

# SIZING UP RED DWARFS IN THE SOLAR NEIGHBORHOOD

by

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Under the Direction of Todd J. Henry, PhD

## ABSTRACT

We present the Systematic Investigation of Radii and Environments of Nearby Stars (SIRENS) Project: the characterization of 1593 stars including 1504 nearby red dwarfs within 25 parsecs. The primary goal is to provide radii for the all-sky sample of red dwarf single stars and spatially resolved primaries with accurate, pre-*Gaia*, trigonometric parallaxes placing them within 25 parsecs, with a special focus on the understudied late-type M dwarfs that have rarely been resolved with optical or infrared long-baseline interferometers.

We provide Johnson-Kron-Cousins *VRI*, 2MASS *JHK*, and *WISE* *W1W2W3* photometry for a total of 1593 stars, including new/updated *VRI* photometry for 637 stars observed at the CTIO/SMARTS 0.9m, ARCSAT 0.5m, and KPNO/WIYN 0.9m. We combine the

distances and photometry and apply spectral energy distribution model fitting similar to the methodology outlined by Dieterich et al. (2014) to determine fundamental parameters — temperature, luminosity, and radius — for the sample. Comparison of our results for 26 stars to their radii determined using interferometry indicates a median absolute difference of only 6%. The result is a set of fundamental parameters for a comprehensive all-sky sample of red dwarfs spanning an unprecedented range of red dwarf spectral types, from approximately M0 to the end of the stellar main sequence. We reveal trends in the dispersion and slope of the radius-effective temperature relationship of red dwarfs and link these trends to star spot coverage. We demonstrate that the radius of a star at effective temperatures greater than 2850 K can span a  $\sim 0.35 R_{\odot}$  range; an effective temperature-radius relation cannot be used to accurately or precisely calculate either of these parameters without additional information. We compare the core main sequence sample of 1503 primary stars and Proxima Centauri to control samples of 53 pre-main sequence stars and 36 cool subdwarfs to map the wide 0.06–1.08  $R_{\odot}$  range in radii for red dwarfs and their young and old counterparts, with the tiniest subdwarf found to be 3/4 the size of Saturn, and the smallest dwarf just smaller than Saturn. We use large radii to identify 56 new young star candidates and small radii to identify 31 cool subdwarf candidates within 25 parsecs. We emphasize that the data required for our technique are photometry and parallaxes only, and form the basis for a much larger future effort using *Gaia* data combined with infrared data for low-mass stars over the entire sky.

INDEX WORDS:

catalogs, stars: fundamental parameters, stars: low-mass, stars: pre-main sequence, starspots, stars: late-type, subdwarfs, Galaxy: solar neighborhood

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MICHELE LOUISE SILVERSTEIN

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## DEDICATION

I'd like to dedicate this dissertation to my colleagues at GSU. I turned to many of you in times of doubt, and it is because of your combined empathy and wisdom that this dissertation has ultimately been written. I'd also like to extend this dedication to anyone who has ever talked me down from overwhelming doubt regarding school and my future, during or before graduate school. Thank you. One's worst enemy is often oneself. "Community is a safety net from an unfair world. Let it catch you when you need it. Catch others when you can."

-Unknown

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Figure 4.5 Example 3rd order polynomial fits to RSR vs. effective temperature for the cool star 2MA1645-1319 ( $V - K = 9.455$ ), using the procedure described in §4.3.3. The y-axis is intentionally cut off at  $\text{RSR} = 1500$  for consistency between plots. The red triangles mark the 5 temperatures with the lowest RSRs, and the X indicates the minimum of the fitted curve, which corresponds the final effective temperature and RSR for each color. The effective temperature of the star is taken to be the mean of these temperatures, and their standard deviation is assigned to be the error in the temperature determination. . . . 100

Figure 4.6 Here we demonstrate the application of our iterative correction procedure to the model spectrum using a modified version of Figure 2b in Dieterich et al. (2014) who use a nearly identical method, but (1) with model spectra that start scaled by  $10^8$  compared to our own and (2) application of a 9th order rather a 10th order polynomial. . . . . 105

Figure 5.1 For validation of our method to determine radius, we compare our results to the most model-independent method for resolved single stars, long-baseline interferometry. (*Left*) We compare our radii to LBI radii calculated by scaling published angular diameters with our parallaxes. Note that these radius values and therefore the associated calculations for Boyajian et al. (2012b) (B12) and Rabus et al. (2019) (R19) are different from their original values presented later in Figure 6.3. (*Right*) We make a similar comparison using angular diameter results. In both panels, our results match to within median absolute differences of 5.9%, with closer matches to more recent publications. This is especially reassuring because the more recent results are expected to use more developed and refined instruments, data reduction pipelines, and/or telescope systems compared to their earlier-published counterparts. Note that we include only the most recent results for each star, but comparison to each star by publication is listed in Table 5.1. . . . . 113

**Figure 5.2** Here we see what can be called a “Radius HR Diagram”. In all three panels our results are plotted for presumed main sequence stars (red circles) and ensembles of known cool subdwarfs (yellow diamonds) and known young stars (blue triangles). (*Top Left*) Our results indicate that the smallest cool subdwarf is about 3/4 the size of Saturn and the smallest late-type red dwarf is just smaller than Saturn. (*Bottom Left*) Results from previous work by others are overplotted for comparison. We include the Gaia DR2 limits in the upper left box to emphasize the need for focused studies of M dwarfs to determine fundamental parameters. Published values from Boyajian et al. (2012b); Dieterich et al. (2014); Mann et al. (2015); Filippazzo et al. (2015) (“B12”, “D14”, “M15”, and “F15”) are overplotted to emphasize that our use of two different color sets to derive parameters for stars warmer and cooler than  $V - K = 7$  ( $\sim 2800$  K) is not to blame for trends in the “radius main sequence”. Scanning from warm to cool stars, main sequence stars of roughly 4000 to 3200 K, exhibit a widened radius main sequence, discussed in §5.4. This radius dispersion diminishes from roughly 3200 to about 2800 K, below which the radius main sequence is consistently narrow, spanning a range of about  $0.1 R_{\odot}$ . Near 2800 K, there is also a distinct change in slope of the overall curve, discussed further in §5.3. Our conclusion is that for red dwarfs with temperatures above  $\sim 2800$  K, effective temperature cannot be used a one-to-one proxy for radius. Stars of different ages stand out by their large and small radii for young and old stars, respectively, and age-extreme candidates can be selected, as explained in Section 5.5. These trends emerge largely due to our unprecedentedly large and age-diverse sample. (*Right*) Results are shown in the context of stars in various age groups. Cool subdwarfs represented by yellow points almost invariably fall below the large numbers of main sequence stars in red. Stars identified to be young are represented by blue points and are typically above the main sequence stars. It is evident that radius can be used as a means to decipher young, main sequence, and old stars. New candidate young stars (Table 5.2) are red points circled in black and new candidate subdwarfs (Table 5.3) are points below the line that separates the main sequence and cool subdwarf stars. The highlighted region corresponds to the 3350-3450 K panel histogram in Figure 5.5 where we further describe young star candidate selection. Results are discussed in §5.5. . . . . 117

Figure 5.3 (*Left*) Our results for 1504 main sequence stars have been overplotted with the fits presented by Rabus et al. (2019), with shaded regions outlining their errors. It is evident that the warmer star fit matches fairly well. This is expected because much of their LBI work and those before them have focused on higher mass M dwarfs. Although the cooler star fit passes through many of the smaller-radius points, it does not accurately map the overall trend and does not reach below 2600 K. We attribute this to a much smaller sample size that does not extend to the coolest stars. The use of these fits also neglects the large range of radii at a given temperature, although the error range does encompass nearly all of our stars. (*Right*) Results for our 1504 main sequence stars are split into two fits with an inflection point at  $T_{eff} = 2850$  K, where there seems to be a distinct change in slope. We note that this value is indeed close to our warm vs. cool star cutoff, but also point out that the trend also exists when we include the work of others as in the bottom left panel of Figure 5.2. For comparison to Rabus et al. (2019), we apply a linear fit (dashed black line) to the cooler stars and quadratic fit to the warmer stars (solid blue line). We conclude that that: (1) A relationship between radius and effective temperature for red dwarfs of  $T_{eff}$  cannot be derived without consideration for other factors that may affect radius (e.g. metallicity, age, rotation rate, and/or activity). As discussed in §5.4 and Figure 5.4, main sequence stars with temperatures of 2850–4000 K may have radii spanning a factor of two, e.g., a star with  $T_{eff} = 3700$  K may have a radius of 0.35 to 0.70  $R_{\odot}$ . (2) In the shaded region from 3200–2850 K there appears to be a transition from the trends we see in the hotter regime of  $> 3200$  K to those in the cooler regime of  $< 2850$  K. This region is somewhat cooler than the region cited by Rabus et al. (2019) as the transition between partially and fully convective stars, evident in the left panel. Jao et al. (2018) found the transition between partially and fully convective energy transfer at a spectral type of M3.5V and mass 0.36  $M_{\odot}$ , both of which are near 3300–3400 K. This temperature regime is higher than the clear change in dispersion we find at 2850 K. . . . . 120

Figure 5.4 (*Left*) As discussed in §5.4, the width of the radius main sequence trends with the evolutionary models created by Somers et al. (2019 in prep.) that incorporate spot coverage. The evolutionary tracks are plotted in our radius vs. effective temperature space for stars of 3 different stellar masses with 6 different percentages of spot coverage. Black arrows at the bottom of each set of curves indicate the slopes traced out by the point locations where a star of the corresponding mass lands on the main sequence. (*Right*) The black arrows from the left panel are plotted over our main sequence results. It is evident that as the arrows decrease in slope, the scatter in radius at a given temperature decreases accordingly. The ramifications are that (1) as spottedness increases, stars of similar mass shift to smaller temperatures but generally have similar radii, (2) star spots have significant effects on effective temperatures, (3) spots cause changing dispersions in radii at given temperatures because stars with various masses have similar effective temperatures. The implications are that star spot coverage is a crucial component to be included in models, and that a single radius-effective temperature relationship cannot be used to derive one parameter or the other without considerations of spottedness, presumably caused by age and/or magnetic activity differences.122

Figure 5.5 Each of the above histograms lays out the demographics and corresponding radii of stars that lie in the given temperature range. The diagram surrounded by a black outline (3350-3450 K) corresponds to the region highlighted in the right panel of Figure 5.2 to help convey the concept behind these histograms. These diagrams further illustrate that the subdwarfs (yellow bars with stars) have radii smaller than their red dwarf counterparts (red bars with diagonal stripes), whereas young stars (blue bars with circles) have generally larger radii, but sometimes remain close enough in size to their main sequence counterparts that radius alone leaves them indistinguishable. In Figure 5.2, we can easily see the boundary between subdwarfs and main sequence stars, so there are no regions shaded here to indicate subdwarf candidacy. However, it is more difficult to define a similar line or curve between main sequence and young stars. We therefore mark regions shaded in blue for radii beyond which the distribution of main sequence stars seems to drop off. These boundaries are defined to be the median radius of the (presumed) main sequence stars plus twice the standard deviation of their radii. Young star candidates are marked in the right panel of Figure 5.2 and listed in Table 5.2, and flagged as “YC” in Table D.1. . . . . 131

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Figure 6.1 Here we compare our effective temperatures to those measured by others, as discussed in §6.2.1. The median absolute differences between our temperatures and those of others are 65 K for Mann et al. (2015), 88 K for Boyajian et al. (2012b), 52 K for Rabus et al. (2019), 153 K for Filippazzo et al. (2015), and 78 K for Dieterich et al. (2014). We note the systematic trend observed in our comparison with Dieterich et al. (2014); the fact that they use a manual color selection method rather than our automated pre-selected colors may be the root cause of this systematic. In the right-most panel we demonstrate our ability to accurately determine stellar effective temperatures for all red dwarfs across a span of roughly 2000 to 4000 K. . . . . 147

Figure 6.2 Here we compare our luminosities in units of  $\log_{10} L$ , where  $L$  is in units of solar luminosities, to those measured by others, as discussed in §6.2.2. The median absolute differences between our luminosities and those of others are 1.5% for Mann et al. (2015), 6.2% for Boyajian et al. (2012b), 5.4% for Rabus et al. (2019), 6.9% for Filippazzo et al. (2015), and 2.8% for Dieterich et al. (2014). As described in §4.3.4, our luminosity results are more directly linked to observations than temperature determinations, and our tight match to results obtained by Mann et al. (2015) using spectroscopy and Filippazzo et al. (2015) using a combination of spectroscopy and photometry speak to the quality of all three data sets, and to the power of our method to succeed with easy-to-acquire photometry data. . . . . 151

Figure 6.3 Here we compare our radii in units of solar radii,  $R_{\odot}$ , to those measured by others, as discussed in §6.2.3. Our radius results generally match those for the easier-to-study early M dwarfs more closely than for cooler stars. In particular, there are significant discrepancies between our results and those of Filippazzo et al. (2015). The median absolute differences between our radii and those of others are 4.8% for Mann et al. (2015), 7.0% for Boyajian et al. (2012b), 3.3% for Rabus et al. (2019), 13.4% for Filippazzo et al. (2015), and 6.7% for Dieterich et al. (2014). Most importantly, our results are a close match to the directly measured values obtained via LBI by Boyajian et al. (2012b) and Rabus et al. (2019), further illustrated in Figure 5.1 and described in §5.2. . . . . 154

Figure 6.4 Similarly to Mann et al. (2015), we find that there are significant discrepancies between our results for temperatures and angular diameters and those of Casagrande et al. (2008). As such, we would not recommend using this method without applying an appropriate correction. . . . . 159

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## CHAPTER 1

### Introduction

#### 1.1 Stars and Their Fundamental Parameters

Stars are the lifeblood of the Universe, both locally and at the far reaches. Here on Earth, we depend on the Sun to keep us warm. The stars we see at night are just a few of many that make up a large portion of the mass that forms the visible Galaxy. The vast majority of visible light in the Universe comes from stars, as do metals, which form upon the deaths of the most massive stars as they undergo supernovae and may also be generated during the merging of neutron stars. Stars are primarily comprised of hydrogen and helium, along with a scattering of other “metals,” defined in astronomy as elements heavier than helium. For most of their lives, stars generate light and heat by fusing hydrogen into helium, and the most massive stars go on to fuse heavier elements. Younger stars contain more metals because during their formation they incorporate what is left behind by their ancestors.

As just described, various stellar properties go hand-in-hand, and learning more about each one helps us better understand how stars form, evolve, and influence their surrounding environments. Here we step through some key fundamental parameters:

(1) Mass — The amount of matter composing a star is arguably its most important property of and directly affects its life cycle, determining whether it dies in a supernova explosion or sheds its outer layers into a planetary nebula, leaving behind its core as a hot white dwarf. More massive stars experience more internal pressure from gravity and therefore have shorter lifetimes because they burn through their fuel more quickly. Mass is a

fundamental property of stars, but is exceptionally difficult to measure. The most common method is to study binary star systems and derive masses using Kepler’s Law (Andersen 1991; Torres et al. 2010; Benedict et al. 2016). In this project, we focus on low-mass stars, defined as those smaller than  $\sim 0.63$  solar masses.

Surface gravity, often expressed as “log  $g$ ,” goes hand-in-hand with mass. Surface gravity is defined as the base-10 logarithm of the acceleration due to gravity in units of  $\text{cm s}^{-2}$  at the equator at the surface of the object in question, in this case a star. In the context of a star, the “surface” is the photosphere, the layer at the farthest distance from the star’s core from which we can still see the photons being emitted.

(2) Age — Ages are even more difficult to pin down, yet play a crucial role in understanding the history of the Galaxy and how stars and planets form. One method to decipher stellar age is to characterize many stars in a cluster. One can take advantage of the fact that more massive stars evolve faster to gauge the age of the all stars in cluster. Comparisons of stellar fundamental parameters to evolutionary models, which are generally calibrated using these clusters, are the dominant method in determining stellar age. Other methods include analyzing a combination of additional properties by, e.g., interpreting features of the light when spread out into a spectrum and evaluating properties such as the activity from magnetic fields or the star’s rate of rotation. Much of the work on low-mass star ages has been done recently by e.g., Malo et al. (2013); Gagné et al. (2014); Riedel et al. (2017b).

Of particular interest are evolutionary models, in the form of evolutionary tracks, which describe various properties of stars of a fixed mass and how they change as a function of

age, or isochrones, which describe stars at a fixed age and how their properties change if you examine stars of different masses. In just the past five years, a multitude of models have been developed for low-mass stars by Baraffe et al. (2015); Choi et al. (2016); Spada et al. (2017). Older models include those by D’Antona & Mazzitelli (1994); Burrows et al. (1997); Chabrier & Baraffe (1997); Baraffe et al. (2002), but these were updated as our understanding of the makeup of stars and the physics governing them improved. Of particular note, star spots are an effect of magnetic activity named for the appearance of a cooler, dark “spot” on the photosphere; there has been recent investigation revisiting the profound effect of star spots on stellar radius, finding a relationship between inaccurate model predictions of radius and the fraction of the stellar surface covered by spots (“spot coverage”) (Jackson & Jeffries 2014; Somers & Pinsonneault 2015). In our work presented here, we compare our results to models generated by Somers et al. in prep. that incorporate the roles played by star spots, with updates based on recent efforts. We compare our results to their models in an effort to link trends in our radii to star spot coverage.

(3) Metallicity — A star’s composition is known as its “metallicity” and describes the ratio of the abundance of elements (“metals”) heavier than hydrogen and helium to the abundance of hydrogen (often denoted as  $\text{Fe}/\text{H}$  or  $\text{M}/\text{H}$ ). As mentioned, this value generally correlates with the age of the star. It also plays a role in governing stellar physics, illustrated by its significant effect on stellar evolutionary models. Recent efforts also suggest that metal-rich stars have more giant planets, at least for stars with masses similar to the Sun (Fischer & Valenti 2005; Wang & Fischer 2015; Petigura et al. 2018). Recent work to determine the

metallicities of low mass stars has been performed by e.g., Rojas-Ayala et al. (2010, 2012); Newton et al. (2014); Rajpurohit et al. (2014); Gaidos & Mann (2014).

Note that metallicity is not the same as “alpha enhancement,” which indicates the amount of “alpha elements” present in a star. These elements mostly have masses that are a multiples of the mass of the alpha particle, helium (He, mass = 4 amu), which has a distinct role in their formation. The alpha elements include oxygen (O, element number 8), magnesium (Mg, 12), silicon (Si, 14), calcium (Ca, 20), and titanium (Ti, 22).

(4) Magnetic Fields — Just like in the Sun, magnetic fields are responsible for flares and cycles in other stars. Caused by the motions of charged particles in the stars, magnetic fields vary in strength from star to star based upon other properties such as stellar rotation rate and age. In the study of exoplanets, work is currently ongoing to determine the impact different effects of the stellar magnetic field have on planetary formation and atmospheres. Recent work to study magnetic properties of low mass stars include those by López-Morales (2007); West et al. (2008, 2011); Malo et al. (2014); West et al. (2015); Hosey et al. (2015); Clements et al. (2017); Han et al. (2017); Kesseli et al. (2019).

(5) Rotation rate — The rotation rate of a star is key to understanding its magnetic properties; over time, angular momentum is lost as mass is ejected by the star’s stellar wind, a phenomenon driven by magnetic activity. The rotation rate of a star can therefore be used to probe its magnetic field, stellar wind, and age. Rotation rate also plays a role in the overall shape of a star — a rapidly rotating star will become stretched, with the star’s radius growing larger at the equator and smaller from pole to pole. Although comparing trends in

rotation rate (e.g., derived by the MEarth<sup>1</sup> team in Newton et al. (2016, 2018)) to the stellar radii derived in this dissertation project may reveal some key trends, that exercise is beyond the scope of this effort.

At the mercy of the five properties described above are luminosity, effective temperature, and effective radius. Luminosity and temperature have been characterized and used to study groups of stars for about a century, since the advent of the Hertzsprung-Russell (HR) Diagram (Russell 1914). The diagram demonstrates the trends in luminosity with temperature, which vary with stellar mass, age, metallicity, magnetic activity levels, and rotation. Once luminosity and temperature are determined, generally by comparing photometric or spectroscopic observations to photospheric models, comparisons with other stars on the HR Diagram provides hints regarding the other five properties listed above.

Once known, luminosity and effective temperature can also be combined to derive the property central to this dissertation — radius — using the Stefan-Boltzmann Law,  $L = 4\pi R^2 \sigma_{sb} T^4$ , where  $\sigma_{sb}$  is the Stefan-Boltzmann constant and  $L$ ,  $R$ , and  $T$  are the luminosity, radius, and effective temperature of the star.

To use the Stefan-Boltzmann law, we are assuming that “effective temperature” corresponds to the temperature of a blackbody with these qualities emitting the same amount of light as the star. A blackbody is defined as an object that absorbs all incident light. Furthermore, there is assumed to be no limb darkening nor star spots, but simply a uniform, spherical object. Stars are not perfect blackbodies and vary in how much they deviate from the idealized cases, so when we derive radius, we do not presume to believe this is the exact

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<sup>1</sup>Irwin et al. (2009), [www.cfa.harvard.edu/MEarth](http://www.cfa.harvard.edu/MEarth)

radius of the star, but rather denote it as an “effective radius”. However, for simplicity in this dissertation, we simply refer to it as “radius.”

Deriving radius is a non-trivial matter — only a few of the nearest, brightest stars can be directly imaged. As such, a uniform, accurate, automated method to derive radii for large numbers of stars as described in this work is useful in a variety of studies.

Knowing the stellar radius unlocks doors to other properties of stars, including those of their planets. When comparing stars of the same temperature, an unusually small star may be a rare, old, cool subdwarf, useful in mapping the history of the Galaxy. In the opposite case where the star is exceptionally large, it may be young and active, or evolved, and/or an unresolved binary whose luminosity is much higher than a single star but is still at the same temperature. Ideally, we would measure age directly, but this is a complicated characteristic to determine, and evolutionary models still need to be (and are being) improved. In the context of transiting exoplanets, knowing an accurate radius for the host star is necessary to calculate the size of the planet, key in determining its density and habitability. These three cases illustrate the power of accurately and efficiently determining stellar radii to map out the demographics of both stars and planets across a wide range of systems of various ages in the solar neighborhood. With these motivations in mind, we set our sights on the most common stars in the Universe, the red dwarfs, described next in §1.2, and we discuss previous efforts to determine their radii in §1.3.

## 1.2 What is a Red Dwarf?

Red dwarfs are the smallest, coolest stars that fuse hydrogen into helium, satisfying the requirement to be called a “dwarf” or “main sequence” star. It is this fusion that generates the heat we experience in the case of the Sun and the outward radiation pressure that keeps a star from collapsing under its own gravity. These dwarf stars are assigned the luminosity class “V” on the main sequence, whereas their more metal-poor counterparts, the cool subdwarfs, are given luminosity class “VI” (Jao et al. 2008).

Red dwarfs span roughly 2000 to 4000 K in temperature, far cooler than the hottest main sequence stars, which can be ten times as hot. We more precisely define a red dwarf to be any main sequence star ranging from spectral type M0.0V (mass  $\approx 0.63 M_{\odot}$ ) to the end of the the main sequence, at roughly L2.5V (mass  $\approx 0.08 M_{\odot}$ ) (Dieterich et al. 2014; Benedict et al. 2016). Below this mass, the layers overlying the core of the objects generate insufficient pressure and temperature to sustain the fusion of hydrogen to helium; hence, the spectral type of L2.5V represents objects at the “hydrogen burning limit”, with a mass that is somewhat dependent on metallicity (Burrows et al. 2011; Dieterich et al. 2014). However, measuring the mass of an individual star is difficult, with most of our understanding of red dwarf masses coming from dynamical studies of resolved binaries in the solar neighborhood (Henry & McCarthy 1993; Benedict et al. 2016; Mann et al. 2019). In Table 1 we provide a set of red dwarf attributes that are (more) directly observable than mass. These are general guidelines, because as we shall see throughout this thesis, only approximate values can be assigned to individual objects without additional knowledge of the star’s character, e.g., its

age, metallicity, magnetic, and rotational properties. In fact, we will show that there are large ranges in all of these values for red dwarfs at a given, for example, temperature.

Table 1.1: Red Dwarf Properties

| Spectral Type | Mass      | Luminosity           | Effective Temperature | Radius    | $V - K$ | $M_V$ | $M_K$ |
|---------------|-----------|----------------------|-----------------------|-----------|---------|-------|-------|
| .             | $M_\odot$ | $L_\odot$            | K                     | $R_\odot$ | mag     | mag   | mag   |
| M0.0V         | 0.63      | $6.1 \times 10^{-2}$ | 3800                  | 0.56      | 3.7     | 9.0   | 5.3   |
| M3.0V         | 0.35      | $1.1 \times 10^{-2}$ | 3200                  | 0.35      | 5.0     | 11.9  | 6.9   |
| M6.0V         | 0.10      | $8.1 \times 10^{-4}$ | 2600                  | 0.14      | 7.7     | 17.1  | 9.4   |
| M9.0V         | 0.09      | $2.4 \times 10^{-4}$ | 2200                  | 0.11      | 9.1     | 19.7  | 10.6  |
| L2.5V         | 0.08      | $1.3 \times 10^{-4}$ | 2100                  | 0.08      | 9.4     | 20.5  | 11.2  |

In Table 1, spectral types come from the RECONS 25 Parsec Database and masses from Dieterich et al. (2014); Benedict et al. (2016). Effective temperatures, luminosities, and radii come from the results of this project and  $V - K$ ,  $M_V$ , and  $M_K$  come from our observations. Note that from M6.0V to L2.5V, there is only a 20% change in mass across six full increments of spectral type, whereas the mass changes by a factor of nearly two across only three full increments in type from M0.0V to M3.0V. Thus, the spectral type scale traditionally used by astronomers for red dwarfs is far from linear in mass, or in fact, any of the other more easily observed attributes.

One unique quality of red dwarfs are their long lives as main sequence stars. Red dwarfs fuse hydrogen into helium for so long that not a single one has moved on to the later stages of its stellar life cycle — running out of hydrogen fuel and evolving off of the main sequence — in



the 13.7 Gyr age of the Universe. Their longevity compared to more massive stars is owed to their lower mass; a decrease in mass leads to lower gravity pressure, which in turn results in a lower central temperature and slower fusion reaction rates in the core, with the consequence that the hydrogen fuel lasts longer than for more massive stars. The combination of their longevity and the rate at which they form are the reasons why these stars make up 75% of stars in the Galaxy (Henry et al. 2006; Winters et al. 2015). The ubiquity and longevity of red dwarfs make them pivotal in studies of our solar neighborhood, exoplanet systems, stellar populations, and Galactic dynamics.

Red dwarfs are an obvious choice for nearby star studies because they comprise three of every four stars within 25 pc (Henry et al. 2006; Winters et al. 2015), and presumably dominate the stellar population throughout our Galaxy, and other galaxies as well. Exoplanet research continues to grow more exciting and diverse, and a large dataset of several thousand of the nearest, most common type of stars is required for robust statistical studies that may not only comprise target lists for potential discoveries of nearby planets, but for overall population studies that help explain the prevalence of planets of various types and how such planets form.

So far, research indicates that red dwarfs tend to have far more terrestrial planets than ice giants or gas giants (Bonfils et al. (2013), Morton & Swift (2014), Lurie et al. (2014), Dressing & Charbonneau 2013; 2015, Mulders et al. 2015a; 2015b). While there is some controversy as to whether or not red dwarfs can host *habitable* planets because of their X-ray radiation and sometimes extreme variability, red dwarfs are the most long-lived stars in the

Universe and may be acceptable environments for life-bearing planets (debated by Tarter et al. (2007); Shields et al. (2016); Ranjan et al. (2017); Gebauer et al. (2018); Mullan & Bais (2018); O'Malley-James & Kaltenegger (2019) and references therein). In truth, we do not have a deep understanding of the environments suitable for life beyond Earth and where they might be found, so the simple fact that most energy sources in the Universe are red dwarf stars makes them crucial targets for further study.

### **1.3 What Do We Know About Red Dwarf Radii?**

Radius is a fundamental characteristic of a star, determined by its mass, age, composition, magnetic properties, and rotation. A massive main sequence star of spectral type O or B has a larger radius than a lower mass star of type K or M because it is more massive, but also because, although they experience more inward pressure due to gravity, they also have a higher amount of energy released by fusion resulting in a higher outward radiation and lower overall density. A star's radius is not constant, however — its radius shrinks from its early days as a contracting pre-main sequence star to its life on the main sequence, where it slowly expands, until its nuclear fuels change and radical radius changes can occur. Older stars that formed during a time when the Galaxy had fewer metals in the interstellar medium. They appear smaller because such stars do not experience as much opacity support by photons streaming from lower layers as do higher metallicity stars, and because we see deeper into their stellar atmospheres.

Benchmark radii for various types of stars are measured primarily via eclipsing binaries

(reviews by Popper (1980); Andersen (1991); Torres et al. (2010); Kirk et al. (2016)) and interferometry (review by von Braun & Boyajian (2017); additional red dwarf work by Kane et al. (2017); Schaefer et al. (2018); Rabus et al. (2019)). In this dissertation we outline a technique that combines astrometry, photometry, and stellar models to determine effective temperatures, bolometric luminosities, and, via the Stefan-Boltzmann law, radii, for a large sample of red dwarfs that are of comparable accuracy to these more traditional methods.

As discussed in §1.1, there are many avenues of scientific inquiry that are enabled by knowing stellar radii. In exoplanet searches, determining the radii of the host stars is crucial for transiting planets because the stellar radii are required to determine planetary radii. Measured values and correlations with stellar properties such as rotation and magnetic activity expands our understanding of stellar physics and better informs stellar and evolutionary models. Large radii can be used to reveal nearby young stars that are key targets in searches for planet-forming disks and embedded planets, and are critical to understanding the timescales on which planets form. Small radii can be used to identify the rare fossil cool subdwarfs that carry information about the ancient era of the Galaxy. Once the young star and old subdwarf populations have been identified, these stars can be compared to their main sequence counterparts to trace the Galaxy’s star formation history.

A large set of accurate radii for red dwarfs — defined here to be stars with spectral types M0.0V to L2.5V (§2.1) — has remained elusive primarily because of the brightness and resolution limits of current instruments and telescopes. The best way to obtain fundamental parameters such as stellar radii is by direct means, independent of stellar models. The

two primary ways of doing this are by mapping the orbits of eclipsing binaries, effectively using Kepler’s Laws and fortuitous geometry, and by direct imaging using interferometry and combining the angular size with a trigonometric parallax. The current status of red dwarf radius measurements via these two techniques is discussed below. However, these techniques can be used for only limited numbers of stars, whereas our goal is to provide reasonably good radius values for large numbers of stars.

In this work we use a combination of accurate data and models to provide temperature and luminosity estimates for various types of red dwarfs in the solar neighborhood, and use these two quantities to derive radii. We also address surface gravity, metallicity, and alpha enhancement parameters for the same stars. Our procedure utilizes astrometric and photometric data with the grid of BT-Settl models (Allard et al. 2012; Rajpurohit et al. 2013) for fundamental parameter determination. While it is known that these models generally work well for early- to mid-M dwarfs (Rajpurohit et al. (2012), Rajpurohit et al. (2013)), they are less applicable to some subsets of red dwarfs, including late-type dwarfs (Rajpurohit et al. 2012), young stars (Gagné et al. 2015a), and subdwarfs (e.g., due to missing opacity sources Rajpurohit et al. (2012) and demonstrated by discrepancies in evolutionary models such as those of Baraffe et al. (2015), as discussed by Jao et al. (2016)). Nonetheless, the BT-Settl models remain among the best available approximations to red dwarf spectra (Rajpurohit et al. 2018b), and can be used reliably to extract the few young stars and cool subdwarfs in large samples, based on derived radii. We acknowledge that our technique is imperfect, but it provides an important step forward in estimating fundamental parameters for large

numbers of red dwarfs, and is particularly compelling in efforts to identify the rare young stars and subdwarfs among the large population of red dwarfs in the solar neighborhood.

### *1.3.1 Eclipsing Binaries*

The study of eclipsing binaries has long been a staple of fundamental stellar parameter determination, and until the advent of imaging techniques sufficient to resolve stars, this was the dominant technique for determining stellar radii. Relying on photometry to detect and characterize eclipsing systems, spectroscopy to derive velocity amplitudes, and the application of Kepler’s Third Law, the study of eclipsing binaries helped determine not only radii, but critical mass-luminosity relations, independent of assumptions about stellar atmospheres and/or interiors.

Although observing eclipsing systems may seem ideal for determining fundamental stellar characteristics, it has its limitations. First, the target list is limited exclusively to multi-star systems that eclipse, many of which are so close that they interact. Thus, conclusions may apply exclusively to these types of systems, rather than systems with larger primary-secondary separations and single star systems. Second, the fraction of systems with multiple stars decreases with stellar mass of the primary — up to 100% of O and B star systems contain at least one companion (Mason et al. (2009), overview of studies by Duchêne & Kraus (2013)), compared to only 27% of M dwarf systems (Winters et al. 2019), which, combined with their small sizes, results in a limited supply of eclipsing M dwarf systems.

Nonetheless, several eclipsing red dwarf systems have been found that provide benchmarks for red dwarf radii. Among these are CM Dra (Metcalf et al. 1996), YY Gem (Torres

& Ribas 2002), and LP 54-19 (GJ 3236) from MEarth (Irwin et al. 2009). *Kepler* and *K2* have also yielded results, including those of Kraus et al. (2015), David et al. (2016), Gillen et al. (2017), and Chaturvedi et al. (2018), who present radii and other properties of several systems.

### *1.3.2 Long-Baseline Interferometry*

The book, *Extrasolar Planets and Their Host Stars* (von Braun & Boyajian 2017), includes a review of long-baseline interferometry (LBI) results. They provide a table of fundamental stellar parameters including stellar radii with “precision better than 5%, smaller than 100 solar radii, out to a distance of 150 pc, as of 1 Nov 2016” and “exclude fast rotators and stars with large pulsations.” Only 9 of 91 papers used as references for stellar angular diameters include M dwarfs — Lane et al. (2001); Ségransan et al. (2003); Berger et al. (2006); van Belle & von Braun (2009); Demory et al. (2009); von Braun et al. (2011, 2012); Boyajian et al. (2012b); von Braun et al. (2014). Additional details of the measurements and other related work can be found in the references listed above and in recent efforts by Kane et al. (2017); Schaefer et al. (2018); Rabus et al. (2019).

A particularly noteworthy paper addressing the radii of red dwarfs is Boyajian et al. (2012b), which provided radius measurements for 12 M dwarfs using optical LBI. While there are concerns regarding the radius errors, and possibly systematic underestimates of radii due to the adopted limb darkening models required to determine the radius of a star via interferometry (White et al. 2013; Casagrande et al. 2014), the authors presented an extensive set of red dwarf radii. Complementary to this effort are the recent results by

Rabus et al. (2019) that include new M dwarfs, including the coolest star with a radius measured with LBI, GJ 406, reported to have  $T_{eff} = 2657 \pm 20$  K and  $R = 0.159 \pm 0.006 R_{\odot}$ . GJ 406 is critical because it can help validate our procedure beyond our previous limit set by Proxima Centauri with LBI (listed by Demory et al. (2009) as  $T_{eff} = 3098 \pm 56$  K,  $R = 0.141 \pm 0.007 R_{\odot}$  and Rabus et al. (2019) as  $T_{eff} = 2901 \pm 68$  K,  $R = 0.154 \pm 0.001 R_{\odot}$ ). Comparisons to these efforts are presented in §6.2.

### *1.3.3 Model-Dependent and Empirical Relation-Based Radii*

Not all stars can be studied via the above (mostly) model-independent techniques because they are either too far, too faint, or are not in eclipsing systems. As a result, others have sought to use empirical data and stellar models to estimate the radii of red dwarfs. Here we provide a summary of some of the most relevant work leading up to our own.

Casagrande and collaborators utilize the infrared flux method (IRFM), with papers Casagrande et al. (2006) (G and K dwarf results), Casagrande et al. (2008) (M dwarf results down to 2000 K), Casagrande et al. (2010) (empirical color-effective temperature relations for FGK dwarfs and subgiants), and Casagrande et al. (2014) (comparison of IRFM to interferometric results). The IRFM operates according to the principle that the ratio of the bolometric flux to an infrared monochromatic flux can be used to provide an estimate of a star’s temperature and angular size. With a trigonometric parallax, the angular size can then be converted into a stellar radius. Their use of the IRFM is similar to our own technique in that it utilizes photospheric models, Johnson-Kron-Cousins *BVRI* optical photometry,

and 2MASS<sup>2</sup> *JHK* infrared photometry. This is similar to the filters we use in this study, but adds the Johnson *B* band and excludes the *WISE*<sup>3</sup> filters, while using an older set of photospheric models. In both IRFM and our technique, these data are used to determine a best fitting model, and fundamental parameters are derived. A cornerstone of IRFM is the assumption that the infrared band used is in the Rayleigh-Jeans part of the spectrum, with minimal molecular features. With this postulate, the flux observed can be reasonably compared to values that would be obtained if the star were a blackbody. However, as described by Casagrande et al. (2008) it is unusable without some changes for red dwarf stars, and the M dwarf version of the procedure is denoted as the Multiple Optical-Infrared Technique (MOITE). The technique adapts to the complicated spectra of red dwarfs by deducing a best-fitting metallicity by comparing observations to models and is flexible in that either optical or infrared data can be used. However, the empirical relations published extend to  $V - K = 8.5$ , which is 2.0 magnitudes in color short of our  $V - K = 10.5$  limit for the coolest red dwarfs. Furthermore, Casagrande et al. (2008) only compare MOITE results for 9 stars to parameters derived using LBI by Ségransan et al. (2003) and Berger et al. (2006), with the coolest star at 3145 K. Since that time, huge strides have been made in both LBI data reduction and sensitivity, reaching nearly 500 K cooler (Rabus et al. 2019), and results from Mann et al. (2015) and our own work (§6.2.4) suggest that Casagrande et al. (2008) effective temperatures are underestimated.

Mann et al. (2015) made a step forward in estimating fundamental parameters for red

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<sup>2</sup>“The Two Micron All Sky Survey (2MASS),” Cutri et al. (2003); Skrutskie et al. (2006)

<sup>3</sup>“Wide-field Infrared Survey Explorer,” Wright et al. (2010)



dwarfs, providing results for 183 stars. Their effective temperatures are based on a comparison of optical spectra to the BT-Settl models. One of the most useful components of their effort is a comparison with interferometrically determined parameters to generate empirical relations between color, effective temperature, and  $M_{Ks}$ . Their study explores spectral types K7 to M7, but is limited to only 15 stars from M5 to M7. In comparison, our study includes 1593 total stars with accurate photometry and parallaxes, spans spectral types  $\sim$ M0.0V to L2.5V, and provides values for 296 stars with types of M5.0V ( $V - K \sim 6$ ) or later. For this reason, and because their luminosities are derived using spectra, and their radii are consistent with interferometry, we treat their work as a valuable comparison with our warmer star results while approaching their later star results and relationships with more caution. This comparison is presented in §6.2.

Filippazzo et al. (2015) derived luminosities, effective temperatures, and radii by combining spectra and photometry to generate spectral energy distributions for 198 cool stars and brown dwarfs with spectral types M6 to T9, with 53 of these objects classified as younger than 500 Myr. They point out that brown dwarf spectra are poorly described by models, even with recent advancements, especially as a function of age. So, they gather flux information across as much of the spectrum as is available, and then use the resulting fluxes to derive luminosities via parallaxes. Informed by age and luminosity estimates, radii are then derived by comparisons to evolutionary models, and effective temperatures are estimated using the radii with the Stefan-Boltzmann Law, independent of photospheric models. This effort is the largest study of late M and early L dwarf fundamental parameters separate from

our own and our colleagues’ previous work presented in Dieterich et al. (2014). As such, it is a critical point of comparison (§6.2) for our results presented here.

Our own effort is based upon that of Dieterich et al. (2014), who used Bessell *VRI*, 2MASS *JHK*, and *WISE* *W1W2W3* filter traces and zero points to extract colors from the BT-Settl model spectra and compare them to observed data. A significant difference is that in this paper we use the native Johnson-Kron-Cousins *VRI* photometry obtained for thousands of stars at Small and Moderate Aperture Research Telescope System (SMARTS) 0.9m at Cerro Tololo Inter-American Observatory (CTIO) (see, e.g., Winters et al. (2015)), rather than optical *VRI* on the Bessell system (further comparison in §6.2). Dieterich et al. (2014) compare their “model colors” to the observed colors for 63 low mass red dwarfs and brown dwarfs, and a temperature is determined via an interpolation between grid points until the color matches perfectly. This is done for each color combination, and the mean of the resulting effective temperatures is given as the temperature of the star. Next, the closest model spectrum in the grid to this final temperature serves to provide a preliminary bolometric flux, the model spectrum is then adjusted to match the observed photometry, and the adjusted spectrum is then integrated to derive a bolometric flux true to the suite of photometric observations. Finally, a parallax from the RECONS collection of parallaxes for objects within 25 pc is used to convert the bolometric flux to a bolometric luminosity, which can be combined with the effective temperature to determine each object’s radius via the Stefan-Boltzmann Law. The overall technique is discussed further by Dieterich et al. (2014), who use it to determine the hydrogen burning limit using the inflection point at

the minimum radius between stars and brown dwarfs, and in the sample selection (§2.1) and technique (§4) portions of this paper. The technique was validated at the time via a comparison of a subset of stellar radii to those determined using the Center for High Angular Resolution Astronomy (CHARA) Array (*www.chara.gsu.edu*) (ten Brummelaar et al. 2005; Boyajian et al. 2012b).

Additional efforts to measure red dwarf parameters using models include Passegger et al. (2016) and those with a focus on young stars by Malo et al. (2014); Gagné et al. (2015a) and the rare cool subdwarfs Kesseli et al. (2019). We do not go into depth on those efforts here because they use similar methods to those described above, but note their importance, especially the latter in their focus on characterizing age-extreme stars.

In this work we provide results based on new code and techniques similar to those reported by Dieterich et al. (2014). There are both minor and major differences between the new and original codes, but the fundamental concept remains the same — using observed and synthetic colors as a means to estimate fundamental stellar parameters by comparison to the BT-Settl model spectra. The overall goals are rather different, however, with an emphasis here on deriving parameters for large numbers of stars, and using the results to explore the population for interesting individual objects and as a means to evaluate the ensemble of red dwarfs near the Sun.

## 1.4 Dissertation Road Map

This dissertation describes how the author successfully (1) developed a method to determine low-mass star radii and applied this method to (2) characterize a sample of 1592 stars, including known young and old stars, to (3) discern trends in the radius-effective temperature relationship of red dwarfs, (4) highlight the influence of stellar magnetic activity on this relationship, (5) identify young star and cool subdwarf candidates within the sample, and (6) leave a legacy dataset that includes optical to mid-infrared photometry (*VRIJHKW1W2W3*), parallaxes, effective temperature, luminosities, radii, and angular diameters of 1592 of the nearest red dwarfs in the solar neighborhood.

In Chapter 2, the author describes the sample and its construction. Chapter 3 delves into the data used for this project, including methods for optical data acquisition and processing from meter-class telescopes, evaluation of *WISE* photometry quality, the RECONS 25 Parsec Database from which the parallax collection originates, and the screening process used to search for multi-star systems that may contaminate the photometry. Chapter 4 details the procedure used to determine the effective temperatures, luminosities, and radii. In Chapter 5, we report the resulting fundamental parameters, trends uncovered in the radius-effective temperature relationship of red dwarfs, and a suite of candidate young stars and subdwarfs. Comparisons of the results from our method to those of others are described in Chapter 6. Future work and the lasting impact of this project are described last in Chapter 7.

## CHAPTER 2

### Sample: Red Dwarfs within 25 Parsecs, Young and Old Stars within 50 Parsecs

#### 2.1 Red Dwarf Definition

This study targets red dwarfs, which are defined to be main sequence stars of a spectral type later than K that fuse hydrogen into helium. These stars are found in the lower right portion of the Hertzsprung-Russell (HR) diagram, for which an observation version is shown in Figure 2.1. Here we describe our methodology in defining both the blue and red (hot and cold) cutoffs for our sample using a collection of results from the RECONS 25 Parsec Database, which contains astrometry, photometry, spectroscopy, and multiplicity information about all objects with parallaxes placing them within 25 parsecs.

The blue cutoff is determined observationally using a combination of accurate photometry in the  $V$  and  $K$  bands and large, systematic, spectroscopic surveys to define a value of  $V - K$  that divides K and M dwarfs. Figure 2.1 illustrates an empirical HR diagram of single main sequence stars from the RECONS 25 Parsec Database with vetted (1) pre-*Gaia* parallaxes placing them within 25 pc, (2) Johnson  $V$  magnitudes, (3) Two Micron All-Sky Survey (2MASS)  $K$  magnitudes, and (4) spectral types. The stars used in this plot are single as far as is known, with no corrupting flux in the  $V$  and  $K$  photometry values used. The  $V$  band photometry comes from five groups who have provided optical photometry for hundreds or thousands of stars each, as discussed in §3.2. Details of the  $K$  band photometry are given in §3.3. Spectral types are taken from three sources: (1) Gray et al. (2006)’s work on stars within 40 pc, (2) the Palomar/Michigan State University (PMSU) survey (Reid et al. 1995;

Hawley et al. 1996; Gizis et al. 2002; Reid et al. 2002a), and (3) our own RECONS work (primarily Henry et al. 1994; 2002; 2006, Jao et al. 2008; 2011, and Riedel et al. 2010; 2014). These three surveys are generally consistent to within a spectral subtype for K dwarfs and a half a spectral subtype for M dwarfs.

Stars with various spectral types are represented with different colored symbols in Figure 2.1. We adopt a dividing line between K and M dwarfs at  $V - K = 3.5$ , given that only a few stars classified as M dwarfs fall on the blue side of this line. In an effort to be more inclusive of the most massive red dwarfs, this cutoff is slightly bluer than the  $V - K = 3.7$  value adopted previously by Winters et al. (2017). We note that while this may not be an absolute dividing line, it provides a useful reference point that can be used to extract the large sample of “red dwarfs” for this study.

For the red cutoff we use the results of Dieterich et al. (2014), who determined the hydrogen burning limit by using two fundamental astrophysical properties of low mass objects: (1) as we examine stars of decreasing mass, their radii are smaller because nuclear fusion rates inside the star are lower, and (2) as mass is removed from a brown dwarf, its radius increases as there is less inward gravitational pressure, counterbalanced by electron degeneracy pressure. As a result, the minimum in a plot of temperature or luminosity vs. radius for red and brown dwarfs corresponds to the hydrogen burning limit, which separates hydrogen-burning stars from brown dwarfs. Dieterich et al. (2014) were the first to use the minima in temperature and luminosity vs. radius plots to determine the inflection points corresponding to the star-brown dwarf boundary, roughly corresponding to the  $V - K = 9.42$  value of the

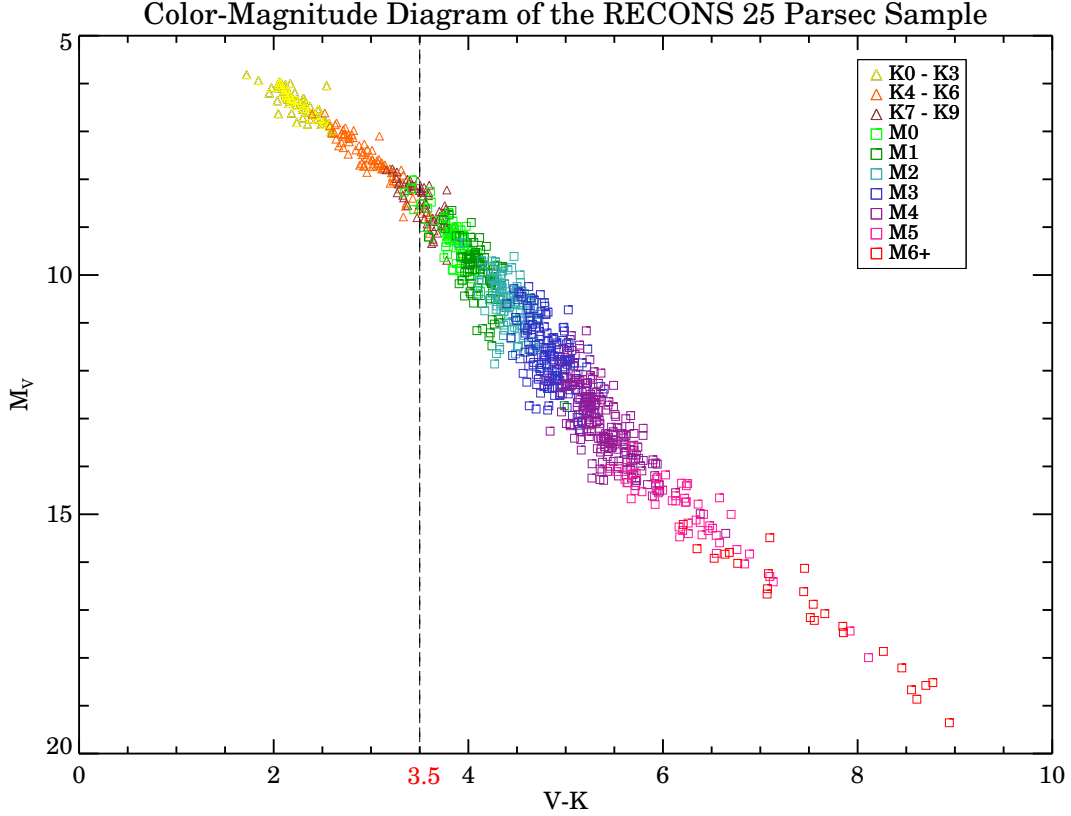


Figure 2.1: Above is an observational HR diagram (i.e.,  $M_V$  magnitude versus  $V - K$  color) of stars in the RECONS 25 pc sample. Points represent single K (triangles) and M dwarfs (squares) with  $V$ ,  $K$ , and a published parallax placing the stars within 25 pc. All stars have spectral types published in the three large surveys of late-type stars described in §2.1. Presumed single stars (§3.6) were chosen to avoid any offsets due to photometry blended with a companion. Error bars are smaller than the points. We define the boundary between K and M dwarfs to be at  $V - K = 3.5$ .

L2.5V star, 2MASS J0523-1403. Given the relatively small sample size of 63 objects used by Dieterich et al. (2014), the temperature gap of roughly 200 K between 2MASS J0523-1403 and the next coolest single star or brown dwarf at spectral type  $\sim$ L3, and the error bars on the order of 0.1 mag occasionally encountered in our  $V$  photometry for faint red and brown dwarfs, we extend our red cutoff to  $V - K = 10.5$  to catch potential outliers.

The result of our two empirical cutoffs for the red dwarf  $V - K$  limits is that, for purposes

of this work, a **red dwarf is defined as a star with  $3.5 \leq V - K \leq 10.5$** , thereby spanning a full 7.0 magnitudes in  $V - K$  color. We note that this color range corresponds to  $M_V \sim 8.5$ –21.5, or a range of 160,000 in flux in the  $V$  band.

### *2.1.1 Stars Without $V$ Photometry*

As just described, the key criteria for stars in the sample is that they must be nearby (25 pc for main sequence stars, 50 pc for young stars and subdwarfs) and have  $3.5 \leq V - K \leq 10.5$ . Although at the start of this work, many stars already had optical photometry in the literature or  $VRI$  magnitudes had been obtained by the RECONS team, many did not. To evaluate which stars without  $V$  might be red dwarfs and should be targeted for photometry, we excluded stars from our observing lists with any of the following properties: (1) no 2MASS  $K$  photometry, (2) unresolved 2MASS  $K$  photometry, (3) known spectral type of white dwarf, O, B, A, F, or G, (4)  $M_K < 4.9$ , (5)  $M_K > 11.4$ . We explain our rationale here:

(1) and (2): 2MASS  $K$  is a requirement for our sample selection, so we excluded any stars without it.

(3): We use  $V - K$  to define our sample because it is easy to accurately determine using a consistent method across a large sample, and this color spans a large portion of the optical/infrared flux for red dwarfs. Spectral types are difficult and expensive to acquire for a large sample of stars and assignments vary depending on both the portion of the spectrum and procedure being used to derive them. Nonetheless, stars with spectral types from the references listed in Section 2.1 are used to eliminate white dwarfs, O, B, A, F, and G stars. We kept stars with the closest-neighboring spectral type to M dwarfs, the K dwarfs, in case



they are outliers that turn out to be red dwarfs once we determine their  $V - K$  colors.

(4) and (5): Using a similar procedure to that described in §2.1, RECONS has determined that the K/M dwarf boundary is at absolute K magnitude  $M_K \sim 5.1$ , and the end of the main sequence is at  $M_K \sim 11.2$ . These boundaries are less reliable than our  $V - K$  color cutoffs because  $K$  band only probes a small part of the stellar spectrum. To allow for outliers, we’ve chosen to retain stars within 0.2 mag of these limits, spanning  $4.9 \leq M_K \leq 11.4$ , and exclude all others. The bright limit is also useful for eliminating any giants that had colors falling in the  $3.5 \leq V - K \leq 10.5$  color regime for red dwarfs.

As we acquired  $V$  photometry, we kept/eliminated the targeted stars based on their  $V - K$  values. To keep the sample size manageable, we only considered primary stars, with the exception of Proxima Centauri. We are confident in our identification of close companions due to a general screening of all stars as they are entered into the RECONS 25 Parsec Database and our access to results from the focused M dwarf multiplicity study described by Winters et al. (2019).

We present a total of 1504 main sequence stars within 25 pc, with 491 in the southern sky (including Proxima Centauri) and 1103 in the northern sky. The northern sky has more stars due to the incorporation of stars from the MEarth-North sample (Irwin et al. 2009; Dittmann et al. 2014) into the RECONS 25 Parsec Database during the project. Parallaxes for the MEarth-South survey were not available during our work.

## 2.2 Three Samples of Red Stars

We provide results here for three main samples of stars. The first is the core sample of single and resolved primary (henceforth simply “primary”) red dwarfs within 25 pc, including 1503 red dwarf primary stars plus the nearest star, Proxima Centauri. To identify noteworthy members of the 25 pc sample with extreme ages (for example 10 Myr for a young M0 star, and roughly the age of the Galaxy for a cool subdwarf star), we supplemented this core sample with control samples of known young star (Riedel et al. 2017b) and cool subdwarf (Jao et al. 2005, 2008, 2011, 2017) primaries. These two samples are defined the same way as the core sample, but they extend to 50 pc to (a) reach more members from nearby moving groups, ensembles of stars that move in space together because they are so young they haven’t experienced enough dynamical interactions to scatter them, and (b) include fast-moving stars that are quickly passing through the solar neighborhood from the halo, an outer region of the Galaxy containing old stars.

The breakdown of the full 1593-star sample is as follows, with a division between the northern and southern skies at declination  $0^\circ$ :

- Main Sequence Stars (cutoff at 25 pc): 1504
  - ▷ Southern Sky: 491 (including Proxima Centauri)
  - ▷ Northern Sky: 1013 (bolstered by stars from MEarth-North)
- Young Stars: 53
  - ▷ Within 25 pc: 36 (14 north/22 south)

- ▷ Between 25 and 50 pc: 17 (5 north/12 south)
- Known Subdwarfs: 36
  - ▷ Within 25 pc: 11 (2 north/9 south)
  - ▷ Between 25 and 50 pc: 25 (15 north/10 south)

Of these, a total of 543 *primaries* are in the southern sky, 1049 are in the northern sky, and 1550 are within 25 pc. As part of our results, the populations of young, cool subdwarf, and main sequence stars will shift as new young star and cool subdwarf candidates are identified (§5.5).

We present our final sample in the color-magnitude diagram in Figure 2.2, where we use absolute  $V$  magnitude ( $M_V$ ) and  $V - K$  color in place of luminosity and effective temperature in the HR diagram. We use  $V - K$  as a measure of temperature because it is the color spanning the largest range of wavelengths across the stellar spectrum that are easily observable from the ground for red dwarfs. As expected, the old cool subdwarfs (yellow diamonds) are bluer than their main sequence counterparts (red circles) and the young stars (blue triangles) lie above the main sequence. The young stars are generally brighter because they are larger than their main sequence counterparts as they contract onto the main sequence. Those that blend in with the main sequence stars are likely not as young.

It is worth noting that there are far fewer of the coldest stars than of the warmest stars. This exacerbates the difficulty in studying these stars, which is already a challenge because they are very faint, evidenced by their high absolute magnitudes.

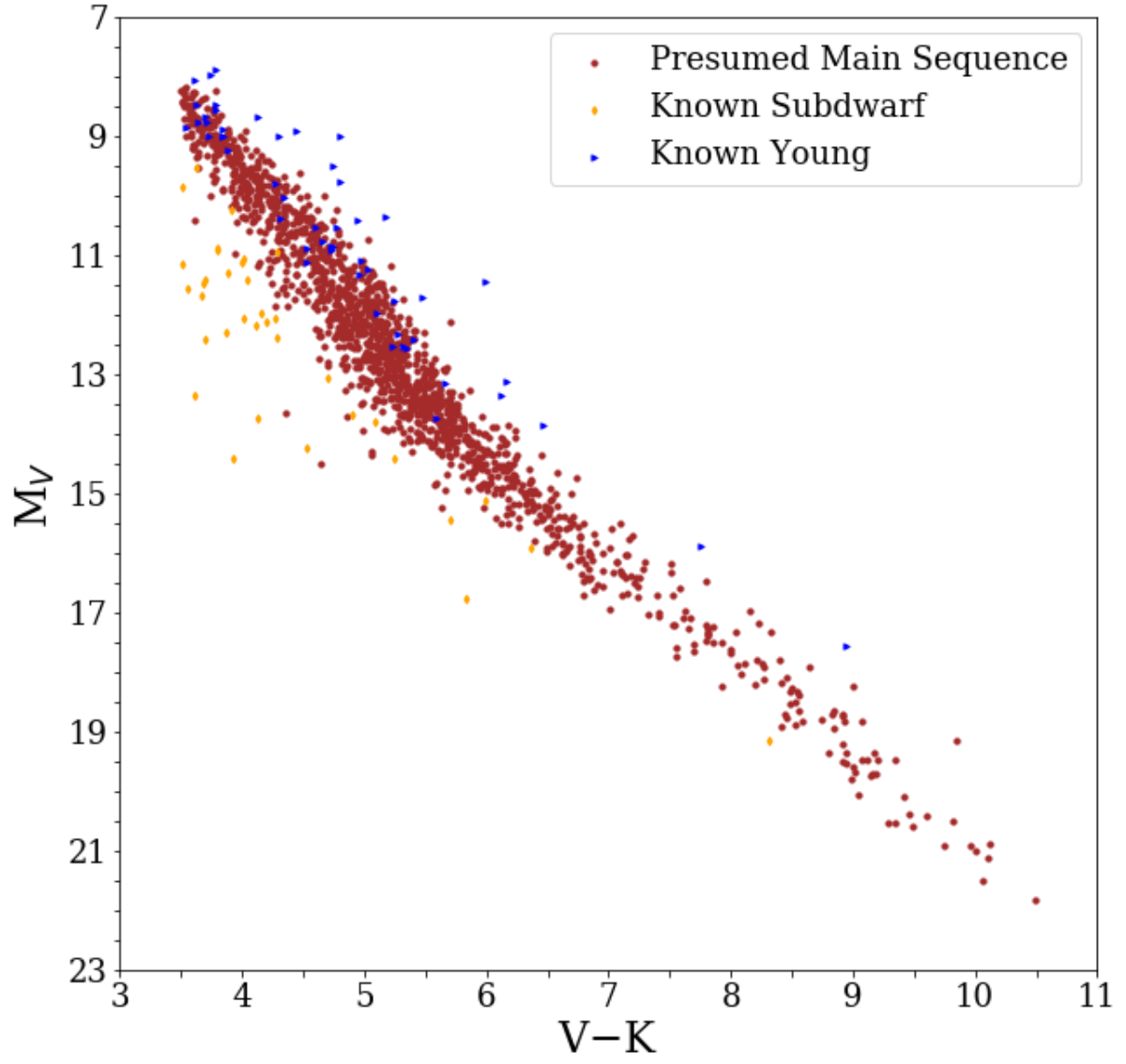


Figure 2.2: In this color-magnitude diagram we present the stars in our final sample using absolute  $V$  magnitude and  $V - K$  color as proxies for luminosity and effective temperature, respectively.

### *2.2.1 Main Sequence Red Dwarfs within 25 Parsecs*

Red dwarfs are notoriously difficult to study because of their low masses and consequent low luminosities compared to their more massive counterparts. Significant studies providing detailed information on the red dwarf population have taken place over the past few decades, e.g., Henry et al. (1990; 2006; 2018), Reid et al. (1995; 2002b; 2002a), Hawley et al. (1996; 2002), Gizis et al. (2002), Lépine et al. (2013; 2011), West et al. (2008; 2011), Allard et al. (1995; 2012), Rajpurohit et al. (2012; 2013; 2014; 2018a), Janson et al. (2012), and Winters et al. (2015, 2017, 2019). In order to provide compelling, and reliable, results for a large number of red dwarfs, we chose to create and target a carefully vetted sample of these low mass stars in the immediate solar neighborhood. The nearby nature of our sample allows us to study these relatively faint stars with sufficient precision to determine their fundamental parameters.

We developed our core sample of nearby red dwarfs from 2013–2017 using the RECONS 25 Parsec Database (Jao et al. 2019 in prep) and from stars that would soon have published RECONS parallaxes in Winters et al. (2017); Bartlett et al. (2017); Jao et al. (2017); Riedel et al. (2018); Henry et al. (2018). Sample construction began well before the first *Gaia* Data Release (DR1) on 14 September 2016, which contained only relatively bright stars that had also been observed by *Tycho*; hence, there were few red dwarfs in *Gaia* DR1 and our sample was not updated. This work commenced several years before *Gaia* Data Release 2 (DR2), which occurred on 25 April 2018 and included many red dwarfs within 25 pc, at which point the observing program was nearly finished. Thus, the sample targeted in this thesis work

does not include any new entries from *Gaia*, although planned future work will include new systems once they have been vetted.

Our core sample is derived from the RECONS 25 Parsec Database, which started as the RECONS 10 Parsec Sample (Henry et al. 2006, 2018) and has evolved and expanded over the past  $\sim 25$  years. The Database contains all systems comprised of stars, brown dwarfs, and/or planets within 25 parsecs of the Sun that have a published trigonometric parallax of 40 mas or more and error 10 mas or less. The Database includes high-quality astrometric, photometric, spectroscopic, and multiplicity information for each of the 3177 systems as of July 2019. For the southern sky members, the construction of the 25 pc sample benefited from RECONS’ 20-year astrometric program based at the Cerro Tololo Inter-American Observatory/Small and Moderate Aperture Research Telescope System (CTIO/SMARTS) 0.9m telescope in Chile; this program substantially boosted the number of red dwarfs with parallaxes in the southern sky and contributed the first reliable parallaxes for  $\sim 10\%$  off *all* systems known within 25 pc. As new parallaxes are published by the RECONS team or others, they are added to the Database, either contributing a new system in the case of the first parallax, or in combination with previous parallaxes as part of an updated weighted-mean value. For the northern sky members, the sample was augmented with results from the MEarth team (Dittmann et al. 2014).

Few research groups have had access to a robust, volume-limited sample of red dwarfs with accurate distance measurements, making our study unique and more statistically significant than previous studies that aimed to determine, in particular, radii for red dwarfs. Even with

the recent availability of *Gaia* DR2, our long-term investment in obtaining large, uniform, datasets of *VRI* photometry for red dwarfs and the careful vetting of close multiples through long-term astrometric work, high-resolution imaging, and (most recently) radial velocity surveys, allows us to provide a “clean” sample of single stars with the complete suites of data needed to determine a self-consistent set of fundamental parameters for the nearest red dwarfs.

Our core sample is made up of 1504 red dwarfs across the entire sky that have reliable trigonometric parallaxes placing them within 25 pc. These stars are all (presumed) main sequence stars and have  $V - K = 3.5\text{--}10.5$ , as described in §2.1. With the exception of Proxima Centauri, we limit ourselves to red dwarf primaries that have no known companions within  $4''$  for which individual *VRI* photometry can be obtained with 1m class telescopes and 2MASS photometry is resolved. Thus, the sample includes single M and early L dwarfs and those that are primaries that may have wide companions.

### 2.2.2 *Young Red Stars*

Young red stars are typically considered to be those with ages less than  $\sim 100$  million years.<sup>1</sup> They lie above the main sequence on the HR diagram because they have yet to contract and initiate stable hydrogen to helium conversion in their cores.

Youth-sensitive, statistical surveys of red dwarfs within 25 pc are especially exciting because focused follow-up work can be done to constrain the ages of candidates in the nearby

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<sup>1</sup>We adopt 100 million years for a pre-main sequence star age for this general discussion, although the lowest mass red dwarfs may take 1 billion years to settle on the main sequence (Burrows et al. 1997; Paxton et al. 2011).

population and to further our knowledge of star and planet formation in individual cases of exoplanet hosts. Here we complement previous work by deriving fundamental parameters that not only help describe already-confirmed young stars, but reveal candidates in a novel manner by pinpointing stars that have inflated radii. An extensive discussion of the identification and characterization of young low-mass stars is beyond the scope of this thesis. Instead, we focus on how we use a control sample of known young stars to identify previously unidentified young stars in the solar neighborhood.

Our young star control sample comes from the work led by RECONS member Adric Riedel, as described in Riedel et al. (2011; 2014; 2017a; 2017b; 2018). Youth determination techniques described in these papers and the references therein include (1) astrometric and photometric surveys to place stars on empirical HR diagrams, where young stars lie above the main sequence, (2) spectroscopic surveys to evaluate Ca, H $\alpha$ , Li, and Na features, (3) UVW space motions (determined by combining astrometric information with radial velocities) to compare individual stars to known nearby moving groups, (4) X-ray and UV flux checks in the *ROentgen SATellite* (*ROSAT*) and *Galaxy Evolution Explorer* (*GALEX*) catalogs for signs of high stellar activity, and (5) weeding out false positives caused by previously unseen companions via speckle imaging, *Hubble Space Telescope* (*HST*) imaging, searches for spectroscopic binaries, and long-term astrometric monitoring that reveals perturbations caused by unseen companions. The culmination of this work is the LocAting Constituent mEmbers In Nearby Groups (LACEwING) code (Riedel et al. 2017b) that permits the identification of young stars linked to moving groups, as well as those that do not appear to be tied to any



known group.

Stars in our young star control sample either have been matched to a moving group, or have a LACEwING identification percentage greater than zero in young star mode in Riedel et al. (2017b). Although the mass of a young red star will be different than a main sequence star of comparable  $V - K$  color, we have chosen to use the same  $V - K$  cutoffs for the young stars explored in this work for consistency with the main sequence core sample. To incorporate sufficient stars for a meaningful comparison with our main sequence sample, we extend our distance limit to 50 parsecs, adding 17 targets and bringing our young star control sample to a total of 53 stars. As discussed in §5.5, radii for young red stars *are* found to be larger than for main sequence dwarfs of similar temperature. We can then use our technique to identify new nearby young red star candidates via their inflated radii.

### *2.2.3 Cool Subdwarf Stars*

Cool subdwarfs are hydrogen-fusing stars that are found below main sequence red dwarfs on the HR diagram. Some subdwarfs are halo stars that formed early in the Milky Way’s history that have first been identified spectroscopically, while others, because of their advanced ages, have experienced significant disk heating and have been identified via their extreme radial and/or tangential velocities. These stars are not shifted downward in the HR diagram because they are intrinsically less luminous than their main sequence counterparts, but because they present hotter temperatures than stars of similar mass, resulting in leftward shifts on the HR diagram. Subdwarfs have fewer metals in their atmospheres than main sequence stars because they are older and were not formed from material as enriched by

supernovae; these lower-metallicity atmospheres allow us to see to deeper, hotter layers in the stars.

Detection of new nearby subdwarfs is important because although they are rare, they are ancient and therefore possess key information about conditions in the Milky Way when it formed. In addition, they appear to be multiple less often than their main sequence counterparts — currently, only 7 cool subdwarf binaries are known (Jao et al. 2016, 2017). Whether this is because multiple stars form less often in clouds of low metallicity, or because binaries dissolve over time remains an important unanswered question. Thus, a search for more subdwarf systems increases the chance of finding subdwarf binaries, which can help us explain their formation mechanisms, why there are so few binaries, and the implication of these results to the history of our Galaxy.

Our cool subdwarf control sample is based on work led by RECONS member Wei-Chun Jao, as described in Jao et al. (2005; 2008; 2011; 2017). This work has identified subdwarfs within 50 pc using (1) astrometric and photometric surveys to place stars on empirical HR diagrams, where subdwarfs lie below the main sequence, and (2) spectroscopic surveys that identify the classic CaH features associated with cool subdwarfs (Jao et al. 2008; 2009; 2016). In particular, as discussed by Jao et al. (2008), the system typically used to derive spectral types for cool subdwarfs does not adequately take into account the *combined* set of three fundamental parameters that set them apart from main sequence stars: temperature, metallicity, and surface gravity. Jao et al. (2008) describe a rigorous classification system that uses multiple parts of a broad spectrum to account for these three parameters using TiO

and CaH features, rather than just a few CaH and TiO band ratios. Using this system, we have collected a total of 36 cool subdwarfs within 50 pc that comprise this control sample. As with the young red stars, we note that although the mass of a subdwarf is different than a dwarf of the same  $V - K$  color, for simplicity, we use the same  $V - K$  cutoff for subdwarf stars as we do for the rest of the sample. As will be seen in §5.5, radii for subdwarfs *are* found to be smaller than for main sequence dwarfs of similar temperature. As a result, we use our technique to derive radius as a compelling indicator of subdwarf status.

## CHAPTER 3

### Observations and Data

#### 3.1 Fundamentals of Photometry and Astrometry

This project utilizes two types of data: brightness information in the form of apparent magnitudes from relative photometry observations (counts on CCDs for targets stars relative to those for standard stars with calibrated fluxes) and distance information in the form of trigonometric parallaxes from astrometry observations.

*Apparent magnitudes*, or simply “magnitudes,” are a unit of brightness created by Hipparchus (Carroll & Ostlie 2007), who assigned the brightest star he saw as equal to magnitude 1, and dimmer stars as larger numbers. Because this system is based upon how luminous an object appears to the human eye, it is logarithmic in nature, as is the scaling of perceived relative brightnesses by our visual system. When comparing the brightnesses of two objects, the relationship between their magnitudes and the number of photons they emit can be written as

$$m_1 - m_2 = -2.512 \log_{10} \frac{F_1}{F_2} \quad (3.1)$$

where  $m_1$  and  $m_2$  are the magnitudes of objects one and two and  $F_1$  and  $F_2$  are their fluxes as seen from Earth. An object that is one magnitude smaller (brighter) than another outputs 2.512 times as many photons. A different object that is 5 magnitudes brighter outputs exactly 100 times as many photons, a factor that defines the magnitude system. Although this system can be counter-intuitive (i.e. a larger number means a fainter object), it is one

of the fundamental units used by astronomers to describe how bright an object in space appears from Earth. At visual wavelengths, the scale currently extends from a bright limit of  $-27$  for our Sun to magnitude  $\sim 30$  for the faintest objects revealed in the deepest images of the cosmos.

Magnitudes are determined via what's known as *relative photometry*. Images of the stars in question are taken throughout the night in different filters (e.g. optical *VRI* filters at the CTIO/SMARTS 0.9m) and observations of stars with known values, known as “standard stars,” are interspersed at different times throughout the night and at different altitudes in the sky. The observations tell us how bright each target star is, but the standards are needed to convert the target star fluxes to a standard photometric system on which the standards have been measured to have absolute photometric fluxes via ratios of the counts registered on the CCDs used for imaging. Standard star images are taken at different altitudes or “airmasses” to account for effects the atmosphere has on the light before it reaches the telescope, e.g., closer to the horizon, there is more atmosphere to look through that blocks more photons from reaching the detector than when looking at the same star at the zenith. In addition, the Earth's atmosphere blocks more blue photons than red, so color term corrections are also required, and measured, using sets of standard stars.

When obtaining photometry data at all of the telescopes discussed below, observations of a handful of fields containing stars with calibrated data (i.e., standard star magnitudes) were sprinkled throughout the night, typically 3–4 visits per field per night. Each standard star field was observed at different airmasses, with the goal of taking observations spanning

the entire 1.0 to 2.0 airmass range used for science star observations. The standard star fields were selected from Bessel (1990), Graham (1982), and Landolt (1992, 2007). Included in the standard star set were one or two very red standard stars with  $V - I > 3.7$ , in order to determine extinction coefficients for stars spanning a wide range of colors; some of these standards were adopted from our own results from the 20-year RECONS program on the CTIO/SMARTS 0.9m telescope. These red stars are especially important for this work because of our focus on the reddest, coolest stars. Overall, most nights included 30 or more observations of standard stars, with at least 3 or 4 measurements of red standard(s). In addition to providing atmospheric extinction corrections for the science stars, these stars help probe the quality of the night by evaluating the consistency of results across the reference star sets.

Although a single epoch on a star usually yields quality results, in most cases we observed each science star until there are two epochs with  $VRI$  photometry consistent to within 0.1 mag or less, corresponding to  $\sim 3\sigma$ . This helps identify the occasional spurious value that may be introduced from unusual sources such as contrails from planes flying overhead. It should be noted here that these observations cannot be performed with any light diminishing sources such as clouds or parts of the dome (due to dome misalignment) between the telescope and stars.

***Astrometry*** is the study of an object’s motion in the plane of the sky. By tracking stars over long periods of time, taking images using a stable, consistent setup, we can see how much the object, e.g. a star, moves in the sky while we orbit the Sun. With enough observations,

the path of every star has at least two components — proper motion and trigonometric parallax. Of concern in this study is the parallax, for which a star is seen to trace out an ellipse over the timespan of the Earth’s orbit. We typically observe only a portion of the ellipse because from our vantage point on Earth, the Sun blocks observations during certain times of year. Closer objects appear to move more, just as when you’re in a moving car (representing the shift of the Earth in its orbit) and look at people on a nearby sidewalk whose angular position shifts by a large amount, while distant mountains appear to shift very little, barely moving because of their much greater distances. This difference in distance is reflected in the size of the ellipse traced out as the Earth orbits the Sun and the *trigonometric parallax* can be measured based upon the width of the ellipse, or major axis. In fact, the trigonometric parallax is defined to be half of the major axis, i.e., the semimajor axis, of the ellipse so that the 1 AU semimajor axis of the Earth’s orbit is effectively used as the baseline. Because of the small angle formula, where the 1 AU baseline of the Earth is much smaller than the distance to any star, the trigonometric parallax in arcseconds is simply the inverse of the distance to the star, where the distance is measured in parsecs. To determine the trigonometric parallax, one ideally acquires observations throughout the year, but especially when the star rises just after evening twilight and sets just after morning twilight. The CTIO Parallax Investigation (CTIOPI) run by the RECONS team primarily makes these types of observations during its  $\sim 6 - 8$  observing runs per year at the CTIO/SMARTS 0.9m.

With this background in mind, data used for this project include photometry measurements in nine filters spanning the optical to mid-infrared: optical Johnson-Kron-Cousins fil-

ters  $V_J$ ,  $R_{KC}$ , and  $I_{KC}$  (henceforth  $VRI$ ), near-infrared filters  $J$ ,  $H$ , and  $K$ , and mid-infrared filters  $W1$ ,  $W2$ , and  $W3$ . Optical data were obtained from the ground by us and four other groups as described in §3.2. Near-infrared data come from the ground-based Two-Micron All Sky Survey (2MASS) as described in §3.3. Mid-infrared data are drawn from results of an all-sky space-based mission called the Wide-Field Infrared Survey Explorer (WISE) as described in §3.4. Parallax information comes from the RECONS 25 Parsec Database (Jao et al. 2019 in prep.), which includes parallaxes from the RECONS CTIOPI program in Chile and other programs, described in §3.5. Information about multi-star systems, i.e., whether our stars have companion stars, and the effects they have on our data are discussed in §3.6.

Table A.2 in Appendix A provides the key observational data for the 1706 stars evaluated here.

### 3.2 Optical Photometry

Johnson-Kron-Cousins  $VRI$  photometry data are drawn from five research groups whose photometry have proven to be consistent to within  $\sim 0.03$  mag for stars brighter than magnitude 16, which accounts for most of the stars in this study. These sources, listed in order of preference based primarily on the number of red dwarfs for which  $VRI$  is available, are:

1. RECONS (this and previous work)
2. Bessell et al.
3. Weis et al.



4. Kilkenney, Koen, Reid, et al.

5. United States Naval Observatory (USNO)

All stellar systems within 25 pc, including the red dwarfs in this study, have *VRI* optical photometry data collected by the RECONS team from these five groups. The young stars and cool subdwarfs beyond 25 pc included in this study were also checked for photometry data by these groups. Stars without data at the time of sample construction (2013 to 2015), including newly discovered objects, have been observed at the (1) SMARTS 0.9m at CTIO, (2) the Apache Point Observatory Small Aperture Telescope (ARCSAT) 0.5m at Apache Point Observatory (APO) and/or (3) the University of Wisconsin-Madison, Indiana University, Yale University, and National Optical Astronomy Observatory (WIYN) 0.9m Telescope at Kitt Peak National Observatory (KPNO). Observations, data reduction, and aperture photometry were carried out with minor differences for each telescope, following the RECONS CTIO/SMARTS 0.9m procedure as described by Jao et al. (2005) and Winters et al. (2011), and described in detail in §3.2.1. During each night of photometry, a few stars with at least one previous epoch of data were observed in order to check for consistency and assess the overall quality of the night. Thus, all but 209 stars of the 1593 stars presented with quality photometry in this work have at least two epochs of *VRI* photometry observations. There is an additional small sample of 61 problem stars and 52 stars with an incomplete *VRI* set (3.6% and 3.0% of the full 1706 targeted stars, respectively) for which we do not provide fundamental parameters here because additional work is needed to refine the optical photometry.

RECONS photometry primarily comes from the CTIO/SMARTS 0.9m telescope in Chile. However, because of its location at latitude  $30.169^\circ$  S, and the general limitation of telescopes to observe targets within  $\pm 60^\circ$  (corresponding to airmass = 2.0) from the zenith (which is equal to the latitude of the observatory), stars at decl.  $> +30^\circ$  are generally unreachable. To compensate RECONS has used several telescopes in the past to acquire photometry for stars in the northern hemisphere; during her dissertation work (Winters et al. 2015, 2019; Winters 2015), Dr. Jennifer G. Winters used the 40" and 42" Telescopes at Lowell Observatory. Comparison of results from these telescope to those from the CTIO/SMARTS 0.9m indicate that photometry in *VRI* can be adopted without corrections, as discussed in her dissertation (Winters 2015)) and in (Winters et al. 2019), Table 5.

For this work, we have incorporated hundreds of additional low-mass stars without previous *VRI* photometry from the groups or telescopes listed above. We have conducted observations at the CTIO/SMARTS 0.9m at CTIO in the southern hemisphere and the ARCSAT 0.5m at APO and WIYN 0.9m at KPNO in the northern hemisphere.<sup>1</sup> WIYN 0.9m observations were secured via proposals to NOAO and were initiated to speed up data acquisition and to observe the fainter stars in our sample by nearly doubling the size of the telescope primary relative to the ARCSAT 0.5m.

In Table 3.1 we present basic properties of these three telescopes, with the numbers of nights on which the author was the primary observer, the numbers of those nights that were used to obtain photometric data, and the total numbers of stars for which quality photometry

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<sup>1</sup> Additional observations were not performed at the Lowell Observatory because Georgia State University's partnership ended with the Observatory and started with APO before the start of this project.

data were acquired. Note that (1) at the CTIO 0.9m, other observers also acquired data for this project (mainly Tiffany D. Clements, Wei-Chun Jao, Todd J. Henry, Jennifer G. Winters), (2) at the ARCSAT 0.5m, 2 nights listed were acquired by Tiffany D. Clements, and (3) all WIYN 0.9m photometry was acquired by the author. It is also important to point out that the CTIO observations and stars span multiple projects. We discuss the telescopes, instruments, filters, observations, data processing, and results from each telescope in the order that we used them, with the CTIO/SMARTS 0.9m in §3.2.1, ARCSAT 0.5m in 3.2.2, and WIYN 0.9m in 3.2.3.

Table 3.1: Telescopes and Instruments Used for Optical *VRI* Photometry

| Telescope   | Site | Instrument         | # Nights Obs | # Nights Phot | # Stars |
|-------------|------|--------------------|--------------|---------------|---------|
| SMARTS 0.9m | CTIO | Tek2K CCD          | 87           | 15            | 854     |
| ARCSAT 0.5m | APO  | SurveyCam          | 80           | 22*           | 156     |
| WIYN 0.9m   | KPNO | Half Degree Imager | 28           | 19**          | 159**   |

Details of telescopes and observations made, where “# Nights” is total nights observed across numerous programs and “# Nights Phot” is the total number of nights observed for photometry. “# Stars” include some companions and other stars that may have been later kicked from the sample, in addition to some stars with photometry blended with close companions. “# Stars from CTIO” are stars with data reduced by me for all RECONS programs, though the data may have been taken by another RECONS team member.

\* 3 nights of observations were performed by Dr. Tiffany Clements.

\*\* # Nights Phot includes 7 not yet reduced. Before the final dissertation is submitted, the author will finish processing these data and expects the # Stars to increase by  $\sim 140$ .

At all telescopes, *V*, *R*, and *I* band filters were used, specifically Johnson *V*, Kron-Cousins *R*, and Kron-Cousins *I*. Figure 3.1 illustrates the *VRI* filter traces used at the

CTIO/SMARTS 0.9m, ARCSAT 0.5m, and WIYN 0.9m.

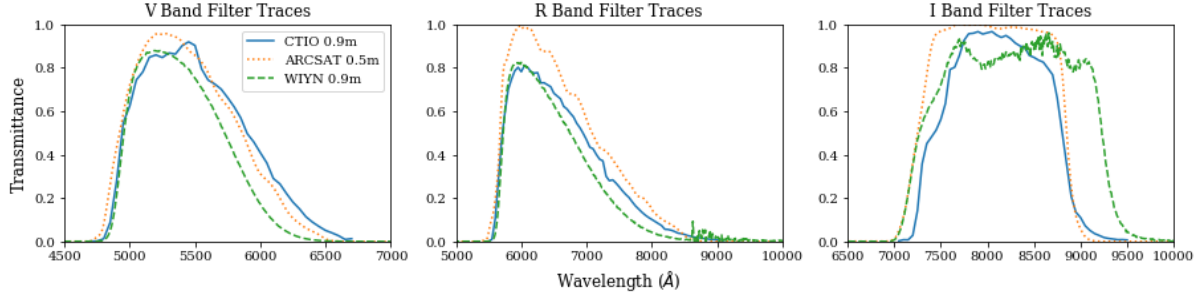


Figure 3.1: Comparison of the *VRI* filter traces for the three telescopes used in this study. The similar *V* filter traces are in line with our finding that the *V* band data are consistent from all three telescopes. The *I* band data are also found to be consistent, even though the filter traces are somewhat different. However, as discussed in §3.2, we do find an offset between the WIYN *R* band results and those from CTIO and ARCSAT. The differing quantum efficiencies of the CCDs in the various cameras at the three sites are presumably the cause for the consistent *I* results even though the filter traces are not identical. The CCDs likely have similar quantum efficiencies in the *R* band, hence the required adjustment to bring the WIYN results in line with the other two datasets.

The CTIO filter traces (Table 3.3 and Figure 3.1) reflect the Tek 2 filter set at CTIO and have been used for the RECONS astrometry and photometry for 20 years. The effective wavelengths of the Johnson-Kron-Cousins *VRI* (AKA  $V_J R_c I_c$ ) filters are 5438 Å, 6400 Å, and 8118 Å, respectively. Column 1 contains the wavelength in question and Columns 2, 3, and 4 report the fraction of light transmitted through each filter at that wavelength. Columns 1–4 continue into Columns 5–8 and then 9–12.

The ARCSAT filter traces were emailed to the author directly by ASTRODON<sup>2</sup>, and are presented in Table 3.5 and Figure 3.1. Note that we have listed an abridged version where we list points every 50 Å rather than 10 Å and round to four decimal points rather than 15.

The exact filters used for the WIYN 0.9m telescope are somewhat uncertain; the docu-

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<sup>2</sup>[www.astrodon.com](http://www.astrodon.com)

mentation for the w046, w047, and w048 filters used lists them as Kron  $V$ , Johnson  $R$ , and Kron  $I$ , respectively with central wavelengths of 5383, 6308, and 8246 Å. The filter traces listed in Table 3.7 and curves shown in 3.1 were acquired from the WIYN website<sup>3</sup> and are cut down in the Table and intervals of 10 to 50 Å and from five to four decimal places in transmission.

As shown in Figure 3.2, similar  $V$  and  $I$  magnitudes were measured using all three telescope/filter/detector combinations. Given the filter traces presented in Figure 3.1, we might expect that results using the ARCSAT  $R$  filter would be offset from the other two telescopes, yet the results in Figure 3.2 indicate the CTIO and ARCSAT magnitudes match well, but the WIYN  $R$  values are shifted by  $\sim 0.2$  mag. Therefore, we perform a correction based on the relationship between ARCSAT  $R$  and WIYN 0.9m  $R$  demonstrated in Figure 3.2, following the equation

$$R_{converted} = 0.1957 + 0.9933 R_{WIYN} \quad (3.2)$$

In the ideal case the three telescope/filter/detector combinations would be perfectly identical for maximum consistency between observations. Although this is impossible to actualize, we have found that the results across all three telescopes, using the correction to the WIYN 0.9m  $R$  data, generally match to within  $\sim 5\%$  (Figure 3.2).

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<sup>3</sup><http://www.wiyn.org/Observe/wiynfilters.html>

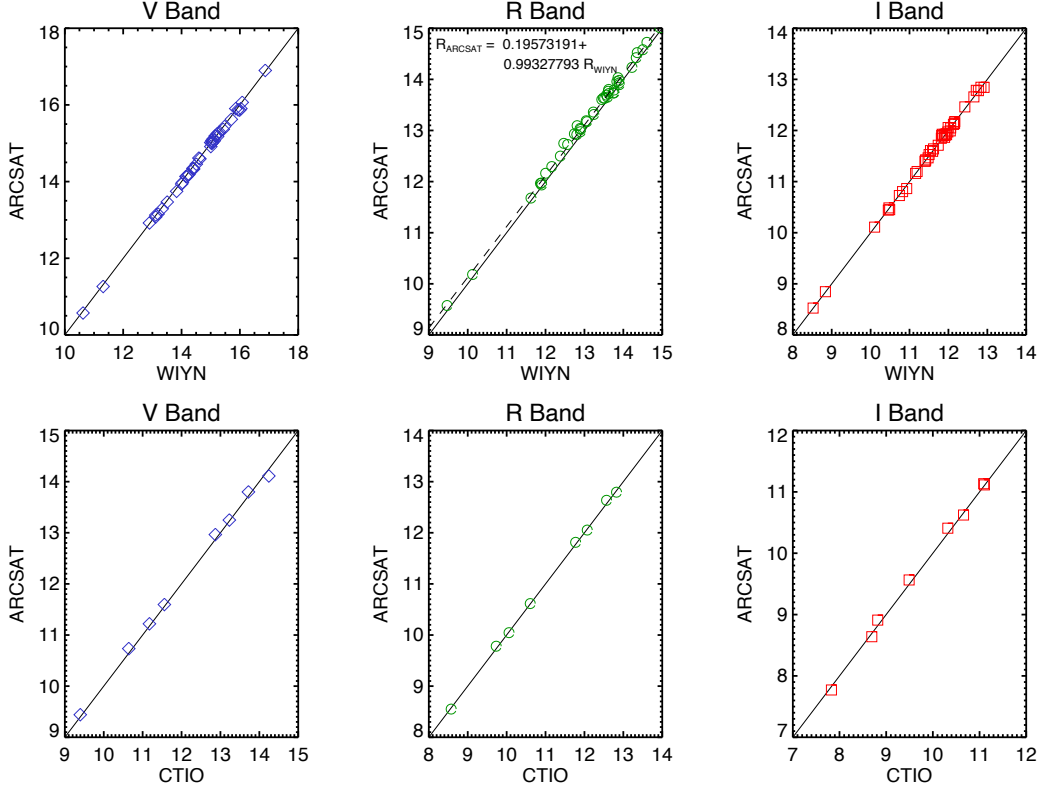


Figure 3.2: A comparison of results for stars with data from two of the telescopes reveals that  $V$  and  $I$  magnitudes are consistent across all three telescopes.  $R$  band data are consistent across the CTIO/SMARTS 0.9m and ARCSAT 0.5m, but WIYN 0.9m  $R$  photometry are underestimated by  $\sim 0.2$  magnitudes, as is visually apparent in the Figure. To compensate for this, we have applied the linear fit displayed in the Figure and listed as Equation 3.2.

### 3.2.1 CTIO/SMARTS 0.9m Photometry

The CTIO/SMARTS 0.9m telescope, equipped with the Tek 2046 $\times$ 2048 camera, is a very reliable facility that has provided consistent astrometry and optical photometry data for the RECONS team since 1999. Detailed discussions of the procedures to acquire and process  $VRI$  photometry at the CTIO/SMARTS 0.9m are presented in Jao et al. (2003), Jao et al. (2005), and Winters et al. (2011). We also discuss these procedures here.

**Data Acquisition:** For the majority of nights, 17 bias and 33 dome flat images (11 for each of the *VRI* filters) were acquired and used for basic science frame calibration. Over the course of the 20-year program, the RECONS team has found the system to be sufficiently stable that if calibrations are not taken on a night, there is a negligible effect on the results from using calibrations from a neighboring night. Odd numbers of frames were chosen to allow the process of median filtering of frame sets to settle on a specific pixel value rather than having to interpolate values between two pixels. Bias frames were taken the usual way by simply reading out the chip after a zero second exposure. Flat-field images were obtained by pointing the telescope at an illuminated white spot in the dome and measuring the relative response of each pixel; e.g., ideally all pixel values are identical, but in practice some pixels may register 25,000 counts, while others register 30,000. The bias level is usually at  $\sim 1200$  counts and the typical mean counts acquired for flat field images are  $\sim 30,000$ .

Most target stars in the sample (henceforth “science stars”) were observed at airmass  $\sim 1.5$  or less, where the adopted acceptable observable range is from airmass = 1.0 at zenith to airmass = 2.0 at altitude  $\sim 30^\circ$ . This minimizes the need for and impact of the airmass corrections made using the standard stars. Various exposure times were used to acquire at least 10,000 total counts for each science star in each of the *VRI* filters, corresponding to Poisson counting errors in the fluxes of only 1%. In a few cases where the exposure time would exceed 20 minutes, total counts were lower than 10,000. In the majority of cases, however, exposures resulted in 100,000 total counts or more, with peak counts of at least several thousand to reduce signal-to-noise errors and to map better the point-spread-function

(PSF) for purposes of choosing an aperture size as described below. The PSF describes how the light from a point source (e.g., an unresolved star, but not a galaxy which has a visible shape to it) actually appears on the CCD — ideally all the light would appear as a single point, but due to distortions from the atmosphere and properties of the instrumentation, that is not the case.

***Data Reduction:***

The raw data were bias-subtracted and flat-fielded using the standard Image Reduction and Analysis Facility (IRAF) tasks *zerocombine*, *flatcombine*, and *ccdproc*. Bias frames contain the base level of counts in every frame, typically  $\sim 1200$  counts for the Tek camera in the standard setup of single amplifier (upper left) readout. This bias level was removed from each frame by averaging the 17 frames obtained on most nights and subtracting the counts for each pixel in the resulting “superbias” from those in every frame throughout the night, adjusted using the overscan region in each frame to compensate for any bias drifts during the night. Flat-field images measure the photon-response of each pixel; as described for photometry, the frames taken by pointing at an illuminated “white spot” screen in the dome map out the inconsistencies in this response. The frames were similarly averaged to create a “superflat” for each filter that is then normalized to 1; all standard star and science frames were then divided by the normalized superflat. The dark current of the CTIO/SMARTS 0.9m is sufficiently low that it is unnecessary to perform the relevant calibration. Example raw and process frames are shown in Figure 3.3.

Stars of interest, including science stars and photometric standard stars, were tagged



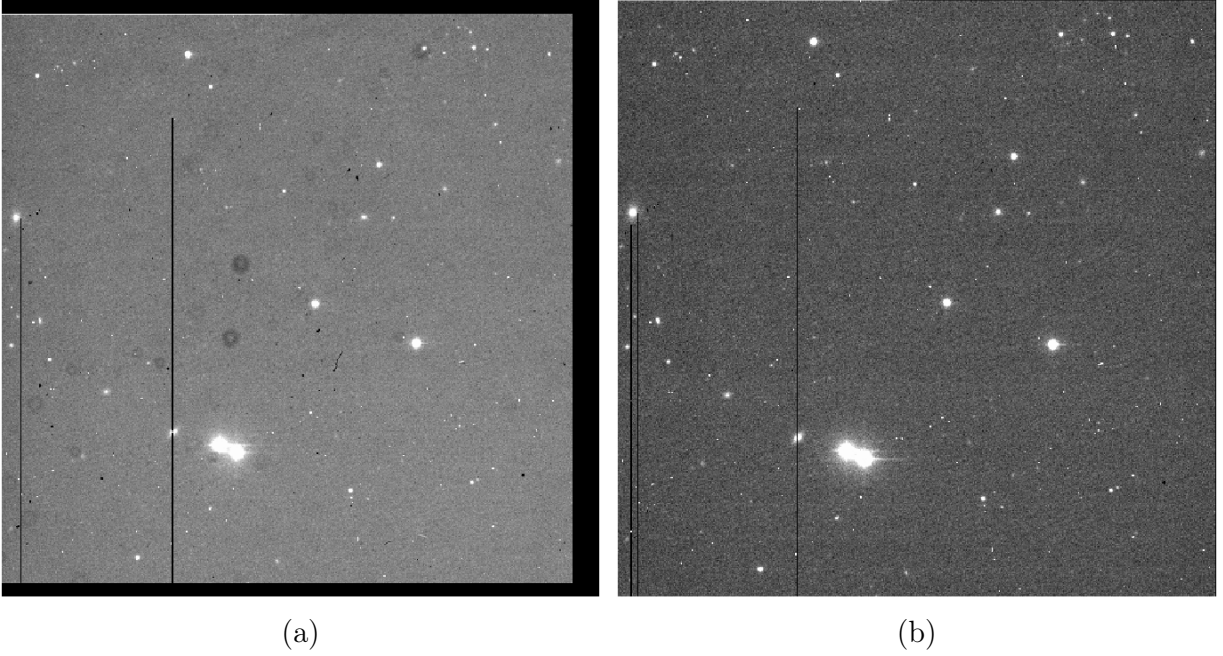


Figure 3.3: Panel (a) shows the raw CTIO data. Panel (b) shows the data after bias-subtraction and flat-fielding.

and usually enclosed in an aperture  $7.0''$  in radius, corresponding to the same radius used by Landolt to determine the fluxes for standard stars. After removing cosmic rays, a star's instrumental magnitude was determined by summing all of the counts for pixels falling in the aperture. However, a  $7.0''$  aperture could not be used if (a) the flux from the star was too spread out on the chip to fit into the aperture, resulting in too few counts, or (b) flux from another nearby source was included in the aperture, resulting in too many counts. In case (a), a larger aperture was used to ensure all of the flux was included. In case (b), smaller apertures were used, and aperture corrections were applied. To perform this correction, the same procedure as was used for the science star(s) was applied to 4 or 5 other stars in the image at different apertures (typically  $2.0''$ ,  $2.5''$ ,  $3.0''$ ,  $3.5''$ ,  $4.0''$ ,  $4.5''$ ,  $5.0''$ ,  $5.5''$ ,  $6.0''$ ,  $6.5''$ ,

and  $7.0''$  in radius) and a polynomial fit was applied to estimate the flux missing when an aperture smaller than  $7.0''$ , e.g.  $4.0''$ , was applied. A sky annulus with  $20''$  inner radius and  $3''$  width was applied to calculate and subtract the sky background counts from the science star counts.

To convert from instrumental to apparent magnitudes, we utilize an equation that relates these two parameters as a function of airmass and source color. This transformation is as follows:

$$m_{standard} = m_{inst} + a1 + a2(AM) + a3(color) + a4(color)(AM) \quad (3.3)$$

where  $m_{inst}$  is the instrumental magnitude from IRAF/DAOPHOT,  $a1$  through  $a4$  are the transformation coefficients,  $color$  is the color term (e.g.,  $V - R$ ,  $V - I$ , or  $R - I$ ),  $AM$  is the airmass, and  $m_{standard}$  is the standard magnitude from Landolt (1992). Using known and instrumental values for the standard stars and the IRAF/fitparam task, the coefficients are calculated via a least-squares method and the equation is consequently applied to the science stars. All RECONS photometry from the CTIO/SMARTS 0.9m is stored in a catalog, which is utilized by several projects, including this one.

Figures 2–4 of Winters et al. (2011) demonstrate the total errors versus magnitude in each of the  $VRI$  filters for a subsample of 268 M dwarfs with at least three nights of photometry. The errors incorporate signal-to-noise errors, errors from the standard star fits on each night, and differences between values across all available nights for each star, resulting in a robust overall error measurement for a given star. Within each band, virtually all stars brighter

than  $V = 18$ ,  $R = 17$ , and  $I = 16$  have errors of  $\sim 0.05$  mag or less. Signal-to-noise errors are typically very small, less than 0.01 mag. Standard star fits on most nights produce errors of only 0.01–0.02 mag. Night-to-night variations in photometric measurements are typically 0.02–0.03 mag. Combining all three errors usually results in final errors no more than 0.03 mag, which is the threshold for 66% of stars at  $V$  and 84% of stars at both  $R$  and  $I$ . The reason that errors remain small for targets spanning a wide range of brightness is that observers at the telescope use increasing exposure times for fainter stars, eliminating much of the increase in error from low signal-to-noise error that would otherwise arise. Still, the red dwarfs in this study are faintest at bluer wavelengths ( $V$  band), so the resulting errors at this band are higher than at  $R$  or  $I$ . Of the 268 stars reported by Winters et al. (2011), 94%, 99%, and 99% have total errors of 0.06 mag or less at  $V$ ,  $R$ , and  $I$ , respectively.

It is important to note that not all CTIO/SMARTS 0.9m photometry reported in this work was processed by this author. Throughout the past 20 years, photometric data have also been reduced by Wei-Chun Jao, John P. Subasavage, Charlie T. Finch, Serge B. Dieterich, and, most notably, Jennifer G. Winters. The vast majority of these reductions were performed prior to April 2015, when I took over responsibility of processing all RECONS data and reducing all  $VRI$  photometry as the SMARTS Graduate Fellow.

Table 3.2: CTIO 0.9m Instrument Tektronix CCD Camera Setup and Properties

| Property                                        | Value                                                                       |
|-------------------------------------------------|-----------------------------------------------------------------------------|
| Instrument                                      | Tektronix CCD Camera                                                        |
| Readout System                                  | ARCON (- June 2015) / Torrent (June 2015-present)                           |
| Cooling System                                  | Liquid Nitrogen                                                             |
| Maximum Field Size                              | $2046 \times 2048$ pixels                                                   |
| Mode Used                                       | 1-amplifier readout, $1024 \times 1024$ pixels (center quarter of the chip) |
| Full Chip Field of View                         | $13.6' \times 13.6'$                                                        |
| Field of View Used                              | $6.8' \times 6.8'$ (center quarter of the chip)                             |
| Read-Out Time 1-Amplifier Readout, Quarter Chip | 45 sec (ARCON) / 66 sec (Torrent)                                           |
| Binning                                         | $1 \times 1$ pixels                                                         |
| Pixel Scale                                     | $0.401'' \text{ pixel}^{-1}$                                                |
| Gain                                            | 3 e-/ADU                                                                    |
| Read-out Noise                                  | 12 e-                                                                       |
| Dark Current                                    | Negligible                                                                  |
| Non-linearity                                   | $> 60,000$                                                                  |
| ADU Saturation                                  | 60,000                                                                      |
| Names of Filters Used                           | Tek #2 <i>oV,R,I</i>                                                        |

Table 3.3: CTIO Filter Transmittance

| $\lambda$ (Å) | V Band | R Band | I Band | $\lambda$ (Å) | V Band  | R Band  | I Band  | $\lambda$ (Å) | V Band  | R Band  | I Band  |
|---------------|--------|--------|--------|---------------|---------|---------|---------|---------------|---------|---------|---------|
| .             | .      | .      | .      | (cont.)       | (cont.) | (cont.) | (cont.) | (cont.)       | (cont.) | (cont.) | (cont.) |
| 4700          | 0.0011 | .      | .      | 6350          | 0.1135  | 0.7305  | .       | 8000          | .       | 0.1014  | 0.9607  |
| 4750          | 0.0017 | .      | .      | 6400          | 0.0890  | 0.7214  | .       | 8050          | .       | 0.0920  | 0.9663  |
| 4800          | 0.0125 | .      | .      | 6450          | 0.0689  | 0.7126  | .       | 8100          | .       | 0.0825  | 0.9499  |
| 4850          | 0.0885 | .      | .      | 6500          | 0.0508  | 0.6823  | .       | 8150          | .       | 0.0733  | 0.9393  |
| 4900          | 0.2822 | .      | .      | 6550          | 0.0394  | 0.6696  | .       | 8200          | .       | 0.0563  | 0.9481  |
| 4950          | 0.5475 | .      | .      | 6600          | 0.0265  | 0.6570  | .       | 8250          | .       | 0.0552  | 0.9339  |
| 5000          | 0.6241 | .      | .      | 6650          | 0.0093  | 0.6218  | .       | 8300          | .       | 0.0515  | 0.9135  |
| 5050          | 0.7437 | .      | .      | 6700          | 0.0127  | 0.6099  | .       | 8350          | .       | 0.0458  | 0.9000  |
| 5100          | 0.7807 | .      | .      | 6750          | .       | 0.5907  | .       | 8400          | .       | 0.0385  | 0.8930  |
| 5150          | 0.8484 | .      | .      | 6800          | .       | 0.5735  | .       | 8450          | .       | 0.0364  | 0.8566  |
| 5200          | 0.8588 | .      | .      | 6850          | .       | 0.5438  | .       | 8500          | .       | 0.0326  | 0.8475  |
| 5250          | 0.8468 | .      | .      | 6900          | .       | 0.5231  | .       | 8550          | .       | 0.0271  | 0.8345  |
| 5300          | 0.8680 | .      | .      | 6950          | .       | 0.4967  | .       | 8600          | .       | 0.0238  | 0.8256  |
| 5350          | 0.8626 | .      | .      | 7000          | .       | 0.4679  | .       | 8650          | .       | 0.0201  | 0.7970  |
| 5400          | 0.9006 | .      | .      | 7050          | .       | 0.4342  | 0.0025  | 8700          | .       | 0.0182  | 0.7677  |
| 5450          | 0.9191 | .      | .      | 7100          | .       | 0.4265  | 0.0079  | 8750          | .       | 0.0166  | 0.6603  |
| 5500          | 0.9023 | 0.0012 | .      | 7150          | .       | 0.4006  | 0.0074  | 8800          | .       | 0.0133  | 0.5101  |
| 5550          | 0.7948 | 0.0095 | .      | 7200          | .       | 0.3787  | 0.0282  | 8850          | .       | 0.0117  | 0.3574  |
| 5600          | 0.7431 | 0.1036 | .      | 7250          | .       | 0.3713  | 0.1412  | 8900          | .       | 0.0093  | 0.2070  |
| 5650          | 0.7252 | 0.2881 | .      | 7300          | .       | 0.3000  | 0.3568  | 8950          | .       | 0.0085  | 0.1348  |
| 5700          | 0.7014 | 0.4720 | .      | 7350          | .       | 0.2795  | 0.4504  | 9000          | .       | 0.0072  | 0.1101  |
| 5750          | 0.6621 | 0.5957 | .      | 7400          | .       | 0.2838  | 0.4809  | 9050          | .       | 0.0057  | 0.0719  |
| 5800          | 0.6196 | 0.6998 | .      | 7450          | .       | 0.2691  | 0.5124  | 9100          | .       | 0.0051  | 0.0510  |
| 5850          | 0.5692 | 0.7468 | .      | 7500          | .       | 0.2519  | 0.5610  | 9150          | .       | .       | 0.0364  |
| 5900          | 0.4965 | 0.7853 | .      | 7550          | .       | 0.2333  | 0.6347  | 9200          | .       | .       | 0.0276  |
| 5950          | 0.4583 | 0.8020 | .      | 7600          | .       | 0.2167  | 0.7920  | 9250          | .       | .       | 0.0183  |
| 6000          | 0.4090 | 0.7815 | .      | 7650          | .       | 0.2026  | 0.8024  | 9300          | .       | .       | 0.0140  |
| 6050          | 0.3616 | 0.8109 | .      | 7700          | .       | 0.1825  | 0.8560  | 9350          | .       | .       | 0.0111  |
| 6100          | 0.2901 | 0.8004 | .      | 7750          | .       | 0.1637  | 0.9259  | 9400          | .       | .       | 0.0081  |
| 6150          | 0.2651 | 0.7805 | .      | 7800          | .       | 0.1490  | 0.9564  | 9450          | .       | .       | 0.0084  |
| 6200          | 0.2213 | 0.7750 | .      | 7850          | .       | 0.1342  | 0.9587  | 9500          | .       | .       | 0.0069  |
| 6250          | 0.1812 | 0.7773 | .      | 7900          | .       | 0.1214  | 0.9660  | .             | .       | .       | .       |
| 6300          | 0.1503 | 0.7301 | .      | 7950          | .       | 0.1105  | 0.9549  | .             | .       | .       | .       |

### 3.2.2 ARCSAT/APO 0.5m Photometry

ARCSAT is a small telescope with a 0.5m-diameter primary meter, located at Apache Point Observatory (APO) in New Mexico<sup>4</sup>. Georgia State University is a partner in the APO Consortium and therefore funded the observing time. The system is automated so that an observer can access a computer at APO via a secure shell (ssh) and operate the telescope and camera using the Automation Control Products (ACP) software tool; thus, the observer can acquire data from the comfort of her or his office or home. By also connecting using the “Telescope User Interface” (TUI) run by APO, the observer can communicate with the observing specialist from the neighboring Astrophysical Research Consortium (ARC) 3.5m telescope for guidance and to troubleshoot problems.

The data acquisition and reduction procedure for ARCSAT was identical to that for the CTIO/SMARTS 0.9m photometry (§ 3.2.1), but with values corresponding to the instrument, called Survey Cam, described in Table 3.4. Example images of raw and processed data are shown in Figure 3.4. We used a Johnson-Kron-Cousins *VRI* filter set, with filter traces listed in Table 3.5.

For an unknown reason, the *setairmass* command in IRAF, used to set the Universal Time (UT) and airmass to the values corresponding to the time in the middle of the exposure, produced spurious results and therefore was not used for any of the ARCSAT data. Instead, we used the airmass computed by the telescope control system already listed in the header, corresponding with the UT at which the shutter opened. Most data were taken

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<sup>4</sup>[www.apo.nmsu.edu/Telescopes/ARCSAT](http://www.apo.nmsu.edu/Telescopes/ARCSAT)

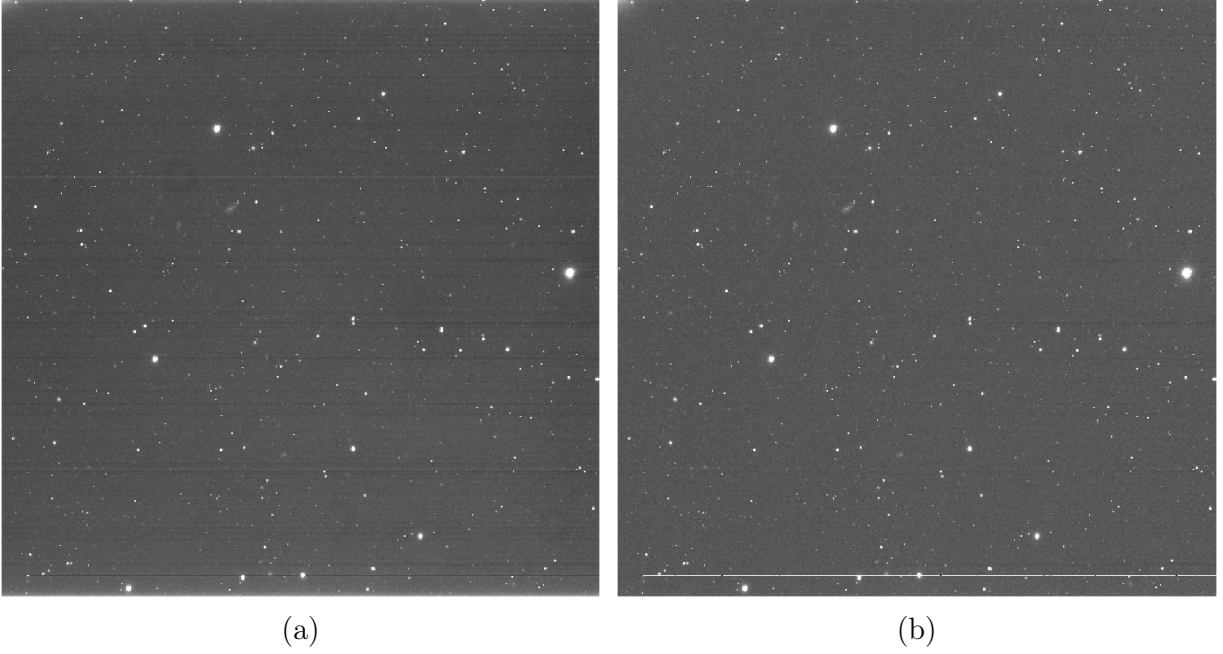


Figure 3.4: Panel (a) shows the raw ARCSAT data. Panel (b) shows the data after bias-subtraction and flat-fielding.

when the targets were near enough to zenith and/or at short enough exposures that the errors introduced are likely within the usual error bars.

Unfortunately, our ARCSAT photometry was occasionally at the mercy of low signal-to-noise and intermittent clouds. As such, for the majority of nights, results for each star were considered suspect until a second epoch could verify it. Nights in which all stars were considered good, with or without a second epoch, contained at least 5 stars throughout the night with results that matched a previous epoch to within the usual RECONS photometry limit of 0.1 magnitudes.

A total of 76 nights of observing time were granted on ARCSAT. A graduate student at the time, Dr. Tiffany Clements was also granted observing time, and we shared our

allotments to maximize the science that could be done; Dr. Clements’ observations could be done with or without thin clouds, whereas my program required clear skies. Of the 76 ARCSAT nights granted,  $\sim 36.5$  (349 hours) were lost due to bad weather, 6.5 nights were lost due to technical issues, and 33 were used for observations. Of these, 21 nights were used for photometry (primarily for this program) and 12 nights were used exclusively for Dr. Clements’ program. Of our 21 nights, 5 were bad. All but 3 of the 21 nights of observations were performed by the author, solo or with others. The remaining three were acquired solo by Dr. Clements. All incoming data from ARCSAT were bias-subtracted and flat-fielded using the CTIO scripts described above, and stored in the relevant directory devoted to Clements’ project or my own for further analysis. I reduced all photometry data as described previously.

Because the light gathering power of the telescope scales as the square of the primary mirror’s radius, the ARCSAT 0.5m provides only 31% the collecting area of the WIYN 0.9m and CTIO/SMARTS 0.9m. Thus, we could only observe about a quarter of the targets per hour as we could with the other telescopes. The reduction in efficiency with the smaller telescope and generally poor weather at APO — only 28% of nights used for photometry — led us to seek out a larger telescope in the northern hemisphere, the WIYN 0.9m.

Below we present the properties of the instrument and transmission curves for the *VRI* filters.



Table 3.4: ARCSAT Instrument SurveyCam Properties

| Property              | Value                                                               |
|-----------------------|---------------------------------------------------------------------|
| Instrument            | SurveyCam                                                           |
| Primary Investigator  | Dmitry Bizyaev                                                      |
| CCD                   | Apogee U16M-HC, 9 $\mu\text{m}$ pixel, KAF-16803, front-illuminated |
| Field Size            | $4096 \times 4096$ pixels (36.9 mm)                                 |
| Mode Used             | 1-amplifier readout                                                 |
| Field of View         | $31.1' \times 31.1'$                                                |
| Read-out Time         | 24 sec, $1 \times 1$ binning                                        |
| Binning               | $1 \times 1$ pixels                                                 |
| Pixel Scale           | $0.465''/\text{pix}$                                                |
| Gain                  | 1.4 e-/ADU                                                          |
| Read-out Noise, e     | 8 e-                                                                |
| Dark Current          | 0.01 e-/sec at CCD T $\sim -40\text{C}$                             |
| Non-linearity         | TBD                                                                 |
| ADU Saturation        | 65,000                                                              |
| QE at 5000A           | $\sim 60\%$                                                         |
| Names of Filters Used | ASTRODON $V$ , $R_C$ , $I_C$                                        |

The properties listed here come directly from the ARCSAT website at [www.apo.nmsu.edu/Telescopes/ARCSAT/Instruments/arcsat\\_instruments.html](http://www.apo.nmsu.edu/Telescopes/ARCSAT/Instruments/arcsat_instruments.html).

Table 3.5: ARCSAT Filter Transmittance

| $\lambda$ (Å) | V Band | R Band | I Band | $\lambda$ (Å) | V Band  | R Band  | I Band  | $\lambda$ (Å) | V Band  | R Band  | I Band  |
|---------------|--------|--------|--------|---------------|---------|---------|---------|---------------|---------|---------|---------|
| .             | .      | .      | .      | (cont.)       | (cont.) | (cont.) | (cont.) | (cont.)       | (cont.) | (cont.) | (cont.) |
| 4700          | 0.0021 | 0.0000 | 0.0000 | 6700          | 0.0001  | 0.6917  | 0.0001  | 8700          | 0.0002  | 0.0029  | 0.9497  |
| 4750          | 0.0234 | 0.0000 | 0.0000 | 6750          | 0.0000  | 0.6801  | 0.0002  | 8750          | 0.0002  | 0.0020  | 0.9170  |
| 4800          | 0.0795 | 0.0000 | 0.0000 | 6800          | 0.0000  | 0.6784  | 0.0002  | 8800          | 0.0002  | 0.0012  | 0.7877  |
| 4850          | 0.2650 | 0.0000 | 0.0000 | 6850          | 0.0000  | 0.6666  | 0.0003  | 8850          | 0.0001  | 0.0006  | 0.5075  |
| 4900          | 0.4356 | 0.0000 | 0.0000 | 6900          | 0.0000  | 0.6425  | 0.0006  | 8900          | 0.0001  | 0.0002  | 0.2540  |
| 4950          | 0.5879 | 0.0000 | 0.0000 | 6950          | 0.0000  | 0.6049  | 0.0022  | 8950          | 0.0001  | 0.0001  | 0.1175  |
| 5000          | 0.7213 | 0.0004 | 0.0000 | 7000          | 0.0000  | 0.5626  | 0.0118  | 9000          | 0.0001  | 0.0001  | 0.0580  |
| 5050          | 0.8087 | 0.0000 | 0.0000 | 7050          | 0.0000  | 0.5218  | 0.0495  | 9050          | 0.0001  | 0.0001  | 0.0219  |
| 5100          | 0.8798 | 0.0000 | 0.0000 | 7100          | 0.0000  | 0.4909  | 0.1149  | 9100          | 0.0001  | 0.0000  | 0.0073  |
| 5150          | 0.9290 | 0.0000 | 0.0000 | 7150          | 0.0000  | 0.4591  | 0.2258  | 9150          | 0.0001  | 0.0000  | 0.0024  |
| 5200          | 0.9548 | 0.0001 | 0.0000 | 7200          | 0.0000  | 0.4323  | 0.3636  | 9200          | 0.0001  | 0.0000  | 0.0009  |
| 5250          | 0.9531 | 0.0002 | 0.0000 | 7250          | 0.0000  | 0.4231  | 0.4925  | 9250          | 0.0001  | 0.0000  | 0.0004  |
| 5300          | 0.9548 | 0.0001 | 0.0000 | 7300          | 0.0000  | 0.4148  | 0.6207  | 9300          | 0.0000  | 0.0000  | 0.0002  |
| 5350          | 0.9417 | 0.0001 | 0.0000 | 7350          | 0.0000  | 0.3980  | 0.7678  | 9350          | 0.0001  | 0.0000  | 0.0001  |
| 5400          | 0.9189 | 0.0032 | 0.0000 | 7400          | 0.0000  | 0.3779  | 0.8978  | 9400          | 0.0001  | 0.0000  | 0.0001  |
| 5450          | 0.8816 | 0.0041 | 0.0000 | 7450          | 0.0000  | 0.3550  | 0.9536  | 9450          | 0.0000  | 0.0000  | 0.0001  |
| 5500          | 0.8573 | 0.0434 | 0.0000 | 7500          | 0.0000  | 0.3338  | 0.9679  | 9500          | 0.0001  | 0.0000  | 0.0001  |
| 5550          | 0.8252 | 0.1064 | 0.0000 | 7550          | 0.0000  | 0.3099  | 0.9747  | 9550          | 0.0001  | 0.0000  | 0.0001  |
| 5600          | 0.7771 | 0.1903 | 0.0000 | 7600          | 0.0000  | 0.2859  | 0.9822  | 9600          | 0.0001  | 0.0000  | 0.0001  |
| 5650          | 0.7066 | 0.3550 | 0.0000 | 7650          | 0.0000  | 0.2691  | 0.9951  | 9650          | 0.0000  | 0.0000  | 0.0001  |
| 5700          | 0.6574 | 0.6749 | 0.0000 | 7700          | 0.0000  | 0.2480  | 1.0003  | 9700          | 0.0000  | 0.0000  | 0.0001  |
| 5750          | 0.6217 | 0.8226 | 0.0001 | 7750          | 0.0000  | 0.2209  | 0.9968  | 9750          | 0.0001  | 0.0000  | 0.0000  |
| 5800          | 0.5750 | 0.8637 | 0.0000 | 7800          | 0.0000  | 0.2068  | 0.9958  | 9800          | 0.0001  | 0.0000  | 0.0000  |
| 5850          | 0.5152 | 0.9181 | 0.0000 | 7850          | 0.0000  | 0.2028  | 0.9967  | 9850          | 0.0001  | 0.0000  | 0.0000  |
| 5900          | 0.4468 | 0.9679 | 0.0000 | 7900          | 0.0000  | 0.1905  | 0.9974  | 9900          | 0.0001  | 0.0000  | 0.0000  |
| 5950          | 0.3694 | 0.9805 | 0.0000 | 7950          | 0.0000  | 0.1718  | 0.9964  | 9950          | 0.0002  | 0.0000  | 0.0000  |
| 6000          | 0.3120 | 0.9941 | 0.0000 | 8000          | 0.0002  | 0.1453  | 0.9916  | 10000         | 0.0003  | 0.0000  | 0.0000  |
| 6050          | 0.2829 | 0.9774 | 0.0000 | 8050          | 0.0002  | 0.1294  | 0.9853  | 10050         | 0.0002  | 0.0000  | 0.0000  |
| 6100          | 0.2486 | 0.9823 | 0.0000 | 8100          | 0.0001  | 0.1152  | 0.9812  | 10100         | 0.0001  | 0.0000  | 0.0000  |
| 6150          | 0.1995 | 0.9767 | 0.0000 | 8150          | 0.0001  | 0.1034  | 0.9807  | 10150         | 0.0001  | 0.0000  | 0.0000  |
| 6200          | 0.1453 | 0.9438 | 0.0000 | 8200          | 0.0002  | 0.0937  | 0.9838  | 10200         | 0.0001  | 0.0000  | 0.0000  |
| 6250          | 0.1076 | 0.9130 | 0.0000 | 8250          | 0.0002  | 0.0855  | 0.9863  | 10250         | 0.0001  | 0.0000  | 0.0000  |
| 6300          | 0.0823 | 0.8800 | 0.0000 | 8300          | 0.0001  | 0.0776  | 0.9863  | 10300         | 0.0001  | 0.0000  | 0.0000  |
| 6350          | 0.0614 | 0.8752 | 0.0000 | 8350          | 0.0003  | 0.0676  | 0.9836  | 10350         | 0.0002  | 0.0000  | 0.0000  |
| 6400          | 0.0465 | 0.8775 | 0.0000 | 8400          | 0.0002  | 0.0554  | 0.9802  | 10400         | 0.0004  | 0.0000  | 0.0000  |
| 6450          | 0.0310 | 0.8675 | 0.0000 | 8450          | 0.0002  | 0.0416  | 0.9781  | 10450         | 0.0004  | 0.0000  | 0.0000  |
| 6500          | 0.0120 | 0.8377 | 0.0000 | 8500          | 0.0003  | 0.0278  | 0.9753  | 10500         | 0.0002  | 0.0001  | 0.0001  |
| 6550          | 0.0032 | 0.8064 | 0.0000 | 8550          | 0.0003  | 0.0167  | 0.9693  | 10550         | 0.0001  | 0.0001  | 0.0001  |
| 6600          | 0.0009 | 0.7669 | 0.0000 | 8600          | 0.0002  | 0.0091  | 0.9654  | 10600         | 0.0001  | 0.0001  | 0.0001  |
| 6650          | 0.0002 | 0.7278 | 0.0000 | 8650          | 0.0002  | 0.0048  | 0.9615  | .             | .       | .       | .       |

### 3.2.3 KPNO/WIYN 0.9m Photometry

The WIYN 0.9m is located at Kitt Peak National Observatory (KPNO) and is equipped with the Half Degree Imager. A total of 31 nights were granted on the WIYN 0.9m by NOAO. Out of 31 nights granted, 3 were lost due to bad weather, 1 was lost due to technical problems, 4 were lost because of personal misfortunes, 7.5 were used on a back-up stellar variability program during partly cloudy nights, and 15.5 were used for the main program to acquire quality *VRI* photometry. All observations were acquired solo and followed the same procedures used to acquire CTIO and ARCSAT photometry. One item of note is that while observing, it was important to not let the science and reference stars to approach the saturation limit of the CCD at 65536 counts because the response became non-linear at  $\sim 30000$  counts.

WIYN 0.9m photometry reductions required a slightly more nuanced approach than for the other two telescopes because the readout system used four amplifiers instead of one, resulting in images with quadrants having different bias levels, in effect making them independent images. These “mosaic” images were combined together in a single fits file. Furthermore, the filter set used was a 2-inch square filter set, whereas the filter wheel is designed to house 4-inch square filters. As a result, our images exhibit vignetting, seen in Figure 3.5. When reducing our data, we considered any stars within the vignetted region unusable, e.g., they could not be used as standard stars.

To bias subtract and flat-field the images, the same procedure is used as for the CTIO/S-MARTS and ARCSAT data except the *zerocombine*, *flatcombine*, and *ccdproc* tasks come

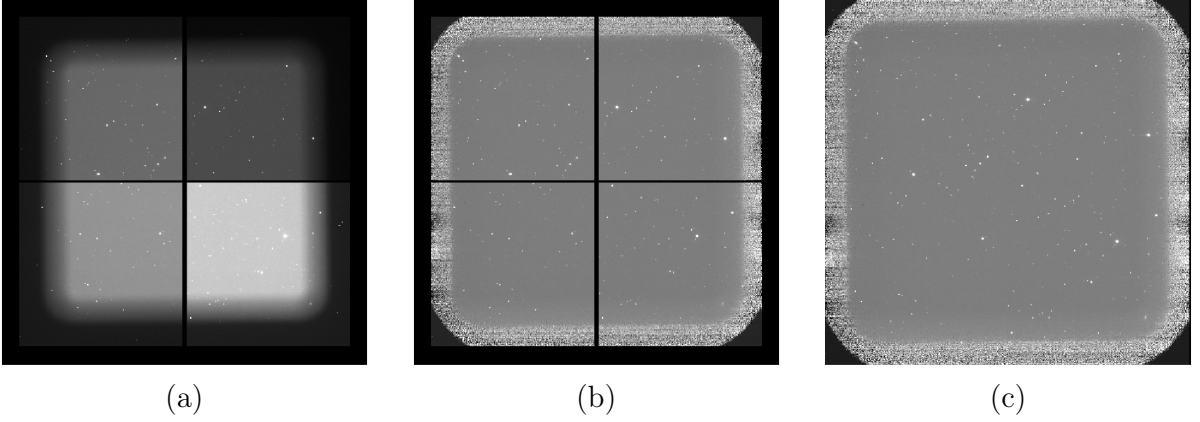


Figure 3.5: Panel (a) shows the raw WIYN data. Panel (b) shows the data after bias-subtraction and flat-fielding. Panel (c) shows the final processed image, where the four mosaic images in (b) have been combined. The outer edges are vignetted because smaller filters were used (2-inch square) than are intended for the filter wheel (4-inch square). Because we simply do not use those regions of the chip and they do not affect our results, we do not bother with the extra step of removing them.

from the IRAF package *mscred* to handle the mosaic format. To combine the four sub-images, I created an IDL routine described in Appendix B.

Once the images were combined, photometry reduction procedures were nearly identical to those used for the CTIO/SMARTS and ARCSAT data, again with the relevant CCD and telescope parameters modified. Unlike ARCSAT, the IRAF procedure *setairmass* worked fine with the WIYN data. The only caveat is that occasionally when observing, the communication between the telescope control system and software that writes the header information to the fits files was severed. When this happened, it is trivial to reconnect, but the observer must be on her or his toes or the header will be missing information, including the UT and airmass, which are fundamental to photometry reductions. Throughout my observations, I kept a careful log including the local standard time for all frames (easily converted to UT) and the airmass of (a) the first image taken of a science star (e.g., through the *I* filter, but

not  $R$  and  $V$ ), and (b) all images taken of standard stars. In the cases where the airmass information was lost in the headers of individual fits files, I used my recorded values and the *setairmass* procedure to fill them in.

As discussed above and demonstrated in Figure 3.2, there is a systematic trend in WIYN 0.9m  $R$  that results in magnitudes that are  $\sim 0.2$  mag brighter than measured at CTIO/S-MARTS or ARCSAT. A linear fit has been made to the data, and the  $R$  magnitudes from WIYN have been adjusted using Equation 3.2.

Below we present the properties of the instrument and transmission curves for the w046  $V$ , w047  $R$ , and w048  $I$  filters.

Table 3.6: WIYN 0.9m Instrument Half Degree Imager Properties

| Property              | Value                                               |
|-----------------------|-----------------------------------------------------|
| Instrument            | Half Degree Imager (HDI)                            |
| Primary Investigator  | Michael Richmond                                    |
| CCD                   | e2V 231-84 CCD chip, back illuminated, four outputs |
| Coolant               | Closed Loop Cooling System and Liquid Nitrogen      |
| Field Size            | $4096 \times 4096$ pixels                           |
| Mode Used             | 4-amplifier readout                                 |
| Field of View         | $29.2' \times 29.2'$                                |
| Read-out Time         | 9 sec, $1 \times 1$ binning                         |
| Binning               | $1 \times 1$ pixels                                 |
| Pixel Scale           | $0.430''/\text{pix}$                                |
| Gain                  | $1.3 \text{ e-}/\text{ADU}$                         |
| Read-out Noise, e     | 7-8 e- (slightly variable)                          |
| Dark Current          | 0.027 0.022 0.021 0.033 e-/ s                       |
| Non-linearity         | $\gtrsim 30,000$                                    |
| ADU Saturation        | 65536                                               |
| QE Near V             | $\sim 80\%$                                         |
| Names of Filters Used | w046, w047, w048                                    |

The properties listed here come directly from the HDI website at [spiff.rit.edu/richmond/wiyn/technotes/tn\\_index.html](http://spiff.rit.edu/richmond/wiyn/technotes/tn_index.html).

Table 3.7: WIYN 0.9m Filter Transmittance

| $\lambda$ (Å) | V Band  | R Band  | I Band  | $\lambda$ (Å) | V Band  | R Band  | I Band  | $\lambda$ (Å) | V Band  | R Band  | I Band  |
|---------------|---------|---------|---------|---------------|---------|---------|---------|---------------|---------|---------|---------|
| (cont.)       | (cont.) | (cont.) | (cont.) | (cont.)       | (cont.) | (cont.) | (cont.) | (cont.)       | (cont.) | (cont.) | (cont.) |
| 4700.00       | 0.0001  | 0.0000  | -0.0001 | 7150.00       | 0.0000  | 0.2881  | 0.2170  | 9600.00       | 0.0075  | 0.0049  | 0.0188  |
| 4750.00       | 0.0007  | -0.0001 | -0.0001 | 7200.00       | -0.0001 | 0.2678  | 0.3495  | 9650.00       | 0.0011  | 0.0043  | 0.0165  |
| 4800.00       | 0.0064  | 0.0000  | -0.0001 | 7250.00       | 0.0000  | 0.2476  | 0.4693  | 9700.00       | -0.0015 | 0.0017  | 0.0149  |
| 4850.00       | 0.0502  | -0.0001 | -0.0001 | 7300.00       | 0.0000  | 0.2198  | 0.5394  | 9750.00       | 0.0026  | 0.0033  | 0.0112  |
| 4900.00       | 0.2167  | -0.0001 | -0.0001 | 7350.00       | -0.0001 | 0.2030  | 0.5922  | 9800.00       | 0.0046  | 0.0077  | 0.0060  |
| 4950.00       | 0.4741  | -0.0001 | -0.0001 | 7400.00       | 0.0001  | 0.1863  | 0.6361  | 9850.00       | 0.0025  | 0.0020  | 0.0044  |
| 5000.00       | 0.6817  | 0.0000  | -0.0001 | 7450.00       | 0.0000  | 0.1649  | 0.6724  | 9900.00       | 0.0029  | 0.0049  | 0.0057  |
| 5050.00       | 0.7959  | 0.0000  | -0.0001 | 7500.00       | 0.0001  | 0.1509  | 0.7208  | 9950.00       | 0.0013  | 0.0028  | 0.0061  |
| 5100.00       | 0.8519  | -0.0001 | -0.0001 | 7550.00       | 0.0001  | 0.1352  | 0.7899  | 10000.00      | 0.0034  | 0.0015  | 0.0029  |
| 5150.00       | 0.8704  | 0.0000  | -0.0001 | 7600.00       | 0.0001  | 0.1209  | 0.8498  | 10050.00      | 0.0029  | 0.0031  | 0.0070  |
| 5200.00       | 0.8769  | 0.0000  | -0.0001 | 7650.00       | -0.0002 | 0.1061  | 0.8914  | 10100.00      | 0.0041  | 0.0031  | 0.0041  |
| 5250.00       | 0.8783  | -0.0001 | -0.0001 | 7700.00       | 0.0001  | 0.0956  | 0.9315  | 10150.00      | 0.0010  | 0.0043  | 0.0011  |
| 5300.00       | 0.8616  | 0.0000  | -0.0001 | 7750.00       | -0.0002 | 0.0806  | 0.9071  | 10200.00      | 0.0006  | 0.0014  | 0.0019  |
| 5350.00       | 0.8452  | -0.0001 | -0.0001 | 7800.00       | 0.0002  | 0.0749  | 0.8934  | 10250.00      | 0.0030  | 0.0051  | 0.0027  |
| 5400.00       | 0.8195  | 0.0001  | -0.0001 | 7850.00       | 0.0000  | 0.0643  | 0.8410  | 10300.00      | 0.0020  | 0.0020  | 0.0024  |
| 5450.00       | 0.7936  | 0.0001  | -0.0001 | 7900.00       | -0.0001 | 0.0572  | 0.8305  | 10350.00      | 0.0021  | 0.0034  | -0.0001 |
| 5500.00       | 0.7503  | 0.0006  | -0.0001 | 7950.00       | 0.0001  | 0.0476  | 0.8034  | 10400.00      | 0.0019  | 0.0017  | -0.0001 |
| 5550.00       | 0.7065  | 0.0042  | 0.0000  | 8000.00       | 0.0001  | 0.0430  | 0.8123  | 10450.00      | 0.0037  | 0.0025  | 0.0023  |
| 5600.00       | 0.6538  | 0.0350  | -0.0001 | 8050.00       | 0.0004  | 0.0378  | 0.8187  | 10500.00      | 0.0016  | 0.0032  | 0.0017  |
| 5650.00       | 0.5985  | 0.1649  | 0.0000  | 8100.00       | 0.0001  | 0.0304  | 0.8355  | 10550.00      | 0.0030  | 0.0028  | 0.0021  |
| 5700.00       | 0.5311  | 0.3978  | -0.0001 | 8150.00       | 0.0003  | 0.0267  | 0.8379  | 10600.00      | 0.0026  | 0.0028  | 0.0025  |
| 5750.00       | 0.4667  | 0.6026  | -0.0001 | 8200.00       | 0.0003  | 0.0245  | 0.8724  | 10650.00      | 0.0033  | 0.0015  | 0.0019  |
| 5800.00       | 0.4017  | 0.7289  | -0.0001 | 8250.00       | 0.0002  | 0.0196  | 0.8649  | 10700.00      | -0.0021 | 0.0009  | 0.0001  |
| 5850.00       | 0.3388  | 0.7933  | -0.0001 | 8300.00       | -0.0001 | 0.0190  | 0.8504  | 10750.00      | 0.0001  | -0.0007 | 0.0009  |
| 5900.00       | 0.2774  | 0.8170  | 0.0000  | 8350.00       | 0.0003  | 0.0159  | 0.8338  | 10800.00      | 0.0032  | 0.0008  | 0.0007  |
| 5950.00       | 0.2217  | 0.8200  | -0.0001 | 8400.00       | -0.0002 | 0.0116  | 0.8820  | 10850.00      | -0.0004 | 0.0009  | 0.0027  |
| 6000.00       | 0.1732  | 0.8244  | -0.0001 | 8450.00       | 0.0009  | 0.0118  | 0.8829  | 10900.00      | 0.0004  | 0.0014  | 0.0014  |
| 6050.00       | 0.1287  | 0.8074  | -0.0001 | 8500.00       | 0.0009  | 0.0073  | 0.8838  | 10950.00      | 0.0022  | 0.0006  | 0.0002  |
| 6100.00       | 0.0947  | 0.7977  | -0.0001 | 8550.00       | -0.0009 | 0.0080  | 0.9479  | 11000.00      | 0.0003  | 0.0030  | 0.0001  |
| 6150.00       | 0.0670  | 0.7812  | -0.0001 | 8600.00       | 0.0041  | 0.0062  | 0.9267  | 11050.00      | 0.0013  | 0.0007  | 0.0013  |
| 6200.00       | 0.0463  | 0.7617  | 0.0000  | 8650.00       | -0.0430 | 0.0014  | 0.8970  | 11100.00      | -0.0002 | 0.0006  | 0.0027  |
| 6250.00       | 0.0305  | 0.7419  | 0.0000  | 8700.00       | 0.0274  | 0.0243  | 0.9198  | 11150.00      | 0.0015  | 0.0018  | 0.0002  |
| 6300.00       | 0.0199  | 0.7204  | 0.0000  | 8750.00       | 0.0078  | 0.0303  | 0.9014  | 11200.00      | 0.0006  | 0.0010  | -0.0008 |
| 6350.00       | 0.0124  | 0.7043  | -0.0001 | 8800.00       | 0.0269  | 0.0341  | 0.8715  | 11250.00      | -0.0007 | 0.0009  | 0.0011  |
| 6400.00       | 0.0075  | 0.6776  | -0.0001 | 8850.00       | 0.0123  | 0.0265  | 0.8255  | 11300.00      | 0.0023  | 0.0008  | 0.0021  |
| 6450.00       | 0.0043  | 0.6548  | 0.0000  | 8900.00       | 0.0171  | 0.0327  | 0.7968  | 11350.00      | 0.0020  | 0.0005  | -0.0006 |
| 6500.00       | 0.0023  | 0.6279  | -0.0001 | 8950.00       | 0.0281  | 0.0253  | 0.7888  | 11400.00      | 0.0007  | 0.0041  | 0.0017  |
| 6550.00       | 0.0014  | 0.6008  | -0.0001 | 9000.00       | 0.0096  | 0.0185  | 0.8188  | 11450.00      | 0.0005  | 0.0032  | 0.0020  |
| 6600.00       | 0.0008  | 0.5767  | 0.0000  | 9050.00       | 0.0076  | 0.0216  | 0.8384  | 11500.00      | -0.0004 | 0.0019  | 0.0020  |
| 6650.00       | 0.0003  | 0.5468  | -0.0001 | 9100.00       | 0.0178  | 0.0098  | 0.8079  | 11550.00      | 0.0009  | 0.0003  | 0.0001  |
| 6700.00       | 0.0002  | 0.5264  | -0.0001 | 9150.00       | 0.0062  | 0.0149  | 0.7469  | 11600.00      | -0.0006 | -0.0004 | 0.0008  |
| 6750.00       | 0.0001  | 0.4960  | 0.0000  | 9200.00       | -0.0039 | 0.0075  | 0.6055  | 11650.00      | 0.0017  | -0.0001 | 0.0004  |
| 6800.00       | -0.0001 | 0.4755  | 0.0000  | 9250.00       | -0.0003 | 0.0094  | 0.4408  | 11700.00      | 0.0010  | -0.0007 | 0.0008  |
| 6850.00       | 0.0000  | 0.4463  | 0.0000  | 9300.00       | 0.0080  | 0.0070  | 0.2770  | 11750.00      | 0.0006  | 0.0019  | 0.0025  |
| 6900.00       | 0.0001  | 0.4195  | 0.0001  | 9350.00       | 0.0075  | 0.0025  | 0.1826  | 11800.00      | -0.0012 | 0.0026  | -0.0002 |
| 6950.00       | 0.0000  | 0.3899  | 0.0008  | 9400.00       | -0.0009 | 0.0046  | 0.1116  | 11850.00      | 0.0001  | -0.0002 | 0.0012  |
| 7000.00       | -0.0001 | 0.3651  | 0.0074  | 9450.00       | 0.0007  | 0.0120  | 0.0748  | 11900.00      | -0.0045 | -0.0042 | -0.0039 |
| 7050.00       | -0.0001 | 0.3378  | 0.0353  | 9500.00       | 0.0045  | 0.0083  | 0.0467  | 11950.00      | 0.0009  | 0.0022  | 0.0004  |
| 7100.00       | 0.0000  | 0.3121  | 0.1072  | 9550.00       | -0.0010 | 0.0066  | 0.0321  | 12000.00      | 0.0002  | 0.0012  | 0.0011  |

### 3.3 2MASS Photometry

2MASS was an all-sky near-infrared survey performed from 1997 to 2001 using filters corresponding to “pockets” of wavelengths not blocked by the Earth’s atmosphere. The telescopes used were the Pairitel 1.3m Telescope at the Whipple Observatory on Mount Hopkins, Arizona and the 1.3m Telescope at CTIO in Chile (now in the SMARTS telescope suite). The effective wavelengths of the  $JHK_s$  (hereafter simply  $JHK$ ) filters are 1.235, 1.662, and 2.159  $\mu\text{m}$ , respectively, and because photons at different wavelengths were refracted at different angles using dichroic mirrors, measurements in all three filters could be taken simultaneously.

All near-infrared  $JHK$  photometry data for the stars targeted in this project come from the 2MASS All-Sky Catalog of Point Sources or the 2MASS 6X Point Source Working Database/Catalog (Cutri et al. 2003; Skrutskie et al. 2006). As mentioned, our sample is limited to single stars or primaries that don’t have companions closer than  $4''$  in order to provide reliable, separate, 2MASS photometry for components. 2MASS is the determining factor in defining this limit; our optical data have a resolution down to  $2''$ , given the designs of the various optical imaging cameras that provide finer resolution with 04–05 pixels on the sky compared to the 2MASS cameras, which had pixel sizes of 20 on the sky. As discussed in §3.4.4, the *WISE* data also appear unaffected by stars at separations greater than  $4''$ .

Whereas individual errors are typically not given for optical photometry studies, errors on 2MASS  $JHK$  values are listed in Table A.2. The errors are the  $x_m\text{sigcom}$  errors (where  $x$  is “j”, “h”, or “k”), which give a measure of the total photometric uncertainty, including global and systematic terms. The combination of *VRI* and  $JHK$  photometry provides a



total of 15 colors that can be compared to stellar models to derive temperatures.

### 3.4 *WISE* Photometry

#### 3.4.1 *Brief Overview of WISE*

With mid-infrared filters spanning 3.4 to 22 microns, results from the the 40cm *WISE* space telescope launched in 2009 provide a glimpse into stellar fluxes far into the Rayleigh-Jeans section of spectra for hot stars (Wright et al. 2010). For cool stars like the red dwarfs targeted here, there is a non-negligible amount of flux in these bands, and they are useful in our comparison of observed and synthetic photometry. Integrating three *WISE* bands (*W1*, *W2*, and *W3*) into our suite of photometry adds 21 more colors (9 *VRI-WISE*, 9 *JHK-WISE*, and 3 *WISE*-only colors) that can be used to evaluate stellar temperatures. As discussed in §4.3.2, infrared-infrared colors do not yield enough information to constrain temperatures derived by comparison to models, but the *WISE* photometry are combined with the optical data to produce 4 of the 9 best color combinations used for our warm subsample of stars and 8 out of 14 used for our cool subsample of stars.

#### 3.4.2 *Data Releases: WISE All-Sky vs. AllWISE*

The *WISE* mission has had several data releases, the most comprehensive of which are the *WISE* All-Sky Data Release (2012 March 14, observations 2010 January 7 to 2010 August 6, henceforth, “All-Sky”) that includes only data obtained during the cryogenic phase of the mission, and the AllWISE Data Release (2013 November 13, observations 2010 January 7 to 2011 February 1, including observations with full (All-Sky), reduced (3-Band Cryo), and

ultimately no cryogen (NEOWISE Post-Cryo), henceforth, “AllWISE”), that incorporates later epochs of data into the photometric results and yields astrometric information such as proper motions. One would expect the more recent data release to be the superior option, with possible improvements to reduction techniques and a greater pool of data with which to work. However, as shown in Figure 3.6 for our nearby red dwarfs and in line with the AllWISE Explanatory Supplement<sup>5</sup>, the errors and saturation levels of the All-Sky data are lower than those of AllWISE, presumably due to the reduced data quality in later epochs as the cryogenics deteriorated. As a result, and because we make no use of the astrometric data released with AllWISE, we opt to use the All-Sky dataset, forgoing the incorporation of observations after the cryogenic phase in favor of a cleaner set of photometric data. All future reference to *WISE* photometry assumes the All-Sky Data Release.

### 3.4.3 *Extracting and Quality-Checking WISE Photometry*

*WISE* All-Sky PSF photometry data were extracted for the sample stars using *WISE* designations obtained from Aladin. Due to their proximity and typically high proper motions, stars were easily confirmed in Aladin via blinking, and each star was checked by eye to be sure the correct source was identified. The *W1*, *W2*, and *W3* photometry values and errors used in this work are given in Table A.2<sup>6</sup>. As discussed below, *W4* data were not included in our analysis. Values were classified as reliable if they met the following criteria:

1. Error ( $\sigma$ ) < 50 mmag

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<sup>5</sup>[http://wise2.ipac.caltech.edu/docs/release/allwise/expsup/sec1\\_4.html](http://wise2.ipac.caltech.edu/docs/release/allwise/expsup/sec1_4.html)

<sup>6</sup>Note that in some cases, a value for the *W3* error is not given, in which case we assign it a dummy value of 9.999.

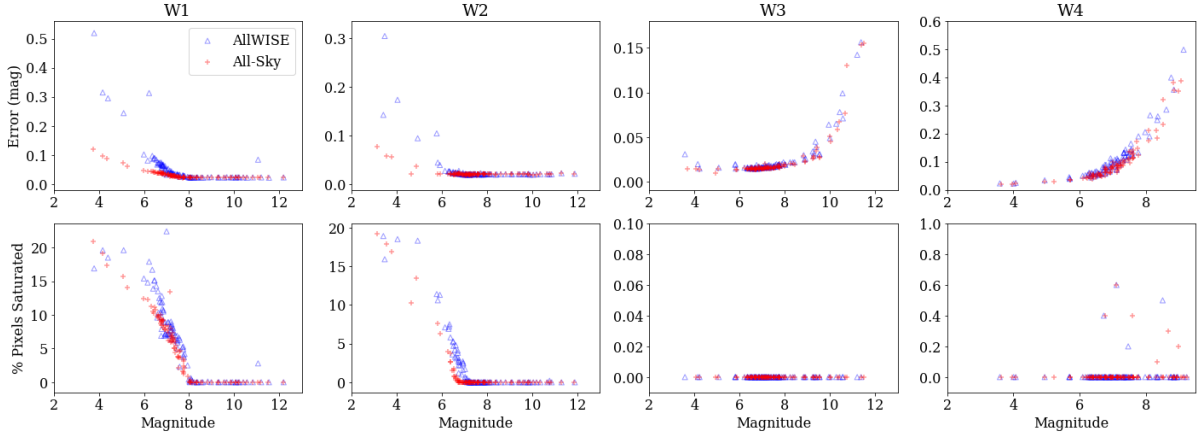


Figure 3.6: This Figure demonstrates the larger errors and saturation frequencies for bright stars in the AllWISE data release compared to All-Sky results. The AllWISE reduction includes data obtained after the coolant began to run out and exhibits lower quality results for bright stars evident by increased errors across all filters and more saturated stars in the *W1* and *W2* filters; hence, we use the All-Sky data. This representative set of data is for 100 stars within our sample with  $RA = 00-01$ .

2. Signal-to-Noise Ratio  $\geq 15$
3. Saturation of  $< 5\%$  of pixels

We use 573 of our stars to be reported in our southern hemisphere radius results publication to evaluate the efficacy of measurements through the four *WISE* filters; we assume that the character of the northern sample stars is similar. Unfortunately, red dwarfs in all three of our samples (core/young/old) can vary from too bright to not bright enough in the various bands — low fluxes are especially evident in the *W4* band, in which 76.1% of the stars in our southern sample fail at least one criterion, typically because the stars are too faint. Fluxes in the *W1* band have opposite problem — 49.7% of the nearest red dwarfs are saturated.<sup>7</sup> These issues are ameliorated in *W2* and *W3*, bands in which nearly and over

<sup>7</sup>The *WISE* All-Sky Explanatory Supplement Section 6.3.d.ii.1 cites the saturation limits of the PSF

90% of stars, respectively, pass all three criteria. The portions of subsample of 573 stars that fail each of the three criteria (error, signal-to-noise, and saturation) and pass all three criteria in each *WISE* band are shown in Figure 3.7; note that in many cases, a measurement fails more than one criterion. Overall, photometry that pass our quality criteria has been acquired for 288 stars (50%) in *W1*, 488 (85%) in *W2*, 528 (92%) in *W3*, and 137 (24%) in *W4* within our southern sample. We use all *W1*, *W2*, and *W3* data, but because of the high failure rate in *W4*, we exclude those values entirely from the suite of photometry used in our procedure.

#### 3.4.4 Contamination of *WISE* Photometry

Because *WISE* was a relatively small (40cm) telescope operating at mid-infrared wavelengths, its resolution is inherently poorer than observations done in the near-infrared or optical regimes on larger ground-based telescopes. The resolution is  $\sim 6''$  in the *W1*, *W2*, and *W3* bands, and  $\sim 12''$  in *W4* (another reason not to use *W4* photometry). It is therefore reasonable to be concerned about contaminating sources corrupting the photometry.

To evaluate potential contamination, we examined a sample of 443 red dwarfs within 25 pc from Winters et al. (2015) with  $V - K$  of 3.50–9.27. These stars are similar to our sample, which spans  $V - K = 3.5$ –10.5, and in fact, many are the same stars. Figure 3.8 illustrates the effects on targeted stars with PSF photometry in *WISE* that have additional sources within  $10''$  found on the SuperCOSMOS Sky Survey (Hambly et al. 2001c,b,a) *BRI* scanned plate images or in 2MASS. The  $J - WISE$  colors on the horizontal axes were found to demon-

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photometry at  $W1=8.1$ ,  $W2=6.7$ ,  $W3=3.8$ , and  $W4=-0.4$ .

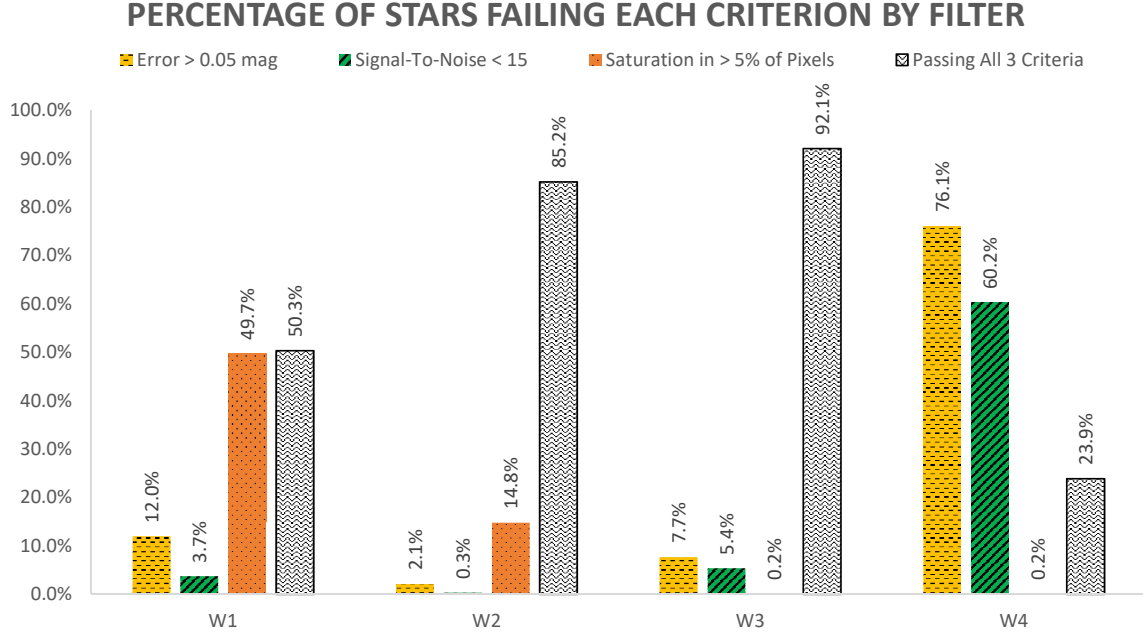


Figure 3.7: Percentages of stars from the southern portion of the survey with reliable data in each of the *WISE* bandpasses according to our three criteria. We assume stars in the northern sample will follow similar trends. Just under half of stars fail the criteria in *W1*, typically because of saturation, but most stars are considered to have good quality *W2* and *W3* data. Note that over 75% of stars fail at least one criterion in the *W4* band. Nearly 50% of the stars in our sample have more than 5% of pixels saturated in *W1*, while in *W4*, nearly 80% have errors greater than 0.05 mag and over 60% have signal-to-noise ratios of less than 15. As in Dieterich et al. (2014), we choose to exclude *W4* photometry due to its poor quality.

strate the clearest trends and were used as the baseline values for comparison in each *WISE* filter. The three panels of Figure 3.8 illustrate that the potentially contaminated sources represented with large circles are not systematically offset from the trend mapped out by the “clean” isolated stars represented by the smaller circles. We conclude that contamination is not a serious issue for the *WISE* photometry we use, even though the resolution of *WISE* images is relatively poor.

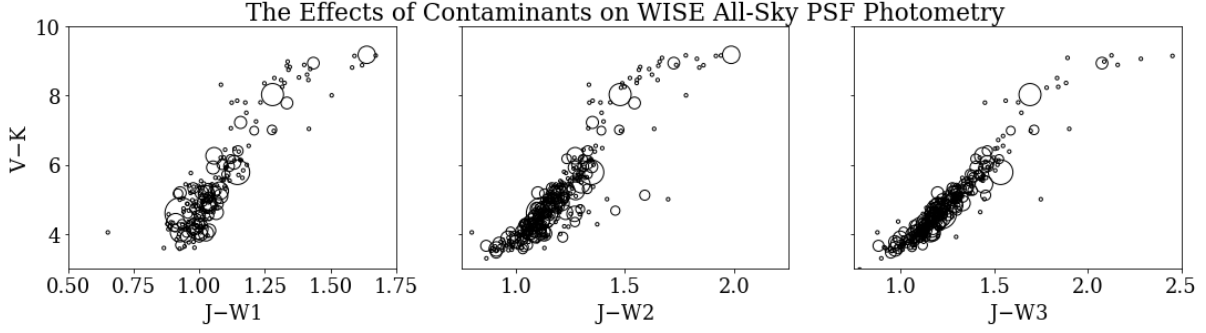


Figure 3.8: *WISE* All-Sky photometry in *W1*, *W2*, and *W3* were extracted for 443 red dwarfs within 25 pc from Winters et al. (2015). Points are shown for stars with *WISE* photometry that passed our three reliability criteria and for which a companion was found within  $10''$  in SuperCOSMOS and/or 2MASS. The *VJK* photometry used in the plot were acquired as described in §3. Symbol size scales inversely with the distance to the nearest potential contaminant to the star as detected in the 2MASS and/or *WISE* All-Sky catalogs when checked by eye using Aladin — a larger symbol indicates a star with a closer potential contaminant. There appears to be no correlation between symbol size (i.e. separation) and deviation from the overall trend in each filter. This indicates that the *WISE* PSF photometry data are not seriously affected by contaminating sources within  $10''$ .

### 3.5 Astrometry

The astrometric data relevant to the current study are the trigonometric parallaxes used for distance determinations. These parallaxes come from a variety of publications used by RECONS to define the sample of all stars within 25 pc (Jao et al. 2019 in prep), including many from our own efforts that are collected and presented at [www.recons.org](http://www.recons.org). Further discussion of the parallaxes from our and other programs can be found in, e.g., Henry et al. (2018) and Winters et al. (2019).

The parallaxes used here are the weighted mean values of all available measurements for each system, i.e., for primaries that have wide companions, individual values for each

component are included when deriving the weighted mean for the system. Parallaxes and references are included in Table A.2. At this time, we do not include results from *Gaia* DR2, as the sample was established before any *Gaia* results were available, and complete vetting of all parallaxes for these systems is not yet complete.

### 3.6 Multiplicity

Multiplicity information for stars in the core sample comes from the long-term effort described in Winters et al. (2019). This work includes a three-part comprehensive survey of M dwarfs for companions: blinking of archival SuperCOSMOS images data in Aladin, an original survey for companions with separations 2–300'' using primarily the Lowell 42in in the north and the CTIO/SMARTS 0.9m in the south, and an aggregate of various detection techniques for companions at separations less than 2''. All but  $\sim 300$  of the stars in our core sample are included in the Winters et al. (2019) sample, and the majority of those that are not have been combed through by members of the RECONS team for inclusion into the 25 Parsec Database (Jao et al. 2019 in prep).

Based on the results in that paper and our unpublished multiplicity check for the remainder of the sample, we conservatively estimate that more than 95% of companions at separations less than the 4'' separation requirement for inclusion in the present core sample have been identified. Thus, overall there are likely to be only a few targets with unidentified companions that may have anomalous derived fundamental parameters because they are unidentified, unresolved, multiples.

## CHAPTER 4

### Deriving Model-Based Stellar Parameters

#### 4.1 Overview

With the goals of estimating the effective temperature, luminosity, and radius of each red dwarf in our sample, we employ a technique that observationally requires only photometry and a parallax. Effective temperature is determined first in our procedure by a direct comparison of observed photometric colors to those extracted from the BT-Settl CIFIST 2011 photospheric model spectra. Luminosity is then estimated by applying an iterative correction to the closest fitting spectrum until the final model photometry matches observed values for  $VRIJHKW1W2W3$  each to within 0.03 mag. Finally we utilize the Stefan-Boltzmann Law to yield stellar radius.

The BT-Settl grid of models (Allard et al. 2012; Rajpurohit et al. 2013), generated by the PHOENIX code (Allard & Hauschildt 1995), provides a suite of spectra that are arguably the best approximations to observed cool star spectra to date. For reference, Figure 4.1 shows the normalized BT-Settl model spectrum for a 2500 K star overlaid with our filter traces. More recent versions of the grid incorporate additional physics, but for this work we opt to use the 2011 version as published in Allard et al. (2012) because of its broad range of surface gravity and metallicity options that are publicly available. The 2011 version also remains superior to other grids such as MARCS (Gustafsson et al. 2008) and APOGEE ATLAS9 (Mészáros et al. 2012) that generally cater to higher mass stars with spectra less complicated by molecular lines (Rajpurohit et al. 2018b). In future efforts, we intend to



include upgrades to the 2015 model grid.<sup>1</sup>

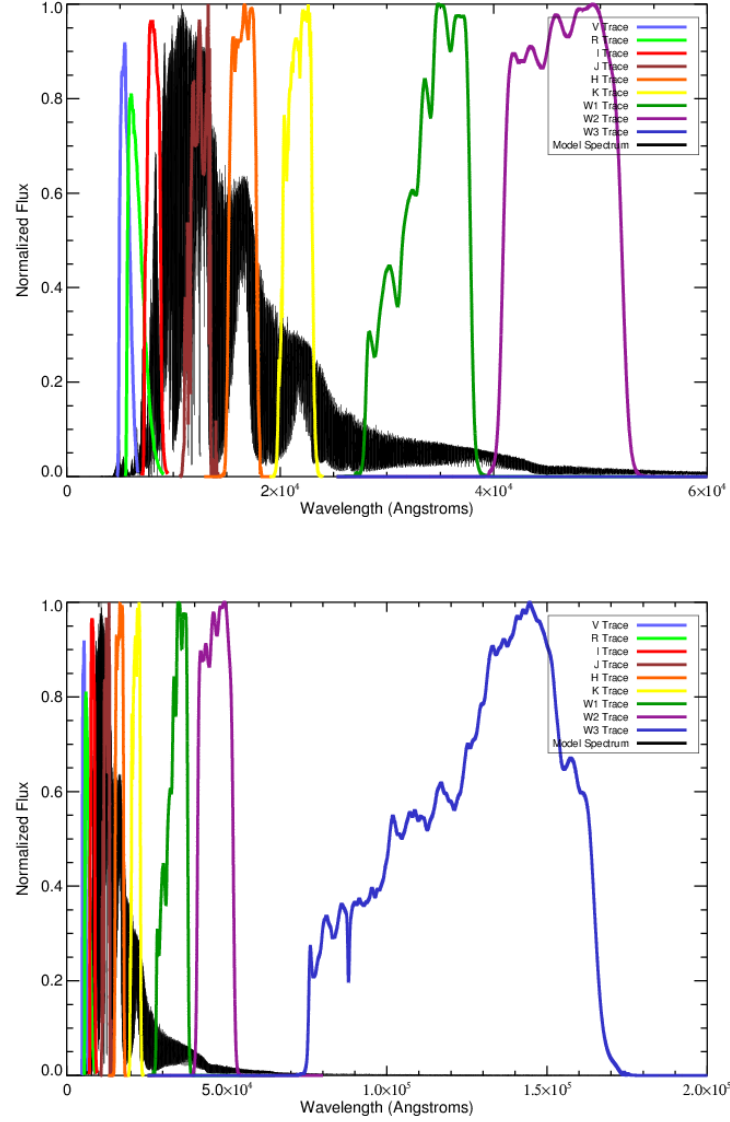


Figure 4.1: The normalized BT-Settl model spectrum for a star at 2500 K, metallicity = 0,  $\log g = 5$ , and alpha enhancement = 0. The top panel shows the spectrum overlaid with eight of our nine filter traces; *W3* is excluded to keep the x-axis small enough to view the overall shape of the spectrum. The bottom panel includes the *W3* filter trace.

<sup>1</sup>[https://phoenix.ens-lyon.fr/Grids/BT-Settl/CIFIST2011\\_2015/](https://phoenix.ens-lyon.fr/Grids/BT-Settl/CIFIST2011_2015/)

## 4.2 Generating Synthetic Photometry and Flux Values

To cover the full range of red dwarf spectra, plus a little wiggle room for outliers and fits as a function of temperature (§4.3.3), we’ve chosen to use 347 model spectra spanning  $1500 \leq T_{eff} \leq 5000$  K,  $-0.5 \leq Z \leq 0.5$  dex,  $4.5 \leq \log g \leq 5.5$ , and  $0.0 \leq \alpha \leq 0.2$  dex, (effective temperature, metallicity, surface gravity, and alpha enhancement sampled by the model grid intervals of 50–100 K, 0.5 dex, 0.5, and 0.2 dex, respectively).

The temperature range spans the full extent expected (and then some) for stars with spectral types M0.0V to the end of the stellar main sequence near L2.5V. Metallicity is constrained from the available range of  $-2.5$  to  $0.5$  to a tighter  $-0.5$  to  $0.5$  range because we do not expect many extremely young or old stars within 25 pc that may have metallicities beyond this range. Surface gravity values are constrained from our initially adopted  $3.0 \leq \log g \leq 6.0$  range, first chosen to discern very young and old stars from their main sequence counterparts, because we found that our filters and/or the model grid are poor probes of surface gravity for the sample stars, as further described in the overall procedure in §4.3.3 and results in §5.6. It is worth noting that single and resolved young stars and old subdwarfs tend to stand out by their luminosities and radii alone — unusual metallicities and surface gravities from this procedure are not required to reveal candidates. With the adopted temperature, metallicity, and surface gravity constraints, our available alpha enhancement options are reduced from 0.0, 0.2, and 0.4 to just 0.0 and 0.2, resulting in a grid of 347 model spectra that we explore for each star.

Here we discuss the generation of each output value from the 347 different model spectra:

- (1) *Filter fluxes* are determined by multiplying the transmission curve for each filter by the model flux in the corresponding wavelength range. First, the model flux must be converted to the proper units. The flux presented in each model spectrum is in units of  $\log(\text{erg cm}^{-2} \text{s}^{-1})$ . The model flux in cgs units is calculated according to the procedure laid out in <http://phoenix.ens-lyon.fr/Grids/FORMAT>, i.e., according to the equation  $F_{cgs} = 10^{F_{log,cgs} + DF}$ , where the “dilution factor”,  $DF = -8.0$ , scales the flux to that at the surface of the star. However, not all photons are created equally; to account for the different energies of photons at different wavelengths, we convert to units of photons  $\text{cm}^{-2} \text{s}^{-1} \text{\AA}^{-1}$  via the equation  $F_{photon} = F_{cgs} \times \frac{hc}{\lambda}$ , where Planck’s constant,  $h = 6.626 \times 10^{-27} \text{ erg s}^{-1}$  and the speed of light,  $c = 2.998 \times 10^{18} \text{ \AA s}^{-1}$ , using Angstroms to match wavelength units. The full conversion between the logarithmic flux presented in the BT-Settl model spectra to flux in photons  $\text{cm}^{-2} \text{s}^{-1} \text{\AA}^{-1}$  can thus be expressed as  $F_{photon} = \frac{hc}{\lambda} 10^{F_{log,cgs} + DF}$ .

The wavelength intervals of the transmission curve and model spectrum are not identical; across the 4700 to 285500 range of our filters, the wavelength interval in the model spectrum varies from 0.05 to 2  $\text{\AA}$ , whereas our filter traces are as coarse as 50  $\text{\AA}$ . We account for this mismatch by performing a linear interpolation of filter trace points such that each wavelength in the model spectrum has a corresponding filter transmission value. The resulting model flux through the filter is estimated by a trapezoidal sum of the product of the transmission curve and the model flux divided by the trapezoidal sum of the transmission curve. Recall the definition of the trapezoidal sum and its

relation to the usual integral:

$$\int_{x=a}^b f(x)dx \sim \lim_{\Delta x \rightarrow 0} \sum_{i=a+1}^b \frac{f(x_{i-1}) + f(x_i)}{2} \Delta x_i \quad (4.1)$$

We can utilize this definition to determine the filter flux according to the following equation:

$$F_{filter} = N \times \frac{\int_{\lambda_0}^{\lambda_N} F(\lambda)T(\lambda)d\lambda}{\int_{\lambda_0}^{\lambda_N} T(\lambda)d\lambda} \quad (4.2)$$

where the  $N$  is the number of angstroms spanned by the filter,  $F$  is model flux,  $\lambda$  is wavelength, and  $T$  is the percent transmission defined by the filter trace. For a discrete data set such as that exhibited by both the model spectrum and filter trace, we use the trapezoidal sum (note that the  $\frac{1}{2}$  factors cancel out).

$$F_{filter} = N \times \frac{\sum_{i=\lambda_1}^{\lambda_N} [F(\lambda_{i-1})T(\lambda_{i-1}) + F(\lambda_i)T(\lambda_i)]\Delta\lambda_i}{\sum_{i=\lambda_1}^{\lambda_N} [T(\lambda_{i-1}) + T(\lambda_i)]\Delta\lambda_i} \quad (4.3)$$

Although it is not ideal to apply a linear interpolation to the filter trace, the filter traces do not have abrupt changes in transmission values compared to changes in a model red dwarf spectrum that is rich with atomic lines and molecular bands. As such, rather than smooth or sample the model spectrum to better match the filter traces, we make the assumption that the filter traces can be reasonably linearly interpolated between given transmission points and leave the model spectrum unchanged.

- (2) *Total flux* at the stellar surface is calculated by integrating the entire model spectrum

using a trapezoidal sum (Eq. 4.1) as is done for the filter fluxes (Eqs. 4.2 and 4.3), but without incorporating any effects due to filter transmission curves. It is important to note that due to the finite nature of the model spectrum, the *total flux* calculated is not precisely the *bolometric flux* of the star being modeled. The range of each spectrum is from 10 to 9995000 Angstroms, roughly spanning mid-X-ray to ultra low frequency radio regimes, so it represents most, but not all, of a star’s emission. Furthermore, our data will only sample a portion of this spectrum, and the model spectrum will be adjusted slightly when we determine bolometric flux to reflect the observed photometry, as described in §4.3.4. We include this total flux in our output nonetheless, and because this step is completely independent of the filters, we opt to keep the model flux in cgs units.

(3) & (4) *Apparent magnitudes and colors* are determined according to the usual magnitude equation, simplified in the case of comparison with the zero point,

$$m = -2.5 \log_{10} \frac{F}{F_{ZP}} \quad (4.4)$$

Here we seek to calculate apparent magnitude,  $m$ , from the model, having already determined the flux,  $F$ , as described above and using the zero point for the given filter,  $F_{ZP}$ . For the 2MASS and *WISE* filters, we use the same filter traces as Dieterich et al. (2014) and calculate zero points similar to those found in that paper, with three differences: (a) The zero points are scaled by  $10^8$  to correspond to the flux at the surface of the star. This was unnecessary in Dieterich et al. (2014) because only

model colors were used, whereas we also use model fluxes and magnitudes. (b) The *W3* filter trace has been corrected. There was a mismatch between the trace used by Dieterich et al. (2014) and that listed online as the photon-counting relative system response curve<sup>2</sup>. (c) The *VRI* filter traces from Dieterich et al. (2014) are on the Bessell system. The Johnson-Kron-Cousins *VRI* filter traces used here come from the CTIO/SMARTS 0.9m filters in Chile, namely the *V*, *R*, and *I* Tek #2 filter set, used by the RECONS team since 1999 and photometry observations for the past two decades (see Figure 3.1 and Table 3.3 with filter traces). These filter traces correspond to the filters used to obtain a majority of our optical photometry data in the southern sky. Although our optical photometry from the northern sky comes from two other telescopes, our photometry from all three telescopes is in agreement to within  $\lesssim 0.05$  mag, so we simplify our procedure by using the same filter traces (see §3.2). All other photometry, gathered from the sources listed in §3.2, have similar filter traces given that *VRI* photometry are generally consistent to 0.03 mag (Winters et al. 2011, 2019). Zero points used in Equation 4.4 are listed in the final row of Table 3.1, which we describe here. Columns 1–2 list the property reported and the corresponding units. Columns 3–11 contain the photometry values in magnitudes for *VRIJHKW1W2W3* bands, and Column 12 lists the reference for these values. The first three rows of data contain the magnitudes of Vega in the Johnson-Kron-Cousins *VRI* bands, followed by the isophotal fluxes through the 2MASS *JHK* bands and *W1W2W3* bands. The

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<sup>2</sup>[http://wise2.ipac.caltech.edu/docs/release/prelim/expsup/sec4\\_3g.html](http://wise2.ipac.caltech.edu/docs/release/prelim/expsup/sec4_3g.html)

isophotal flux as described by Cohen et al. (2003); Jarrett et al. (2011) is defined to be mean flux per unit wavelength or frequency of a zero magnitude source through the filter. Next we include the results from Dieterich et al. (2014), but reiterate that those values are for the Bessell *VRI* filters and that the *W3* filter trace was incorrect; units are photon fluxes per angstrom. We scale their values by  $10^8$  to correspond to the surface of the star. The Vega magnitudes and isophotal fluxes from Rows 1–3 are used to calculate Rows 5–7. In Row 5 the flux per Angstrom of Vega through each filter has been calculated (Eq. 4.3) by applying the filter traces to the CALSPEC model Vega<sup>3</sup>. We include these in flux per Angstrom units for comparison to Dieterich et al. (2014); note that our fluxes differ from theirs by less than 3% in all cases except *W3*, which differs by 9%. Next, the zero point per Angstrom is calculated for all 9 filters (Row 6). They are calculated for *VRI* by substituting the Vega flux and Bessel (1990) magnitude values into the zero point flux equation (4.4). For *JHKW1W2W3* the values are calculated by scaling isophotal flux (converted to units of photons  $\text{cm}^{-2} \text{s}^{-1}$ ) by the filter function,

$$F_{ZP,filter} = F_{iso,filter} \frac{\int_{\lambda_0}^{\lambda_N} \lambda T(\lambda) d\lambda}{\int_{\lambda_0}^{\lambda_N} T(\lambda) d\lambda} \quad (4.5)$$

To calculate the final zero points used in this work (Row 7), we scale the non-integrated values by the wavelength range of the the filter traces in Angstroms. These final values are used in Equation 4.4 for each model spectrum to calculate the “observed” model

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<sup>3</sup><http://www.stsci.edu/hst/observatory/crds/calspec.html>

fluxes.

Table 4.1: Photometric Bandpass Properties

| Property               | Units                                                          | <i>V</i> | <i>R</i> | <i>I</i> | <i>J</i> | <i>H</i> | <i>K</i> | <i>W1</i> | <i>W2</i> | <i>W3</i> | Reference               |
|------------------------|----------------------------------------------------------------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-------------------------|
| Vega Mag               | mag                                                            | 0.030    | 0.039    | 0.035    | -        | -        | -        | -         | -         | -         | Bessel (1990)           |
| Isophotal Flux         | $10^{-11} \text{ erg cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}$ | -        | -        | -        | 31.29    | 11.33    | 4.283    | -         | -         | -         | Cohen et al. (2003)     |
| Isophotal Flux         | $10^{-14} \text{ erg cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}$ | -        | -        | -        | -        | -        | -        | 817.9     | 241.5     | 6.515     | Jarrett et al. (2011)   |
| Mean ZP <sup>a</sup>   | $\text{phot cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}$          | 1014.6   | 715.58   | 471.72   | 195.48   | 94.186   | 46.692   | 14.000    | 5.6557    | 0.38273   | Dieterich et al. (2014) |
| Vega Flux <sup>b</sup> | $\text{phot cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}$          | 985.90   | 695.26   | 445.04   | 193.21   | 93.837   | 46.377   | 13.671    | 5.5547    | 0.35462   | This Work               |
| Mean ZP <sup>b</sup>   | $\text{phot cm}^{-2} \text{ s}^{-1} \text{ \AA}^{-1}$          | 1013.5   | 720.69   | 459.62   | 195.48   | 94.186   | 46.692   | 14.001    | 5.6556    | 0.42016   | This Work               |
| Final ZP <sup>c</sup>  | $10^5 \text{ phot cm}^{-2} \text{ s}^{-1}$                     | 20.211   | 25.828   | 11.200   | 7.5847   | 5.8857   | 2.3295   | 5.5585    | 3.0936    | 1.0933    | This Work               |

- a (1) Dieterich et al. (2014) use Bessell *VRI* filters. In this work we use Johnson-Kron-Cousins *VRI* filters. (2) Simply for comparison, we report their values of mean zero point (ZP) scaled to correspond to the surface of the star (by a factor of  $10^8$ ) — this was not necessary for Dieterich et al. (2014) who utilize model *colors*, but not *magnitudes*. (3) In Dieterich et al. (2014) these values are mistakenly cited as having units of photons  $\text{cm}^{-2} \text{ s}^{-1}$ . In truth they are the mean zero point in each filter. We show our results in these units next for comparison. (4) The difference between our *W3* zero point and that calculated by Dieterich et al. (2014) results from an incorrect filter trace used in that study.
- b The mean zero point for comparison to Dieterich et al. (2014). Results for Vega are close to our zero point values, as expected.
- c Integrated across (equivalently the mean scaled by) the full wavelength range of the filters.

In summary, CTIO/SMARTS Johnson-Kron-Cousins *VRI*, 2MASS *JHK*, and *WISE* *W1*, *W2*, and *W3* filter traces are applied to BT-Settl model spectra in photon flux units to obtain filter fluxes for each model, which are then used to determine model magnitudes and colors. Bolometric flux is estimated by integrating the entire spectrum in cgs units. Of note, we deviate from Dieterich et al. (2014) in (a) our *VRI* filter system, (b) *W3* filter trace, (c) scaling of our zero points, (d) incorporation of model fluxes and magnitudes in addition to model colors, and (e) interpolation of *only* the filter traces, rather than the section of model spectrum, at the corresponding wavelengths.



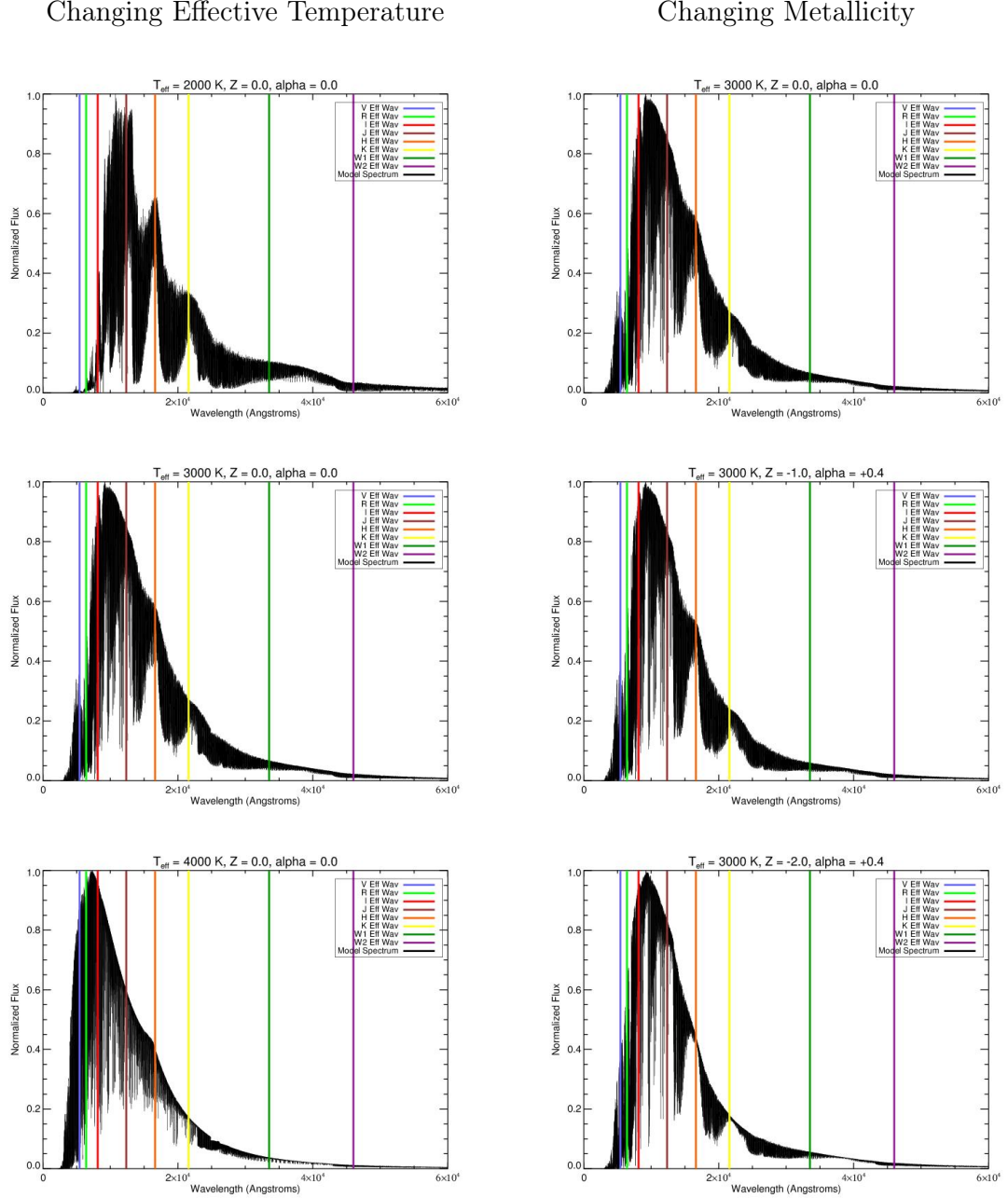


Figure 4.2: Here we compare the locations of each filter (except  $W3$  which is far to the right at an effective wavelength of  $11.5608 \times 10^4 \text{ \AA}$ ) to normalized model spectra corresponding to three different temperatures (2000 K, 3000 K, and 4000 K) in the left panels and three different metallicities (0, -1, and -2) in the right panels. Note that for metallicity -1 and -2, alpha enhancement of +0.4 is the only option and is therefore used above.

Figure 4.2 demonstrates the changes in the model spectra across different effective temperatures and metallicities. For comparison, we have overlaid the effective wavelengths of 8 of our 9 passbands; *W3* corresponds to  $\sim 12 \mu\text{m}$  and goes well beyond the red end of our plots. In the left three panels, we see as the temperature changes from 4000 K to 2000 K, the wavelength corresponding to the peak flux changes from its location between the *R* and *I* bands to within the *J* band, a factor of almost 2 in wavelength, as lining up with the predictions of Wien’s Law in the idealized case of the simpler blackbody spectrum. Also note that the overall shape of the spectrum becomes more complex with decreasing temperature, and the increase range of fluxes at roughly the same wavelengths demonstrates the presence of many spectral absorption features.

The right three panels highlight the change in the model spectrum with different metallicities. With decreasing metallicity, the peak flux wavelength decreases slightly, moving to bluer wavelengths. At the lowest metallicity listed here,  $Z = -2$ , the Rayleigh Jeans tail becomes bluer, less luminous, and more of a smooth, unchanging function than in the  $Z = -1$  and  $Z = 0$  cases, perhaps because it contains the fewest metals that might produce these features. There appears to be a stark increase in flux at *V* and *R* bands (nearly  $\sim 30\%$  and  $100\%$ , respectively) and  $\sim 40\%$  and  $60\%$  decreases at *H* and *K* bands with decreasing metallicity.

Because metallicity plays a significant role in the shape of the spectrum, it should be noted that in the cases of metal-poor stars, our fundamental parameter results may not be as accurate as our zero metallicity stars because we have limited ourselves to metallicities

-0.5 to +0.5 — otherwise, the procedure did not produce results comparable to studies performed before this one. It is also important to acknowledge that different filters probe different spectral features depending on both the metallicity and temperature of the star. Some filters will be more sensitive to changes in these values than others, as we will discuss in §4.2.

### 4.3 Determining Fundamental Parameters

#### 4.3.1 General Procedure

The algorithm we have developed to carry out the calculations of fundamental parameters is called *MODELFIT*. Observed *VRIJHKW1W2W3* magnitudes are read into the *MODELFIT* program for each star, as well as magnitude errors and *WISE* saturation levels and signal-to-noise ratios. Parallaxes and errors, object names, and sample IDs (young, main sequence, or subdwarf) are also read in.

By virtue of our sample selection criteria, all stars must have a  $V - K$  color. We use this single color to determine which subset (“warm” or “cool”) of the 36 possible color combinations are best used for the star in question (see §4.3.2 for more details).

Once the color subset is chosen for a given star, a (*model color* – *observed color*) residual-minimizing iterative method is used to calculate the best interpolated effective temperature and corresponding surface gravity, metallicity, and alpha enhancement within the range of the model grid (see §4.3.3).

Finally, the spectrum closest to our result for a star is used to determine luminosity via an

adjustment of the spectrum to match the observed flux (see §4.3.4). Once the effective temperature and luminosity are calculated, the radius follows according to the Stefan-Boltzmann Law.

#### 4.3.2 Color Selection

There are many publications that provide color-temperature relations, e.g., Saxner & Hammarback (1985), Bessell et al. (1998), Choi et al. (1998), Houdashelt et al. (2000), Sekiguchi & Fukugita (2000), Clem et al. (2004), Casagrande et al. (2010), Boyajian et al. (2012a), Boyajian et al. (2012b), Boyajian et al. (2013), Mann et al. (2015), and Adams et al. (2018). However, in active stars, starspots may disrupt the color of the star due to changes in the spectrum introduced by cooler regions on the stellar surface. In addition, spectral features can change dramatically as a function of spectral type — different filters and colors exhibit different sensitivities to these changes. Thus, it is prudent to probe as wide a portion of a star’s spectral energy distribution (SED) as possible to decipher stellar effective temperature and flux. In this work, we use fluxes spanning the  $V$  ( $0.55 \mu\text{m}$ ) to  $W3$  ( $12 \mu\text{m}$ ) bands, which incorporate  $\sim 95\%$  of the flux emitted by an M0V star and  $\sim 99.9\%$  emitted by an L2.5V star.

Across our 9 bands of photometry ( $VRIJHKW1W2W3$ ) there are 36 unique color combinations. These can be categorized into subsets that include two optical bands (“ $opt - opt$ ”), two infrared bands (“ $IR - IR$ ”), or one of each (“ $opt - IR$ ”), of which there are 3, 15, and 18 combinations, respectively. As discussed by Dieterich et al. (2014), not all colors are equal in their utility for discerning red dwarf fundamental parameters from the models; colors

removed from their procedure included all the  $IR - IR$  colors and the  $I - J$  band. Because our methodologies are not identical and our sample is larger and spans a greater range of spectral types, here we re-evaluate the utility of all 36 color options for various types of red dwarfs. To do this, it is ideal to use a subsample of the stars with the highest quality data possible to ensure there are no outliers skewing the apparent utility of any of the colors. For this check, we selected a subset of 238 stars in the southern sample that satisfied the following criteria:

- (a) main sequence star
- (b)  $JHKW1W2W3$  photometry errors  $< 0.1$  mag
- (c)  $W1$ ,  $W2$ , and  $W3$  signal-to-noise values  $\geq 10$
- (d)  $W1$ ,  $W2$ , and  $W3$  saturation levels of  $< 10\%$  of pixels

Representative  $VRI$  photometry errors of 0.03 mag have been adopted for most stars, as described in previous papers in the *The Solar Neighborhood* series (see Jao et al. (2005) and Winters et al. (2011) for reduction procedures and error discussions). As such, we have no optical photometry error criteria in our above list. Unlike the infrared photometry, for which we are dependent upon survey missions, we had the luxury of being able to obtain our own photometry if no data were available or if we found an issue with published data. To ensure high-quality optical data, we have carefully vetted the available  $VRI$  photometry and/or taken new observations to ensure the data are consistent from multiple nights.

One particularly important consideration for the *VRI* data is that we were able to integrate longer on fainter stars to reduce photometric errors, rather than having to maintain identical exposure times for all stars, as is typically done in sky surveys. Nonetheless, we have found that our *V* band photometry errors rise with increasing magnitude starting at  $V \sim 18$ , with errors occasionally as large as 0.3 mag as we approach  $V \sim 20$ –21. Nonetheless, to enhance our understanding of radii for the coolest stars, we opt to include the targets with  $V > 18$  despite *V* band photometry that could be of lesser quality than the rest of the sample. For example, in the southern sample there are 38 stars fainter than  $V = 18$ . These stars have  $V - K = 7.8$ –10.1, whereas if we include only those brighter than  $V = 18$ , there are only 5 stars spanning  $V - K = 7.8$ –8.9 (recall the overall sample includes stars as late-type as  $V - K = 10.5$ ).

Our ability to span the full range of the sample is valuable because it is necessary to map out which colors work best for different stellar “regimes.” As described below, some colors work better for “warm” stars, whereas a different set of colors works for “cool” stars. There are several reasons, some of which are expanded upon in Dieterich et al. (2014) and Filippazzo et al. (2015), why different sets of colors are appropriate for different types of red dwarfs:

- (1) Spectral features change dramatically from M0.0V to L2.5V, with molecular lines complicating the spectra of the latest-type stars.
- (2) As effective temperatures change on the order of 1000 K, the peak wavelengths of the stellar spectra shift as well; because the filter bandpasses remain the same for all stars,

the portion of the spectral energy distribution each filter probes changes with stellar temperature, in some cases overlapping with the Rayleigh-Jeans tail for a warmer star, but landing shorter than the peak wavelength of a cooler star.

- (3) The transition between partially and fully convective energy transport is near spectral type M3.0V. This transition is not fully understood, and it is hard to predict what effects this might have on the shape of a spectrum. Just this past year, Jao et al. (2018) used data from *Gaia* DR2 to discern a never-before seen “gap” in the main sequence postulated to be caused by this transition, corresponding to a mass of  $\sim 0.35 M_{\odot}$  and in agreement with several model predictions. In contrast, Rabus et al. (2019) report detecting a gap in the effective temperature-radius relation of M dwarfs at  $\sim 0.23 M_{\odot}$  and suggest it corresponds to this transition. We provide counter-evidence for the latter result in §5.3.

- (4) The latest-type main sequence stars that have been interferometrically observed are Proxima Centauri (M5.0V), as described by Ségransan et al. (2003), Demory et al. (2009), and Rabus et al. (2019), and GJ 406 (M5.5V) discussed by Rabus et al. (2019). This means that the radii adopted for later-type stars (in non-eclipsing systems) are model-dependent — we have no directly observed radii to compare our results to, and it cannot be assumed that the latest-type red dwarfs follow a trend that can be extrapolated from results for their earlier-type counterparts. Additionally, the BT-Settl models, known for their superior accuracy for later-type stars compared to other models, appear to drop off in accuracy with decreasing stellar effective temperature

(Rajpurohit et al. 2012). Thus, by virtue of the limitations of both observations and models, the accuracy of derived fundamental parameters for later-type stars with our method is inherently limited by the tools with which we have to work.

Given these reasons, we do not assume that our best procedure for earlier-type, warmer, stars will work equally well for later-type, cooler, stars. We also acknowledge that our accuracy and error bars are necessarily inherently worse for later-type red dwarfs.

We now proceed with our sample of 238 red dwarfs that have complete sets of high-quality photometry, as described by the criteria above, with the additional *caveat* about stars with  $V > 18$ . Photometry for the stars was run through the *MODELFIT* procedure, using all 36 color combinations. As described further in §4.3.3, the final temperature is the result of a combination of each color’s independent temperature estimate. Part way through this procedure, an output file is generated that contains the temperature result for each color ( $T_{eff,color}$ ), and a median value can be calculated ( $T_{eff,median}$ ). From these temperatures, we derive two quantities for each color to evaluate its utility: (i) The median temperature offset for each color serves to check how far that color’s temperature result typically is from  $T_{eff,median}$ , i.e., how much of an outlier it is. (ii) The mean absolute deviation from  $T_{eff,median}$  ( $MAD, \overline{|T_{eff,color} - T_{eff,median}|}$ ) serves to indicate how consistent the offset is between  $T_{eff,color}$  and  $T_{eff,median}$ , i.e., how inconsistent of an outlier it is. Ideally, both of these quantities are low. This was done for the 238 stars, and the results are plotted in Figure 4.3; we plot each color’s offset from the median effective temperature,  $|T_{eff,color} - T_{eff,median}|$ ,



versus observed  $V - K$ <sup>4</sup>. The idea behind the plots shown in Figure 4.3 is to reveal colors that consistently produce temperatures that are outliers compared to the rest. Corroborating the findings of Dieterich et al. (2014), we find that the 15  $IR - IR$  colors are frequent outliers compared to other color combinations. When these colors are removed, the code is re-run several more times until we have the 19 remaining colors shown in Figure 4.4. In those 19 panels, we identify two populations of stars that we designate as “warm” and “cool”, divided at  $V - K = 7.0$ . Henceforth, stars in each subsample pass through different “doors” in the procedure utilizing the set of colors assigned to the corresponding subsample.

Here we explain the selection process of adopting the colors outlined in further detail in Table 4.2 for warm and cool stars. The first row of column titles (e.g., Step 1) simply corresponds to the color selection step. The second row describes which and how many stars we are assessing in the corresponding column (e.g., “Warm 187” means we are looking at the warm subset only, comprised of 187 stars). The third row of titles informs us of how many color combinations have passed all previous cuts and are therefore used in the procedure for that column. The fourth row of column titles indicates what type of values are in the column below (e.g. the “Color” column has  $V - R$ ,  $V - I$ , etc.).

Step 1 of Table 4.2 corresponds to Figure 4.3 and demonstrates our results when we run the full 238 stars through the procedure using all colors. All  $IR - IR$  colors are eliminated according to the following criteria: (1) median temperature offset  $\geq 200$  K, indicating that the color is a poor probe of temperature, OR (2) offset  $\geq 100$  K and MAD  $\gtrsim 100$  K,

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<sup>4</sup> $V - K$  has been used by the RECONS team for the last two decades as the go-to color for distinguishing between stars of different temperatures without spectral type information; it spans the largest wavelength range between our optical and 2MASS photometry.  $V - K$  also defines our sample for this work.

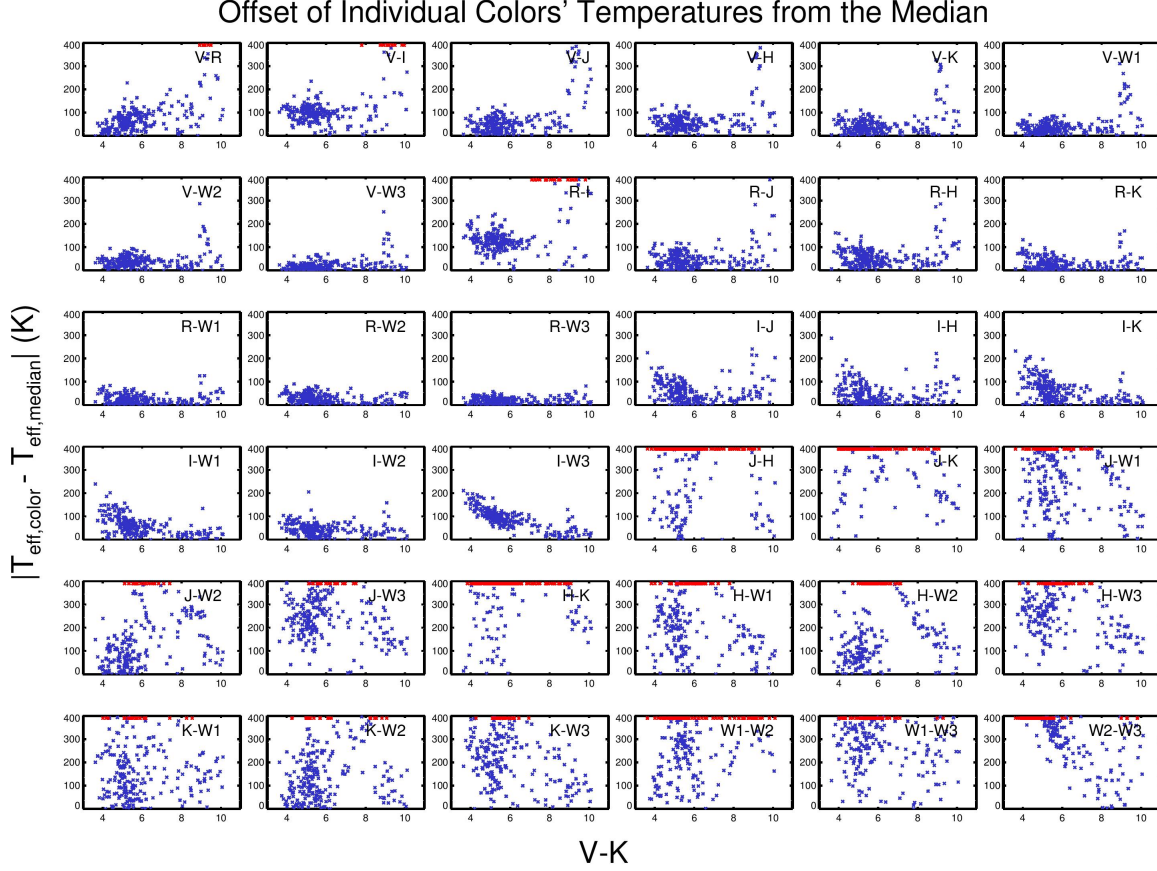


Figure 4.3: Using our set of 238 stars with high-quality photometry (§4.3.2), here we evaluate the utility of each color in deciphering accurate stellar effective temperatures, calculated to be the mean of temperature results produced by each color. For each star, a *median* (to avoid drifts caused by significant outliers) temperature is derived using all 36 colors. Shown in each color panel are 238 points representing the effective temperature offsets between each star’s effective temperature determined using that color and its median temperature value. Using the ensemble of stars, we calculate the median offset and median absolute deviation value for all 36 possible colors; these are reported in Table 4.2. Ideally, all 36 colors would yield identical temperature results. However, as illustrated above, the  $IR - IR$  colors, especially, often deviate on the order of hundreds (and indeed thousands) of Kelvin. Red points indicate data points above the 400 K maximum plot range. The issue with  $IR - IR$  colors is demonstrated numerically in Table 4.2. These colors are eliminated from our procedure, as discussed in Section 4.3.2.

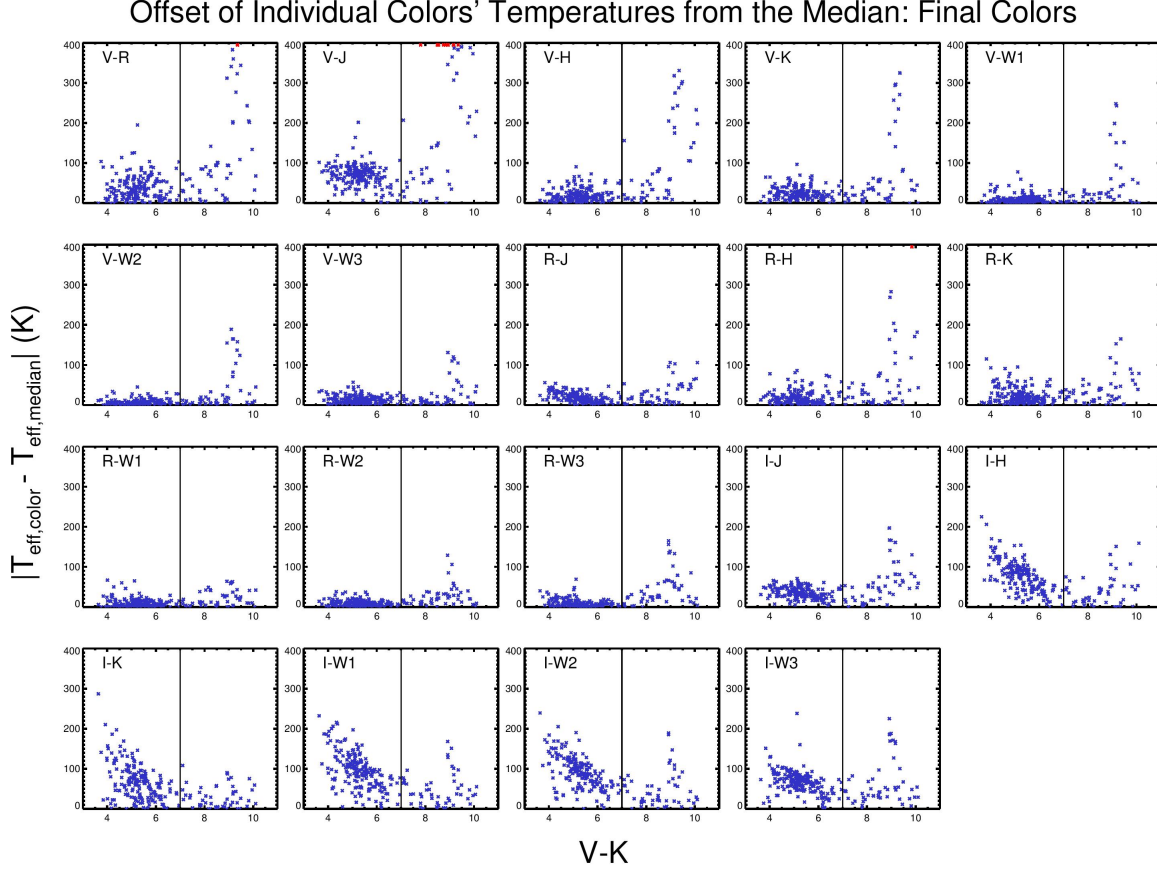


Figure 4.4: The distributions of temperature offsets for the 238 stars with high-quality photometry are shown after determining median temperatures for stars using the 19 adopted colors —  $V - I$ ,  $R - I$ , and all  $IR - IR$  colors were eliminated. See details about the colors in Table 4.2 and described in §4.3.2. The larger the  $|T_{eff,color} - T_{eff,median}|$  values and spread in those values, the larger an outlier that color's temperature result typically is from the others. Ultimately, different subsets of these colors are used for warmer stars at  $V - K < 7.0$  (9:  $V - J$ ,  $V - H$ ,  $V - K$ ,  $V - W1$ ,  $V - W2$ ,  $R - J$ ,  $R - K$ ,  $R - W1$ , and  $R - W2$ ) and cooler stars at  $V - K \geq 7.0$  (14:  $V - K$ ,  $V - W1$ ,  $V - W2$ ,  $V - W3$ ,  $R - H$ ,  $R - K$ ,  $R - W1$ ,  $R - W2$ ,  $R - W3$ ,  $I - J$ ,  $I - H$ ,  $I - K$ ,  $I - W1$ , and  $I - W2$ ) to optimize the accuracy of the final temperature results.

indicating that the color is an inconsistently reliable indicator of temperature. In Figure 4.3, it is visually obvious that the  $IR - IR$  colors exhibit large spreads with high offsets from the

Table 4.2: Typical Offsets from All-Color Median Effective Temperature

| .                | Step 1  |       | Step 2   |      | Step 3  |       | Step 4   |      |
|------------------|---------|-------|----------|------|---------|-------|----------|------|
| Which Stars:     | All 238 |       | Warm 187 |      | Cool 51 |       | Warm 187 |      |
| Number of Colors | 36      |       | 21       |      | 21      |       | 13       |      |
|                  |         |       |          |      |         |       | FINAL 14 |      |
|                  |         |       |          |      |         |       | FINAL 9  |      |
| <i>Color</i>     | Median  | MAD   | Median   | MAD  | Median  | MAD   | Median   | MAD  |
| $V - R$          | 68      | 47.6  | 29       | 23.4 | 78      | 89.3  | 28       | 35.0 |
| $V - I$          | 102     | 48.6  | 70       | 21.5 | 147     | 141.8 | .        | .    |
| $V - J$          | 51      | 40.0  | 16       | 11.8 | 39      | 80.1  | 12       | 14.8 |
| $V - H$          | 54      | 33.3  | 23       | 11.9 | 35      | 58.9  | 17       | 19.4 |
| $V - K$          | 34      | 28.6  | 7        | 7.2  | 23      | 36.8  | 4        | 6.1  |
| $V - W1$         | 31      | 24.6  | 5        | 4.9  | 15      | 34.9  | 4        | 6.2  |
| $V - W2$         | 36      | 21.0  | 10       | 7.8  | 10      | 24.2  | 5        | 7.4  |
| $V - W3$         | 15      | 15.8  | 19       | 10.2 | 18      | 20.8  | 26       | 29.1 |
| $R - I$          | 129     | 63.1  | 97       | 28.4 | 273     | 140.1 | .        | .    |
| $R - J$          | 38      | 29.4  | 15       | 13.2 | 28      | 55.3  | 11       | 16.2 |
| $R - H$          | 48      | 29.6  | 21       | 16.8 | 25      | 29.7  | 15       | 21.3 |
| $R - K$          | 24      | 21.5  | 8        | 7.7  | 19      | 17.1  | 12       | 13.8 |
| $R - W1$         | 20      | 16.3  | 6        | 5.8  | 14      | 14.2  | 12       | 14.2 |
| $R - W2$         | 26      | 16.2  | 5        | 7.0  | 29      | 24.6  | 6        | 8.4  |
| $R - W3$         | 16      | 12.0  | 36       | 12.1 | 45      | 29.1  | 47       | 47.1 |
| $I - J$          | 47      | 36.0  | 79       | 31.9 | 40      | 34.3  | .        | .    |
| $I - H$          | 35      | 34.2  | 58       | 35.5 | 23      | 22.9  | .        | .    |
| $I - K$          | 53      | 37.9  | 89       | 36.6 | 31      | 28.7  | .        | .    |
| $I - W1$         | 54      | 31.6  | 88       | 32.1 | 22      | 31.2  | .        | .    |
| $I - W2$         | 41      | 20.1  | 67       | 21.5 | 45      | 35.9  | .        | .    |
| $I - W3$         | 94      | 33.7  | 126      | 30.1 | 59      | 32.6  | .        | .    |
| $J - H$          | 395     | 95.0  | .        | .    | .       | .     | .        | .    |
| $J - K$          | 395     | 45.5  | .        | .    | .       | .     | .        | .    |
| $J - W1$         | 284     | 108.0 | .        | .    | .       | .     | .        | .    |
| $J - W2$         | 101     | 98.4  | .        | .    | .       | .     | .        | .    |
| $J - W3$         | 247     | 75.1  | .        | .    | .       | .     | .        | .    |
| $H - K$          | 395     | 50.0  | .        | .    | .       | .     | .        | .    |
| $H - W1$         | 228     | 108.9 | .        | .    | .       | .     | .        | .    |
| $H - W2$         | 152     | 114.9 | .        | .    | .       | .     | .        | .    |
| $H - W3$         | 285     | 87.2  | .        | .    | .       | .     | .        | .    |
| $K - W1$         | 147     | 99.4  | .        | .    | .       | .     | .        | .    |
| $K - W2$         | 135     | 97.3  | .        | .    | .       | .     | .        | .    |
| $K - W3$         | 226     | 95.5  | .        | .    | .       | .     | .        | .    |
| $W1 - W2$        | 306     | 100.4 | .        | .    | .       | .     | .        | .    |
| $W1 - W3$        | 308     | 88.2  | .        | .    | .       | .     | .        | .    |

Starting with all the color combination options in the first column, colors are eliminated iteratively, and the sample is split into two subsamples, until the final two columns containing the final colors used to derive effective temperatures for each subsample. (see §4.3.2).

median temperatures. We postulate that these colors are too far down the Rayleigh-Jeans tail to differentiate well between temperatures.

Step 2 of Table 4.2 demonstrates our results for the remaining colors when we split the

sample into warmer and cooler stars at  $V - K = 7.0$ . It is worth noting that without inclusion of the 38 stars with  $V > 18$  (and typically higher optical photometry errors), there would be only 13 stars rather than 51 stars with  $V - K \geq 7$  available for selecting the best cool star color set.

Step 3 is used to eliminate colors with median temperature offsets or MADs  $\geq 50$  K. This is not done in Step 1 because the median effective temperature values were skewed by the  $IR - IR$  color effective temperature results. It is worth noting that close to the border of the criteria resulting in the elimination of the  $IR - IR$  colors are the  $V - I$  and  $R - I$  colors; these are eliminated for both warm and cool stars in Step 3, reducing the eligible color set to 19. There are likely several contributing factors that make the  $V - I$  and  $R - I$  colors unsuitable for deriving effective temperature: (1) there are several metallicity-sensitive absorption lines, including those from MgH, CaH, and TiO. Because we do not fully address metallicity in our procedure (see §4.1), changes in these features may have an unaccounted for effect on our results. (2) Another issue worth noting is that these bands are very close together in wavelength, and therefore do not probe a large portion of the stellar spectrum, decreasing their ability to map changes in the spectrum across different spectral types. Note that these two colors are not shown in Figure 4.4, which demonstrates the results for the 19 remaining colors once  $V - I$ ,  $R - I$ , and all  $IR - IR$  colors are excluded. Step 3 of Table 4.2 contains the median temperature offsets and MADs of the remaining warm star colors and cool star colors. The “Cool” column contains the final set of 14 colors used for stars of  $V - K \geq 7.0$ :  $V - K$ ,  $V - W1$ ,  $V - W2$ ,  $V - W3$ ,  $R - H$ ,  $R - K$ ,  $R - W1$ ,  $R - W2$ ,  $R - W3$ ,

$I - J$ ,  $I - H$ ,  $I - K$ ,  $I - W1$ , and  $I - W2$ . Eliminating additional colors reduced the match of our results to those from other works.

Finally, Step 4 is used to eliminate any warm star colors with a median temperature offset or  $\text{MAD} \geq 20$  K. The final column of Table 4.2 contains the median temperature offsets and MADs of the final set of 9 colors for stars with  $V - K < 7.0$ :  $V - J$ ,  $V - H$ ,  $V - K$ ,  $V - W1$ ,  $V - W2$ ,  $R - J$ ,  $R - K$ ,  $R - W1$ , and  $R - W2$ . Note that  $I$  and  $W3$  band photometry are unnecessary for the warmer stars.

#### *4.3.3 Determining Effective Temperature, Metallicity, Surface Gravity, and Alpha Enhancement*

The first wave of fundamental parameters to be determined includes effective temperature, metallicity, surface gravity, and alpha enhancement, constrained in that order. Our technique utilizes an iterative least squares method in which the general procedure is that for every model a “reduced square residual” (henceforth “RSR”) is calculated for every color (e.g.,  $V - R$ ,  $V - I$ , ...,  $R - I$ ,  $R - J$ , ..., etc.) by comparing the model and observed colors:  $(\frac{\text{model color} - \text{observed color}}{\text{observed color error}})^2$ . In theory the best-fitting model spectrum is the one with the lowest RSR across all color combinations. However, due to occasional local minima and some model parameters being poorly constrained by our filters and/or modeled with insufficient accuracy or precision, the actual procedure turns out to be not so straightforward.

Temperature and metallicity appear to be the two parameters best probed by the combination of our  $VRIJHKW1W2W3$  photometry and the BT-Settl model grid. Varying surface gravity appears to have negligible effects on the overall RSR values, in line with find-

ings by Leggett et al. (1998, 2000), and alpha enhancement has a maximum of three options in this version of the grid (fewer in some sections). Through trial and error, the most accurate (see §5.2) means of determining the four parameters appears to be to let alpha enhancement float and set two of the three remaining parameters as constant for a given iteration as the third parameter is calculated — e.g., when determining temperature, metallicity and surface gravity are set constant so that the best temperature can be calculated independently of the other two parameters. Because surface gravity is the remaining parameter least probed by our method, and temperature has a far broader range of options (1500-5000 K at 50 K intervals vs.  $-0.5$  to  $0.5$  dex at 0.5 dex intervals) we constrain temperature, metallicity, surface gravity, and alpha enhancement in that order, as detailed carefully next. Bear in mind that the grid is discrete, and our calculated values are not necessarily equal to these discrete values, as explained below.

Step 1 Calculate a temperature,  $T_1$ , with metallicity = 0 and surface gravity = 5.0.

Step 2 Calculate a metallicity,  $M_1$ , with temperature set to the grid value closest to  $T_1$  and surface gravity = 5.0.

Step 3 Repeat Steps 1 (for  $T_2$ ) and 2 (for  $M_2$ ), using the grid values closest to the most recent calculation (i.e.  $M_1$ , and then  $T_2$ ). This is to account for the possibility that the starting temperature and/or metallicity are far from the best fit.

Step 4 Calculate surface gravity,  $G_1$ , with temperature and metallicity set to the grid values closest to the just-calculated  $T_2$  and  $M_2$ .

Step 5 Repeat steps 1-4 using the grid values closest to the calculated values, to account for a possibly inaccurate starting surface gravity.

Step 6 Repeat steps 1-3 to account for possible changes introduced by our new (and final) surface gravity value.

Step 7 Calculate the best alpha enhancement, which may simply be zero if that is the only option given the other parameters.

Summary The order of calculations is as follows:  $(T1 \Rightarrow M1 \Rightarrow T2 \Rightarrow M2 \Rightarrow G1) \Rightarrow (T3 \Rightarrow M3 \Rightarrow T4 \Rightarrow M4 \Rightarrow \mathbf{G2}) \Rightarrow (T5 \Rightarrow M5 \Rightarrow \mathbf{T6} \Rightarrow \mathbf{M6} \Rightarrow \mathbf{A1})$ , with alpha enhancement floating until the last step, and one parameter being constrained at a time, while the remaining two are set to either their initial value or the closest matching grid value to their most recently calculated value. The resulting boldfaced values — **T6**, **M6**, **G2**, and **A1** — comprises the final adopted set of stellar parameters.

For example, the first three calculation results may be as follows, with settings for the calculation in parentheses and setting values carried over from previous steps in italics:

$T1 = 3257 \text{ K}$  ( $M = 0 \text{ dex}$ ,  $G = 5.0$ ,  $A$  floating)

$M1 = +0.27 \text{ dex}$  ( $T = 3300 \text{ K}$ ,  $G = 5.0$ ,  $A$  floating)

$T2 = 3278 \text{ K}$  ( $M = +0.5 \text{ dex}$ ,  $G = 5.0$ ,  $A$  floating)

and so on. Perhaps the progression would be (with final values in bold):



T1 = 3257 K  $\Rightarrow$  M1 = +0.27 dex  $\Rightarrow$  T2 = 3278  $\Rightarrow$  M2 = +0.32 dex  $\Rightarrow$  G1 = 4.71  $\Rightarrow$  T3 = 3310 K  $\Rightarrow$  ...  $\Rightarrow$  **G2 = 4.68**  $\Rightarrow$  ...  $\Rightarrow$  **T6 = 3314 K**  $\Rightarrow$  **M6 = +0.36 dex**  $\Rightarrow$  **A1 = 0.17 dex**.

The word “calculate” has a slightly different meaning than its usual connotation in this context — the temperature, metallicity, surface gravity, and alpha enhancement are calculated to be the means of the results for each color combination, and the standard deviations are then assigned as errors. To clarify, each color combination (e.g.,  $V - R$ ) yields a best-fitting spectrum in the grid corresponding to the lowest RSR. The corresponding RSR value indicates how closely that best-fitting spectrum matches observations. However, it is unlikely that the properties of any given star are an exact match to any of the spectra in the grid (e.g., exactly 3000 K, metallicity = 0.0,  $\log g = 5.0$ , and alpha enhancement = 0.0). It is far more likely that the true values are somewhere between the values of the grid spectra. Also, because the other three parameters, especially surface gravity, aren’t as well-probed as temperature by the model spectra and/or our filters, it is important to sample each of the four parameters individually in order to decipher values between the grid spectra. Because our chosen parameter ranges have 41 effective temperature options, but only 3, 3, and 2 metallicity, surface gravity, and alpha enhancement options, respectively, as described next we employ a different procedure to determine effective temperature than for the other three properties. Henceforth, we are calculating one property at a time by applying these procedures to one color combination at a time.

One would expect RSRs to increase at model grid temperatures higher and lower than

the true temperature of the star; color is generally taken to be a proxy for temperature, so it makes sense that there would be stark mismatches when comparing observed colors to the colors exhibited by a model star that is hundreds of Kelvin warmer or cooler. As shown in Figure 4.5 for one star, 2MA1645-1319, for a sufficient number of model grid points, e.g., our maximum of 41 temperature options, plots of RSR for each of the 14 colors used for this cool star vs. effective temperature usually yield roughly parabolic-shaped curves. We show temperatures within 500 K of the temperature producing the lowest RSR to probe the minimum (marked by a red X in each panel of Figure 4.5). This range is chosen in an effort to (1) avoid some of the starkly different RSRs that occasionally show up at larger temperature offsets from the minimum, (2) include enough points (usually around 15) to generate a fit of sufficient quality, (3) avoid the dominance of the warmer side of the curve, smoother due to improved model quality, on the fit, and (4) avoid a lopsided curve sampled much more extensively on the warm or cool side for cooler and warmer stars respectively. Our 1500 to 5000 K range allows this wiggle room on either side of the true effective temperature, expected to be about 3900 to 1900 K for M0-L2.5 dwarfs (Pecaut & Mamajek 2013; Filippazzo et al. 2015).<sup>5</sup> Note that because the models are not perfect, especially for the lowest mass stars, and because the color mismatch between observed and model temperature may not be exactly quadratic with temperature, we opt to use a third order polynomial for these fits. This polynomial fit is applied to a 1 K interval array spanning 500 K on either side of the initial minimum (the grid temperature with the lowest RSR) using IDL's *POLY\_FIT* routine. The minimum is calculated to be at the point where the derivative of the polynomial

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<sup>5</sup>[www.pas.rochester.edu/~emamajek/EEM\\_dwarf\\_UBVIJHK\\_colors\\_Teff.txt](http://www.pas.rochester.edu/~emamajek/EEM_dwarf_UBVIJHK_colors_Teff.txt)

is zero and the concavity  $> 0$ .

As can be seen in Figure 4.5, this procedure is performed on all colors assigned to a given star (9 for warm stars and 14 for cool stars). At the end of this procedure, the mean value and standard deviation are recorded as the “final” temperature for that particular iteration through the temperature procedure. As the code moves on to the next steps (metallicity, surface gravity, and/or alpha enhancement), the grid value closest to this result (e.g., 2300 K for a final value of 2284 K) is used until the next iteration of the temperature procedure. When the entire iterative process is over, the final mean value and standard deviation are the final results for the star. As discussed in §6.2.1, our effective temperature results match established methods to determine low mass star effective temperatures, and compare well with previous efforts, while providing values for many more, and broader range of stars.

For the other three parameters there are not enough value options to fit a polynomial as was done for temperature — a maximum of only three values for metallicity = -0.5, 0.0, 0.5; three values for gravity = 4.5, 5.0, 5.5; and two values for alpha enhancement 0.0, 0.2. As we move from color to color, we still determine a best value for a given color, but it is prudent to give the extracted parameter values with high RSRs less weight than those with superior fits, rather than just taking the mean. Therefore, for each color (e.g.  $V - K$ ), the metallicity/surface gravity/alpha enhancement is determined according to the weighted mean of all  $N$  grid options,  $i$  (and  $j$ ), for that iteration, with the weights set to be the inverse

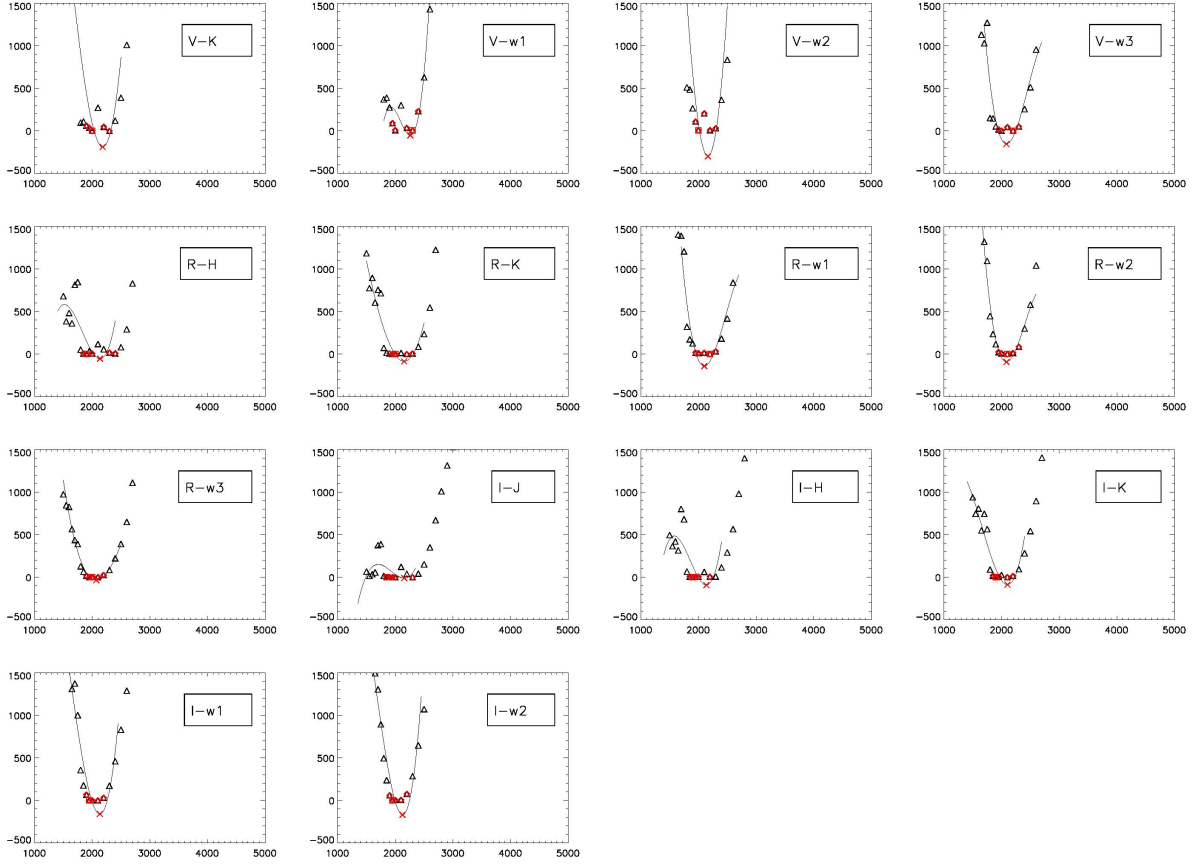


Figure 4.5: Example 3rd order polynomial fits to RSR vs. effective temperature for the cool star 2MA1645-1319 ( $V - K = 9.455$ ), using the procedure described in §4.3.3. The y-axis is intentionally cut off at  $RSR = 1500$  for consistency between plots. The red triangles mark the 5 temperatures with the lowest RSRs, and the X indicates the minimum of the fitted curve, which corresponds the final effective temperature and RSR for each color. The effective temperature of the star is taken to be the mean of these temperatures, and their standard deviation is assigned to be the error in the temperature determination.

of the RSR, e.g., for metallicity  $Z$ :

$$Z_{color} = \frac{\sum_{i=1}^N Z_i RSR_{color,i}^{-1}}{\sum_{j=1}^N RSR_{color,j}^{-1}} \quad (4.6)$$

This procedure is repeated for each color, and then the mean of the results for all the colors

is taken to be the final result for the star. The closest grid value is used as the fixed value for calculations of the remaining three parameters, as is done with effective temperature.

Although we do not find much consistency between metallicity reported from our procedure and what one would expect for young stars and cool subdwarfs, this is somewhat expected because we are using broadband filter measurements that are relatively insensitive to the oftentimes subtle features of low-mass star spectra for at least the milder versions of young red dwarfs and cool subdwarfs. In fact, as explained next, our best-fitting spectrum will need some adjustment to match the photometry observations used to determine the luminosities of the stars.

#### *4.3.4 Calculating Bolometric Flux, Luminosity, Radius, and Angular Diameter*

Our method to determine each star’s luminosity begins by identifying the closest-matching model spectrum to the results found in the previous part of the procedure (effective temperature, metallicity, surface gravity, and alpha enhancement). We then utilize the previously determined filter fluxes, magnitudes, and available trigonometric parallaxes to estimate the overall bolometric flux and, ultimately, luminosity.

It is currently not feasible to simply scale the closest-matching model spectrum to match the flux levels that would be observed from Earth. This procedure produced model-based magnitudes grossly at odds with the photometry because the models simply do not match the overall spectral shape across the broad wavelengths covered in this study (see, for example, Figure 2 in Dieterich et al. (2014)). This is likely part of the reason we must use only certain color combinations. As such, we have chosen to adopt a procedure nearly identical to that

laid out by Dieterich et al. (2014).

We apply an iterative correction to the model spectrum until the modified spectrum produces magnitudes within 0.03 mag for each of the *VRIJHKW1W2W3* observations. To do this, we determine a scaling factor,  $SF = 10^{-(mag_{observed} - mag_{model})/2.5}$ , for each magnitude, and perform a 10th order polynomial fit to the scale factors at the following points in wavelength space: (1) the bandpass effective wavelengths, (2) the bluest *V* and reddest *W3* bandpass wavelengths, (3) the wavelength equal to the mean of the *W2* and *W3* effective wavelengths (dubbed “W2.5”), and (4) halfway between the effective *W3* wavelength and end of the *W3* bandpass (dubbed “W3.5”). We then have the 13 wavelength points  $\lambda_{V_{start}}, \lambda_V, \lambda_R, \lambda_I, \lambda_J, \lambda_H, \lambda_K, \lambda_{W1}, \lambda_{W2}, \lambda_{W2.5} = \frac{\lambda_{W2} + \lambda_{W3}}{2}, \lambda_{W3_{eff}}, \lambda_{W3.5} = \frac{\lambda_{W3} + \lambda_{W3_{end}}}{2}$ , and  $\lambda_{W3_{end}}$ . Wavelength and scale factor values are reported in Table 4.3. Due to the broad range of the *W3* filter, without these additional points, the iterative procedure does not converge. We include two additional wavelength points within the *W3* bandpass (*W2.5* and *W3.5*) rather than one as done by Dieterich et al. (2014) because the bandpass has been corrected since that work, and is broader in wavelength range. As a result, one additional point was insufficient to ensure convergence during the fitting procedure. We also included the bluest wavelength of *V* and reddest wavelength of *W3* to mitigate extrapolation. It is also important to note that although a 10th order polynomial may overfit 13 data points, the goal is to generate a continuous scaling function to apply to (1) the entire spectrum spanned by our observed wavelength range, including (2) the spectral range of each individual waveband. The 10th order polynomial is one degree greater than the 9th order polynomial used

in Dieterich et al. (2014). The result of this procedure is a scale factor as a function of wavelength,  $SF(\lambda)$ , encompassing the wavelength range of the spectrum spanned by the filter traces.

Table 4.3: Wavelengths and Scale Factors Used in Bolometric Flux Procedure Polynomial Fit

| Filter                 | <i>V</i> Blue End | <i>V</i> | <i>R</i> | <i>I</i> | <i>J</i> | <i>H</i> | <i>K</i> | <i>W1</i> | <i>W2</i> | “ <i>W2.5</i> ”             | <i>W3</i> | “ <i>W3.5</i> ” | <i>W3</i> Red End |
|------------------------|-------------------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------------------------|-----------|-----------------|-------------------|
| Wavelength ( $\mu m$ ) | 0.4700            | 0.5438   | 0.6400   | 0.8118   | 1.235    | 1.662    | 2.159    | 3.3526    | 4.6028    | 8.0811                      | 11.5608   | 20.0554         | 28.5500           |
| Scale Factor           | $SF_V$            | $SF_V$   | $SF_R$   | $SF_I$   | $SF_J$   | $SF_H$   | $SF_K$   | $SF_{W1}$ | $SF_{W2}$ | $\frac{SF_{W2}+SF_{W3}}{2}$ | $SF_{W3}$ | $SF_{W3}$       | $SF_{W3}$         |

These are the wavelengths ( $\lambda$ ) and scale factors (SF) used in the procedure described in §4.3.4. *VRI* effective wavelengths come from the CTIO 0.9m telescope Tek 2 filter traces (see Figure 3.1 and Table 3.3). *JHK* wavelengths are the isophotal wavelengths reported by Cohen et al. (2003), and *W1*, *W2*, and *W3* wavelengths are the isophotal effective wavelengths are reported by Jarrett et al. (2011).

This scale factor is applied to that portion of the spectrum to create a new modified spectrum, and then the new model fluxes and magnitudes are calculated and compared to observations. This is repeated until all 9 magnitudes match observations to within 0.03 mag (the approximate errors of the *VRI* photometry, and typically consistent with the *JHK* photometry errors) or until the code has reached 500 iterations. We increased the number of iterations used in Dieterich et al. (2014) (100) to 500 iterations because 500 were found to be sufficient to converge on a spectrum that produced model magnitudes within 0.03 mag of observations for the wide range of temperatures addressed in this work. The final model spectrum is integrated within the wavelength range of the observed photometry to calculate the total flux reaching Earth across those wavelengths.

An visual example of this procedure is shown in Figure 4.6, a modified version of Figure 2b in Dieterich et al. (2014). There is a starting spectrum and a final spectrum, both normalized

to their maximum flux. The points and fitted line toward the top of the Figure are the scale factors (SF, plus signs) at their corresponding wavelengths as just described (see also Table 4.3) and the polynomial fit (dashed line) derived using them. Note that here there are only 10 points because that is the number of scale factors used in Dieterich et al. (2014), from which this example Figure is drawn. In this case only three iterative corrections were needed to create a modified spectrum with values matching our photometry observations to within 0.03 mag. The first correction performed in our version of the method does not appear on this modified version of the plot because it is by far the largest — it scales the flux from the much higher values at the surface of the star to the value that would be seen from Earth. All additional iterations are much smaller adjustments, and after only two, the final spectrum is made and is, in this case, redder than the model spectrum we started with.

Once a modified final spectrum has been derived, a star’s bolometric flux is then determined by applying a bolometric correction to the total flux spanned by the observed wavelengths. To determine this correction, we examine a blackbody with the same temperature as we’ve derived. We calculate (using the IDL *planck* function) how much blackbody flux would be measured spanning the range of our observed wavelengths, as we’ve done with the star. We take the ratio of the total blackbody flux (calculated via Wien’s Law) to this value (which is smaller than the total blackbody flux, as expected). This fractional bolometric correction is then multiplied by our calculated total flux spanned by the bandpasses. We find that for stars of temperatures warm, medium, and cool temperatures, e.g., 4004, 3251, and 2040 K, the median bolometric corrections are 5.2%, 1.5%, and 0.087%. The bolometric



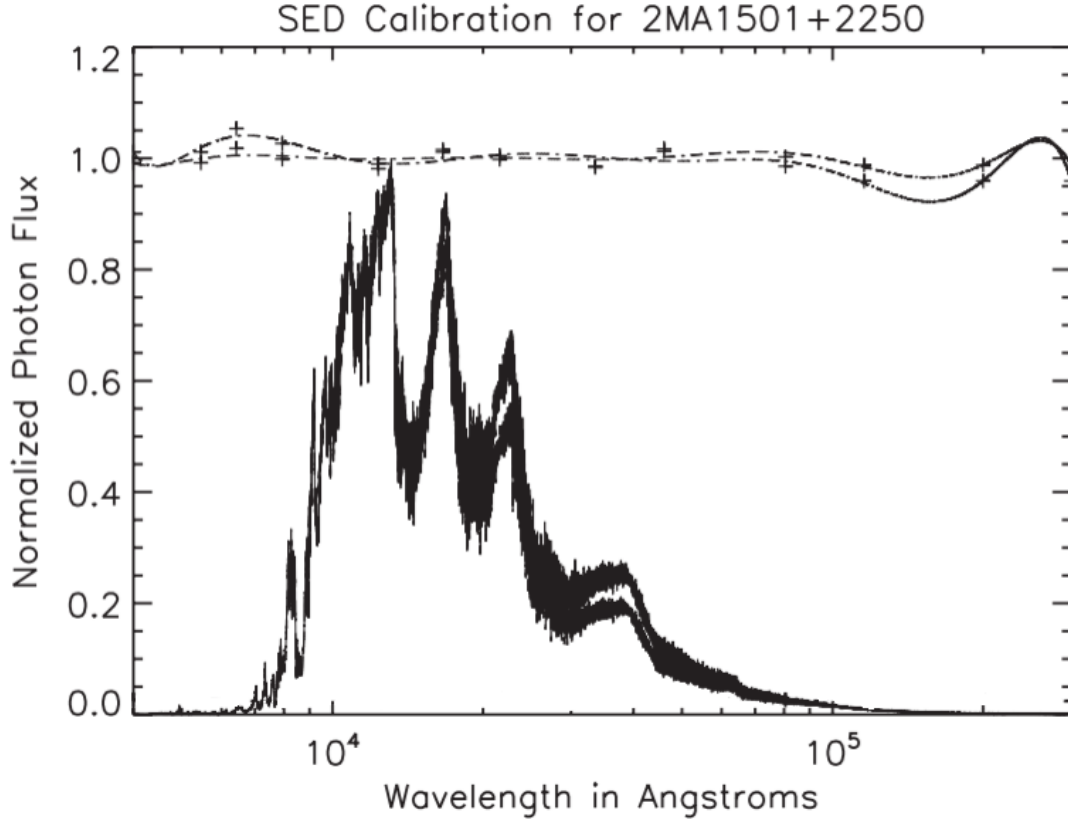


Figure 4.6: Here we demonstrate the application of our iterative correction procedure to the model spectrum using a modified version of Figure 2b in Dieterich et al. (2014) who use a nearly identical method, but (1) with model spectra that start scaled by  $10^8$  compared to our own and (2) application of a 9th order rather a 10th order polynomial.

corrections are larger for warm stars because they have more UV flux that is not accounted for in our wavelength coverage, whereas the corrections needed for cool stars are negligible, though still applied.

With the bolometric flux reaching Earth in hand, we combine it with the parallax to determine the bolometric luminosity:  $L_{bol} = \frac{4\pi}{parallax^2} \times F_{bol}$ . Units of solar luminosities are then calculated by dividing the result by the Sun's value of  $L_{\odot} = 3.828 \times 10^{33} \text{ erg s}^{-1}$

(Mamajek et al. 2015). The radius is then trivially calculated via the rearranged Stefan-Boltzmann Law:  $R = \frac{1}{T_{eff}^2} \sqrt{\frac{L_{bol}}{4\pi\sigma_{SB}}}$ , with the Stefan-Boltzmann Constant,  $\sigma_{SB} = 5.670367 \times 10^{-5} \text{ erg cm}^2 \text{ s}^{-1} \text{ K}^{-4}$ . Results in units of solar radii are calculated by dividing by the Sun's value of  $R_{\odot} = 6.95700 \times 10^{10} \text{ cm}$  (Mamajek et al. 2015). Angular size can then be determined by doubling the radius multiplied by the parallax, with the appropriate unit conversion, where  $1 \text{ pc} = 3.085677581 \times 10^{18} \text{ cm}$ .

Throughout the dissertation, the majority of our error analysis follows the usual procedure, e.g., as described by Bevington & Robinson (1992) (see also Appendix C). Details about the error analysis for the luminosity, radius, and angular diameter determinations, which are rather straightforward once the bolometric flux is in hand, are described in Appendix C. However, the adjustment of the model spectrum is a bit tricky, and so we have taken a two-pronged approach to establish the error on the bolometric flux. The first method is a Monte Carlo analysis, which illustrates the precision of the technique before the bolometric correction, given our typical photometry errors of 0.03 mag. The second method is the same as that done by Dieterich et al. (2014) and describes the final error due to both the errors in our photometry data and differences in our final observed vs. model magnitudes, with inclusion of the bolometric correction. Both error values are reported in Table D.1

*Method 1:* For each star in the sample we performed a Monte Carlo analysis. We generated 100 random sets of magnitudes within 0.03 mag of our observations. A final flux (before the bolometric correction) was calculated for each set, and the mean and standard deviation were extracted. In  $\sim 99\%$  of cases, the ratio of this standard deviation value to

our non-bolometric flux is on the order of 0.02, or 2% (ratios reported in Table D.1, Column 6). This low value speaks not necessarily to the accuracy of our method, but to its precision in adjusting the model spectrum to match observations. We note that a typical Monte Carlo analysis includes at least 10,000 iterations to ensure the generation of a Gaussian-shaped curve. However, because the standard deviations are on the order of  $\sim 2\%$  of the non-bolometric flux, we have decided that 100 iterations are sufficient.

*Method 2:* For our bolometric flux uncertainties, we perform the same procedure as done by Dieterich et al. (2014) — we account for the error in the observed photometry and the final offset between observed and synthetic photometry results. More specifically, we add the following in quadrature for each passband: the ratios of observed flux errors over observed flux and *observed* – *model* flux over model flux. We then scale this value by the bolometric correction. The procedure is further described in Appendix C.

The derived results for the fundamental parameters for 1593 stars are summarized in Table D.1, where Columns 1 and 2 contain the 2000.0 right ascension and declination of the star, followed by the name of the star in Column 3. Column 4 is the  $V - K$  color of the star, which must be within the range of 3.5 to 10.5 to be part of our sample. Columns 5 and 6 are the derived effective temperatures and errors, taken to be the standard deviation of the effective temperature results for each color, as described in §4.3.3. Column 7 contains the standard deviation of non-bolometric flux results produced during our Monte Carlo (MC) procedure as a ratio with the non-bolometric flux, which illustrates the sensitivity (or lack thereof) of our spectrum-adjusting procedure results to changes in the photometry within

0.03 mag (§4.3.4). Column 7 contains the number of iterations performed by the spectrum-adjusting procedure described in §4.3.4 before the model magnitudes match observed values to within 0.03 mag; at 500 iterations, the match was not made. Column 8 contains the bolometric correction (BC) value used to scale our non-bolometric flux to its bolometric value in units of  $\text{erg s}^{-1}$ , where 1.000 would indicate no bolometric correction required. Columns 9 and 10 then give the total bolometric fluxes and errors with powers of base-10. Column 11 provides the luminosities relative to the Sun, with errors in Column 12, also with powers of base-10. Units below the flux and luminosity columns are in brackets to indicate they are the units for the corresponding antilog values. The radii (and errors) and angular diameters (and errors) are then given in Columns 13–16. Finally, Column 15 is the subsample we have assigned to the star, where YG = known young star, SD = known cool subdwarf, RD = main sequence star, YC = young star candidate, and SC = cool subdwarf candidate. These resulting designations will be discussed in detail in §2.2.2.

## CHAPTER 5

### Results

#### 5.1 Overview

We have determined the fundamental parameters for a total of 1593 stars (described in §2.2), including the core sample of 1503 main sequence primaries within 25 pc, Proxima Centauri, and an additional 53 known young and 36 known old stars out to 50 pc. The *VRIJHKW1W2W3* photometry and parallaxes used to determine the fundamental parameters are presented in Table A.2. Effective temperatures, luminosities, radii, and angular diameters for all 1593 stars are presented in Table D.1.

In this Chapter we first validate our radius results, the main goal of our effort, via comparison to direct measurements using long-baseline interferometry (LBI) that are the cornerstone of stellar radii for small stars. The results are described in §5.2, illustrated in Figure 5.1, and reported in Table 5.1. Comparisons of our effective temperatures, luminosities, and radii results to previous work are described in the Discussion Chapter (§6.2).

A fundamental plot of radius vs. effective temperature for the entire sample of 1593 stars is shown in the three panels of Figure 5.2. This plot, in effect, can be considered a “Radius HR Diagram.” Three key attributes of the distribution seen in this Figure are described in further detail in §5.3, §5.4, and §5.5, respectively. To summarize, we identify

1. a changing slope in the red dwarf radius-effective temperature relationship, rather than the gap reported by Rabus et al. (2019),

2. a trend in radius dispersion with temperature, with a lower dispersion amongst the lowest-mass, coolest stars, and
3. lists of candidate young stars and subdwarfs identified by their inflated and small radii, respectively, presented in Tables 5.2 and 5.3, and used to define our age census of the solar neighborhood in the ideal case where all candidates are *bona fide* — of the 1550 primaries within 25 pc in this sample, 5.9% are young, 2.7% are old, and 91.4% are main sequence stars.

Finally, we present our metallicity, surface gravity, and alpha enhancement results in §5.6.

## 5.2 Radius Validation by Long-Baseline Interferometry

It is fortuitous that ground-truth measurements of radius are possible by “simply” looking at stars in the sky and combining their angular sizes and measured distances. Thus, we begin by comparing our results to radius measurements from LBI, which currently are the gold standards for direct measurements of stellar radii.<sup>1</sup> The left panel of Figure 5.1 and Table 5.1 illustrate our ability to replicate radius results obtained via LBI to a median absolute difference of 6% from the most recent results for 26 stars.

Table 5.1 maps our consistency star by star with results from 12 interferometry efforts using CHARA and the Very Large Telescope Interferometer (VLTI), namely Lane et al. (2001); Ségransan et al. (2003); Berger et al. (2006); van Belle & von Braun (2009); Demory

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<sup>1</sup>Whereas many radii for red dwarfs in eclipsing binaries have been determined, they generally do not have sufficiently large separations to be resolved individually by LBI because of their distances.

et al. (2009); von Braun et al. (2011, 2012); Boyajian et al. (2012b); von Braun et al. (2014); Kane et al. (2017); Schaefer et al. (2018); Rabus et al. (2019). Column 1 lists the star name. The same star may be repeated throughout the table if studied by another group. Columns 2–5 contain radius and angular results from the publication and their errors. Columns 6–7 contain the radius and corresponding error calculated using the angular diameter listed in the publication scaled by the parallax used in our study. This practice accounts for the fact that differences in radii may stem from difference in parallaxes, especially in the cases of older papers that may contain outdated results. Our radius and angular diameter results and errors are listed in Columns 8–11. In the final two columns we compare our radius results to those in Column 6 derived using our parallaxes and published angular diameters. The absolute value of the difference between the two radii is listed in Column 12 and the percent difference between our result and that from interferometry is listed in Column 13, where the “correct” value in the denominator is declared to be the value from LBI. The resultant values in Column 13 range from 0.393% to 22.4% with the values generally decreasing, down to an average 5.6% difference from results by Rabus et al. (2019).

Because interferometric observations are generally limited to the biggest, brightest stars, predictably 25 of these 26 stars pass through our “warm door” (discussed in §4.2). We are therefore confident that our procedure produces realistic results for our warmer subsample of stars ( $V - K < 7$ ). The single star that passes through our “cool door”, as discussed in §4.2, is GJ 406 with  $V - K = 7.53$ . Even in this case, our result is offset from the interferometric result of Rabus et al. (2019) by only 2.6%, illustrating the capability of our

cooler star procedure to produce results matching those from direct observations.

In the right panel of Figure 5.1 we consider the distances to the stars and compare our derived angular diameters to interferometric measurements. We attribute the larger errors for stars with larger angular sizes to the increased levels of saturation and therefore error in the photometry. Although the points shift from their locations in the left panel, the result is the same — the median difference between our angular diameters and those measured interferometrically is again 6%. We notice a small systematic offset in favor of our having larger radii, though we do not know its cause.



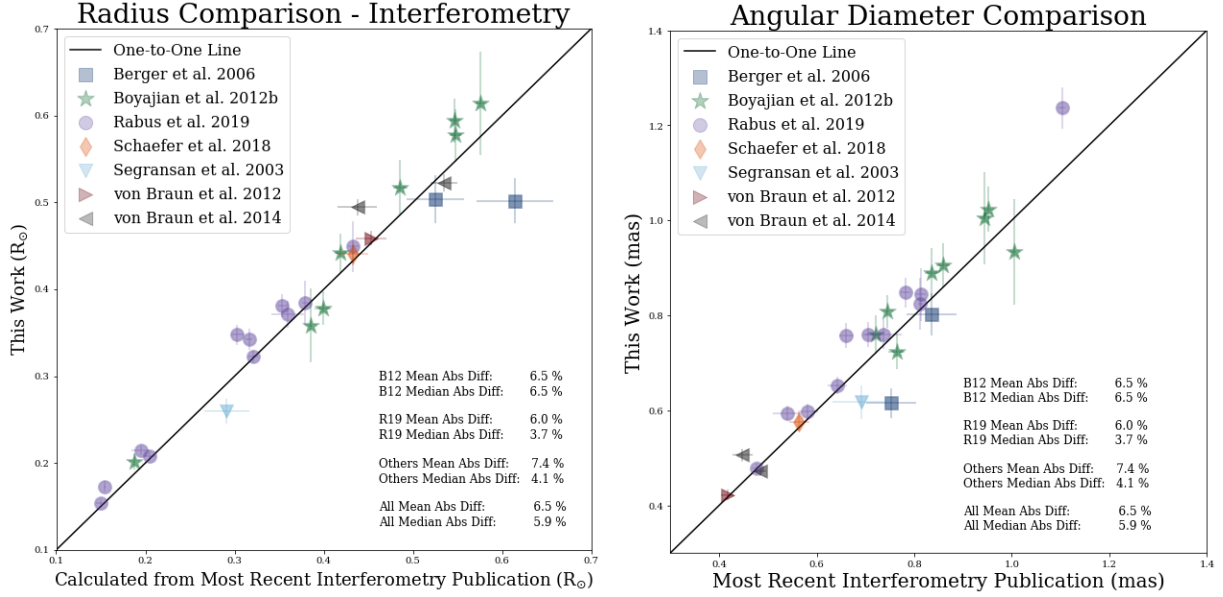


Figure 5.1: For validation of our method to determine radius, we compare our results to the most model-independent method for resolved single stars, long-baseline interferometry. (*Left*) We compare our radii to LBI radii calculated by scaling published angular diameters with our parallaxes. Note that these radius values and therefore the associated calculations for Boyajian et al. (2012b) (B12) and Rabus et al. (2019) (R19) are different from their original values presented later in Figure 6.3. (*Right*) We make a similar comparison using angular diameter results. In both panels, our results match to within median absolute differences of 5.9%, with closer matches to more recent publications. This is especially reassuring because the more recent results are expected to use more developed and refined instruments, data reduction pipelines, and/or telescope systems compared to their earlier-published counterparts. Note that we include only the most recent results for each star, but comparison to each star by publication is listed in Table 5.1.

Table 5.1: Comparisons of Angular Diameter and Radius  
to Interferometric Values

| Star                         | Publication |                 |               |               | Publication with our $\pi^*$ |               | This Work |                 |               |               | Comparison**     |                  |
|------------------------------|-------------|-----------------|---------------|---------------|------------------------------|---------------|-----------|-----------------|---------------|---------------|------------------|------------------|
|                              | $\theta$    | $\sigma_\theta$ | $R$           | $\sigma_R$    | $R$                          | $\sigma_R$    | $\theta$  | $\sigma_\theta$ | $R$           | $\sigma_R$    | $ \Delta R_\pi $ | % $Diff_{R_\pi}$ |
|                              | ( $''$ )    | ( $''$ )        | ( $R_\odot$ ) | ( $R_\odot$ ) | ( $R_\odot$ )                | ( $R_\odot$ ) | ( $''$ )  | ( $''$ )        | ( $R_\odot$ ) | ( $R_\odot$ ) | ( $R_\odot$ )    |                  |
| (1)                          | (2)         | (3)             | (4)           | (5)           | (6)                          | (7)           | (8)       | (9)             | (10)          | (11)          | (12)             | (13)             |
| Lane et al. (2001)           |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| BARNARDS                     | 1.026       | 0.04            | 0.2009        | 0.0002        | 0.202                        | 0.008         | 0.956     | 0.053           | 0.188         | 0.010         | 0.014            | 6.848            |
| GJ0015                       | 1.014       | 0.05            | 0.3890        | 0.0004        | 0.389                        | 0.019         | 0.934     | 0.112           | 0.359         | 0.043         | 0.031            | 7.917            |
| Ségransan et al. (2003)      |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| GJ0191                       | 0.692       | 0.06            | 0.291         | 0.025         | 0.291                        | 0.025         | 0.617     | 0.035           | 0.260         | 0.015         | 0.031            | 10.792           |
| GJ0205                       | 1.149       | 0.11            | 0.702         | 0.063         | 0.702                        | 0.067         | 1.005     | 0.097           | 0.614         | 0.059         | 0.088            | 12.534           |
| PROXIMA                      | 1.044       | 0.08            | 0.145         | 0.011         | 0.146                        | 0.011         | 1.237     | 0.043           | 0.173         | 0.006         | 0.027            | 18.491           |
| Berger et al. (2006)         |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| GJ0015                       | 0.988       | 0.016           | 0.379         | 0.006         | 0.379                        | 0.006         | 0.934     | 0.112           | 0.359         | 0.043         | 0.021            | 5.494            |
| GJ0514                       | 0.753       | 0.052           | 0.611         | 0.043         | 0.615                        | 0.042         | 0.615     | 0.032           | 0.502         | 0.026         | 0.113            | 18.324           |
| GJ0526                       | 0.845       | 0.057           | 0.493         | 0.033         | 0.492                        | 0.033         | 0.889     | 0.054           | 0.517         | 0.031         | 0.025            | 5.157            |
| GJ0687                       | 1.009       | 0.077           | 0.492         | 0.038         | 0.492                        | 0.038         | 0.904     | 0.046           | 0.441         | 0.022         | 0.051            | 10.37            |
| GJ0752                       | 0.836       | 0.051           | 0.526         | 0.032         | 0.525                        | 0.032         | 0.802     | 0.044           | 0.504         | 0.028         | 0.021            | 4.069            |
| GJ0880                       | 0.934       | 0.059           | 0.689         | 0.044         | 0.686                        | 0.043         | 0.808     | 0.035           | 0.594         | 0.025         | 0.092            | 13.457           |
| van Belle & von Braun (2009) |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| GJ0526                       | 0.823       | 0.069           | 0.481         | 0.040         | 0.479                        | 0.040         | 0.889     | 0.054           | 0.517         | 0.031         | 0.038            | 7.968            |
| Demory et al. (2009)         |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| PROXIMA                      | 1.011       | 0.052           | 0.141         | 0.007         | 0.141                        | 0.007         | 1.237     | 0.043           | 0.173         | 0.006         | 0.032            | 22.358           |
| von Braun et al. (2011)      |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| GJ0581                       | 0.446       | 0.014           | 0.299         | 0.010         | 0.301                        | 0.009         | 0.478     | 0.010           | 0.323         | 0.006         | 0.022            | 7.225            |
| von Braun et al. (2012)      |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| GJ0436                       | 0.417       | 0.013           | 0.455         | 0.018         | 0.453                        | 0.014         | 0.422     | 0.012           | 0.459         | 0.008         | 0.006            | 1.292            |
| Boyajian et al. (2012b)      |             |                 |               |               |                              |               |           |                 |               |               |                  |                  |
| BARNARDS                     | 0.952       | 0.005           | 0.1867        | 0.0012        | 0.188                        | 0.001         | 0.956     | 0.053           | 0.188         | 0.010         | 0.001            | 0.393            |
| GJ0015                       | 1.005       | 0.005           | 0.3874        | 0.0023        | 0.386                        | 0.002         | 0.934     | 0.112           | 0.359         | 0.043         | 0.027            | 7.092            |
| GJ0205                       | 0.943       | 0.004           | 0.5735        | 0.0044        | 0.576                        | 0.002         | 1.005     | 0.097           | 0.614         | 0.059         | 0.038            | 6.573            |

Comparisons of Angular Diameter and Radius to Inter-  
ferometric Values

| Star                    | Publication |                 |               |               | Publication with our $\pi^1$ |               | This Work |                 |               |               | Comparison <sup>2</sup> |                  |
|-------------------------|-------------|-----------------|---------------|---------------|------------------------------|---------------|-----------|-----------------|---------------|---------------|-------------------------|------------------|
|                         | $\theta$    | $\sigma_\theta$ | $R$           | $\sigma_R$    | $R$                          | $\sigma_R$    | $\theta$  | $\sigma_\theta$ | $R$           | $\sigma_R$    | $ \Delta R_\pi $        | % $Diff_{R_\pi}$ |
|                         | (" )        | (" )            | ( $R_\odot$ ) | ( $R_\odot$ ) | ( $R_\odot$ )                | ( $R_\odot$ ) | (" )      | (" )            | ( $R_\odot$ ) | ( $R_\odot$ ) | ( $R_\odot$ )           | (13)             |
| (1)                     | (2)         | (3)             | (4)           | (5)           | (6)                          | (7)           | (8)       | (9)             | (10)          | (11)          | (12)                    | (13)             |
| GJ0412                  | 0.764       | 0.017           | 0.3982        | 0.0091        | 0.399                        | 0.009         | 0.725     | 0.038           | 0.379         | 0.020         | 0.020                   | 5.047            |
| GJ0526                  | 0.835       | 0.014           | 0.4840        | 0.0084        | 0.486                        | 0.008         | 0.889     | 0.054           | 0.517         | 0.031         | 0.031                   | 6.416            |
| GJ0687                  | 0.859       | 0.014           | 0.4183        | 0.0070        | 0.419                        | 0.007         | 0.904     | 0.046           | 0.441         | 0.022         | 0.022                   | 5.281            |
| GJ0809                  | 0.722       | 0.008           | 0.5472        | 0.0067        | 0.548                        | 0.006         | 0.761     | 0.041           | 0.578         | 0.031         | 0.030                   | 5.396            |
| GJ0880                  | 0.744       | 0.004           | 0.5477        | 0.0048        | 0.547                        | 0.003         | 0.808     | 0.035           | 0.594         | 0.025         | 0.047                   | 8.644            |
| von Braun et al. (2014) |             |                 |               |               |                              |               |           |                 |               |               |                         |                  |
| GJ0176                  | 0.448       | 0.021           | 0.4525        | 0.0221        | 0.438                        | 0.021         | 0.506     | 0.013           | 0.495         | 0.009         | 0.057                   | 12.933           |
| GJ0649                  | 0.484       | 0.012           | 0.5387        | 0.0157        | 0.535                        | 0.013         | 0.473     | 0.011           | 0.522         | 0.010         | 0.013                   | 2.355            |
| GJ0876                  | 0.746       | 0.009           | 0.3761        | 0.0059        | 0.374                        | 0.005         | 0.760     | 0.026           | 0.381         | 0.013         | 0.007                   | 1.898            |
| Kane et al. (2017)      |             |                 |               |               |                              |               |           |                 |               |               |                         |                  |
| GJ0628                  | 0.695       | 0.018           | 0.3207        | 0.0088        | 0.319                        | 0.008         | 0.758     | 0.026           | 0.348         | 0.012         | 0.029                   | 9.072            |
| Schaefer et al. (2018)  |             |                 |               |               |                              |               |           |                 |               |               |                         |                  |
| GJ0393                  | 0.564       | 0.021           | 0.428         | 0.017         | 0.432                        | 0.016         | 0.576     | 0.019           | 0.441         | 0.013         | 0.009                   | 2.046            |
| Rabus et al. (2019)     |             |                 |               |               |                              |               |           |                 |               |               |                         |                  |
| GJ0001                  | 0.812       | 0.005           | 0.379         | 0.002         | 0.379                        | 0.002         | 0.824     | 0.055           | 0.385         | 0.025         | 0.006                   | 1.481            |
| GJ0273                  | 0.783       | 0.010           | 0.320         | 0.005         | 0.316                        | 0.004         | 0.854     | 0.033           | 0.345         | 0.013         | 0.029                   | 9.120            |
| GJ0406                  | 0.582       | 0.020           | 0.159         | 0.006         | 0.150                        | 0.005         | 0.597     | 0.018           | 0.154         | 0.004         | 0.004                   | 2.550            |
| GJ0447                  | 0.540       | 0.029           | 0.196         | 0.010         | 0.195                        | 0.010         | 0.596     | 0.017           | 0.215         | 0.006         | 0.020                   | 10.428           |
| GJ0581                  | 0.476       | 0.007           | 0.322         | 0.005         | 0.321                        | 0.005         | 0.478     | 0.010           | 0.323         | 0.006         | 0.002                   | 0.467            |
| GJ0628                  | 0.661       | 0.014           | 0.306         | 0.007         | 0.303                        | 0.006         | 0.758     | 0.026           | 0.348         | 0.012         | 0.045                   | 14.682           |
| GJ0674                  | 0.737       | 0.037           | 0.360         | 0.018         | 0.360                        | 0.018         | 0.760     | 0.031           | 0.371         | 0.015         | 0.011                   | 3.167            |
| GJ0729                  | 0.642       | 0.020           | 0.205         | 0.006         | 0.205                        | 0.006         | 0.652     | 0.018           | 0.208         | 0.006         | 0.003                   | 1.605            |
| GJ0832                  | 0.814       | 0.010           | 0.435         | 0.005         | 0.433                        | 0.005         | 0.844     | 0.056           | 0.449         | 0.030         | 0.016                   | 3.717            |
| GJ0876                  | 0.705       | 0.009           | 0.354         | 0.005         | 0.353                        | 0.005         | 0.760     | 0.026           | 0.381         | 0.013         | 0.028                   | 7.824            |
| PROXIMA                 | 1.103       | 0.007           | 0.154         | 0.001         | 0.154                        | 0.001         | 1.237     | 0.043           | 0.173         | 0.006         | 0.019                   | 12.153           |

\* These radii and errors are calculated by scaling the published angular diameter values by the parallaxes used in this work.

\*\* Using values from Column 6 to avoid discrepancies caused by different parallaxes.

### 5.3 Trends in the Radius-Effective Temperature Relationship of Red Dwarfs — No Discontinuity

Having established the relatively good match between our derived radii and interferometric measurements, we examine the overall character of the distribution of red dwarf radii shown in the panels of Figure 5.2. The three panels — top left, bottom left, and right — outline the basic results, comparisons to previous work, and the diagram’s utility for identifying young and old stars, respectively.

Here we focus on the left two panels of Figure 5.2; the right panel is discussed in detail in §5.5. From the points representing the 1593 stars in this study, the overall trend is clear — cooler stars have smaller radii. This is, of course, linked to well-known trends with decreasing mass, for which stars are redder, cooler, of lower luminosity, and have smaller radii. It is also clear that there is a significant change in the radius dispersion as a function of temperature, as will be discussed below in §5.4, and that cool subdwarfs can be smaller than gas giant planets, discussed in §6.2.3.

We note that in the region from 2900–3200 K, there appear to be points clustered at very similar temperatures. We do not attribute this to a physical mechanism, but rather to the nature of our procedure. The final temperature for each star is a mean of effective temperature results for each of its colors. When most colors’ best-fitting model spectrum is the same, we can expect numbers very close to the model grid temperature points (e.g. 2900, 3000, 3100, 3200, etc.). For stars with effective temperatures of 2900–3200 K, a majority of our colors for each star were most accurately modeled by the same synthetic spectrum. A

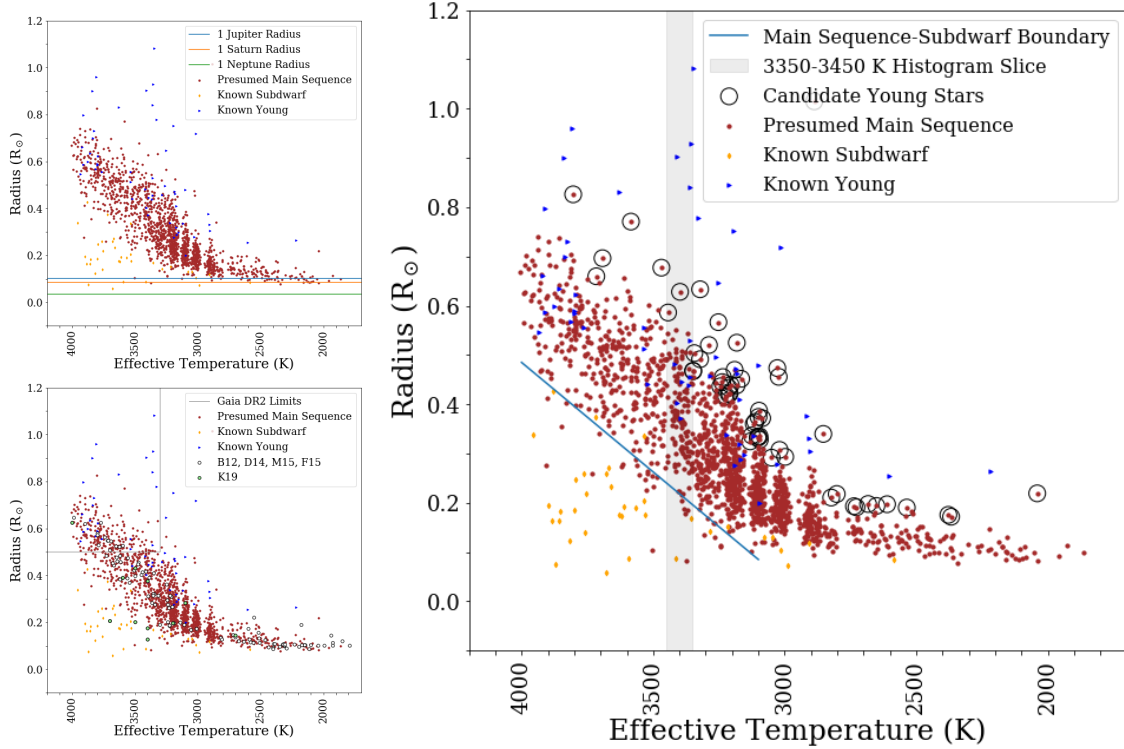


Figure 5.2: Here we see what can be called a “Radius HR Diagram”. In all three panels our results are plotted for presumed main sequence stars (red circles) and ensembles of known cool subdwarfs (yellow diamonds) and known young stars (blue triangles). (*Top Left*) Our results indicate that the smallest cool subdwarf is about  $3/4$  the size of Saturn and the smallest late-type red dwarf is just smaller than Saturn. (*Bottom Left*) Results from previous work by others are overplotted for comparison. We include the Gaia DR2 limits in the upper left box to emphasize the need for focused studies of M dwarfs to determine fundamental parameters. Published values from Boyajian et al. (2012b); Dieterich et al. (2014); Mann et al. (2015); Filippazzo et al. (2015) (“B12”, “D14”, “M15”, and “F15”) are overplotted to emphasize that our use of two different color sets to derive parameters for stars warmer and cooler than  $V - K = 7$  ( $\sim 2800$  K) is not to blame for trends in the “radius main sequence”. Scanning from warm to cool stars, main sequence stars of roughly 4000 to 3200 K, exhibit a widened radius main sequence, discussed in §5.4. This radius dispersion diminishes from roughly 3200 to about 2800 K, below which the radius main sequence is consistently narrow, spanning a range of about  $0.1 R_{\odot}$ . Near 2800 K, there is also a distinct change in slope of the overall curve, discussed further in §5.3. Our conclusion is that for red dwarfs with temperatures above  $\sim 2800$  K, effective temperature cannot be used as a one-to-one proxy for radius. Stars of different ages stand out by their large and small radii for young and old stars, respectively, and age-extreme candidates can be selected, as explained in Section 5.5. These trends emerge largely due to our unprecedentedly large and age-diverse sample. (*Right*) Results are shown in the context of stars in various age groups. Cool subdwarfs represented by yellow points almost invariably fall below the large numbers of main sequence stars in red. Stars identified to be young are represented by blue points and are typically above the main sequence stars. It is evident that radius can be used as a means to decipher young, main sequence, and old stars. New candidate young stars (Table 5.2) are red points circled in black and new candidate subdwarfs (Table 5.3) are points below the line that separates the main sequence and cool subdwarf stars. The highlighted region corresponds to the 3350-3450 K panel histogram in Figure 5.5 where we further describe young star candidate selection. Results are discussed in §5.5.

finer model grid would be expected to de-cluster these results.

Until this work there was a void of fundamental parameter measurements for stars of “intermediate” temperature — between the warmer stars observed using LBI and stars eval-

uated spectroscopically in Mann et al. (2015) and the cooler stars studied by Dieterich et al. (2014) and Filippazzo et al. (2015). There are few stars in those publications with temperatures of 2800–3000 K that are near the border of our “warm” and “cool” samples; here we fill in these missing “medium temperature” stars and see that there is a distinct change in slope of the overall distribution of stellar radii. This is in contrast to the recent result of Rabus et al. (2019), who found a gap at  $\sim 3200\text{--}3340$  K and  $0.18\text{--}0.42 R_{\odot}$ , implying a change in radius of more than a factor of two with a temperature difference of only 140 K. With our robust set of radius determinations for many more stars across a larger range of temperatures, the gap is absent, and instead we reveal a changing, shallower slope with decreasing temperature with an inflection point near 2850 K (Figure 5.3). In addition, Rabus et al. (2019) claim that their discontinuity corresponds to the transition from partially to fully convective stars, citing a mass of  $\sim 0.23 M_{\odot}$ . This is in contrast to the  $\sim 0.35 M_{\odot}$  value found by Jao et al. (2018), who used *Gaia* DR2 and other photometric data, combined with stellar models, to detect a gap in the main sequence using stars within 100 pc. Although our results here do not support nor conflict with results from Jao et al. (2018), they are in conflict with the results of Rabus et al. (2019). As such, we posit that the mass corresponding to the transition from partially radiative to fully convective red dwarfs is near a mass of  $\sim 0.35 M_{\odot}$  rather than  $\sim 0.23 M_{\odot}$ . We attribute the detection of a gap in Rabus et al. (2019) to the smaller data set used in that work. Recent results by Cassisi & Salaris (2019) also refute the discontinuity reported by Rabus et al. (2019), citing instead a model-predicted slope change at  $0.2 M_{\odot}$  corresponding with an increasing influence from electron degeneracy on the gas

equation of state. Given these two results in combination with our own, we conclude that our result is (a) unlikely to provide information regarding the location of the transition region, unless it is colder than expected and in fact spans our 2850 to 3200 K region, but (b) may further constrain the portion of stellar models pertaining to the role of electron degeneracy.

#### 5.4 Radius Dispersion as a Function of Temperature

This is the first work incorporating fundamental parameters spanning the entire M dwarf spectral range into the early L dwarfs, and as a result, new trends are revealed. By including results for stars at effective temperatures lower than 2657 K, the lowest value reported by Rabus et al. (2019), we reveal strong observational evidence for the first time that the radius vs. effective temperature relation for lower mass stars is both narrower and has a shallower slope in the radius-temperature diagram (described in §5.3) than for warmer M dwarfs. In fact, we find a transition region in the dispersion of stellar radii for main sequence stars from 2850 to 3200 K<sup>2</sup>. Stars warmer than  $\sim 3200$  K consistently exhibit radii within a broad range of  $\sim 0.15 R_{\odot}$  of the mean radius for a star of that temperature (Figure 5.2). From 2850-3200 K there is a transition region, and for temperatures cooler than 2850 K, the radius dispersion at a given temperature becomes nearly nonexistent.

Jao et al. (2018) found the transition between partially and fully convective energy transfer at a spectral type of M3.5V and mass  $0.36 M_{\odot}$ , both of which are near 3300–3400 K. This temperature regime is higher than the clear change in dispersion we find at 2850 K. Cassisi

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<sup>2</sup>This is  $\sim 150$ – $300$  K cooler than the location of the discontinuity reported by Rabus et al. (2019) at 3200 to 3340 K.

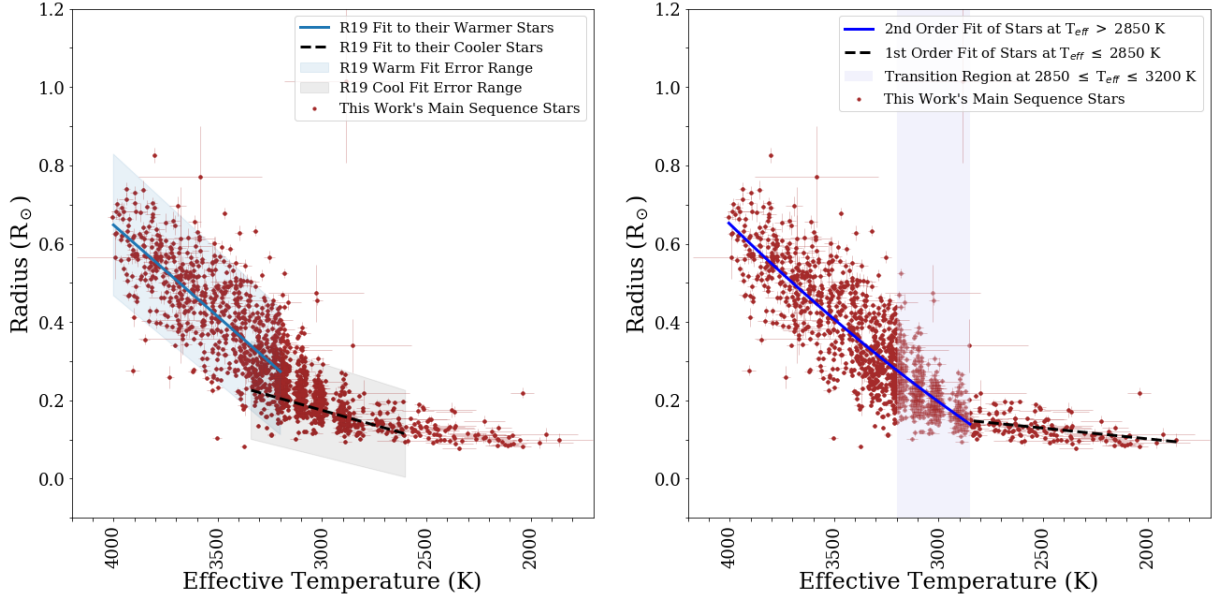


Figure 5.3: (*Left*) Our results for 1504 main sequence stars have been overplotted with the fits presented by Rabus et al. (2019), with shaded regions outlining their errors. It is evident that the warmer star fit matches fairly well. This is expected because much of their LBI work and those before them have focused on higher mass M dwarfs. Although the cooler star fit passes through many of the smaller-radius points, it does not accurately map the overall trend and does not reach below 2600 K. We attribute this to a much smaller sample size that does not extend to the coolest stars. The use of these fits also neglects the large range of radii at a given temperature, although the error range does encompass nearly all of our stars. (*Right*) Results for our 1504 main sequence stars are split into two fits with an inflection point at  $T_{eff} = 2850$  K, where there seems to be a distinct change in slope. We note that this value is indeed close to our warm vs. cool star cutoff, but also point out that the trend also exists when we include the work of others as in the bottom left panel of Figure 5.2. For comparison to Rabus et al. (2019), we apply a linear fit (dashed black line) to the cooler stars and quadratic fit to the warmer stars (solid blue line). We conclude that that: (1) A relationship between radius and effective temperature for red dwarfs of  $T_{eff}$  cannot be derived without consideration for other factors that may affect radius (e.g. metallicity, age, rotation rate, and/or activity). As discussed in §5.4 and Figure 5.4, main sequence stars with temperatures of 2850–4000 K may have radii spanning a factor of two, e.g., a star with  $T_{eff} = 3700$  K may have a radius of 0.35 to 0.70  $R_{\odot}$ . (2) In the shaded region from 3200–2850 K there appears to be a transition from the trends we see in the hotter regime of  $> 3200$  K to those in the cooler regime of  $< 2850$  K. This region is somewhat cooler than the region cited by Rabus et al. (2019) as the transition between partially and fully convective stars, evident in the left panel. Jao et al. (2018) found the transition between partially and fully convective energy transfer at a spectral type of M3.5V and mass 0.36  $M_{\odot}$ , both of which are near 3300–3400 K. This temperature regime is higher than the clear change in dispersion we find at 2850 K.

& Salaris (2019) suggest a smooth change in slope at temperature close to 2850 K, in line with our findings described in §5.3, citing model predictions that this change corresponds to a heightened influence of electron degeneracy on the gas equation of state in stars smaller



than  $0.2 M_{\odot}$ . Perhaps this change in radius dispersion is attributable to the same physical mechanism.

There has been a long-term issue with stellar evolutionary models underestimating stellar radii, as recently discussed by, e.g., Somers & Pinsonneault (2015), Han et al. (2017), and Kesseli et al. (2018). In addition, dispersion in the mass-radius relationship of M dwarfs has recently been investigated by, e.g., Parsons et al. (2018). One new facet to the discussion, and a possible explanation for the changing degree of dispersion in radii through the red dwarf sequence we have found, comes from recent work by Somers et al. (2019 in prep.). As demonstrated by Figure 5.4, it appears that when spot coverage is incorporated into evolutionary models, both the radius dispersion and radius-temperature slope are affected. This has been discussed in the context of eclipsing binaries by e.g. Chabrier et al. (2007), but never before in the context of a statistically significant sample spatially resolved stars. Perhaps star spots are part of the solution to this discrepancy.

In the left panel of Figure 5.4, we present several evolutionary tracks from the Somers et al. (2019 in prep.) models in radius vs. effective temperature space, using the same x- and y-axis ranges that we have been using to plot results for our sample. Each track corresponds to a different combination of stellar mass and percent of the stellar surface covered by spots (“spot coverage”). Each rainbow set of tracks corresponds to a different stellar mass, i.e.  $0.5$ ,  $0.3$ , and  $0.1 M_{\odot}$ . The stars age from the top to bottom of the track, where the radius reaches a minimum and the star is defined to have landed on the main sequence. The large black arrows at the bottoms of each set of tracks map the trends in radius vs. effective

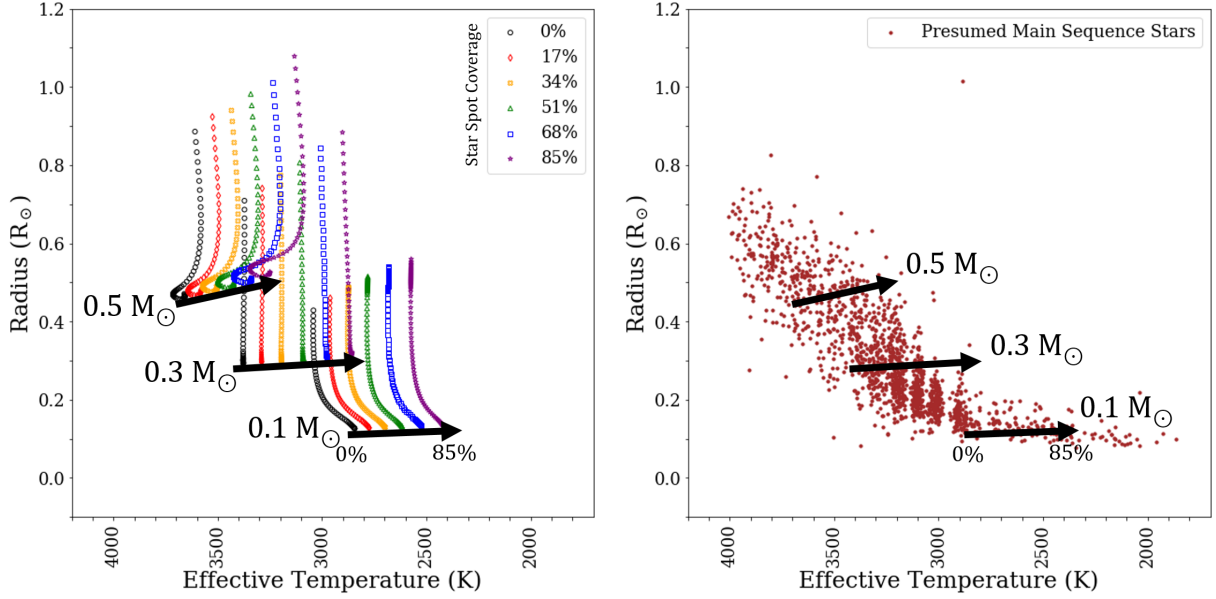


Figure 5.4: (*Left*) As discussed in §5.4, the width of the radius main sequence trends with the evolutionary models created by Somers et al. (2019 in prep.) that incorporate spot coverage. The evolutionary tracks are plotted in our radius vs. effective temperature space for stars of 3 different stellar masses with 6 different percentages of spot coverage. Black arrows at the bottom of each set of curves indicate the slopes traced out by the point locations where a star of the corresponding mass lands on the main sequence. (*Right*) The black arrows from the left panel are plotted over our main sequence results. It is evident that as the arrows decrease in slope, the scatter in radius at a given temperature decreases accordingly. The ramifications are that (1) as spottedness increases, stars of similar mass shift to smaller temperatures but generally have similar radii, (2) star spots have significant effects on effective temperatures, (3) spots cause changing dispersions in radii at given temperatures because stars with various masses have similar effective temperatures. The implications are that star spot coverage is a crucial component to be included in models, and that a single radius-effective temperature relationship cannot be used to derive one parameter or the other without considerations of spottedness, presumably caused by age and/or magnetic activity differences.

temperature for a main sequence star of that mass as a function of spot coverage. We have chosen models corresponding to  $0.5$ ,  $0.3$ , and  $0.1 M_{\odot}$  stars because they land in the portions of the diagram with the largest, intermediate, and smallest radius dispersions, respectively, in the radius vs. effective temperature plot for our sample, as seen in the right panel where

we have overlaid the black arrows. The combination of our results and the trends mapped out by the models empirically demonstrates the relationship between spot coverage and radius dispersion as a function of effective temperature and speaks to the quality of the models. Note that according to the Stefan-Boltzmann law, changes in luminosity, radius, and effective temperature are linked, by virtue of the equation  $L = 4\pi R^2 \sigma_{sb} T^4$ . For example, in the idealized case of constant luminosity, an increase in radius should result in a decrease in effective temperature. Illustrated in Figure 5.4, for more massive stars, star spots increase the radius by  $\sim 10\text{--}20\%$  and decrease the effective temperature of the star by  $\sim 500$  K. According to the Stefan-Boltzmann law, this should correspond to a decrease in luminosity. This echos similar model- and observation-based findings, respectively, from Somers et al. 2015; 2017 for early M dwarfs and warmer. We would like to note that the effect of photometric variability on our results due to spot coverage is minimal and is not expected to influence our results here; our photometric consistency checks of better than 0.1 mag in  $VRI$  account for photometric variations due to spots, and variations in the infrared are anticipated to be much smaller. As we move to lower masses, at  $0.3 M_{\odot}$ , the slope of the arrow decreases and the effect of spots decreases on radius, but increases on temperature<sup>3</sup>. For the lowest mass stars, at  $0.1 M_{\odot}$ , we see that the black arrow is nearly horizontal, implying that the effect of star spots on stellar radius is negligible while the effect on effective temperature is comparable at  $\sim 500$  K.

*Caveats* of this analysis include that (1) the models assume a consistent spot coverage

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<sup>3</sup>We note that this is reflected in our data for radius, but not effective temperature. Keep in mind that it may be difficult for a star to present 85% spot coverage, and there are other parameters that may need to be considered such as metallicity.

throughout the lifetime of the star, (2) the probability of a star exhibiting each spot coverage percentage is not addressed here, (3) the metallicity of the stars in these evolutionary models is set to zero, which may not be the case for all stars in the sample, and (4) star spots may be a piece of a larger puzzle. The ramifications of this result include: (1) Empirical evidence indicates that that spot coverage significantly affects the radius versus effective temperature relationship of low-mass stars with the potential to increase the radius of a  $0.5 M_{\odot}$  star by  $\sim 10\text{--}20\%$ . (2) Predictions of radius from evolutionary models that do not incorporate spot coverage may be inaccurate to within a range of  $\sim 0.35 R_{\odot}$  (a factor of two at 3700 K) for stars of effective temperature larger than roughly 2850 K.

### 5.5 Candidate Young Stars and Cool Subdwarfs

A plot of radius versus temperature for the entire sample, including known young stars and cool subdwarfs, reveals, as expected, that young stars have inflated radii and that cool subdwarfs have smaller radii relative to their main sequence counterparts of the same temperature (Figure 5.2). We have used well-vetted samples of young and old stars to outline the regions they populate in the radius-temperature diagram — recall that our ensemble of young stars comes from the collection of work summarized in Riedel et al. (2017b) and our known cool subdwarfs come from the work of Jao et al. 2005; 2008; 2011; 2017.

*Young Stars:* Here we consider stars within 50 parsecs that have either been matched to a nearby moving group or given a percent likelihood of being young by Riedel et al. (2017b). Keep in mind that at different masses, “young” corresponds to different numbers and a 0.08

$M_{\odot}$  star can take on the order of 1 Gyr to reach their equilibrium luminosities on the main sequence (Burrows et al. 1997; Paxton et al. 2011). The majority of the already known young stars ( $\sim 5$ -500 Myr, Riedel et al. (2017b), shown with blue triangles in the panels of Figure 5.2) stand out above the main group of presumed main sequence stars shown in red. We suspect those that blend in with the main sequence stars are on the older side of “young.” Red points circled in black are those we have identified to be new young star candidates.

Although it is easy to identify some young candidates by eye on the plot, to guide us, in Figure 5.5, vertical slices in temperature (typically 100 K wide) have been made through Figure 5.2 and plotted as histograms of radii in each temperature range. To clarify the connection between the two Figures, the highlighted region in the right panel of Figure 5.2 corresponds to the outlined 3350-3450 K histogram in Figure 5.5. Main sequence stars are indicated with red bars with a diagonal line pattern, young stars with blue bars with a circle pattern, and old subdwarfs with yellow bars with a star pattern. These histograms reveal the separations of the different age populations in radius space. For each temperature bin, we define the minimum radius at and above which we identify a star to be potentially young (indicated with blue shading). This value is the median plus two times the standard deviation of the (presumed) main sequence star radii. When we expand the sample, say using tens to hundreds of thousands of stars in the *Gaia* DR 2 catalog, we hope to make a more rigorous determination of the cutoffs for young star candidates. The temperature bins, radius cutoffs, and candidate young stars are detailed in Table 5.2, where Column 1 lists the temperature range of each bin and Columns 2–4 list the numbers of main sequence stars, their median

radius, and the standard deviation of their radii. These are used to determine the minimum qualifying radius ( $R_{median} + 2\sigma_R$ ) for young star candidacy in Column 5. Columns 6–9 list the candidates, their radii and corresponding errors, and how many standard deviations their radii are from the median main sequence star radius.

Table 5.2: Young Star Selection Criteria and 56 Candi-

dates

|           | MAIN SEQUENCE STAR STATISTICS |                   |                                                  |                                      | YOUNG STAR CANDIDATES                   |                                                                                                                |                                                                      |                                                                      |                                                              |
|-----------|-------------------------------|-------------------|--------------------------------------------------|--------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------|
|           | $T_{eff}$ Range<br>K<br>(1)   | # of Stars<br>(2) | Median Radius <sup>1</sup><br>$R_{\odot}$<br>(3) | Radius Std Dev<br>$R_{\odot}$<br>(4) | Qualifying Radius<br>$R_{\odot}$<br>(5) | Star<br>(6)                                                                                                    | Radius<br>$R_{\odot}$<br>(7)                                         | Radius Error<br>$R_{\odot}$<br>(8)                                   | Std Dev.s from Median<br>$R_{\odot}$<br>(9)                  |
| 1850–2450 |                               | 45                | 0.105                                            | 0.026                                | 0.158                                   | LP135-272<br>LSPM1925+0938<br>SIP2045-6332                                                                     | 0.176<br>0.172<br>0.219                                              | 0.019<br>0.013<br>0.013                                              | 2.68<br>2.53<br>4.33                                         |
| 2450–2850 |                               | 103               | 0.135                                            | 0.027                                | 0.188                                   | LP423-031<br>LHS2650<br>LP069-457<br>LSPM0648+0326<br>LP623-040<br>2MA1507-2000<br>LEHPM2-0783<br>SCR1826-6542 | 0.198<br>0.218<br>0.211<br>0.191<br>0.193<br>0.190<br>0.194<br>0.197 | 0.009<br>0.035<br>0.004<br>0.009<br>0.008<br>0.004<br>0.003<br>0.003 | 2.37<br>3.13<br>2.86<br>2.11<br>2.20<br>2.09<br>2.21<br>2.35 |
| 2850–2950 |                               | 110               | 0.162                                            | 0.088                                | 0.339                                   | LHS1857<br>GJ1232                                                                                              | 1.015<br>0.340                                                       | 0.207<br>0.067                                                       | 9.65<br>2.01                                                 |
| 2950–3050 |                               | 151               | 0.191                                            | 0.046                                | 0.284                                   | LHS1068<br>GJ1250                                                                                              | 0.307<br>0.293                                                       | 0.009<br>0.017                                                       | 2.51<br>2.20                                                 |

Young Star Selection Criteria and 56 Candidates

| MAIN SEQUENCE STAR STATISTICS |                   |                                                  |                                      | YOUNG STAR CANDIDATES                   |               |                              |                                    |                                             |
|-------------------------------|-------------------|--------------------------------------------------|--------------------------------------|-----------------------------------------|---------------|------------------------------|------------------------------------|---------------------------------------------|
| $T_{eff}$ Range<br>K<br>(1)   | # of Stars<br>(2) | Median Radius <sup>1</sup><br>$R_{\odot}$<br>(3) | Radius Std Dev<br>$R_{\odot}$<br>(4) | Qualifying Radius<br>$R_{\odot}$<br>(5) | Star<br>(6)   | Radius<br>$R_{\odot}$<br>(7) | Radius Error<br>$R_{\odot}$<br>(8) | Std Dev.s from Median<br>$R_{\odot}$<br>(9) |
| 3050–3150                     | 190               | 0.215                                            | 0.051                                | 0.317                                   | LP031-301     | 0.292                        | 0.016                              | 2.17                                        |
|                               |                   |                                                  |                                      |                                         | LSPM0835+1408 | 0.456                        | 0.012                              | 5.71                                        |
|                               |                   |                                                  |                                      |                                         | LP780-032     | 0.473                        | 0.072                              | 6.09                                        |
|                               |                   |                                                  |                                      |                                         | GJ0285        | 0.372                        | 0.008                              | 3.06                                        |
|                               |                   |                                                  |                                      |                                         | LHS3122       | 0.387                        | 0.014                              | 3.36                                        |
|                               |                   |                                                  |                                      |                                         | LHS5009       | 0.334                        | 0.007                              | 2.33                                        |
|                               |                   |                                                  |                                      |                                         | GJ0169.1      | 0.335                        | 0.008                              | 2.34                                        |
|                               |                   |                                                  |                                      |                                         | LEHPM1-0255   | 0.364                        | 0.006                              | 2.92                                        |
|                               |                   |                                                  |                                      |                                         | SCR0509-4325  | 0.328                        | 0.008                              | 2.21                                        |
|                               |                   |                                                  |                                      |                                         | LT03896       | 0.360                        | 0.006                              | 2.84                                        |
| 3150–3250                     | 250               | 0.267                                            | 0.073                                | 0.413                                   | WT0392        | 0.332                        | 0.005                              | 2.28                                        |
|                               |                   |                                                  |                                      |                                         | GJ0555        | 0.337                        | 0.007                              | 2.38                                        |
|                               |                   |                                                  |                                      |                                         | LT07077       | 0.374                        | 0.007                              | 3.11                                        |
|                               |                   |                                                  |                                      |                                         | LHS4021       | 0.325                        | 0.008                              | 2.14                                        |
|                               |                   |                                                  |                                      |                                         | LP557-046     | 0.436                        | 0.013                              | 2.32                                        |
|                               |                   |                                                  |                                      |                                         | G145-029      | 0.416                        | 0.009                              | 2.04                                        |
|                               |                   |                                                  |                                      |                                         | LHS0543       | 0.439                        | 0.008                              | 2.36                                        |
|                               |                   |                                                  |                                      |                                         | GJ0669        | 0.470                        | 0.009                              | 2.78                                        |
|                               |                   |                                                  |                                      |                                         |               |                              |                                    |                                             |
|                               |                   |                                                  |                                      |                                         |               |                              |                                    |                                             |



Young Star Selection Criteria and 56 Candidates

| MAIN SEQUENCE STAR STATISTICS |                   |                                                  |                                      | YOUNG STAR CANDIDATES                   |              |                              |                                    |                                             |
|-------------------------------|-------------------|--------------------------------------------------|--------------------------------------|-----------------------------------------|--------------|------------------------------|------------------------------------|---------------------------------------------|
| $T_{eff}$ Range<br>K<br>(1)   | # of Stars<br>(2) | Median Radius <sup>1</sup><br>$R_{\odot}$<br>(3) | Radius Std Dev<br>$R_{\odot}$<br>(4) | Qualifying Radius<br>$R_{\odot}$<br>(5) | Star<br>(6)  | Radius<br>$R_{\odot}$<br>(7) | Radius Error<br>$R_{\odot}$<br>(8) | Std Dev.s from Median<br>$R_{\odot}$<br>(9) |
| 3250–3350                     | 163               | 0.297                                            | 0.084                                | 0.465                                   | LHS2317      | 0.455                        | 0.016                              | 2.58                                        |
|                               |                   |                                                  |                                      |                                         | LHS1784      | 0.525                        | 0.011                              | 3.54                                        |
|                               |                   |                                                  |                                      |                                         | GJ1254       | 0.422                        | 0.011                              | 2.12                                        |
|                               |                   |                                                  |                                      |                                         | SCR0143-0602 | 0.416                        | 0.007                              | 2.05                                        |
|                               |                   |                                                  |                                      |                                         | LHS2520      | 0.438                        | 0.010                              | 2.35                                        |
|                               |                   |                                                  |                                      |                                         | NLTT30359    | 0.433                        | 0.009                              | 2.28                                        |
|                               |                   |                                                  |                                      |                                         | LHS2567      | 0.452                        | 0.020                              | 2.53                                        |
|                               |                   |                                                  |                                      |                                         | LEP1330-2039 | 0.445                        | 0.009                              | 2.44                                        |
|                               |                   |                                                  |                                      |                                         | LP870-065    | 0.421                        | 0.009                              | 2.11                                        |
|                               |                   |                                                  |                                      |                                         | GJ0480       | 0.491                        | 0.012                              | 2.31                                        |
| 3350–3450                     | 120               | 0.370                                            | 0.097                                | 0.563                                   | LHS3445      | 0.633                        | 0.013                              | 4.01                                        |
|                               |                   |                                                  |                                      |                                         | GJ0157.1     | 0.467                        | 0.028                              | 2.03                                        |
|                               |                   |                                                  |                                      |                                         | LHS5004a     | 0.468                        | 0.022                              | 2.03                                        |
|                               |                   |                                                  |                                      |                                         | SCR0757-7114 | 0.567                        | 0.016                              | 3.21                                        |
|                               |                   |                                                  |                                      |                                         | GJ0812       | 0.520                        | 0.015                              | 2.66                                        |
|                               |                   |                                                  |                                      |                                         | GJ0849       | 0.504                        | 0.014                              | 2.46                                        |
|                               |                   |                                                  |                                      |                                         | LHS3129      | 0.628                        | 0.586                              | 2.67                                        |
|                               |                   |                                                  |                                      |                                         | LP837-053    | 0.019                        | 0.012                              | 2.34                                        |
|                               |                   |                                                  |                                      |                                         |              |                              |                                    |                                             |
|                               |                   |                                                  |                                      |                                         |              |                              |                                    |                                             |

Young Star Selection Criteria and 56 Candidates

|           | MAIN SEQUENCE STAR STATISTICS |                   |                                                  |                                      | YOUNG STAR CANDIDATES                   |                       |                              |                                    |                                             |
|-----------|-------------------------------|-------------------|--------------------------------------------------|--------------------------------------|-----------------------------------------|-----------------------|------------------------------|------------------------------------|---------------------------------------------|
|           | $T_{eff}$ Range<br>K<br>(1)   | # of Stars<br>(2) | Median Radius <sup>1</sup><br>$R_{\odot}$<br>(3) | Radius Std Dev<br>$R_{\odot}$<br>(4) | Qualifying Radius<br>$R_{\odot}$<br>(5) | Star<br>(6)           | Radius<br>$R_{\odot}$<br>(7) | Radius Error<br>$R_{\odot}$<br>(8) | Std Dev.s from Median<br>$R_{\odot}$<br>(9) |
| 3450–3550 |                               | 91                | 0.428                                            | 0.099                                | 0.627                                   | GJ0844                | 0.677                        | 0.014                              | 2.51                                        |
| 3550–3650 |                               | 78                | 0.471                                            | 0.096                                | 0.663                                   | NLTT26813             | 0.771                        | 0.129                              | 3.12                                        |
| 3650–3750 |                               | 76                | 0.500                                            | 0.079                                | 0.659                                   | GJ0275.1<br>HIP106803 | 0.696<br>0.660               | 0.026<br>0.022                     | 2.47<br>2.01                                |
| 3750–3850 |                               | 67                | 0.562                                            | 0.081                                | 0.724                                   | GJ2079                | 0.826                        | 0.019                              | 3.25                                        |
| 3850–4050 |                               | 60                | 0.597                                            | 0.087                                | 0.771                                   | .                     | .                            | .                                  | .                                           |

<sup>1</sup> Recall that the minimum radius to qualify as a young star candidate is set to the median radius plus two times the radius standard deviation of the main sequence stars.

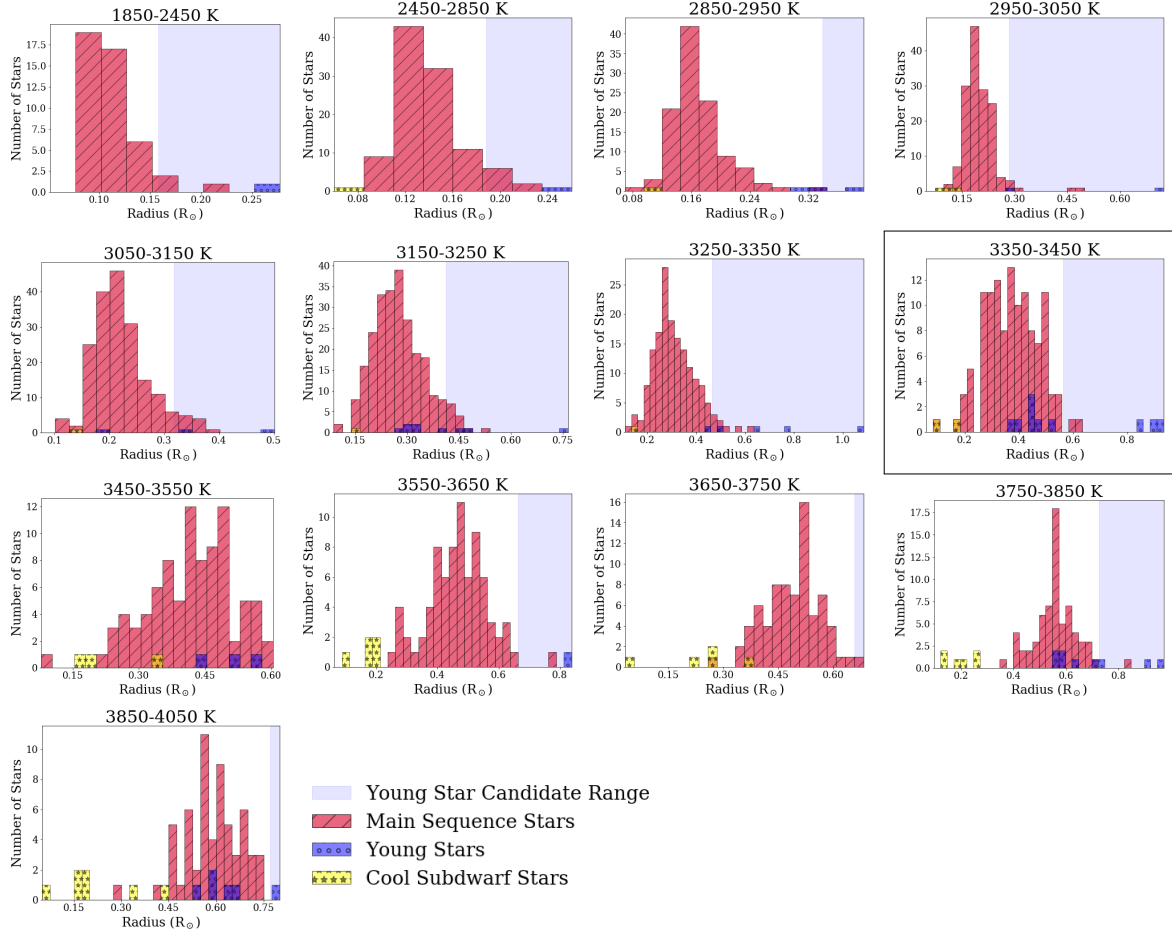


Figure 5.5: Each of the above histograms lays out the demographics and corresponding radii of stars that lie in the given temperature range. The diagram surrounded by a black outline (3350-3450 K) corresponds to the region highlighted in the right panel of Figure 5.2 to help convey the concept behind these histograms. These diagrams further illustrate that the subdwarfs (yellow bars with stars) have radii smaller than their red dwarf counterparts (red bars with diagonal stripes), whereas young stars (blue bars with circles) have generally larger radii, but sometimes remain close enough in size to their main sequence counterparts that radius alone leaves them indistinguishable. In Figure 5.2, we can easily see the boundary between subdwarfs and main sequence stars, so there are no regions shaded here to indicate subdwarf candidacy. However, it is more difficult to define a similar line or curve between main sequence and young stars. We therefore mark regions shaded in blue for radii beyond which the distribution of main sequence stars seems to drop off. These boundaries are defined to be the median radius of the (presumed) main sequence stars plus twice the standard deviation of their radii. Young star candidates are marked in the right panel of Figure 5.2 and listed in Table 5.2, and flagged as “YC” in Table D.1.

It is important to remember that when choosing young star candidates via this method, unresolved binaries may masquerade as young stars in our analysis. Because two stars of similar type will maintain a similar combined temperature, their increased brightness corresponds to a larger estimated radius compared to a single star at the same distance. Although we have attempted to remove unresolved multiples from our sample, there are undoubtedly a few very close binaries that remain unidentified, so this *caveat* remains.

*Old Subdwarfs:* The Galactic fossils known as subdwarfs formed in the early epochs of the Milky Way coalescence. They tend to have low metallicities because the interstellar medium from which they formed contained few heavy elements, and they typically have high space motions because they have experienced many encounters with giant molecular clouds and stars over the billions of years of their lives. Virtually all of the known subdwarfs indicated with yellow points in Figure 5.2 fall unambiguously below the presumed main sequence stars in red. Thus, there appears to be a clear divide separating main sequence stars and cool subdwarfs in our radius vs. effective temperature diagram that for young stars. Rather than rely on histograms like those used to identify the young stars, we have selected cool subdwarf candidates in a straightforward way, choosing stars that fall exclusively among the known subdwarfs below the “radius main sequence.” The divide between subdwarfs and main sequence stars is marked in the right panel of Figure 5.2 as the “Main Sequence-Subdwarf Boundary,” which we define as the line passing through  $0.485 R_{\odot}$  at 4000 K and  $0.085 R_{\odot}$

at 3100 K:

$$R = 4.444 \times 10^{-4} \times T_{eff} - 1.293 \quad (5.1)$$

where radius,  $R$ , is in units of  $R_{\odot}$  and effective temperature,  $T_{eff}$ , in units of K, must be  $\geq 3100$  K. Stars less than or equal to this radius are declared subdwarf candidates and are listed in Table 5.3 by name in (Column 1), followed by their effective temperatures (Column 2), the minimum qualifying radii calculated by substituting their effective temperatures into 5.1 (Column 3), and the radii of the stars (Column 4). The candidates are also flagged as “SC” in Table D.1. For cooler stars, it is hard to differentiate any cool subdwarfs, but we note that one star, ESO207-061 is slightly smaller than the others, as reported in the Table 5.3. Several others may be worth isolating for follow-up observations as well, but we highlight this star because it is the smallest one  $T < 3100K$ .

Table 5.3: Cool Subdwarf Selection Criteria and 27 Candidates

| Cool Subdwarf Candidate <sup>a</sup> | $T_{eff}$ (K) | Maximum Qualifying Radius ( $R_{\odot}$ ) | Radius ( $R_{\odot}$ ) |
|--------------------------------------|---------------|-------------------------------------------|------------------------|
| G038-024                             | 3564          | 0.291                                     | 0.288                  |
| G099-025                             | 3270          | 0.160                                     | 0.159                  |
| G132-028                             | 3393          | 0.215                                     | 0.204                  |
| G262-026                             | 3830          | 0.409                                     | 0.403                  |
| GJ0052.2                             | 3530          | 0.276                                     | 0.247                  |
| GJ0465                               | 3524          | 0.273                                     | 0.264                  |
| GJ0690.1                             | 3520          | 0.271                                     | 0.260                  |
| GJ0821                               | 3706          | 0.354                                     | 0.341                  |
| GJ0907                               | 3614          | 0.313                                     | 0.279                  |
| GJ1003                               | 3368          | 0.204                                     | 0.186                  |
| GJ1019                               | 3292          | 0.170                                     | 0.168                  |
| GJ1185                               | 3525          | 0.273                                     | 0.225                  |
| GJ1188                               | 3908          | 0.444                                     | 0.277                  |
| GJ1248                               | 3555          | 0.287                                     | 0.257                  |
| LHS0150                              | 3622          | 0.317                                     | 0.273                  |
| LHS1266                              | 3498          | 0.261                                     | 0.234                  |
| LHS1882                              | 3561          | 0.290                                     | 0.276                  |
| LHS3877                              | 3383          | 0.210                                     | 0.187                  |
| LHS4053                              | 3488          | 0.257                                     | 0.252                  |
| LHS6009                              | 3268          | 0.159                                     | 0.130                  |
| LP109-057                            | 3377          | 0.208                                     | 0.178                  |
| LP355-032                            | 3242          | 0.148                                     | 0.110                  |
| LP449-015                            | 3504          | 0.264                                     | 0.256                  |
| LP681-091                            | 3903          | 0.442                                     | 0.412                  |
| LSPM1632+4024                        | 3375          | 0.207                                     | 0.083                  |
| LSPM1650+3555E                       | 3849          | 0.417                                     | 0.356                  |
| LSPM1906+2354                        | 3244          | 0.149                                     | 0.114                  |
| LSPM1912+3943                        | 3308          | 0.177                                     | 0.135                  |
| LTT07944                             | 3504          | 0.264                                     | 0.104                  |
| LTT11918                             | 3732          | 0.365                                     | 0.260                  |
| ESO207-061 <sup>b</sup>              | 2344          | .                                         | 0.077                  |

a Note that candidates are ordered left to right across Figure 5.2.

b Note that this star, ESO207-061, is identified by eye as a subdwarf candidate because it is well-beyond the applicable range of the cutoff function (Equation 5.1) described in §5.5. ESO207-061 is smaller in radius than our coldest known subdwarf, SSS1444-2019 ( $R = 0.085 R_{\odot}$ ,  $T_{eff} = 2584$  K).

For a larger sample of perhaps 10000 stars, we would apply a Gaussian curve as a function

of radius to narrower temperature slices than those used to identify young stars (one of which is highlighted in the right panel of 5.2). We could then choose a number of standard deviations from the Gaussian centers in the various temperature bins to define both young star and subdwarf candidates more rigorously.

In addition to the Tables of young and old star candidates, each star’s classification — RD for red dwarf main sequence, YG for young star, SD for subdwarf, YC for young star candidate, and SC for subdwarf candidate — is reported in the final column of the Fundamental Parameters Table D.1. Examples of our success in assigning stars to given samples include:

Young:

- TWA 8, a TW Hydra association member (age  $10 \pm 3$  Myr (Bell et al. 2015)), is identified as a young via a large radius of  $1.081 \pm 0.030 R_{\odot}$ , the largest in our sample, at an effective temperature  $T_{eff} = 3345 \pm 31$  K.
- GJ 803, AKA AU Mic, an AB Doradus moving group member (age  $149^{+51}_{-19}$  Myr (Bell et al. 2015)), is identified as young with a large radius of  $0.831 \pm 0.039 R_{\odot}$  at its temperature of  $T_{eff} = 3629 \pm 84$  K.
- TWA 26, a TW Hydra association member (age  $10 \pm 3$  Myr (Bell et al. 2015)) and the coolest ( $T_{eff} = 2218 \pm 135$  K) known young star in our sample, has a radius of  $R = 0.263 \pm 0.032 R_{\odot}$ , which is more than double the average for a main sequence star of similar temperature.

- AP Col, an Argus association member (age 40-50 Myr (Zuckerman 2019)) and the closest pre-main sequence star to the Sun (Riedel et al. 2011; Henry et al. 2018), is identified as young with  $T_{eff} = 2907 \pm 29$  K and radius  $0.331 \pm 0.007 R_{\odot}$ .

#### Cool Subdwarf:

- GJ 191 AKA Kapteyn's Star is identified as a cool subdwarf at  $T_{eff} = 3765 \pm 105$  K by its small radius of  $0.260 \pm 0.015 R_{\odot}$ .
- LHS 12, the warmest known subdwarf in our sample at  $T_{eff} = 3955 \pm 42$  K is identified as a cool subdwarf via its a radius of  $0.339 \pm 0.022 R_{\odot}$ .
- SSS1444-2019, the coolest known subdwarf in our sample at  $T_{eff} = 2584 \pm 85$  K, beyond the range of our dwarf-subdwarf dividing line, is identified by eye as a cool subdwarf via its small radius of only  $0.0847 \pm 0.0057 R_{\odot}$ .

#### Main Sequence:

- Proxima Centauri, our nearest neighbor, remains identified as a main sequence star at  $T_{eff} = 2805 \pm 46$  K and radius  $0.173 \pm 0.012 R_{\odot}$ .

There have been many efforts to identify nearby young stars, with diagnostic procedures such as BANYAN (Malo et al. 2013; 2014 and Gagné et al. 2014; 2015b; 2015a; 2018a; 2018b; 2018), and LACEwING (Riedel et al. 2017b), and efforts such as those by Zuckerman et al. 2001; 2004; 2006; 2011; 2013, Montes et al. 2001b; 2001a, et al. 2009; 2012; 2017, and others, including López-Santiago et al. (2006); Torres et al. (2006); Zhao et al. (2009); Maldonado



et al. (2010); Klutsch et al. (2014); Alonso-Floriano et al. (2015); Oh et al. (2017); Lee & Song (2018); Frasca et al. (2018). We do not presume to say that a radius estimate alone is sufficient to identify a star as young or old, but posit that radius is a neglected marker of age that can be incorporated in these procedures, effectively added to the toolbox of stellar age analysis. Of particular value is that our procedure can quickly provide radii for a large sample of stars, which can then be followed up for deeper age-related studies.

Among the 1592 primaries within 25 pc in this survey, there were previously 1503 main sequence stars, 53 known young stars, and 36 known subdwarfs. Among the main sequence stars, we now identify 56 new young star candidates and 31 new subdwarf candidates within 25 pc, bringing the totals to 1416 main sequence, 109 young and 67 old stars in the idealized case where they are confirmed to fall into their assigned categories. Thus, the result of our age evaluation is a census of 92 young stars, 42 cool subdwarfs, and 1416 main sequence primaries within 25 pc, corresponding to proportions of 5.9%, 2.7%, and 91.4% of the 1550 primaries for these stellar populations, respectively. Note that in the case of a constant rate of star formation, if the solar neighborhood is  $\sim 10$  billion years old and it takes a red dwarf  $\sim 100$  million years to make it onto the main sequence, only stars that have formed in the past 100 million years would still be “young”, corresponding to only 1% of the total stars. However, star formation is not constant (Haywood et al. 2013), and there are several young moving groups of stars that formed together and are passing through the solar neighborhood, including  $\beta$  Pictoris, AB Doradus, and the Argus Association (ages and distances in Bell et al. (2015), Gagné & Faherty (2018)).

The current breakdown of the full 1593-star sample in the idealized case in which candidates are *bona fide* is as follows:

- Main Sequence Stars (cutoff at 25 pc): 1417
  - ▷ Northern Sky: 959
  - ▷ Southern Sky: 458 (including Proxima Centauri)
- Young Stars: 109
  - ▷ Within 25 pc: 92 (45 north/47 south, with 56 NEW CANDIDATES )
  - ▷ Between 25 and 50 pc: 17 (5 north/12 south)
- Subdwarfs: 67
  - ▷ Within 25 pc: 42 (25 north/17 south, with 31 NEW CANDIDATES)
  - ▷ Between 25 and 50 pc: 25 (15 north/10 south)

### ***5.5.1 The Case for Luminosity versus Radius as an Age Indicator***

An argument can be made that because luminosity scales quadratically with radius, luminosity should be a more sensitive indicator of youth, given the pivotal concept that young stars are inflated relative to their main sequence counterparts of the same effective temperature. With increased size also comes a quadratic increase in luminosity. Here we discuss several points supporting the case for using radius.

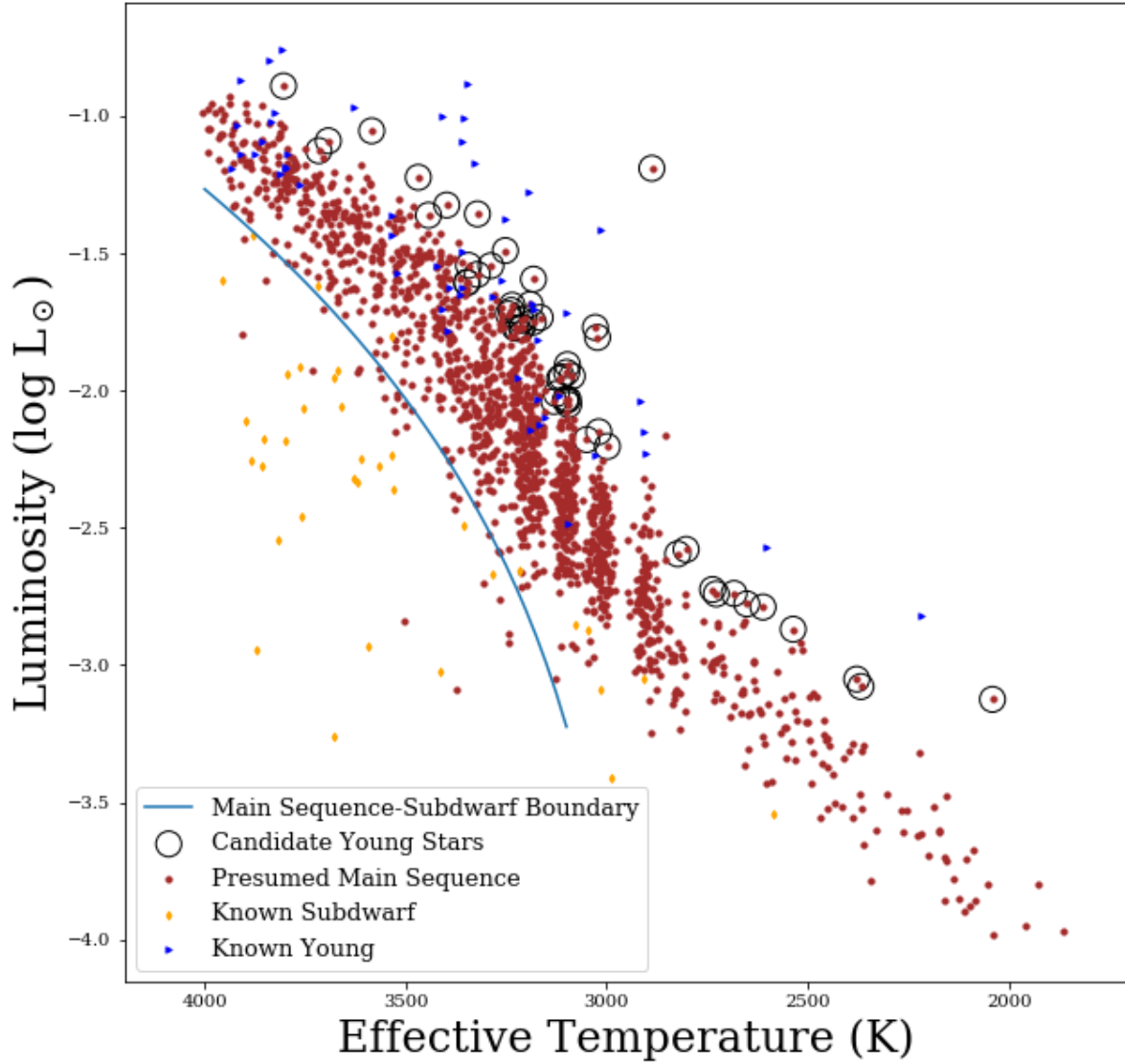


Figure 5.6: This empirical Hertzsprung-Russell Diagram includes our main sequence stars, known young stars, and known subdwarfs. Young star candidates chosen according to the described procedure are circled, identically as in the right panel of Figure 5.2. The subdwarf-main sequence boundary is also drawn, converted from its linear form in radius-effective temperature space to a logarithmic quadratic in log luminosity-effective temperature space using the Stefan-Boltzmann Law.

(1) Although often important in deriving radius, luminosity is not always readily available or the most accurately measured parameter, e.g. in the case of interferometry where the star is directly resolved.

(2) In Figure 5.6, we see that many of our candidate young stars stand out in luminosity and subdwarf candidates remain below our dividing line (see right panel of 5.2), which has been converted to luminosity as a function of radius using the Stefan-Boltzmann Law. However, because the subdwarfs lie further away from the main sequence, and the trend of the dividing line is less linear than in our radius vs. effective temperature diagram, if we used this figure to identify the main-sequence-subdwarf boundary, it might lie at a lower luminosity or take on a different shape, and we may overlook some subdwarf candidates.

(3) We make the case for radius as a better indicator of youth than luminosity. As can be seen in Figure 5.6, there is a spread in luminosity for main sequence stars of the same temperature. The same can be said for radius at a given temperature. The deviation of the young star value from the biggest/brightest star is more pronounced in radius space than in luminosity space.

To illustrate this, observe that main sequence stars of around 3800 K span a factor of roughly 3 in luminosity, from around 0.03 to 0.1  $L_{\odot}$  (we'll call this factor,  $f$ ,  $f_{L,MS}$ ). Meanwhile, a nearby young star has a luminosity of  $\sim 0.15 L_{\odot}$ , a factor of  $\sim 1.5$  times the luminosity of the brightest main sequence star ( $f_{L,young}$ ).

Meanwhile at the same temperature, radius spans roughly 0.4 to 0.75  $R_{\odot}$ , a factor of nearly 2 ( $f_{R,MS}$ ) and the young star lies at roughly 0.95  $R_{\odot}$ , a factor of  $\sim 1.3$  times the

size of the largest main sequence star ( $f_{R,young}$ ). The ratio of these factors for luminosity is  $\frac{f_{L,MS}}{f_{L,young}} = \frac{1.5}{3} = 0.5$  and for radius is  $\frac{f_{R,MS}}{f_{R,young}} = \frac{1.3}{2} = 0.65$ . This illustrates that the deviation we see in a young star from the normal spread in values is larger in radius space than in luminosity space. Thus, radius can be a more effect indicator in isolating young stars.

As discussed above, radius is a useful value for identifying young stars and cool subdwarfs, and its utility cannot necessarily be replaced with luminosity.

## 5.6 Metallicity, Surface Gravity, and Alpha Enhancement

We have presented results for the fundamental parameters effective temperature, luminosity, and radius in the previous sections. Unfortunately, overall we find that our derived metallicity, surface gravity, and alpha enhancement results are not reliable. With subsets of 53 known young and 36 known old stars in-hand, we can derive the mean and standard deviation of metallicities for both sets and find values of  $-0.002 \pm 0.140$  for young stars and  $-0.019 \pm 0.195$  for the subdwarfs. This is in contrast to expected metallicities that would be non-negligibly greater than and less than zero for young and old stars, respectively. However, this is not always the case for young stars, which are often found with solar metallicities in open clusters. The fact that the spectra need to be adjusted to match observations in order to match published luminosities speaks to the fact that various atomic and/or molecular species may not be sufficiently modeled for the BT-Settl 2011 model spectra to be used as a reliable means to derive metallicities for low-mass stars, at least not via our method that uses broad-band filters. Similar statements can be made for surface gravity and alpha

enhancements, which we have necessarily limited even more so than metallicities. As such, although our results have metallicity, surface gravity, and alpha enhancements expected for main sequence red dwarfs (by virtue of our initial constraints), we do not report their final values here.

## CHAPTER 6

### Discussion

#### 6.1 Overview

With the results in-hand, in §6.2, we compare our results and those reported by others. In particular, our large sample of stars allows us to make several evaluations of various studies, many of which could not previously be compared because of the limited numbers of stars common to the studies. We focus on our southern sample in these comparisons because it has been under the greatest scrutiny for the longest time and prepared to be submitted to a peer-reviewed journal. Comparisons between our southern hemisphere work and that of Boyajian et al. (2012b), Dieterich et al. (2014), Mann et al. (2015), Filippazzo et al. (2015), and Rabus et al. (2019) are described in §6.2.1 and Figure 6.1 for effective temperature, §6.2.2 and Figure 6.2 for luminosity, and §6.2.3 and Figure 6.3 for radius. Of particular note, we identify three main sequence stars smaller than the “smallest star” identified by Dieterich et al. (2014), namely, from smallest to largest ESO207-061, 2MA0251-3502, and 2MA0921-2104. In §6.2.4, we reveal a systematic offset between our results and those of Casagrande et al. (2008), and in §6.2.5 we discuss our close match to the cool subdwarf results presented by Kesseli et al. (2019). Throughout §6.2.1, §6.2.2, §6.2.3, and particularly in §6.2.6, we discuss the nuances between our warm star and cool star results and how they compare to these other efforts. We find that (a) our warm subsample stars (with  $V - K < 7$ ) have derived effective temperatures that match results presented by Mann et al. (2015) to within  $\sim 1\sigma$ , (b) our cool subsample stars (with  $V - K \geq 7$ ) have luminosities that match results

presented by Filippazzo et al. (2015) to within a median absolute difference of 6%, and (c) as mentioned briefly in §5.2 and discussed in more detail below, our radius results match those determined via long-baseline optical and infrared interferometry to within  $\sim 6\%$ .

We describe several advantages of our method over other procedures in §6.3, including that our procedure applies to stars smaller and cooler than those characterized by *Gaia* DR2. Our final conclusions are reported in §6.4.

## 6.2 Comparisons to Other Work

The effective temperatures, luminosities, and radii of subsets of our stars can be compared to the spectroscopic work by Mann et al. (2015) (52 stars), LBI results found for directly imaged stars, such as those from Boyajian et al. (2012b) (8 stars) and Rabus et al. (2019) (11 stars), spectroscopic and photometric luminosity results by Filippazzo et al. (2015) (20 stars), the original version of our method, presented by Dieterich et al. (2014) (23 stars), an M dwarf version of the infrared flux method described by Casagrande et al. (2008) (84 stars), and a subdwarf-focused study by Kesseli et al. (2019) (18 stars). We compare our results to the corresponding overlapping subsets of these efforts both in terms of each of the subsets in Table 6.1 and star by star in Table E.1. In §6.2.1, §6.2.2, and §6.2.3, for effective temperature, luminosity, and radius, respectively, and within the warm and cool subsamples, we emphasize different publications according to which parameters have been provided. One exception is the work of Casagrande et al. (2008), for which results are systematically offset from our results (and others), and therefore that effort is addressed separately in §6.2.4. Work by



Kesseli et al. (2019) is also addressed separately in §6.2.5 because (a) the overlapping sample is only 18 stars, (b) it is the only known study other than ours that specifically includes a sample of cool subdwarf radii, and (c) their methods have distinct overlap with Mann et al. (2015) and Filippazzo et al. (2015).

Table 6.1: Comparison of Results with Literature Values

| Publication              | # of Stars | Mean<br>$\Delta T$ | Median<br>$\Delta T$ | Mean<br>$\Delta F\%$ | Median<br>$\Delta F\%$ | Mean<br>$\Delta L\%$ | Median<br>$\Delta L\%$ | Mean<br>$\Delta R\%$ | Median<br>$\Delta R\%$ | Mean<br>$\Delta \theta\%$ | Median<br>$\Delta \theta\%$ |
|--------------------------|------------|--------------------|----------------------|----------------------|------------------------|----------------------|------------------------|----------------------|------------------------|---------------------------|-----------------------------|
| Casagrande et al. (2008) | 84         | 123                | 127                  | -                    | -                      | -                    | -                      | -                    | -                      | 6.9                       | 6.9                         |
| Boyajian et al. (2012b)  | 8          | 81                 | 88                   | 6.5                  | 5.5                    | 7.3                  | 6.2                    | 6.7                  | 7.0                    | 6.5                       | 6.5                         |
| Dieterich et al. (2014)  | 23         | 86                 | 78                   | -                    | -                      | 4.3                  | 2.8                    | 8.1                  | 6.7                    | -                         | -                           |
| Mann et al. (2015)       | 52         | 79                 | 65                   | 2.5                  | 1.5                    | -                    | -                      | 5.2                  | 4.8                    | -                         | -                           |
| Filippazzo et al. (2015) | 20         | 156                | 153                  | -                    | -                      | 11.9                 | 6.9                    | 12.2                 | 13.4                   | -                         | -                           |
| Kesseli et al. (2019)    | 18         | 103                | 101                  | -                    | -                      | 12.6                 | 8.5                    | 10.0                 | 8.9                    | -                         | -                           |
| Rabus et al. (2019)      | 11         | 72                 | 52                   | 5.5                  | 5.0                    | 5.7                  | 5.4                    | 5.7                  | 3.3                    | 6.0                       | 3.7                         |

Above are comparisons of our effective temperatures, bolometric fluxes, bolometric luminosities, radii, and angular diameters to those reported in seven other publications. The number of overlap stars for each comparison are listed, as well as mean and median offset values for each parameter, in the sense that the ratio denominators are set to be values from the previously published work. Temperature units are in Kelvin. Units cancel out for the remaining values, but, for full disclosure, calculations were performed in units of  $10^{-8} \text{ erg s}^{-1} \text{ cm}^{-2}$ ,  $L_{\odot}$ ,  $R_{\odot}$ , and milliarcseconds for bolometric flux, bolometric luminosity, radius, and angular diameter, respectively. Note that this is not an all-inclusive list; papers to be included in future analysis include Cantrell et al. (2013), who followed a similar procedure to our own to get fundamental parameters of low-mass stars within 5pc, and Schweitzer et al. (2019), who use a combination of broad-band photometry, high resolution spectroscopy, and the BT-Settl models to derive values for 293 stars from the CARMENES survey (Quirrenbach et al. (2010, 2016), carmenes.caha.es).

Unless specified otherwise, henceforth, all statements regarding stars in these efforts pertain to the those that overlap with our own sample. As discussed in §4.3.2, our stellar sample can be split between warmer and cooler stars at  $V - K = 7$ . The stars studied using LBI all pass through our warm door, with the exception of GJ 406, studied by Rabus et al.

(2019). Mann et al. (2015)’s stars also fall into the warm star regime, with the exception of GJ 406. Dieterich et al. (2014) and Filippazzo et al. (2015)’s stars fall into the cooler star regime.

During the following comparisons, we rely on median absolute differences between two sets of values, which we deem to provide more realistic comparisons than mean absolute differences because there are often a few stars with large mismatches that would otherwise skew the interpretations. Differences given as percentages are calculated in the sense of our value divided by the previously published value. The overall outcome is that our results match those of previous publications to the degree that we are confident moving forward using our procedure on even larger samples of stars. The quality of our results speaks not only to the quality of our procedure, but also to that of the BT-Settl 2011 photospheric models, with the caveat that some care should be taken in using them to derive luminosities.

### ***6.2.1 Effective Temperature***

Comparison of our temperatures to those in the literature are presented in Figure 6.1, where we show individual comparisons to four different publications in separate panels on the left. Note that the comparisons for Mann et al. (2015) and the interferometric publications are for our warm stars and those for Filippazzo et al. (2015) and Dieterich et al. (2014) are for cool stars. The larger plot on the right combines all four studies, permitting a comprehensive view that spans the full temperature range of red dwarfs. Note the gap in coverage of previous efforts around 3000 K; we have filled in that gap with many stars, but there are no overlapping stars with the previous studies. We next address the warm and cool star

subsamples in turn.

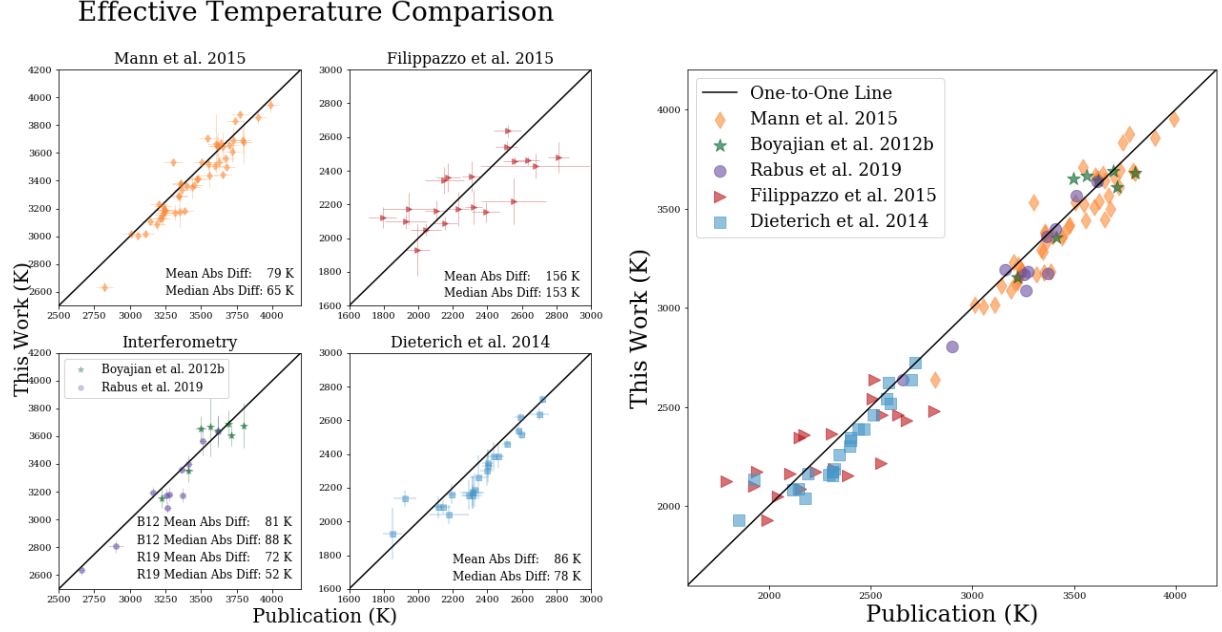


Figure 6.1: Here we compare our effective temperatures to those measured by others, as discussed in §6.2.1. The median absolute differences between our temperatures and those of others are 65 K for Mann et al. (2015), 88 K for Boyajian et al. (2012b), 52 K for Rabus et al. (2019), 153 K for Filippazzo et al. (2015), and 78 K for Dieterich et al. (2014). We note the systematic trend observed in our comparison with Dieterich et al. (2014); the fact that they use a manual color selection method rather than our automated pre-selected colors may be the root cause of this systematic. In the right-most panel we demonstrate our ability to accurately determine stellar effective temperatures for all red dwarfs across a span of roughly 2000 to 4000 K.

*Warm Stars:* Mann et al. (2015) use the most direct means to determine stellar effective temperature — comparing spectroscopy to the BT-Settl models, predominantly as discussed by Mann et al. (2013). We find that our temperatures differ from theirs with a median absolute difference of 65 K, with a systematic shift in the sense that our temperatures are cooler. They also discuss their improvement upon the method used by Boyajian et al. (2012b), who take a more roundabout approach by performing an SED fitting method with *BVRIJHK*

photometry and the older Pickles (1998) models to determine bolometric fluxes. Boyajian et al. (2012b) then use a modified Stefan-Boltzmann Law to combine bolometric fluxes with angular sizes and parallaxes to produce temperatures. In contrast, Rabus et al. (2019) use an SED fitting method using undisclosed photometric data to determine bolometric flux, which they in turn substitute into the modified Stefan-Boltzmann Law (using bolometric flux, angular diameter, and a parallax rather than bolometric luminosity and radius). Given that the required data are not presented in their paper, it is hard to know the quality of photometry used, and therefore, the quality of these results. Overall, there are fewer overlapping targets between the two interferometric studies and our own than for Mann et al. (2015) because LBI has only been used to resolve the biggest, brightest stars as seen from Earth, most of which unfortunately have saturated data in 2MASS and/or *WISE*. Note that Mann et al. (2015) utilize the most direct observations to determine effective temperature, ensuring that any systematic trends are not due to saturation of photometric data. With these caveats in mind, we find that we match the results of Boyajian et al. (2012b) and Rabus et al. (2019) to 88 K and 52 K, respectively. Overall, our temperatures are generally lower than those presented in these three publications, but it is unknown in which work or during which step of these procedures the discrepancy is introduced.

*Cool Stars:* We compare our cool star temperatures primarily to results by Filippazzo et al. (2015) and our previous work that uses a similar procedure, Dieterich et al. (2014). In addition, there is one cool star in common with Mann et al. (2015) and Rabus et al. (2019). Other than our own previous work, Filippazzo et al. (2015) is the only dedicated

study of cool star temperatures. They derive luminosity via a stitched together SED created using both photometric and spectroscopic data. Radius is then derived based upon assigned ages and evolutionary models, and temperature is calculated via the Stefan-Boltzmann Law. We attribute our median absolute difference of 135 K and the large scatter demonstrated in Figure 6.1 to issues with their chosen evolutionary models and/or ages used to derive their radii. Our luminosity discussion will reveal that our luminosities match quite well, and that it is after this stage in their procedure that our results begin to diverge. Notably, their temperature error bars are often larger than those reported in the other four publications. In contrast, with a median absolute difference of 75 K, we do not see a large scatter in our comparison to Dieterich et al. (2014). Because the method presented by Dieterich et al. (2014) is the ancestor of the one described here, the match between our results cannot be used as evidence that our mismatches with Filippazzo et al. (2015) do not originate within our procedure. Mann et al. (2015) examines one star in our cool star regime: GJ 406; our comparison to this stars yields the largest mismatch between our results and those from Mann et al. (2015), with an offset of 182 K. The single cool star observed with LBI is also GJ 406, for which Rabus et al. (2019) derives a temperature ( $2657 \pm 20$  K) less than  $1 \sigma$  from our own ( $2636 \pm 35$  K), an offset of only 21 K. However, this single star is insufficient to explore the typical differences between their effective temperature results and our own.

It is important to note that our comparison with Dieterich et al. (2014) reveals a systematic shift in the sense that our derived temperatures are cooler. Recall that metallicity, surface gravity, alpha enhancement, and effective temperature are necessarily intertwined in

determining the temperature via our procedure. Dieterich et al. (2014) manually selected metallicity, surface gravity, and alpha enhancement according the smallest  $opt - IR$  and  $opt - opt$  color residuals across all models. They then eliminated outlier colors by eye and repeated the process as deemed necessary until they were satisfied with the results. In contrast, we use a uniform, automated, iterative, RSR-minimizing procedure and consistent set of colors to determine these values, removing the human element. We suspect that our systematically lower temperatures are partially due this shift in methodology. The corrections made to the  $W3$  band fluxes are also likely a factor.

Overall, we conclude that while improvements can still be made, we are confident in our ability to derive reasonably reliable effective temperatures for both warm and cool stars. We believe our results are sound because our temperatures are typically within 100 K of results from four different previous efforts that use various techniques. In addition, as described in §4.3.4, our luminosities and radii are easier to measure directly than effective temperature, and are tight matches to the LBI benchmark work for both cool and warm stars (as described in §5.2).

### **6.2.2 Luminosity**

Similar in layout to the temperature comparisons in Figure 6.1, Figure 6.2 illustrates our matches to the luminosity values of Mann et al. (2015), Boyajian et al. (2012b), Rabus et al. (2019), Filippazzo et al. (2015), and Dieterich et al. (2014). We note that Mann et al. (2015) do not report luminosities, so we derive values using our parallaxes and their bolometric flux results.

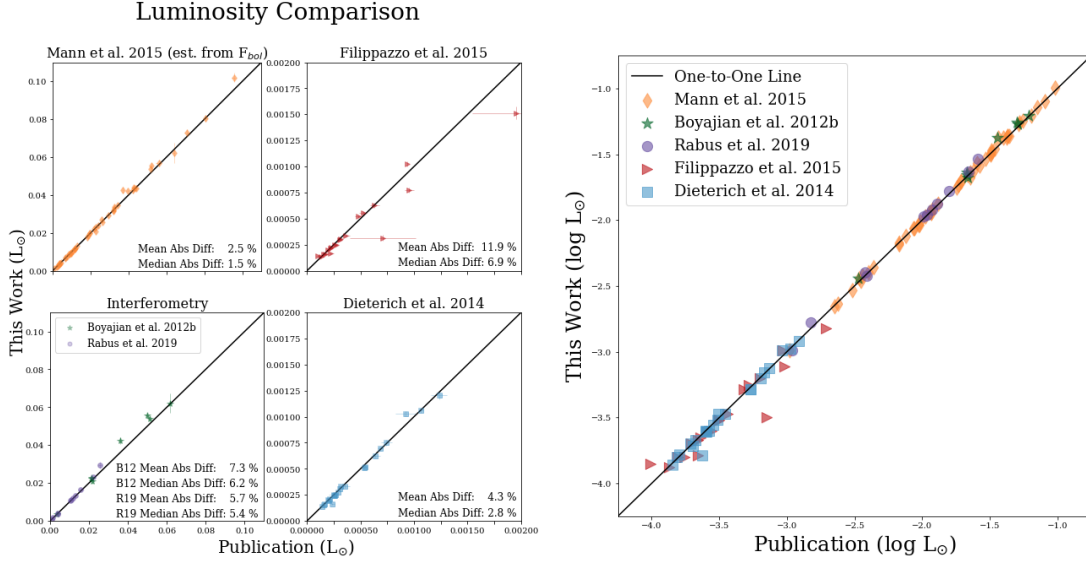


Figure 6.2: Here we compare our luminosities in units of  $\log_{10} L$ , where  $L$  is in units of solar luminosities, to those measured by others, as discussed in §6.2.2. The median absolute differences between our luminosities and those of others are 1.5% for Mann et al. (2015), 6.2% for Boyajian et al. (2012b), 5.4% for Rabus et al. (2019), 6.9% for Filippazzo et al. (2015), and 2.8% for Dieterich et al. (2014). As described in §4.3.4, our luminosity results are more directly linked to observations than temperature determinations, and our tight match to results obtained by Mann et al. (2015) using spectroscopy and Filippazzo et al. (2015) using a combination of spectroscopy and photometry speak to the quality of all three data sets, and to the power of our method to succeed with easy-to-acquire photometry data.

*Warm Stars:* Because of the large number of overlapping stars, we again emphasize the comparison of our warm star results to Mann et al. (2015), who determine bolometric flux using spectra. Our luminosity results match to within a median absolute difference of only 1.5%. Because both sets of luminosities are calculated with the same parallaxes, this is equivalently a direct comparison of bolometric flux. Our results match values from the interferometry studies by Boyajian et al. (2012b) and Rabus et al. (2019) to within differences of 6.2% and 5.4%, respectively. Because flux values are derived using a photometry-based SED fitting method for both interferometry papers — using the older Pickles (1998) models

in Boyajian et al. (2012b) (as described by van Belle et al. (2008)) and undisclosed data in Rabus et al. (2019) — we take our superior match to the spectroscopy-based SED fit results of Mann et al. (2015) to imply that our warm star bolometric luminosity values are robust and accurate, with the advantage that they can be derived with far-easier-to-obtain photometry, often already available from large surveys, than from spectra.

*Cool Stars:* We emphasize our cool star comparison to results by Filippazzo et al. (2015), who provide a very carefully constructed set of luminosities for low-mass stars and brown dwarfs using a combination of photometry and spectra. By using observations from as broad a range of wavelengths as possible, rather than relying on photospheric models, they acknowledge that these models need, and are, improving for these objects, while also serving as an excellent test of model accuracy. We reiterate the need to directly measure fundamental parameters for more low-mass stars, given the limited sample currently targeted to date by Dieterich et al. (2014) (50 total stars), Filippazzo et al. (2015) (72 total stars), and our present study (126 total stars)<sup>1</sup>. The reasonably close match of our luminosities to those of Filippazzo et al. (2015), with a median offset of 6.9%, validate both efforts and speak to the quality of both datasets (recall that our luminosities are derived by adjusting the best-fitting spectrum from the temperature procedure until it matches observations within 0.03 mag). Some discrepancies are caused by different parallaxes used by Filippazzo et al. (2015) — all but 6 of our parallaxes are within 3 mas of each other, but occasional large offsets are

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<sup>1</sup>For purposes of this census, Dieterich et al. (2014) objects were considered stars if they had a  $T_{eff}$  smaller than that of their “smallest star” listed as  $2074 \pm 27$  K. Filippazzo et al. (2015) objects were considered stars if they had a  $T_{eff} \geq 1850$  K, just under the smallest temperature listed here of DEN1058-1548 at  $1862 \pm 160$  K.



present, e.g., an offset of 2.2 in flux for 2MA2127-4215 because they used a parallax of 42 mas whereas we used 29 mas.<sup>2</sup>. The 2.8% match between Dieterich et al. (2014) and our results is not surprising, given the similarity in our procedures. Once more we illustrate that accurate fundamental parameters can be deciphered for low-mass stars without obtaining spectra.

### 6.2.3 Radius

As touched upon in §5.2, we can break our radius validation into two sets of comparisons: (1) a large ensemble of long-baseline optical and infrared interferometry results (Figure 5.1) and (2) the three additional efforts just discussed in the temperature and luminosity comparisons (Figure 6.3). Here we evaluate the comparisons as an ensemble, rather than in separate warm and cool subsamples. As before, we use a similar layout of individual comparisons in the for small panels in the left of Figure 6.3, and combine the comparisons in the right panel.

For stars with sizes of 0.10–0.65  $R_{\odot}$ , we are confident in our radii; the majority of results presented in the right panel of Figure 6.3 fall on the one-to-one line with an overall median absolute difference of 5.5%. Focusing on the results from interferometry alone is equally encouraging. Figure 5.1 illustrates our ability to reproduce radii and angular diameters from interferometry to within a median absolute difference of 6%, with matches improving with more recent publications (Boyajian et al. (2012b): 6.5%, Rabus et al. (2019): 3.7%). These Figures only illustrate the most recent result for each star; we include a comparison with all known interferometric results for red dwarfs to date in Table 5.1. Because LBI efforts resolve

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<sup>2</sup>The new *Gaia* DR2 parallax is 28 mas (Gaia Collaboration et al. 2016, 2018; Lindegren et al. 2018)

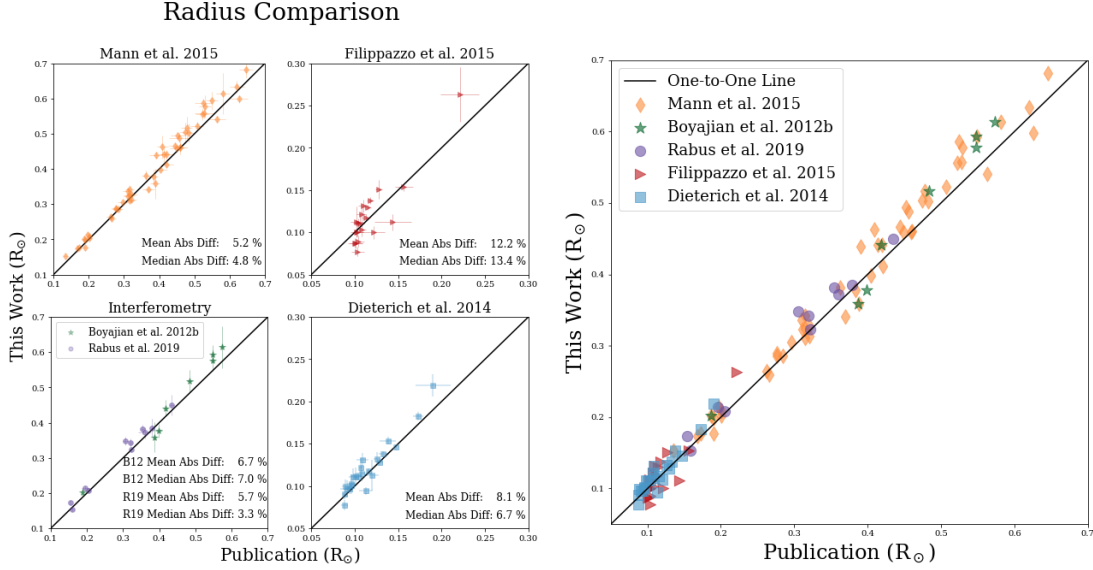


Figure 6.3: Here we compare our radii in units of solar radii,  $R_{\odot}$ , to those measured by others, as discussed in §6.2.3. Our radius results generally match those for the easier-to-study early M dwarfs more closely than for cooler stars. In particular, there are significant discrepancies between our results and those of Filippazzo et al. (2015). The median absolute differences between our radii and those of others are 4.8% for Mann et al. (2015), 7.0% for Boyajian et al. (2012b), 3.3% for Rabus et al. (2019), 13.4% for Filippazzo et al. (2015), and 6.7% for Dieterich et al. (2014). Most importantly, our results are a close match to the directly measured values obtained via LBI by Boyajian et al. (2012b) and Rabus et al. (2019), further illustrated in Figure 5.1 and described in §5.2.

stars directly, our match to the LBI results to 6% is arguably more valuable than any other measure of validating our radii. In comparison, we find differences of 4.8%, 13.4%, and 6.7% between our radii and those of Mann et al. (2015), Filippazzo et al. (2015), and Dieterich et al. (2014), respectively, with no obvious large systematic offsets.

Worthy of detailed discussion are the radii of the smallest stars. We are especially encouraged that we match the five smallest interferometrically observed stars (smallest to largest: GJ 406, Proxima Centauri, Barnard’s Star, GJ 729, and GJ 447) to within a mean absolute difference of 6.8%. Recall that there is only one red dwarf within our cool sample

at  $V - K = 7.53$  measured with LBI — GJ 406, recently observed by Rabus et al. (2019) — for which we find a radius of  $0.154 R_{\odot}$  that is 3.1% larger than measured interferometrically. Therefore, we only have one data point available to probe the accuracy of our method for the cool subset of stars directly ( $V - K > 7$ ). Our remaining options are comparisons to Filippazzo et al. (2015), one star in Mann et al. (2015), (GJ 406, matching to within 10%), and one star in Kesseli et al. (2019) (GJ 406, matching to within 6%), discussed further in §6.2.5. Filippazzo et al. (2015) does not cite any radii smaller than  $0.1 R_{\odot}$  for any of our 19 overlapping stars, while we derive main sequence star radii near the hydrogen burning limit as small as  $0.077 R_{\odot}$ , 23% smaller than theirs. Unfortunately, no work other than our previous effort, Dieterich et al. (2014), presents radii of more than a few stars this small. In fact, we find stars as small as  $0.058 R_{\odot}$  (LHS 3181), as shown in the top left panel of (Figure 5.2).

*Small Main Sequence Stars:* We derive radii for three stars that are slightly smaller than the radius cited for the smallest main sequence star (2MA0523-1403 at  $0.086 R_{\odot}$ ) found by Dieterich et al. (2014), for which we find  $0.084 R_{\odot}$ . Identifying the smallest stars is key to studies of low-mass stars and brown dwarfs because the smallest radius defines the boundary between the two types of objects. There is a local minimum in radius that marks the transition from main sequence stars that fuse hydrogen and brown dwarfs that are supported by electron degeneracy pressure. In order of smallest to largest, the smallest main sequence stars in our sample, all cooler than 2500 K and not known to be subdwarfs, are:

1. ESO207-061 —  $0.077 \pm 0.006 R_{\odot}$ ,  $V-K = 9.05$

(Dieterich et al. (2014) found  $R = 0.088 \pm 0.004 R_{\odot}$ )

2. 2MA0251-3502 —  $0.082 \pm 0.004 R_{\odot}$ ,  $V-K = 10.06$

3. 2MA0921-2104 —  $0.084 \pm 0.005 R_{\odot}$ ,  $V-K = 9.29$

4. 2MA0523-1403 —  $0.084 \pm 0.007 R_{\odot}$ ,  $V-K = 9.35$

(Dieterich et al. (2014) found  $R = 0.086 \pm 0.003 R_{\odot}$ )

The only suspect photometry value for these four stars is the  $W3$  band signal-to-noise ratio of  $\sim 10$  exhibited by star (1). However, we expect this alone to have little effect on our results. In addition, as described in §5.5, (1) may also be a subdwarf; it is noticeably below the other stars in the radius vs. effective temperature diagram (Figure 5.2).

Star (2) has sub-optimal Monte Carlo results from the flux fitting procedure, indicating that a small change in the observed magnitudes can produce a non-negligible change in measured bolometric flux, and therefore radius.

Finally, we presently see no reason that our results for stars (3) and (4) are suspect.

*Small Subdwarfs:* We find a few subdwarfs that appear to have radii even smaller than these tiny main sequence stars. Properties of subdwarfs, including knowledge that they may be smaller than Jupiter and Saturn, are critical to refining stellar models at the extreme limits of metallicity and radius, especially because M subdwarfs are so faint and rare that they are often neglected. However, we reiterate the *caveat* that the accuracy of our results in this regime is hard to evaluate; although our results for the larger, more metal-rich stars

are validated by LBI measurements and comparisons to other previous efforts, we have no other work to compare to for stars this small. Furthermore, although they are arguably the best models available, there is still room for improvement at low metallicities in the BT-Settl CIFIST 2011 model grid (Rajpurohit et al. (2012) investigation of source opacities, Jao et al. (2016) evaluation of (Baraffe et al. 2015) evolutionary models). In a future effort with a larger subdwarf sample, we may re-calculate the subdwarf fundamental parameters using a low-metallicity version of the more recent 2015 model grid (unpublished, granted via private communication with Derek Homeier).

The smallest cool subdwarfs revealed in this work are:

1. LHS 3181 —  $0.058 \pm 0.003 R_{\odot}$ ,  $V-K = 3.93$
2. SSS1013-1356 —  $0.073 \pm 0.005 R_{\odot}$ ,  $V-K = 5.83$
3. LHS 335 —  $0.075 \pm 0.009 R_{\odot}$ ,  $V-K = 3.61$

We note that historically it has been difficult to find subdwarfs in multi-star systems (Jao et al. 2016). In addition to their paucity in the solar neighborhood, meaning that few candidates for multiplicity are available, the lack of companions to subdwarfs may be caused by formation processes for low metallicity protostellar environments and/or companion stripping during the vast timescales of their lifetimes. In addition, cool subdwarfs are intrinsically faint, making them more difficult to observe than their brighter metal-rich counterparts.

#### ***6.2.4 Mismatch with the Multiple Optical-Infrared Technique (MOITE) Developed by Casagrande et al. (2008)***

Figure 6.4 illustrates the clear offsets in temperatures and angular diameters between our work for 84 stars and the results obtained by Casagrande et al. (2008) using a modified version of the infrared flux method called the Multiple Optical-Infrared Technique (MOITE). We find that temperatures derived using MOITE by Casagrande et al. (2008) are cooler by an average of 127 K, with the disparity increasing with decreasing temperature.

This is in line with the trend and 140 K offset found by Mann et al. (2015) when they performed a 19-star comparison. Our results further validate their proposal that the offset increases with decreasing temperature: our coolest overlapping star is at 2500 K compared to the 3100 K star reported by Mann et al. (2015). Explanations for the disparity between our method and the MOITE are well laid out by Mann et al. (2015) and include (1) the unaccounted for divergence from a simple Rayleigh-Jeans tale with decreasing mass, (2) the assumption that the PHOENIX models used were of sufficient accuracy in this stellar regime, and (3) small number statistics for validation. Paired with the result of Mann et al. (2015), our findings indicate that using MOITE as a means to derive low-mass star fundamental parameters, at least without applying a correction, is not advised.

#### ***6.2.5 Comparison with the Cool Subdwarf Study of Kesseli et al. (2019)***

Until this point, we have mostly excluded the work done by Kesseli et al. (2019) from our discussions. We have chosen to address this paper separately because it focuses on our often-neglected cool subdwarf neighbors. The results of our comparison are shown in Table 6.1

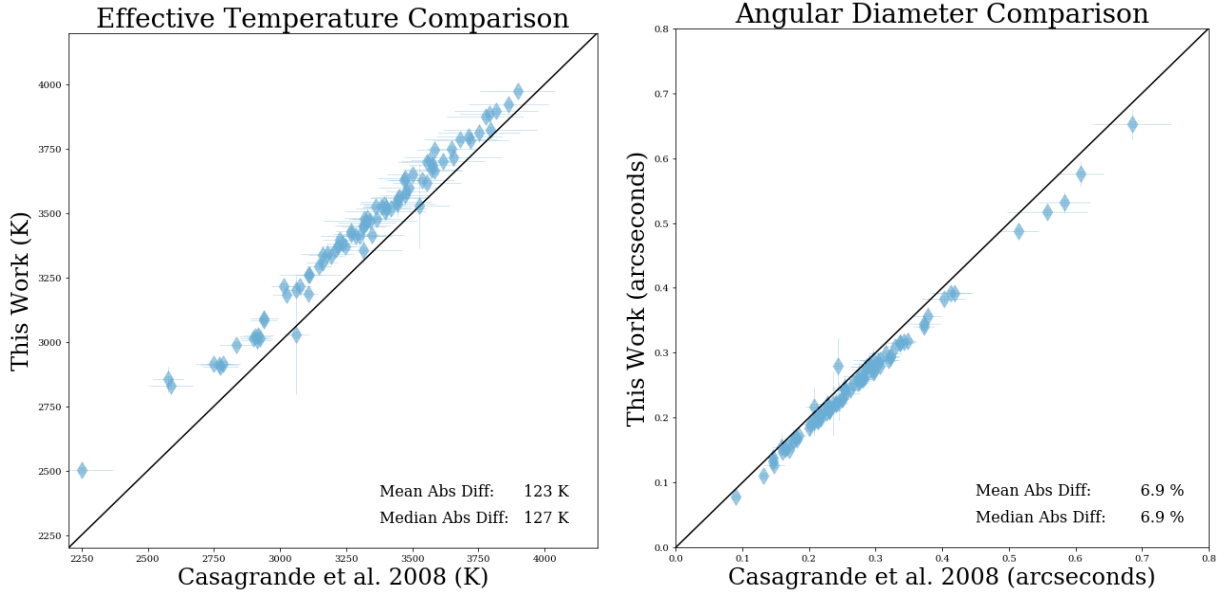


Figure 6.4: Similarly to Mann et al. (2015), we find that there are significant discrepancies between our results for temperatures and angular diameters and those of Casagrande et al. (2008). As such, we would not recommend using this method without applying an appropriate correction.

and Figure 6.5 and use the data presented in Table E.1. Their derivation of temperature is very similar to the procedure used by Mann et al. (2015), while their luminosity procedure is similar to that employed by Filippazzo et al. (2015). We are in strong agreement with both of these efforts in these respective parameters (see §6.2.1 and §6.2.2, Table 6.1, and Figures 6.1 and 6.2). As such, it is puzzling that our results are not a better match to those in Kesseli et al. (2019) — the average median differences are 101 K, 8.5%, and 8.9%, respectively, for effective temperature, luminosity, and radius. At this time, we are uncertain why these discrepancies arise, and given the lack of other dedicated subdwarf studies to determine fundamental parameters, it is difficult to tease apart the discrepancy. However, we note that Kesseli et al. (2019) incorporate measured metallicity values and we do not. This is likely a

contributing factor.

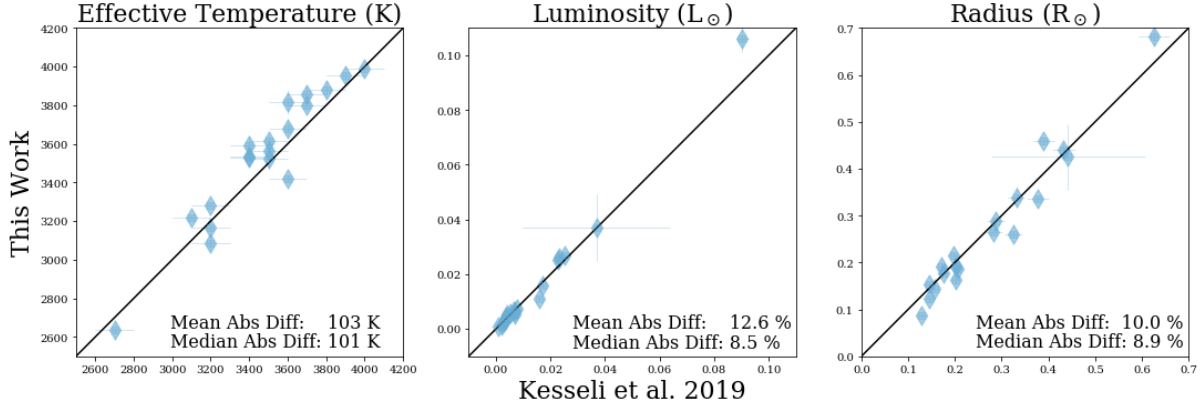


Figure 6.5: Kesseli et al. (2019) perform a dedicated study of cool subdwarfs. Discrepancies are currently unaccounted for, but we suspect that the fact that metallicity is unaccounted for in our work has some impact.

### 6.2.6 Summary of Warm versus Cool Star Validation

Our effective temperature matches to publications by other groups for warm stars (Boyajian et al. (2012b), Mann et al. (2015), and Rabus et al. (2019)) are superior to our match for cool stars (Filippazzo et al. (2015)) (§6.2.1). The following nuances may contribute to this finding:

1. *Different Methodologies for other Efforts:* Mann et al. (2015) perform a direct comparison between spectra and the BT-Settl models, whereas Filippazzo et al. (2015) rely on a combination of photometry and spectroscopy data, and on notoriously difficult-to-model evolutionary tracks to ultimately derive effective temperatures. Although Filippazzo et al. (2015) performs a comparison to Dieterich et al. (2014)’s luminosities, there is no comparison of temperatures. As such, we are uncertain as to whether



Filippazzo et al. (2015) or our own results are more likely to be correct.

2. *Color Choices:*

- *Warm vs. Cool Door:* The warm star “door” employs a different set of colors than for the cool stars. Although the set of colors for the warm stars appears to work quite well, perhaps there is room for improvement to the cool star color set.
- *Cool Door Color Selection:* The stars used to calibrate the best colors for the cooler stars had decidedly higher photometry errors than their warm counterparts. This, combined with the lower star count (51 stars vs. 187 stars used in the warm star color selection) may have had an impact on color selection results.

3. *Optical Data Quality:* Higher photometric errors increase the inherent error in all calculated fundamental parameters for a given star. Because the lower mass stars are among the faintest, and there is a rise in optical photometry errors for stars with  $V > 18$ , we expect this to be a contributing factor to both the difficulty in pinning down the best colors to use and the derived temperature results.

4. *Model Spectra:* In general, because of the growing strength of molecular features with dropping temperature, cool stars exhibit the most difficult-to-model spectra. In a future effort, an update to the 2015 models may help with our temperature and radius mismatches to Filippazzo et al. (2015).

In the end, effective temperature errors are expected to be larger for the cool stars than

for warm stars because of less accurate photometry, a more restricted set of colors to use, and models that are more complicated than for warm stars.

### 6.3 Advantages over Other Methods and Previous Efforts

Here we highlight a few ways in which our procedure has advantages over other techniques. We describe the advantages over the primary references discussed here in alphabetical order, followed by a brief synopsis of the situation with *Gaia* radii.

Boyajian et al. (2012b), and later, Rabus et al. (2019), measured the radii of a few dozen stars directly using LBI. Although this type of measurement reigns supreme as the best method to determine accurate stellar radii, the technique has so far been limited in its application to the nearest, brightest stars, very few of which are M dwarfs. With the method presented in this work, we have already derived stellar parameters for over one thousand stars, and the ultimate sample size is set only by the population of stars for which accurate photometry and parallaxes can be secured.

Casagrande et al. (2008) use assumptions about the shape of the stellar spectrum that do not hold up as well for M dwarfs as they do for more massive stars. Therefore, the procedure is limited in its utility for the red dwarfs discussed here.

Dieterich et al. (2014)’s method is the ancestor of the procedure reported here and depends on user interaction to select the best colors for each star. This is impractical for larger data sets and could inhibit the repeatability of results. Our method takes a uniform approach for each star.

Filippazzo et al. (2015) depend on evolutionary models and ages to determine radii. However, ages are very hard to constrain, and large leaps forward are still being made in the development of evolutionary models (PAdova-TRieste Stellar Evolution Code (PARSEC): Bressan et al. (2012) and Chen et al. (2014), Modules for Experiments in Stellar Astrophysics (MESA) Isochrones and Stellar Tracks (MIST): Paxton et al. (2011), Dotter (2016), Choi et al. (2016), in addition to work by Baraffe et al. (2015) and Somers et al. (2019) in prep.). Although their derived luminosities grounded in spectral measurements appear to be sound, it is unclear whether their radius, and therefore temperature, results are accurate. Our procedure depends far less on uncertain evolutionary models and ages given that optical/infrared photometry and parallaxes are more directly measurable.

Mann et al. (2015) report fundamental parameters for only three dwarfs with spectral types of M5-M7 using spectra. Using optical to mid-IR photometry and a parallax, we report parameters for 51 stars with  $V - K > 7$ , corresponding to stars with spectral types of  $\sim$ M6 and later, with our reddest star at  $V - K = 10.5$ . As such, although they report relations between fundamental parameters and magnitudes and/or colors, their utility has not been well-tested beyond type M5. It is therefore necessary to use other means to determine parameters for these objects, and our procedure provides an accurate, inexpensive way to do so.

As shown in the bottom left panel of Figure 5.2, *Gaia* DR2 results only extend to  $R = 0.6 R_{\odot}$  and  $T_{eff} = 3300$  K and have been found to have temperatures inconsistent with other efforts; Kesseli et al. (2019) described overestimated temperatures and Rabus et al. (2019)

described underestimated temperatures. In effect, the *Gaia* DR2 results provide almost no radii estimates for red dwarfs. In contrast, our work reaches to the end of the stellar main sequence at  $\sim 1930$  K and as small as  $\sim 0.03 R_{\odot}$ . *Gaia* DR3 results will be released in the second half of 2021, and at that time, the astronomical community as a whole will be picking apart the data, looking for systematic trends and assessing quality. In the meantime, there is utility in a procedure that can derive these fundamental parameters and ultimately be used as a check for *Gaia* results.

## 6.4 Conclusions

In summary, we provide here a list of the most important conclusions of this work:

1. created a method to inexpensively and accurately determine fundamental parameters — temperatures, luminosities, and radii — for red dwarfs with spectral types  $\sim$ M0.0V to the end of the stellar main sequence at  $\sim$ L2.5V
2. examined and addressed the need to treat warm and cool low-mass stars differently when determining fundamental parameters
3. derived effective temperatures, luminosities, and radii for 1593 low-mass stars, including 1503 main sequence primaries, with radii matching directly measured results from LBI to within an average of  $\sim 6\%$
4. unearthed several properties of the radius-effective temperature relationship of red dwarfs:

- the dispersion of radii for stars of a given temperature is very broad for stars with  $T_{eff} > 3200$  K, tapers off from  $2850 \text{ K} < T_{eff} < 3200$  K, and is consistently small for  $T_{eff} < 2850$  K
  - there is a distinct change in slope at roughly 2850 K, but the relationship is continuous, lacking the discontinuity reported by Rabus et al. (2019) due to their sparser data set
  - spot coverage is related to, if not the cause of, both the radii dispersion changes with temperature and the slope change of the radius-effective temperature relationship
5. unveiled inflated and contracted radii as new ways to distinguish young and old stars, respectively
  6. identified 56 new young star candidates within 25 pc by their inflated radii
  7. identified 31 new cool subdwarf candidates within 25 pc by their contracted radii
  8. estimated using the 25 pc sample (with candidates assumed to be *bona fide*) that the solar neighborhood is comprised of 5.9% young stars, 2.7% cool subdwarfs, and 91.4% main sequence stars

## CHAPTER 7

### Future Work

Here we discuss several future endeavors related to this work that can continue to enhance our understanding of the smallest stars, the ubiquitous red dwarfs. These include a new observing program targeting stars we have identified that may have radii sufficiently large to be resolved with long-baseline interferometry, exploring the *causes* of trends in the radius-temperature relation, pinpointed young star and subdwarf studies, procedural upgrades to our methodology, major expansions of our efforts to include *Gaia* and *TESS* targets, and exploration of the ramifications of these results on exoplanet studies.

#### 7.1 New Targets Resolvable via Long-Baseline Interferometry at CHARA

Long-baseline interferometry (LBI) is the most direct means we have available to determine stellar radii. However, only the biggest, brightest, and nearest targets can be resolved with LBI. As various LBI facilities across the world continue to improve, such as the adaptive optics installation on the CHARA Array (ten Brummelaar et al. 2005) that is nearly complete, the ability to resolve smaller, fainter, and more distant stars improves. In Figure 7.1 and Table 7.1 we identify 19 new stars that may be resolved by the CHARA Array as it is now, based upon our derived angular sizes and observed  $V$ ,  $R$ , and  $H$  magnitudes. Our identified sample nearly doubles the currently available sample of 26 red dwarfs used for comparison in this study. The list of new CHARA targets includes only those stars with  $V < 14$  at decl.  $> -10$ . For the PAVO instrument, possible targets have  $R < 8$  and angular diameters of  $\theta \geq 0.2''$ . There are 9 stars meeting these criteria, but none of them are new. For the

CLASSIC instrument, candidate targets have  $H < 10$  and  $\theta \geq 0.5''$  Ireland et al. (2008).

There are 28 candidates for CLASSIC, including the 19 new stars.

Stepping through the Table, we list right ascension, declination, and star name in Columns 1–3. Next we list the  $V$  and  $R$  magnitudes in Columns 4–5 and the  $H$  magnitudes and errors in Columns 6–7. Columns 8–9 contain our derived angular diameter and error, and the final four Columns, 10–13, contain our effective temperature and radius results and their corresponding errors. Stars that have not been studied via LBI before are listed in bold. As the adaptive optics installation is finalized at CHARA Array and the new limits of the instrument are tested, this Table and our Data and Results Tables, described and listed in Appendices A and D, can be consulted to identify fainter and smaller targets.

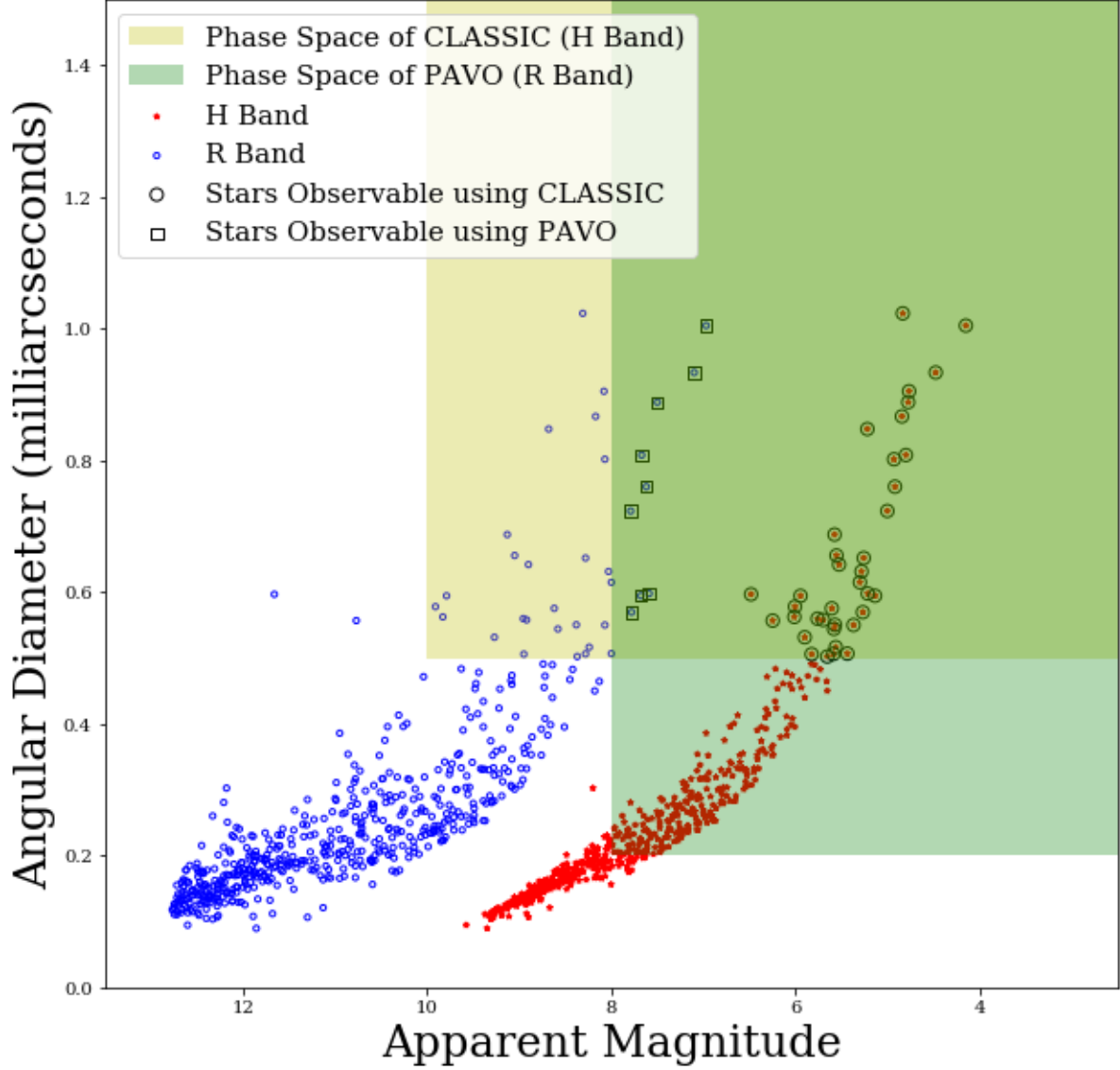


Figure 7.1: Shown are the angular diameter versus apparent magnitude discovery spaces (using the two magnitudes,  $R$  and  $H$ ) for the PAVO (Ireland et al. 2008) and CLASSIC (Ten Brummelaar et al. 2013) beam-combiners, respectively, at the CHARA Array. The phase space for resolving red dwarfs with PAVO is highlighted in green and with CLASSIC in yellow, and we limit ourselves to stars at decl.  $> -10^\circ$  and  $V < 14$ . All stars in our sample are plotted twice — once in  $R$  band and once in  $H$  band. Table 7.1 lists the stars that may be resolved with the CHARA Array with each beam-combiner, with previously unresolved targets highlighted in bold font.



Table 7.1: Stars Observable Using CHARA

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name <sup>a</sup><br>(3) | V<br>mag<br>(4) | R<br>mag<br>(5) | H<br>mag<br>(6) | $\sigma_H$<br>mag<br>(7) | $\theta$<br>''<br>(8) | $\sigma_\theta$<br>''<br>(9) | $T_{eff}$<br>K<br>(10) | $\sigma T_{eff}$<br>K<br>(11) | R<br>$R_\odot$<br>(12) | $\sigma_R$<br>$R_\odot$<br>(13) |
|--------------------|---------------------|-------------------------------|-----------------|-----------------|-----------------|--------------------------|-----------------------|------------------------------|------------------------|-------------------------------|------------------------|---------------------------------|
| PAVO or CLASSIC    |                     |                               |                 |                 |                 |                          |                       |                              |                        |                               |                        |                                 |
| 00 18 23           | +44 01 23           | GJ0015                        | 8.09            | 7.10            | 4.476           | 0.200                    | 0.9337                | 0.1115                       | 3667.5                 | 210.4                         | 0.3585                 | 0.0428                          |
| 04 37 41           | +52 53 37           | GJ0172                        | 8.63            | 7.78            | 5.268           | 0.031                    | 0.5697                | 0.0199                       | 3903.3                 | 62.2                          | 0.6197                 | 0.0208                          |
| 05 31 27           | -03 40 38           | GJ0205                        | 7.95            | 6.97            | 4.149           | 0.212                    | 1.0049                | 0.0971                       | 3677.5                 | 160.1                         | 0.6139                 | 0.0592                          |
| 11 05 29           | +43 31 37           | GJ0412                        | 8.77            | 7.79            | 5.002           | 0.021                    | 0.7233                | 0.0374                       | 3652.8                 | 92.4                          | 0.3781                 | 0.0194                          |
| 12 50 44           | -00 46 05           | GJ0488                        | 8.47            | 7.59            | 5.215           | 0.084                    | 0.5979                | 0.0199                       | 3949.8                 | 58.7                          | 0.6817                 | 0.0219                          |
| 13 45 44           | +14 53 29           | GJ0526                        | 8.46            | 7.50            | 4.775           | 0.206                    | 0.8885                | 0.0540                       | 3642.7                 | 103.6                         | 0.5171                 | 0.0314                          |
| 16 16 43           | +67 14 20           | GJ0617                        | 8.59            | 7.68            | 5.136           | 0.034                    | 0.5946                | 0.0186                       | 3895.1                 | 56.0                          | 0.6818                 | 0.0207                          |
| 20 53 20           | +62 09 16           | GJ0809                        | 8.56            | 7.62            | 4.919           | 0.059                    | 0.7602                | 0.0405                       | 3688.8                 | 95.7                          | 0.5772                 | 0.0306                          |
| 22 56 35           | +16 33 12           | GJ0880                        | 8.65            | 7.67            | 4.800           | 0.036                    | 0.8083                | 0.0349                       | 3607.2                 | 74.9                          | 0.5937                 | 0.0253                          |
| CLASSIC Only       |                     |                               |                 |                 |                 |                          |                       |                              |                        |                               |                        |                                 |
| 01 02 32           | +71 40 48           | <b>GJ0048</b>                 | 9.98            | 8.92            | 5.699           | 0.049                    | 0.5579                | 0.0139                       | 3436.3                 | 34.0                          | 0.4955                 | 0.0114                          |
| 01 02 39           | +62 20 42           | <b>GJ0049</b>                 | 9.56            | 8.58            | 5.582           | 0.024                    | 0.5442                | 0.0158                       | 3583.0                 | 41.0                          | 0.5817                 | 0.0148                          |
| 04 31 11           | +58 58 38           | <b>GJ0169.1</b>               | 11.04           | 9.83            | 6.012           | 0.020                    | 0.5624                | 0.0129                       | 3095.6                 | 31.9                          | 0.3350                 | 0.0075                          |
| 04 42 56           | +18 57 29           | GJ0176                        | 9.98            | 8.95            | 5.824           | 0.033                    | 0.5059                | 0.0131                       | 3498.0                 | 23.9                          | 0.4945                 | 0.0092                          |
| 05 36 31           | +11 19 40           | <b>GJ0208</b>                 | 8.87            | 8.00            | 5.436           | 0.024                    | 0.5068                | 0.0133                       | 3909.0                 | 42.0                          | 0.6151                 | 0.0147                          |
| 06 54 49           | +33 16 05           | <b>GJ0251</b>                 | 10.02           | 8.90            | 5.526           | 0.016                    | 0.6420                | 0.0262                       | 3331.2                 | 64.9                          | 0.3875                 | 0.0155                          |
| 07 27 25           | +05 13 33           | GJ0273                        | 9.88            | 8.68            | 5.219           | 0.063                    | 0.8478                | 0.0308                       | 3169.5                 | 54.3                          | 0.3423                 | 0.0124                          |
| 07 44 40           | +03 33 09           | <b>GJ0285</b>                 | 11.19           | 9.91            | 6.005           | 0.038                    | 0.5781                | 0.0145                       | 3085.5                 | 28.9                          | 0.3717                 | 0.0082                          |
| 09 56 09           | +62 47 19           | <b>GJ0373</b>                 | 8.97            | 8.07            | 5.369           | 0.044                    | 0.5501                | 0.0152                       | 3796.4                 | 41.9                          | 0.6373                 | 0.0158                          |
| 10 12 18           | -03 44 44           | <b>GJ0382</b>                 | 9.29            | 8.28            | 5.258           | 0.016                    | 0.6519                | 0.0229                       | 3536.4                 | 52.9                          | 0.5558                 | 0.0178                          |
| 10 19 36           | +19 52 12           | <b>GJ0388</b>                 | 9.29            | 8.17            | 4.843           | 0.020                    | 0.8670                | 0.0383                       | 3346.3                 | 67.1                          | 0.4556                 | 0.0191                          |
| 10 28 56           | +00 50 28           | GJ0393                        | 9.63            | 8.62            | 5.605           | 0.033                    | 0.5755                | 0.0193                       | 3521.8                 | 49.3                          | 0.4411                 | 0.0133                          |
| 10 56 29           | +07 00 53           | GJ0406 <sup>b</sup>           | 13.61           | 11.66           | 6.482           | 0.042                    | 0.5968                | 0.0176                       | 2636.1                 | 34.9                          | 0.1537                 | 0.0044                          |
| 11 00 04           | +22 49 59           | <b>GJ0408</b>                 | 10.02           | 8.95            | 5.760           | 0.020                    | 0.5598                | 0.2481                       | 3409.0                 | 34.2                          | 0.4031                 | 0.1786                          |
| 11 47 44           | +00 48 17           | GJ0447                        | 11.15           | 9.79            | 5.945           | 0.024                    | 0.5945                | 0.0157                       | 3084.7                 | 37.3                          | 0.2144                 | 0.0056                          |
| 13 30 00           | +10 22 38           | GJ0514                        | 9.05            | 8.00            | 5.300           | 0.033                    | 0.6150                | 0.0319                       | 3694.7                 | 93.1                          | 0.5020                 | 0.0257                          |
| 17 30 23           | +05 32 55           | <b>GJ0678.1</b>               | 9.30            | 8.37            | 5.654           | 0.042                    | 0.5023                | 0.0139                       | 3749.8                 | 44.2                          | 0.5370                 | 0.0138                          |
| 17 36 26           | +68 20 21           | GJ0687                        | 9.17            | 8.08            | 4.766           | 0.033                    | 0.9052                | 0.0459                       | 3353.4                 | 82.8                          | 0.4414                 | 0.0223                          |
| 17 57 49           | +04 41 36           | BARNARDS                      | 9.54            | 8.31            | 4.834           | 0.034                    | 1.0235                | 0.0478                       | 3153.2                 | 72.0                          | 0.2017                 | 0.0094                          |
| 18 05 08           | -03 01 53           | <b>GJ0701</b>                 | 9.37            | 8.38            | 5.571           | 0.040                    | 0.5505                | 0.0228                       | 3649.1                 | 70.5                          | 0.4598                 | 0.0184                          |
| 18 58 00           | +05 54 29           | <b>GJ0740</b>                 | 9.21            | 8.28            | 5.587           | 0.029                    | 0.5063                | 0.0151                       | 3775.6                 | 41.4                          | 0.5935                 | 0.0148                          |
| 19 16 55           | +05 10 08           | GJ0752                        | 9.10            | 8.07            | 4.929           | 0.027                    | 0.8019                | 0.0444                       | 3440.3                 | 93.4                          | 0.5036                 | 0.0278                          |
| 22 02 10           | +01 24 01           | <b>GJ0846</b>                 | 9.17            | 8.24            | 5.562           | 0.051                    | 0.5165                | 0.0161                       | 3774.0                 | 46.2                          | 0.5670                 | 0.0156                          |
| 22 09 40           | -04 38 27           | <b>GJ0849</b>                 | 10.38           | 9.27            | 5.899           | 0.044                    | 0.5316                | 0.0158                       | 3343.3                 | 41.7                          | 0.5037                 | 0.0137                          |
| 22 46 50           | +44 20 03           | <b>GJ0873</b>                 | 10.22           | 9.05            | 5.554           | 0.031                    | 0.6557                | 0.0236                       | 3266.0                 | 56.4                          | 0.3557                 | 0.0127                          |
| 23 31 52           | +19 56 14           | <b>GJ0896</b>                 | 10.29           | 9.13            | 5.575           | 0.021                    | 0.6875                | 0.0498                       | 3179.3                 | 112.4                         | 0.4623                 | 0.0332                          |
| 23 41 55           | +44 10 39           | <b>GJ0905</b>                 | 12.29           | 10.77           | 6.247           | 0.027                    | 0.5569                | 0.0119                       | 2897.4                 | 27.3                          | 0.1894                 | 0.0040                          |
| 23 49 13           | +02 24 04           | <b>GJ0908</b>                 | 8.98            | 8.03            | 5.282           | 0.031                    | 0.6315                | 0.0393                       | 3691.5                 | 113.0                         | 0.4041                 | 0.0250                          |

<sup>a</sup> The 19 stars in bold have not been observed before using long-baseline interferometry.

<sup>b</sup> GJ0406 at M6.0V (Henry & McCarthy 1993) is the coldest star that's been observed interferometrically and has been observed at VLTI, but not CHARA.

## 7.2 Evaluating Trends in the Radius-Effective Temperature Relationship

The trends in slope and radius dispersion exhibited in the red dwarf radius-effective temperature relationship of Figures 5.3 and 5.4, respectively, beg additional explanation. We propose that at least some of the effects are caused by starspots, but additional considerations are warranted. One method that may be particularly revealing is to compare our results to additional stellar parameters, including exploring several different avenues of inquiry:

1. *Metallicity*: Our results should certainly be compared to published metallicities from, e.g., Rojas-Ayala et al. 2010; 2012 and Gaidos & Mann (2014). In fact, Figure 9 of Kesseli et al. (2019) already reveals a trend of increasing radius with metallicity for warmer stars.
2. *Rotation Rate*: A large number of rotation rates for red dwarfs have been determined in the past decade by, e.g., Irwin et al. (2009), West et al. (2015), and Newton et al. 2014; 2016; 2017; 2018. The overlap between our sample and these is likely becoming large enough to perform statistical analyses, particularly for the warm stars. In the case of rapid rotation, a star can become oblong, such that the diameter of the star is shorter from pole to pole than it is across the equator. In this case, the poles will also be the hottest and brightest portions of the star. If the stars pole is face-on toward the observers, the star will appear more luminous than if the star is at a different inclination (see discussion by Jones (2016) in the context of rapidly rotating A stars). The rotation rate and axis are important considerations that we've assumed to have

negligible effects until this point, but have impacts on effective temperature, luminosity, and radius.

3. *Activity: TESS* is now nearly finished surveying the southern sky and will move to the northern sky soon. Thus, magnetic activity results, as measured via flare rates and photometric variability, will be forthcoming for a large number of our stars that can be evaluated for correlations between radii and short-term photometric variability. We can also incorporate results from *Kepler*, *K2*. There is now also long-term coverage by RECONS over a decade or more on many of these stars (Hosey et al. (2015) and Clements et al. (2017)), and these results can be compared to our radii results as well.
4. *Stellar Evolutionary Models:* We can compare our results to stellar evolutionary models that incorporate a range of metallicities, such as the PAdova and TRieste Stellar Evolution Code (PARSEC) (Bressan et al. 2012) or Modules for Experiments in Stellar Astrophysics (MESA) (Paxton et al. 2011; Dotter 2016; Choi et al. 2016).

### 7.3 Young Star and Subdwarf Status

Although follow-up work is required to verify that our young star and cool subdwarf candidates truly belong to those populations, the author has no immediate plans to perform this work and welcomes collaboration. Candidate young star follow-up is complex and may include (1) spectroscopic measurements to search for  $H\alpha$  and lithium features, determine metallicity, and possibly pin down moving group association using UVW space motions, (2) light curves revealing short-term variability and flare activity, (3) speckle imaging to root

out any unresolved binaries that mimic the large radii of young stars, and (4) checks of X-ray and UV sky surveys for flux in these high-energy regimes, indicative of the high activity associated with young stars. In the interest of bolstering studies of planet formation, each young star candidate could also be (5) screened for mid-IR excesses from circumstellar material indicative of a debris disk. Cool subdwarf candidate follow-up must involve spectroscopic measurements to determine metallicity and would benefit from UVW space motions to associate candidates with the Galactic halo or long-term disk heating.

#### 7.4 Procedure Upgrades

Moving forward, we intend to test and improve the procedure in the following ways:

1. *Expanding Filter Options:* The procedure will be updated to include bandpasses from a variety of missions, surveys, and studies, including filters used for SDSS, SkyMapper, Pan-STARRS, *Gaia*, *TESS*, *Kepler*, *Spitzer*, and *Herschel*. In the cases where some data are not available for certain filters, having a variety of filter options expands our ability to stitch together a result using different bandpasses from a variety of missions, surveys, and studies.
2. *Updating Models:* An upgrade to the most recent set of PHOENIX models is underway; the optimistic hope is that metallicity, surface gravity, and alpha enhancement values will better reflect expectations, and that we will be able to provide reasonable values, and errors, for these quantities.
3. *Performing Diagnostics:* Why are our temperatures sometimes lower than those found

by others? How do our cool star results relate to other results, and from where do discrepancies arise? Additional effort will search for answers to these questions.

4. *Revisiting Error Analysis:* Temperature errors are currently defined as the dispersion of temperature results from each color, but this has its limitations. This is evident in the small 10 K errors found for many stars. While such low errors are encouraging, are they realistic? One current consideration is to assume a minimum error of 50 K, corresponding to half the difference between a majority of the model grid points. Additional suggestions on how to assess the sizes of errors are encouraged.

5. *Re-assessing Subdwarf Results:* Although we limit ourselves to metallicities in the range of -0.5 to 0.5 here, we acknowledge that cool subdwarfs often have metallicities well below these values. Now that we have identified the subdwarf candidates, we will expand to model grid options to include lower metallicities.

## 7.5 Synergy with Large Missions

*Gaia:* The greatest future expansion of this work will undoubtedly be incorporating *Gaia* parallaxes and photometry into our effort. Once the protocol has been revised, virtually any star of spectral type M0 or later with photometric data from *Gaia*, 2MASS, and *WISE* can be analyzed using our procedure, assuming a reddening correction has been applied to the photometry of more distant stars. In the end, we expect that we will be able to estimate fundamental parameters, including radii, for tens or hundreds of thousands of stars within 100 pc.

*TESS*: The timing of this study is particularly good for low-mass stars targeted by *TESS*, for which we will evaluate samples in both hemispheres. The resulting database of stellar radii can be put to use in deriving *TESS*-detected transiting planet radii, key in the statistical analysis of exoplanet system architectures and demographics. The combination of stellar radii, exoplanet radii, and other properties such as stellar activity could reveal an M dwarf equivalent of the Fulton Gap (Fulton et al. 2017; Fulton & Petigura 2018) for Sun-like stars, and help us decipher whether or not the impact of stellar activity on planetary atmospheres is to blame for a dearth of planets of a given radius.

#### ***7.5.1 The M Dwarf Fulton Gap***

With support from the NASA Postdoctoral Program Fellowship, the author’s next career move centers on combining two stellar properties, magnetic activity and radii for stars with *Gaia* parallaxes placing them within 100 pc. We pose the following questions in the context of low-mass stars: (1) How does stellar activity impact exoplanet atmospheres and habitability? (2) What do the statistics of host star and exoplanet radii tell us about exoplanetary system formation?

If low-mass stars of the same mass with various radii have different levels of activity as a function of time, there may be direct evidence for how this influences the radii of their exoplanets due to atmospheric evolution. This effect, resulting in the so-called Fulton Gap, is starting to be teased out of the Kepler planet sample for Sun-like stars (e.g. Fulton et al. (2017); Fulton & Petigura (2018)). In the case of M dwarfs, higher stellar activity is expected to have a greater impact on planets orbiting in close orbits. Moving

from masses of 0.8 to 1.2  $M_{\odot}$ , the radius gap shifts from around 1.6 to 2.0  $R_{\oplus}$  (Fulton et al. 2017). Thus, for planets orbiting M dwarfs, there may be both a shift in center of the gap and greater depth in valley due to stronger levels of stellar activity.

To study stellar activity we plan to implement procedures described by Davenport et al. (2014); Davenport (2016) to map TESS light curves. We will assemble a suite of radii for tens to hundreds of thousands of stars using the procedure developed by the author in this project. The target list will be expanded to include red dwarfs within 100 parsecs, with a focus on stars in nearby moving groups, clusters, and targeted by *TESS* with a 2-minute cadence. With the resulting suite of planetary radii, combined with host star activity levels, ages, temperatures, luminosities, and radii, we will scrutinize the effects of photoevaporation of planetary atmospheres as a function of stellar parameters and planetary system configurations. Stars in clusters and moving groups have known ages, allowing us to track the trend of magnetic activity as a function of both stellar temperature and age.

In addition, the resulting catalog of nearby, homogeneously and accurately characterized, young to old stars will inform target lists for and have applications in a treasure trove of exoplanet-related studies:

- a. determining radii of transiting planets like those revealed by *TESS* and *K2*
- b. constraining star and planet formation theories
- c. revealing age via compact/inflated stellar radius

- d. mapping magnetic activity levels as a function of age, radius, and effective temperature, which are key to
- e. isolating different stellar populations and
- f. deciphering the impact of activity on planetary properties such as their atmospheres and habitability

## 7.6 The Lasting Impact

Finally, moving forward, our procedure can be used to, e.g.,

1. determine fundamental parameters for a boundless sample
2. reveal relationships between radius and age in stellar clusters
3. determine transiting planet host star radii and consequently planetary radii, key for missions such as *Kepler*, *K2*, *TESS* and *CHEOPS*, as well as ground-based transit programs

The legacy dataset for the 1592 stars presented here can be used to populate a list of well-vetted targets for a variety of studies as described above, as well as studies not yet even imagined. The proximity of these stars enables a level of scrutiny unattainable at greater distances, especially for the smallest stars.

The analysis of a statistically significant sample of red dwarf radii has the power to reveal relationships between radius, age (for those stars in moving groups and clusters),



and/or activity (for those stars studied by *TESS*, MEarth, and other teams), fundamental to understanding star and planet formation and physics.

In the author's opinion, the most exciting results are the yet-undiscovered applications of this method and our pursuit of a well-vetted sample of our nearest, ubiquitous stellar neighbors — these are the stars we already know the best, and the ones we will come to know even better in the years to come.

## APPENDIX A PHOTOMETRY AND ASTROMETRY DATA

As mentioned in §3.1, Table A.2 provides the key observational data for the 1706 stars evaluated here, separated into subsamples of stars with a complete suite of quality data dwarfs, those stars with problems either in the data or with the procedure results, and those awaiting a final photometry reduction. The RA/decl. 2000.0 coordinates are given first (Columns 1–2), followed by names (Column 3), optical Johnson-Kron-Cousins *VRI* photometry and references (4–7), *JHK* 2MASS photometry (8–13), *WISE* *W1W2W3* photometry (14–19), trigonometric parallaxes (20–21), and notes.

A few points of note:

1. Of the 1707-star sample, the first 1592 listed are those with well-vetted, quality data. Next are 61 “problem stars” with questionable photometry and/or results from the procedure. Lastly we include the 52 stars that do not have a full set of *VRI* photometry.
2. *W4* band is not useful for the stars in this study, as discussed in §3.4.3, and is excluded here.
3. Values of 9.999 are used in place of missing errors (e.g. when *WISE* reports an error of “null”).
4. *VRI* references are listed in Column (7) where ### stands for the number of observations made in each bandpass in that order, as performed in this work. A “.” symbol after the three numbers means that the data are not of good quality and more data are

needed. When numbers are not listed, but instead Abc, that is a reference. The reference keys are as follows: Bar17: Bartlett et al. (2017), Bes90: Bessel (1990), Bes91: Bessell (1991), Cos05: Costa et al. (2005), Cos06: Costa et al. (2006), Dah02: Dahn et al. (2002), Dav15: Davison et al. (2015), Har85: Harrington et al. (1985), Hen04: Henry et al. (2004), Hen06: Henry et al. (2006), Hen18: Henry et al. (2018), Hos15: Hosey et al. (2015), Jao05: Jao et al. (2005), Jao11: Jao et al. (2011), Jao14: Jao et al. (2014), Jao17: Jao et al. (2017), Kil07: Kilkenny et al. (2007), Koe10: Koen et al. (2010), Lur14: Lurie et al. (2014), Mon92: Monet et al. (1992), Rei02: Reid et al. (2002b), Rie10: Riedel et al. (2010), Rie14: Riedel et al. (2014), Rie18: Riedel et al. (2018), Sub17: Subasavage et al. (2017), Wei82: Weis & Upgren (1982), Wei84: Weis (1984), Wei86: Weis (1986), Wei87: Weis (1987), Wei88: Weis (1988), Wei91a: Weis (1991b), Wei91b: Weis (1991a), Wei93: Weis (1993), Wei94: Weis (1994), Wei96: Weis (1996), Wei99: Weis (1999), Win11: Winters et al. (2011), Win15: Winters et al. (2015), Win17: Winters et al. (2017), Win19: Winters et al. (2019).

Table A.1: Key to Flags Under “Notes” Column

|               |                                                                |
|---------------|----------------------------------------------------------------|
| 1             | Kapteyn’s Star                                                 |
| 2             | GJ0551                                                         |
| 3             | AU Microscopii                                                 |
| 4             | GJ0699                                                         |
| 2MASSx?       | wrong 2MASS data?                                              |
| A05           | <i>VRI</i> from ARCSAT 0.5m                                    |
| B91           | Bes91 does not have R photometry                               |
| BP            | blended photometry due to companion or nearby source           |
| faintV        | too faint to observe at <i>V</i>                               |
| KS            | known subdwarf                                                 |
| KY            | known young star                                               |
| MIA           | original data/results missing from RECONS catalog              |
| Mx            | MODELFIT procedure failed — no result                          |
| Mxs           | MODELFIT result suspicious — subdwarf with very large radius   |
| Mxy           | MODELFIT result suspicious — young star with very small radius |
| NC            | nearby contaminating source                                    |
| PSF           | PSF photometry is listed, rather than aperture photometry      |
| PSF!          | optical data need PSF fit due to contamination                 |
| R?            | resolvable?                                                    |
| redS          | occasionally used as a red photometry standard                 |
| UB?           | unresolved binary?                                             |
| Vref          | <i>V</i> band result is from Monet et al. (1992)               |
| <i>VRI</i> x? | spurious <i>VRI</i> ?                                          |
| W09           | <i>VRI</i> from WIYN 0.9m                                      |
| <i>WISE</i> x | no <i>WISE</i> All-Sky data available                          |

[h]

Table A.2: Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1)                | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-----------------------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| STARS WITH TRUSTED RESULTS (1593) |                     |                  |                 |          |                 |            |                 |            |                  |                    |                  |                    |                   |                    |                   |                    |                   |                    |                      |                    |               |
| 00 01 16                          | +06 59 36           | L524-048         | 16.58           | 15.05    | 13.15           | 222        | 11.286          | 0.022      | 10.741           | 0.028              | 10.418           | 0.021              | 10.208            | 0.022              | 10.017            | 0.022              | 9.876             | 0.050              | 57.1                 | 2.6                |               |
| 00 02 06                          | +01 15 36           | L584-004         | 19.33           | 17.12    | 14.78           | 222        | 12.168          | 0.022      | 11.543           | 0.023              | 11.129           | 0.023              | 10.891            | 0.024              | 10.664            | 0.021              | 10.412            | 0.079              | 59.5                 | 4.7                |               |
| 00 04 36                          | -40 44 03           | GJ1001           | 12.83           | 11.62    | 10.08           | Win15      | 8.601           | 0.021      | 8.043            | 0.031              | 7.737            | 0.040              | 7.537             | 0.023              | 7.376             | 0.019              | 7.272             | 0.016              | 77.9                 | 2.0                |               |
| 00 05 24                          | -37 21 27           | GJ0001           | 8.54            | 7.57     | 6.41            | Bes90      | 5.328           | 0.019      | 4.828            | 0.076              | 4.523            | 0.017              | 4.359             | 0.089              | 3.755             | 0.055              | 4.202             | 0.014              | 230.3                | 0.9                |               |
| 00 06 19                          | -65 50 26           | LHS1019          | 12.17           | 11.11    | 9.78            | Koe10      | 8.479           | 0.029      | 7.839            | 0.038              | 7.631            | 0.017              | 7.445             | 0.025              | 7.325             | 0.020              | 7.227             | 0.015              | 59.9                 | 2.6                |               |
| 00 06 43                          | -07 32 17           | GJ1002           | 13.84           | 12.21    | 10.21           | Win15      | 8.323           | 0.019      | 7.792            | 0.034              | 7.439            | 0.021              | 7.176             | 0.028              | 6.993             | 0.020              | 6.860             | 0.016              | 213.0                | 3.6                |               |
| 00 07 27                          | +29 14 33           | GJ1003           | 14.16           | 13.01    | 11.54           | We196      | 10.218          | 0.019      | 9.739            | 0.028              | 9.464            | 0.021              | 9.282             | 0.022              | 9.063             | 0.021              | 8.913             | 0.027              | 53.5                 | 2.5                |               |
| 00 07 59                          | +08 00 19           | LHS1022          | 13.09           | 12.02    | 10.67           | Win15      | 9.392           | 0.024      | 8.911            | 0.033              | 8.652            | 0.019              | 8.507             | 0.022              | 8.304             | 0.021              | 8.225             | 0.021              | 44.0                 | 6.3                |               |
| 00 08 17                          | -57 05 53           | LTT00057         | 12.13           | 11.00    | 9.57            | Win15      | 8.206           | 0.024      | 7.630            | 0.023              | 7.395            | 0.023              | 7.190             | 0.030              | 7.049             | 0.018              | 6.962             | 0.016              | 75.2                 | 2.1                |               |
| 00 08 27                          | +17 25 27           | HIP000687        | 10.80           | 9.88     | 8.93            | We193      | 7.807           | 0.021      | 7.165            | 0.018              | 6.980            | 0.016              | 6.827             | 0.036              | 6.834             | 0.021              | 6.790             | 0.016              | 46.0                 | 1.9                |               |
| 00 09 04                          | -27 07 29           | GJ0007           | 11.69           | 10.74    | 9.78            | Bes90      | 8.655           | 0.024      | 8.143            | 0.026              | 7.856            | 0.021              | 7.743             | 0.024              | 7.643             | 0.020              | 7.593             | 0.018              | 43.6                 | 2.6                |               |
| 00 09 45                          | -42 01 49           | LEHPM1-0255      | 13.62           | 12.35    | 10.66           | Win15      | 9.069           | 0.024      | 8.449            | 0.033              | 8.223            | 0.017              | 8.003             | 0.024              | 7.810             | 0.020              | 7.703             | 0.018              | 53.3                 | 1.5                |               |
| 00 11 32                          | +59 08 49           | LEP0011+5908     | 15.65           | 13.97    | 11.91           | 333        | 9.945           | 0.023      | 9.393            | 0.026              | 9.093            | 0.021              | 8.864             | 0.023              | 8.633             | 0.019              | 8.407             | 0.025              | 108.4                | 0.5                |               |
| 00 11 53                          | +22 59 04           | L348-040         | 13.05           | 11.86    | 10.36           | 222        | 8.862           | 0.021      | 8.308            | 0.036              | 7.987            | 0.021              | 7.817             | 0.023              | 7.693             | 0.021              | 7.551             | 0.019              | 60.2                 | 1.8                |               |
| 00 13 39                          | +80 39 57           | LTT17095         | 11.12           | 10.12    | 9.00            | 111        | 7.756           | 0.034      | 7.131            | 0.047              | 6.904            | 0.020              | 6.766             | 0.037              | 6.748             | 0.019              | 6.663             | 0.014              | 51.1                 | 1.8                |               |
| 00 15 49                          | +13 32 22           | GJ0012           | 12.62           | 11.46    | 10.04           | 333        | 8.619           | 0.020      | 8.068            | 0.026              | 7.807            | 0.020              | 7.645             | 0.027              | 7.485             | 0.019              | 7.387             | 0.018              | 89.2                 | 3.4                |               |
| 00 16 37                          | -50 16 09           | L218-009         | 12.35           | 11.34    | 10.14           | Koe10      | 8.967           | 0.024      | 8.330            | 0.031              | 8.168            | 0.024              | 7.958             | 0.024              | 7.853             | 0.020              | 7.763             | 0.017              | 45.0                 | 3.4                |               |
| 00 16 56                          | +05 07 27           | GJ1007           | 13.79           | 12.55    | 10.92           | We196      | 9.398           | 0.023      | 8.869            | 0.051              | 8.587            | 0.019              | 8.371             | 0.024              | 8.192             | 0.020              | 8.080             | 0.020              | 56.9                 | 3.7                |               |
| 00 17 20                          | +29 10 59           | LHS1054          | 11.52           | 10.52    | 9.35            | We196      | 8.152           | 0.034      | 7.499            | 0.027              | 7.241            | 0.018              | 7.125             | 0.033              | 7.103             | 0.020              | 7.025             | 0.016              | 43.8                 | 2.3                |               |
| 00 17 24                          | -66 45 12           | SCR0017-6645     | 12.45           | 11.37    | 10.00           | Rie14      | 8.563           | 0.021      | 7.928            | 0.042              | 7.703            | 0.021              | 7.601             | 0.024              | 7.486             | 0.021              | 7.406             | 0.015              | 25.6                 | 1.7                | KY            |
| 00 17 40                          | -10 46 17           | LHS0109          | 13.88           | 12.97    | 12.10           | Win15      | 11.046          | 0.026      | 10.563           | 0.024              | 10.366           | 0.021              | 10.201            | 0.023              | 10.059            | 0.019              | 10.013            | 0.051              | 28.4                 | 3.5                | KS            |
| 00 18 17                          | +10 12 10           | GJ0016           | 10.91           | 9.92     | 8.78            | Bes90      | 7.564           | 0.032      | 6.922            | 0.059              | 6.741            | 0.027              | 6.573             | 0.042              | 6.523             | 0.020              | 6.483             | 0.015              | 60.4                 | 2.1                |               |
| 00 18 23                          | +44 01 23           | GJ0015           | 8.09            | 7.10     | 6.07            | 222        | 5.252           | 0.264      | 4.476            | 0.200              | 4.018            | 0.020              | 3.853             | 0.099              | 3.130             | 0.074              | 3.707             | 0.015              | 280.0                | 0.6                |               |
| 00 18 54                          | +27 48 59           | L292-066         | 13.86           | 12.64    | 11.05           | We187      | 9.535           | 0.023      | 8.930            | 0.022              | 8.648            | 0.018              | 8.490             | 0.023              | 8.327             | 0.020              | 8.212             | 0.021              | 69.2                 | 5.2                |               |
| 00 20 08                          | -17 03 41           | GJ2003           | 11.68           | 10.70    | 9.64            | Win19      | 8.545           | 0.023      | 7.914            | 0.040              | 7.695            | 0.017              | 7.555             | 0.024              | 7.475             | 0.021              | 7.394             | 0.017              | 43.1                 | 3.8                |               |
| 00 20 29                          | +33 05 06           | LHS0112          | 16.09           | 14.41    | 12.34           | We196      | 10.284          | 0.021      | 9.691            | 0.022              | 9.330            | 0.018              | 9.092             | 0.023              | 8.901             | 0.020              | 8.724             | 0.024              | 85.0                 | 2.3                |               |
| 00 21 17                          | +18 43 56           | LHS1060          | 16.98           | 15.26    | 13.25           | 111        | 11.320          | 0.020      | 10.762           | 0.022              | 10.420           | 0.021              | 10.148            | 0.024              | 9.932             | 0.020              | 9.843             | 0.053              | 40.1                 | 3.2                |               |
| 00 21 20                          | -45 44 47           | GJ0017.1         | 10.40           | 9.46     | 8.49            | Bes90      | 7.412           | 0.021      | 6.810            | 0.031              | 6.544            | 0.026              | 6.460             | 0.042              | 6.397             | 0.021              | 6.344             | 0.015              | 57.8                 | 4.4                |               |
| 00 21 37                          | -46 05 33           | LHS5004a         | 12.24           | 11.14    | 9.73            | Koe10      | 8.325           | 0.019      | 7.734            | 0.029              | 7.447            | 0.016              | 7.350             | 0.027              | 7.229             | 0.019              | 7.130             | 0.020              | 51.8                 | 1.9                |               |
| 00 21 56                          | -31 24 22           | GJ1009           | 11.13           | 10.12    | 8.92            | Koe10      | 7.674           | 0.020      | 7.052            | 0.036              | 6.785            | 0.017              | 6.655             | 0.037              | 6.613             | 0.019              | 6.554             | 0.015              | 55.6                 | 2.3                |               |
| 00 23 19                          | -50 53 38           | LHS1064          | 11.89           | 10.84    | 9.56            | Kil07      | 8.259           | 0.023      | 7.640            | 0.038              | 7.375            | 0.036              | 7.258             | 0.027              | 7.176             | 0.020              | 7.083             | 0.016              | 50.0                 | 2.7                |               |
| 00 23 29                          | +77 11 22           | GJ1010           | 11.31           | 10.32    | 9.18            | We196      | 8.042           | 0.023      | 7.390            | 0.038              | 7.187            | 0.026              | 6.908             | 0.035              | 6.932             | 0.019              | 6.860             | 0.016              | 55.8                 | 2.6                |               |
| 00 24 04                          | +26 26 30           | LSPM0024+2626    | 14.79           | 13.45    | 11.82           | 111        | 10.222          | 0.020      | 9.592            | 0.019              | 9.299            | 0.017              | 9.118             | 0.023              | 8.959             | 0.020              | 8.819             | 0.025              | 45.3                 | 2.2                |               |
| 00 24 25                          | -01 58 20           | NLT01261         | 19.88           | 17.46    | 15.12           | Rie18      | 11.992          | 0.035      | 11.084           | 0.022              | 10.539           | 0.023              | 10.166            | 0.024              | 9.900             | 0.019              | 9.412             | 0.039              | 82.4                 | 2.2                |               |
| 00 24 35                          | +30 02 39           | LHS1068          | 14.56           | 13.23    | 11.48           | We196      | 9.776           | 0.021      | 9.218            | 0.022              | 8.892            | 0.020              | 8.717             | 0.023              | 8.513             | 0.021              | 8.389             | 0.022              | 47.4                 | 2.0                |               |
| 00 25 15                          | -61 30 48           | CTTUC            | 11.36           | 10.49    | 9.62            | 222        | 8.615           | 0.027      | 7.943            | 0.040              | 7.749            | 0.026              | 7.606             | 0.025              | 7.594             | 0.020              | 7.515             | 0.016              | 21.8                 | 2.4                | KY            |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 00 25 16           | +54 22 55           | LSPM0025+5422    | 18.51           | 16.66    | 14.12           | 111        | 11.775          | 0.024      | 11.215           | 0.030              | 10.819           | 0.022              | 10.595            | 0.023              | 10.379            | 0.022              | 9.802             | 0.031              | 67.6                 | 2.0                |               |
| 00 25 21           | +22 53 11           | LHS1073          | 14.19           | 12.935   | 11.291          | We96       | 9.716           | 0.021      | 9.155            | 0.020              | 8.868            | 0.017              | 8.679             | 0.021              | 8.509             | 0.020              | 8.375             | 0.021              | 70.4                 | 3.2                |               |
| 00 26 13           | +46 26 53           | L150-006         | 14.38           | 13.17    | 11.72           | 222        | 10.256          | 0.022      | 9.761            | 0.021              | 9.470            | 0.019              | 9.287             | 0.023              | 9.122             | 0.020              | 8.998             | 0.023              | 47.8                 | 2.0                |               |
| 00 26 32           | +14 59 23           | G032-018         | 14.56           | 13.30    | 11.72           | 222        | 10.166          | 0.026      | 9.595            | 0.030              | 9.388            | 0.022              | 9.173             | 0.023              | 9.006             | 0.019              | 8.866             | 0.051              | 45.1                 | 1.8                |               |
| 00 26 53           | +70 08 33           | GJ0021           | 10.53           | 9.58     | 8.55            | We93       | 7.411           | 0.030      | 6.742            | 0.036              | 6.568            | 0.024              | 6.438             | 0.043              | 6.360             | 0.022              | 6.320             | 0.016              | 60.6                 | 1.3                |               |
| 00 27 07           | +49 41 53           | G217-051         | 14.28           | 12.93    | 11.32           | 111        | 9.733           | 0.021      | 9.160            | 0.021              | 8.852            | 0.018              | 8.665             | 0.022              | 8.522             | 0.019              | 8.376             | 0.019              | 47.6                 | 1.7                | A05           |
| 00 27 50           | -32 33 06           | GJ2006           | 12.95           | 11.79    | 10.29           | Rie14      | 8.882           | 0.032      | 8.236            | 0.038              | 8.012            | 0.033              | 7.720             | 0.021              | 7.541             | 0.017              | 7.512             | 0.016              | 31.0                 | 1.8                | KY            |
| 00 28 39           | -06 39 48           | GJ1012           | 12.21           | 11.03    | 9.51            | 222        | 8.038           | 0.020      | 7.504            | 0.057              | 7.189            | 0.016              | 7.063             | 0.034              | 6.916             | 0.020              | 6.846             | 0.017              | 75.4                 | 5.1                |               |
| 00 30 49           | +77 42 34           | L012-382         | 16.84           | 15.04    | 12.73           | 444        | 10.458          | 0.023      | 9.891            | 0.027              | 9.562            | 0.021              | 9.317             | 0.023              | 9.115             | 0.019              | 8.832             | 0.022              | 76.4                 | 4.0                |               |
| 00 31 35           | -05 52 13           | GJ1013           | 12.73           | 11.59    | 10.14           | We96       | 8.762           | 0.027      | 8.217            | 0.029              | 7.945            | 0.021              | 7.755             | 0.023              | 7.589             | 0.021              | 7.512             | 0.017              | 62.3                 | 4.2                |               |
| 00 32 16           | +54 29 02           | LHS0009          | 13.91           | 12.64    | 11.01           | 111        | 9.387           | 0.022      | 8.827            | 0.016              | 8.570            | 0.014              | 8.406             | 0.022              | 8.223             | 0.020              | 8.118             | 0.018              | 49.5                 | 1.4                |               |
| 00 34 38           | +40 50 02           | LHS1101          | 13.53           | 12.37    | 10.88           | We96       | 9.465           | 0.023      | 8.878            | 0.031              | 8.669            | 0.019              | 8.445             | 0.023              | 8.297             | 0.020              | 8.128             | 0.018              | 49.5                 | 1.7                |               |
| 00 34 38           | +71 11 42           | L193-248         | 17.67           | 15.86    | 13.74           | 333        | 11.772          | 0.021      | 11.213           | 0.021              | 10.880           | 0.016              | 10.633            | 0.023              | 10.426            | 0.020              | 10.142            | 0.039              | 64.6                 | 3.1                |               |
| 00 35 53           | +52 41 12           | LHS1104          | 12.54           | 11.49    | 10.20           | We96       | 8.932           | 0.026      | 8.352            | 0.016              | 8.095            | 0.023              | 7.917             | 0.023              | 7.788             | 0.020              | 7.729             | 0.017              | 47.8                 | 1.3                |               |
| 00 35 56           | +10 28 36           | GJ1014           | 15.32           | 13.88    | 12.00           | We96       | 10.222          | 0.023      | 9.656            | 0.030              | 9.367            | 0.023              | 9.146             | 0.024              | 8.928             | 0.024              | 8.989             | 0.067              | 70.2                 | 3.3                |               |
| 00 36 08           | +45 30 57           | G172-013         | 11.71           | 10.67    | 9.42            | We99       | 8.167           | 0.027      | 7.576            | 0.016              | 7.359            | 0.021              | 7.191             | 0.031              | 7.056             | 0.021              | 6.986             | 0.015              | 43.9                 | 9.8                |               |
| 00 36 16           | +18 21 10           | 2MA0036+1821     | 21.21           | 18.42    | 16.06           | 355        | 12.466          | 0.029      | 11.588           | 0.030              | 11.058           | 0.021              | 10.516            | 0.024              | 10.237            | 0.020              | 9.931             | 0.053              | 114.2                | 0.8                |               |
| 00 38 15           | +52 19 56           | G218-005         | 10.48           | 9.62     | 8.78            | We88       | 7.714           | 0.023      | 7.057            | 0.017              | 6.916            | 0.023              | 6.802             | 0.037              | 6.807             | 0.020              | 6.754             | 0.016              | 42.2                 | 1.9                |               |
| 00 38 59           | +30 36 59           | GJ0026           | 11.08           | 10.03    | 8.76            | We96       | 7.453           | 0.021      | 6.864            | 0.021              | 6.606            | 0.029              | 6.481             | 0.043              | 6.348             | 0.020              | 6.316             | 0.016              | 80.1                 | 3.9                |               |
| 00 39 19           | +55 08 13           | LHS6009          | 14.22           | 12.99    | 11.47           | 222        | 10.021          | 0.020      | 9.519            | 0.021              | 9.236            | 0.016              | 9.059             | 0.023              | 8.860             | 0.020              | 8.740             | 0.023              | 87.6                 | 2.6                |               |
| 00 39 59           | -44 15 12           | GJ0027.1         | 11.39           | 10.44    | 9.36            | Bes90      | 8.225           | 0.027      | 7.609            | 0.038              | 7.394            | 0.029              | 7.248             | 0.028              | 7.219             | 0.019              | 7.135             | 0.016              | 41.0                 | 2.7                |               |
| 00 40 56           | +31 22 57           | G069-011         | 13.90           | 12.43    | 11.04           | 111        | 9.491           | 0.022      | 8.864            | 0.030              | 8.592            | 0.020              | 8.419             | 0.024              | 8.293             | 0.021              | 8.158             | 0.019              | 56.5                 | 2.1                |               |
| 00 41 30           | -33 37 32           | GJ1016           | 10.53           | 9.62     | 8.74            | 222        | 9.839           | 0.020      | 9.307            | 0.017              | 9.039            | 0.016              | 8.858             | 0.022              | 8.685             | 0.020              | 8.511             | 0.018              | 43.4                 | 2.0                |               |
| 00 41 21           | +55 50 04           | GJ1015           | 14.10           | 12.86    | 11.33           | Koe10      | 7.708           | 0.020      | 7.100            | 0.038              | 6.884            | 0.016              | 6.789             | 0.039              | 6.730             | 0.020              | 6.681             | 0.014              | 51.2                 | 2.2                |               |
| 00 43 26           | -41 17 34           | LHS1134          | 13.00           | 11.75    | 10.11           | Win15      | 8.572           | 0.019      | 8.026            | 0.034              | 7.710            | 0.016              | 7.527             | 0.026              | 7.340             | 0.019              | 7.215             | 0.016              | 95.2                 | 1.4                | UB?           |
| 00 43 36           | +28 26 41           | GJ1019           | 14.51           | 13.33    | 11.81           | We96       | 10.392          | 0.020      | 9.880            | 0.026              | 9.670            | 0.026              | 9.433             | 0.023              | 9.236             | 0.022              | 9.127             | 0.028              | 56.3                 | 2.2                |               |
| 00 43 39           | +75 45 15           | LSPM0043+7545    | 14.71           | 13.48    | 11.81           | 222        | 10.271          | 0.023      | 9.674            | 0.027              | 9.411            | 0.025              | 9.222             | 0.022              | 9.063             | 0.020              | 8.878             | 0.027              | 45.9                 | 2.3                |               |
| 00 44 39           | +67 57 39           | G243-039         | 14.51           | 13.25    | 11.67           | 222        | 10.139          | 0.024      | 9.599            | 0.030              | 9.329            | 0.021              | 9.130             | 0.023              | 8.924             | 0.021              | 8.826             | 0.024              | 50.7                 | 1.4                |               |
| 00 44 59           | -15 16 18           | LHS1140          | 14.18           | 12.88    | 11.19           | Win15      | 9.612           | 0.023      | 9.092            | 0.026              | 8.821            | 0.024              | 8.582             | 0.022              | 8.367             | 0.019              | 8.246             | 0.020              | 80.2                 | 2.8                |               |
| 00 46 36           | +36 36 49           | G132-028         | 14.31           | 13.13    | 11.80           | 222        | 10.428          | 0.022      | 9.856            | 0.021              | 9.640            | 0.018              | 9.465             | 0.023              | 9.324             | 0.020              | 9.255             | 0.025              | 43.8                 | 2.4                |               |
| 00 48 13           | -05 08 08           | LTT00453         | 12.03           | 11.05    | 9.94            | Win19      | 8.768           | 0.020      | 8.181            | 0.049              | 7.932            | 0.024              | 7.807             | 0.023              | 7.715             | 0.022              | 7.646             | 0.018              | 42.1                 | 3.8                |               |
| 00 48 51           | +35 51 22           | LHS1153          | 15.03           | 13.769   | 12.14           | We96       | 10.602          | 0.019      | 10.033           | 0.028              | 9.799            | 0.025              | 9.582             | 0.023              | 9.396             | 0.019              | 9.270             | 0.026              | 59.7                 | 2.9                |               |
| 00 49 02           | -50 08 42           | LTT00464         | 10.73           | 9.80     | 8.86            | K107       | 7.804           | 0.019      | 7.161            | 0.021              | 6.949            | 0.027              | 6.846             | 0.038              | 6.824             | 0.020              | 6.763             | 0.015              | 46.3                 | 2.1                |               |
| 00 49 29           | -61 02 33           | GJ1022           | 12.17           | 11.12    | 9.86            | Jao11      | 8.627           | 0.021      | 8.089            | 0.046              | 7.837            | 0.026              | 7.736             | 0.025              | 7.579             | 0.020              | 7.503             | 0.016              | 48.6                 | 1.4                |               |
| 00 51 30           | +58 18 08           | GJ0038           | 10.67           | 9.80     | 8.90            | We96       | 7.831           | 0.018      | 7.235            | 0.018              | 7.047            | 0.018              | 6.919             | 0.034              | 6.852             | 0.021              | 6.812             | 0.016              | 54.3                 | 2.1                |               |
| 00 52 55           | -27 06 00           | RG0050-2722      | 21.54           | 19.09    | 16.65           | Win19      | 13.611          | 0.026      | 12.984           | 0.032              | 12.540           | 0.029              | 12.171            | 0.024              | 11.874            | 0.021              | 11.518            | 0.155              | 41.0                 | 4.0                |               |
| 00 56 38           | +17 27 35           | GJ1024           | 13.71           | 12.47    | 10.87           | We96       | 9.285           | 0.024      | 8.655            | 0.033              | 8.374            | 0.026              | 8.206             | 0.021              | 8.083             | 0.019              | 7.963             | 0.018              | 51.4                 | 2.7                |               |
| 00 56 50           | -11 35 29           | LTT00534         | 11.12           | 10.19    | 9.25            | Koe10      | 8.227           | 0.026      | 7.600            | 0.053              | 7.361            | 0.021              | 7.239             | 0.030              | 7.223             | 0.021              | 7.167             | 0.016              | 40.4                 | 2.8                |               |
| 00 57 12           | -64 15 24           | L087-002         | 12.40           | 11.28    | 9.81            | Win15      | 8.403           | 0.018      | 7.815            | 0.026              | 7.596            | 0.024              | 7.382             | 0.026              | 7.255             | 0.019              | 7.147             | 0.016              | 56.3                 | 1.4                |               |
| 00 58 28           | -27 51 25           | GJ0046           | 11.77           | 10.65    | 9.17            | Bes90      | 7.763           | 0.023      | 7.203            | 0.051              | 6.892            | 0.021              | 6.748             | 0.041              | 6.543             | 0.019              | 6.504             | 0.015              | 80.8                 | 3.1                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 00 59 08           | +37 52 49           | LSPM0059+3752    | 15.36           | 13.97    | 12.31           | 222        | 10.688          | 0.023      | 10.082           | 0.031              | 9.837            | 0.023              | 9.636             | 0.023              | 9.451             | 0.020              | 9.333             | 0.026              | 40.4                 | 2.0                |               |
| 01 00 14           | +34 04 06           | L242-019         | 16.55           | 15.06    | 13.28           | 111        | 11.498          | 0.023      | 10.926           | 0.030              | 10.623           | 0.021              | 10.448            | 0.023              | 10.261            | 0.020              | 10.112            | 0.041              | 46.3                 | 2.6                |               |
| 01 00 56           | -04 26 57           | GJ1025           | 13.36           | 12.10    | 10.55           | 222        | 9.042           | 0.032      | 8.485            | 0.047              | 8.224            | 0.021              | 8.024             | 0.022              | 7.853             | 0.020              | 7.757             | 0.020              | 87.7                 | 2.4                |               |
| 01 01 20           | +61 21 57           | GJ10047          | 10.85           | 9.81     | 8.56            | Wei96      | 7.272           | 0.021      | 6.710            | 0.018              | 6.483            | 0.018              | 6.310             | 0.044              | 6.158             | 0.021              | 6.147             | 0.015              | 90.9                 | 4.4                |               |
| 01 01 59           | +54 10 58           | G218-020         | 15.08           | 13.54    | 11.62           | 111        | 9.778           | 0.022      | 9.197            | 0.021              | 8.864            | 0.016              | 8.634             | 0.022              | 8.453             | 0.020              | 8.339             | 0.023              | 91.8                 | 2.8                |               |
| 01 02 32           | +71 40 48           | GJ10048          | 9.98            | 8.92     | 7.57            | Wei96      | 6.301           | 0.034      | 5.699            | 0.049              | 5.449            | 0.017              | 5.380             | 0.065              | 5.017             | 0.032              | 5.171             | 0.014              | 121.1                | 1.2                |               |
| 01 02 39           | +62 20 42           | GJ0049           | 9.56            | 8.58     | 7.44            | Wei96      | 6.230           | 0.021      | 5.582            | 0.024              | 5.371            | 0.020              | 5.271             | 0.063              | 4.969             | 0.031              | 5.177             | 0.014              | 100.6                | 1.4                |               |
| 01 02 51           | -37 37 44           | LHS0132          | 18.53           | 16.30    | 13.88           | Die14      | 11.130          | 0.023      | 10.479           | 0.024              | 10.069           | 0.021              | 9.844             | 0.024              | 9.607             | 0.021              | 9.294             | 0.029              | 82.0                 | 2.7                |               |
| 01 02 59           | +53 04 08           | LSPM0102+5304    | 16.59           | 14.79    | 13.10           | 111        | 11.315          | 0.025      | 10.794           | 0.024              | 10.464           | 0.018              | 10.244            | 0.022              | 10.043            | 0.020              | 9.892             | 0.038              | 60.8                 | 3.1                |               |
| 01 04 07           | -65 22 27           | L087-010         | 13.98           | 12.63    | 10.95           | Win15      | 9.401           | 0.026      | 8.841            | 0.025              | 8.532            | 0.021              | 8.322             | 0.024              | 8.136             | 0.020              | 8.002             | 0.018              | 85.5                 | 1.5                |               |
| 01 04 54           | -18 07 29           | GJ1028           | 14.55           | 13.07    | 11.20           | 333        | 9.387           | 0.026      | 8.753            | 0.049              | 8.453            | 0.024              | 8.206             | 0.022              | 8.031             | 0.021              | 7.870             | 0.018              | 99.8                 | 5.0                |               |
| 01 05 38           | +28 29 34           | GJ1029           | 14.79           | 13.29    | 11.35           | Wei96      | 9.486           | 0.025      | 8.881            | 0.034              | 8.550            | 0.020              | 8.305             | 0.023              | 8.146             | 0.019              | 7.984             | 0.018              | 83.7                 | 2.2                |               |
| 01 06 42           | +15 16 22           | GJ1030           | 11.40           | 10.42    | 9.23            | Koe10      | 8.005           | 0.039      | 7.372            | 0.020              | 7.159            | 0.023              | 6.998             | 0.035              | 6.966             | 0.019              | 6.917             | 0.015              | 45.9                 | 2.3                |               |
| 01 06 55           | +80 27 35           | L012-502         | 14.01           | 12.77    | 10.98           | 222        | 9.350           | 0.023      | 8.773            | 0.031              | 8.523            | 0.022              | 8.314             | 0.023              | 8.114             | 0.021              | 7.971             | 0.017              | 65.3                 | 4.3                |               |
| 01 07 48           | +34 12 31           | GJ0052.2         | 13.37           | 12.33    | 11.06           | Wei96      | 9.843           | 0.017      | 9.310            | 0.015              | 9.082            | 0.014              | 8.906             | 0.023              | 8.739             | 0.019              | 8.638             | 0.021              | 45.1                 | 3.2                |               |
| 01 08 12           | +00 27 57           | G001-047         | 14.88           | 13.52    | 11.79           | 222        | 10.112          | 0.023      | 9.505            | 0.023              | 9.166            | 0.020              | 8.990             | 0.024              | 8.823             | 0.022              | 8.736             | 0.027              | 47.9                 | 4.2                |               |
| 01 09 02           | -51 00 59           | SSS0109-5100     | 20.02           | 17.54    | 15.14           | 444        | 12.228          | 0.024      | 11.538           | 0.024              | 11.092           | 0.020              | 10.833            | 0.023              | 10.573            | 0.020              | 10.373            | 0.054              | 57.8                 | 3.5                | UB?           |
| 01 09 13           | -24 41 21           | GJ1032           | 12.25           | 11.17    | 9.79            | Koe10      | 8.449           | 0.021      | 7.841            | 0.029              | 7.608            | 0.023              | 7.424             | 0.027              | 7.326             | 0.020              | 7.242             | 0.017              | 44.3                 | 3.0                |               |
| 01 09 51           | -03 43 26           | LP647-013        | 19.35           | 17.13    | 14.87           | Hen18      | 11.694          | 0.021      | 10.931           | 0.026              | 10.428           | 0.025              | 10.073            | 0.024              | 9.834             | 0.021              | 9.389             | 0.035              | 94.1                 | 0.9                |               |
| 01 10 18           | -11 51 18           | LP707-016        | 12.70           | 11.50    | 10.02           | Win15      | 8.625           | 0.043      | 7.928            | 0.033              | 7.656            | 0.021              | 7.508             | 0.026              | 7.398             | 0.021              | 7.300             | 0.018              | 53.9                 | 1.5                |               |
| 01 11 23           | +16 48 31           | G034-008         | 15.55           | 14.21    | 12.53           | 222        | 10.861          | 0.026      | 10.319           | 0.034              | 10.028           | 0.018              | 9.812             | 0.023              | 9.623             | 0.019              | 9.508             | 0.038              | 51.7                 | 2.7                |               |
| 01 11 36           | +41 27 53           | L194-035         | 18.55           | 16.65    | 14.46           | 222        | 12.223          | 0.019      | 11.592           | 0.019              | 11.220           | 0.018              | 10.980            | 0.023              | 10.810            | 0.022              | 10.590            | 0.054              | 49.6                 | 3.0                |               |
| 01 11 48           | -49 08 09           | SCR0111-4908     | 17.74           | 15.91    | 13.75           | Win17      | 11.538          | 0.026      | 11.003           | 0.024              | 10.607           | 0.024              | 10.382            | 0.023              | 10.180            | 0.019              | 10.037            | 0.045              | 54.3                 | 1.4                |               |
| 01 11 56           | +04 55 05           | LHS1212          | 12.88           | 11.73    | 10.27           | Wei96      | 8.804           | 0.020      | 8.239            | 0.027              | 7.951            | 0.027              | 7.756             | 0.025              | 7.620             | 0.020              | 7.508             | 0.017              | 65.1                 | 1.6                |               |
| 01 12 31           | -16 59 56           | GJ0054.1         | 12.16           | 10.72    | 8.94            | Win19      | 7.258           | 0.020      | 6.749            | 0.033              | 6.420            | 0.017              | 6.167             | 0.044              | 5.929             | 0.021              | 5.888             | 0.014              | 269.1                | 3.0                |               |
| 01 12 47           | +01 54 49           | G002-029         | 14.11           | 12.84    | 11.21           | 222        | 9.651           | 0.022      | 9.054            | 0.033              | 8.769            | 0.019              | 8.584             | 0.022              | 8.413             | 0.021              | 8.330             | 0.024              | 62.6                 | 1.9                |               |
| 01 13 16           | -54 29 14           | DEN0113-5429     | 14.16           | 12.85    | 11.17           | Win15      | 9.571           | 0.023      | 8.975            | 0.026              | 8.684            | 0.022              | 8.457             | 0.023              | 8.302             | 0.020              | 8.153             | 0.017              | 60.9                 | 1.2                | UB?           |
| 01 14 34           | -53 56 32           | L221-060         | 11.08           | 10.09    | 8.99            | Kil07      | 7.805           | 0.023      | 7.242            | 0.026              | 6.966            | 0.023              | 6.843             | 0.036              | 6.770             | 0.021              | 6.692             | 0.014              | 60.4                 | 1.8                |               |
| 01 16 29           | +24 19 27           | GJ1034           | 15.00           | 13.78    | 12.16           | Wei96      | 10.705          | 0.024      | 10.166           | 0.020              | 9.909            | 0.018              | 9.632             | 0.022              | 9.437             | 0.020              | 9.423             | 0.030              | 48.1                 | 4.5                |               |
| 01 17 15           | -35 42 57           | GJ1036           | 11.28           | 10.26    | 9.05            | Koe10      | 7.845           | 0.021      | 7.182            | 0.059              | 6.938            | 0.017              | 6.822             | 0.035              | 6.730             | 0.020              | 6.665             | 0.016              | 61.7                 | 3.4                |               |
| 01 17 16           | -13 15 48           | L797-030         | 10.79           | 9.84     | 8.86            | Kil07      | 7.759           | 0.018      | 7.170            | 0.049              | 6.906            | 0.027              | 6.787             | 0.038              | 6.793             | 0.020              | 6.746             | 0.015              | 42.8                 | 2.6                |               |
| 01 17 43           | +64 59 05           | LHS5030          | 13.61           | 12.43    | 10.96           | 222        | 9.538           | 0.020      | 8.985            | 0.021              | 8.752            | 0.016              | 8.561             | 0.023              | 8.363             | 0.019              | 8.254             | 0.019              | 49.8                 | 1.4                |               |
| 01 18 16           | -12 53 59           | GJ0056.1         | 11.79           | 10.78    | 9.55            | Bes90      | 8.356           | 0.024      | 7.737            | 0.026              | 7.550            | 0.036              | 7.366             | 0.028              | 7.293             | 0.020              | 7.238             | 0.016              | 45.3                 | 3.3                |               |
| 01 19 17           | +59 51 22           | G218-027         | 15.43           | 13.96    | 12.26           | 222        | 10.470          | 0.025      | 9.912            | 0.032              | 9.599            | 0.022              | 9.412             | 0.024              | 9.245             | 0.020              | 9.003             | 0.024              | 52.7                 | 2.2                |               |
| 01 19 52           | +84 09 33           | GJ1035           | 14.75           | 13.38    | 11.58           | Wei96      | 9.855           | 0.026      | 9.314            | 0.031              | 9.025            | 0.023              | 8.812             | 0.023              | 8.608             | 0.019              | 8.441             | 0.020              | 75.8                 | 2.3                |               |
| 01 21 35           | -41 39 23           | GJ0057           | 10.12           | 9.25     | 8.38            | Bes90      | 7.356           | 0.019      | 6.758            | 0.033              | 6.581            | 0.020              | 6.422             | 0.042              | 6.375             | 0.021              | 6.346             | 0.015              | 59.9                 | 1.5                |               |
| 01 21 45           | -46 42 52           | HIP006365        | 11.40           | 10.43    | 9.31            | Kil07      | 8.168           | 0.021      | 7.536            | 0.036              | 7.294            | 0.026              | 7.178             | 0.031              | 7.116             | 0.019              | 7.045             | 0.015              | 44.7                 | 2.6                |               |
| 01 22 31           | +88 54 31           | L001-046         | 14.69           | 13.51    | 11.87           | 222        | 10.342          | 0.023      | 9.720            | 0.028              | 9.455            | 0.020              | 9.299             | 0.024              | 9.126             | 0.019              | 8.914             | 0.022              | 46.7                 | 3.1                |               |
| 01 24 23           | +68 19 31           | LSPM0124+6819    | 17.78           | 15.99    | 13.74           | 333        | 11.473          | 0.036      | 10.920           | 0.047              | 10.539           | 0.033              | 10.004            | 0.023              | 9.891             | 0.020              | 9.711             | 0.038              | 62.1                 | 5.9                |               |
| 01 25 37           | +09 45 25           | LHS6028          | 13.14           | 11.943   | 10.386          | Wei86      | 8.952           | 0.023      | 8.413            | 0.044              | 8.089            | 0.021              | 7.883             | 0.023              | 7.731             | 0.020              | 7.618             | 0.018              | 64.0                 | 3.2                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.     | Decl.     | Star Name     | V     | R      | I      | ref   | J      | err   | H      | err   | K      | err   | W1     | err   | W2     | err   | W3     | err   | π     | err  | Notes |
|----------|-----------|---------------|-------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|-------|
| (1)      | (2)       | (3)           | (4)   | (5)    | (6)    | (7)   | (8)    | (9)   | (10)   | (11)  | (12)   | (13)  | (14)   | (15)  | (16)   | (17)  | (18)   | (19)  | (20)  | (21) | (22)  |
| 01 30 43 | +02 36 37 | L587-070      | 16.95 | 15.37  | 13.48  | 222   | 11.563 | 0.024 | 10.906 | 0.024 | 10.618 | 0.024 | 10.389 | 0.023 | 10.217 | 0.019 | 9.972  | 0.047 | 43.7  | 4.4  |       |
| 01 31 31 | +10 01 39 | LHS1257       | 16.37 | 15.26  | 13.82  | Jao17 | 12.401 | 0.021 | 11.931 | 0.021 | 11.675 | 0.023 | 11.495 | 0.022 | 11.286 | 0.022 | 11.380 | 0.153 | 21.7  | 3.5  | KS    |
| 01 32 26 | -21 54 19 | LHS0142       | 11.16 | 10.18  | 9.09   | Win19 | 7.977  | 0.021 | 7.346  | 0.029 | 7.100  | 0.016 | 6.924  | 0.033 | 6.863  | 0.020 | 6.833  | 0.018 | 55.2  | 1.9  |       |
| 01 34 11 | +64 59 36 | LSPM0134+6459 | 16.48 | 15.02  | 13.11  | 222   | 11.280 | 0.024 | 10.752 | 0.030 | 10.474 | 0.022 | 10.268 | 0.024 | 10.045 | 0.021 | 9.981  | 0.047 | 49.1  | 3.1  |       |
| 01 36 00 | +41 38 12 | LHS1266       | 13.66 | 12.602 | 11.313 | We196 | 10.055 | 0.018 | 9.576  | 0.019 | 9.296  | 0.016 | 9.087  | 0.022 | 8.947  | 0.020 | 8.875  | 0.023 | 43.4  | 1.5  |       |
| 01 37 21 | -49 11 44 | LHS1268       | 10.39 | 9.48   | 8.56   | Koe10 | 7.497  | 0.026 | 6.851  | 0.040 | 6.621  | 0.021 | 6.521  | 0.042 | 6.566  | 0.020 | 6.492  | 0.015 | 44.4  | 1.5  |       |
| 01 38 30 | +00 39 06 | LHS1272       | 11.57 | 10.57  | 9.38   | 222   | 8.189  | 0.023 | 7.610  | 0.020 | 7.324  | 0.021 | 7.171  | 0.032 | 7.111  | 0.020 | 7.027  | 0.016 | 49.4  | 3.0  |       |
| 01 39 22 | -39 36 09 | LP991-084     | 14.48 | 12.97  | 11.06  | Win15 | 9.209  | 0.023 | 8.629  | 0.034 | 8.274  | 0.026 | 8.057  | 0.023 | 7.864  | 0.021 | 7.722  | 0.018 | 115.9 | 1.3  |       |
| 01 40 17 | +31 47 31 | LHS037a       | 13.91 | 12.649 | 11.011 | We187 | 9.437  | 0.022 | 8.833  | 0.024 | 8.566  | 0.018 | 8.372  | 0.023 | 8.225  | 0.019 | 8.088  | 0.019 | 53.4  | 2.1  |       |
| 01 41 16 | +30 16 11 | LHS1280       | 16.21 | 14.68  | 12.90  | 222   | 11.166 | 0.021 | 10.573 | 0.020 | 10.315 | 0.018 | 10.086 | 0.022 | 9.869  | 0.020 | 9.748  | 0.034 | 48.1  | 1.9  |       |
| 01 41 55 | +38 43 27 | LSPM0141+3843 | 15.01 | 13.72  | 12.23  | 222   | 10.753 | 0.021 | 10.258 | 0.023 | 9.937  | 0.018 | 9.748  | 0.023 | 9.562  | 0.020 | 9.445  | 0.031 | 50.7  | 1.7  |       |
| 01 42 18 | +61 47 04 | L080-077      | 13.81 | 12.664 | 11.185 | We188 | 9.773  | 0.026 | 9.191  | 0.030 | 8.950  | 0.021 | 8.785  | 0.023 | 8.631  | 0.021 | 8.533  | 0.025 | 49.8  | 1.5  |       |
| 01 42 56 | -42 12 13 | LHS1288       | 11.17 | 10.26  | 9.29   | Win19 | 8.239  | 0.021 | 7.617  | 0.051 | 7.402  | 0.024 | 7.317  | 0.029 | 7.264  | 0.020 | 7.181  | 0.017 | 42.6  | 2.3  |       |
| 01 43 16 | +27 50 32 | LHS1289       | 10.40 | 9.50   | 8.55   | We196 | 7.483  | 0.035 | 6.811  | 0.021 | 6.598  | 0.016 | 6.516  | 0.041 | 6.546  | 0.020 | 6.494  | 0.014 | 46.7  | 1.9  |       |
| 01 43 20 | +04 19 18 | GJ0070        | 10.92 | 9.88   | 8.61   | Bes90 | 7.370  | 0.024 | 6.809  | 0.042 | 6.516  | 0.023 | 6.355  | 0.042 | 6.217  | 0.021 | 6.196  | 0.014 | 87.4  | 1.9  |       |
| 01 43 45 | -06 02 40 | SCR0143-0602  | 13.01 | 11.80  | 10.25  | Rie18 | 8.770  | 0.023 | 8.174  | 0.034 | 7.912  | 0.018 | 7.760  | 0.023 | 7.593  | 0.020 | 7.485  | 0.016 | 50.5  | 1.5  |       |
| 01 43 53 | +00 14 33 | LSPM0143+0014 | 17.36 | 15.55  | 13.39  | 333   | 11.169 | 0.023 | 10.610 | 0.025 | 10.258 | 0.025 | 10.008 | 0.022 | 9.793  | 0.020 | 9.578  | 0.038 | 73.8  | 6.8  |       |
| 01 44 58 | +16 20 39 | GJ0073        | 14.12 | 12.83  | 11.20  | Bes90 | 9.584  | 0.020 | 9.012  | 0.021 | 8.709  | 0.021 | 8.536  | 0.022 | 8.376  | 0.019 | 8.242  | 0.020 | 69.0  | 2.8  |       |
| 01 46 29 | -53 39 33 | WT0050        | 14.18 | 12.81  | 11.08  | Win15 | 9.458  | 0.024 | 8.848  | 0.063 | 8.609  | 0.021 | 8.376  | 0.023 | 8.177  | 0.020 | 8.038  | 0.019 | 56.7  | 1.8  |       |
| 01 48 04 | +21 12 24 | L1303-013     | 12.16 | 11.10  | 9.79   | We199 | 8.514  | 0.035 | 7.895  | 0.044 | 7.644  | 0.021 | 7.489  | 0.025 | 7.393  | 0.020 | 7.306  | 0.017 | 49.1  | 3.4  |       |
| 01 51 04 | -06 07 05 | LHS1302       | 14.49 | 13.00  | 11.17  | Hen06 | 9.413  | 0.021 | 8.841  | 0.021 | 8.552  | 0.022 | 8.309  | 0.023 | 8.099  | 0.021 | 7.947  | 0.019 | 97.0  | 0.9  |       |
| 01 51 24 | +21 23 49 | G034-055      | 13.90 | 12.664 | 11.055 | We187 | 9.489  | 0.022 | 8.907  | 0.027 | 8.644  | 0.019 | 8.423  | 0.023 | 8.269  | 0.020 | 8.158  | 0.019 | 56.3  | 3.7  |       |
| 01 51 49 | -10 48 13 | GJ0078        | 11.80 | 10.81  | 9.59   | Bes90 | 8.375  | 0.023 | 7.849  | 0.023 | 7.631  | 0.029 | 7.469  | 0.025 | 7.312  | 0.018 | 7.266  | 0.016 | 61.6  | 2.8  |       |
| 01 52 31 | +60 21 08 | G219-026      | 15.03 | 13.69  | 12.15  | 333   | 10.616 | 0.022 | 9.986  | 0.027 | 9.770  | 0.021 | 9.570  | 0.022 | 9.430  | 0.021 | 9.276  | 0.038 | 41.8  | 2.3  |       |
| 01 52 49 | -22 26 06 | GJ0079        | 8.88  | 7.98   | 7.08   | Bes90 | 6.064  | 0.021 | 5.405  | 0.026 | 5.178  | 0.020 | 5.074  | 0.072 | 4.865  | 0.036 | 5.063  | 0.015 | 90.8  | 1.2  | KY    |
| 01 52 52 | -48 05 41 | LHS0045       | 13.79 | 12.48  | 10.80  | Win15 | 9.171  | 0.024 | 8.596  | 0.063 | 8.243  | 0.023 | 8.063  | 0.022 | 7.894  | 0.020 | 7.767  | 0.018 | 75.1  | 1.9  |       |
| 01 53 31 | +01 47 56 | G159-009      | 16.04 | 14.56  | 12.66  | 222   | 10.786 | 0.024 | 10.234 | 0.028 | 9.879  | 0.021 | 9.680  | 0.023 | 9.484  | 0.020 | 9.317  | 0.028 | 45.5  | 3.8  |       |
| 01 53 37 | -66 53 34 | L088-043      | 11.68 | 10.60  | 9.24   | Win15 | 7.911  | 0.019 | 7.285  | 0.024 | 6.990  | 0.018 | 6.848  | 0.037 | 6.760  | 0.022 | 6.666  | 0.015 | 75.4  | 3.5  |       |
| 01 53 50 | +44 27 29 | G133-048      | 15.54 | 14.09  | 12.24  | 222   | 10.416 | 0.019 | 9.838  | 0.027 | 9.547  | 0.025 | 9.353  | 0.024 | 9.156  | 0.022 | 8.999  | 0.027 | 49.4  | 2.9  |       |
| 01 55 02 | +37 58 02 | LSPM0155+3758 | 15.48 | 14.02  | 12.26  | 222   | 10.469 | 0.022 | 9.855  | 0.015 | 9.560  | 0.018 | 9.300  | 0.022 | 9.139  | 0.020 | 9.013  | 0.025 | 63.3  | 2.7  |       |
| 01 56 46 | +30 33 29 | L296-057      | 15.15 | 13.74  | 12.01  | 111   | 10.323 | 0.023 | 9.718  | 0.031 | 9.449  | 0.021 | 9.267  | 0.023 | 9.074  | 0.019 | 8.925  | 0.028 | 46.3  | 3.4  |       |
| 01 58 45 | +40 49 45 | L196-017      | 15.77 | 14.30  | 12.46  | 222   | 10.704 | 0.022 | 10.083 | 0.019 | 9.811  | 0.019 | 9.571  | 0.023 | 9.378  | 0.019 | 9.249  | 0.026 | 56.8  | 2.8  |       |
| 01 59 12 | +03 31 09 | GJ1041        | 11.23 | 10.28  | 9.29   | 111   | 7.906  | 0.060 | 7.221  | 0.057 | 7.070  | 0.027 | 7.094  | 0.066 | 7.084  | 0.036 | 7.099  | 0.035 | 41.3  | 1.3  |       |
| 01 59 24 | +58 31 16 | GJ0082        | 12.21 | 10.99  | 9.38   | We199 | 7.790  | 0.019 | 7.224  | 0.061 | 6.961  | 0.024 | 6.789  | 0.037 | 6.631  | 0.020 | 6.541  | 0.016 | 81.7  | 3.4  | KY    |
| 02 00 07 | +36 39 48 | G133-061      | 13.93 | 12.758 | 11.25  | We187 | 9.805  | 0.021 | 9.198  | 0.027 | 9.000  | 0.020 | 8.811  | 0.037 | 8.668  | 0.020 | 8.539  | 0.020 | 45.3  | 1.3  |       |
| 02 00 13 | +13 03 07 | GJ0083.1      | 12.35 | 10.95  | 9.18   | Dav15 | 7.514  | 0.017 | 6.970  | 0.027 | 6.648  | 0.017 | 6.438  | 0.042 | 6.162  | 0.021 | 6.100  | 0.014 | 224.1 | 2.8  |       |
| 02 00 38 | -55 58 05 | L173-019      | 11.90 | 10.70  | 9.15   | Hos15 | 7.625  | 0.021 | 7.088  | 0.038 | 6.773  | 0.020 | 6.613  | 0.037 | 6.452  | 0.020 | 6.362  | 0.015 | 123.1 | 2.1  |       |
| 02 02 16 | +10 20 14 | LHS1326       | 15.70 | 13.99  | 11.91  | 333   | 9.842  | 0.023 | 9.254  | 0.025 | 8.928  | 0.025 | 8.677  | 0.024 | 8.481  | 0.020 | 8.283  | 0.020 | 113.6 | 2.5  |       |
| 02 02 52 | +05 42 21 | LHS0012       | 12.20 | 11.30  | 10.42  | 111   | 9.474  | 0.023 | 8.900  | 0.027 | 8.684  | 0.020 | 8.525  | 0.023 | 8.401  | 0.020 | 8.373  | 0.020 | 33.7  | 4.2  | KS    |
| 02 03 29 | +21 34 17 | L352-079      | 17.40 | 15.75  | 13.67  | 111   | 11.661 | 0.023 | 11.033 | 0.024 | 10.714 | 0.018 | 10.488 | 0.023 | 10.285 | 0.020 | 10.121 | 0.045 | 42.7  | 4.5  |       |



# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>(11) | K<br>mag<br>(12) | err<br>(13) | W1<br>mag<br>(14) | err<br>(15) | W2<br>mag<br>(16) | err<br>(17) | W3<br>mag<br>(18) | err<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|-------------|------------------|-------------|-------------------|-------------|-------------------|-------------|-------------------|-------------|----------------------|--------------------|---------------|
| 02 05 24           | -28 04 11           | GJ0084.1         | 10.88           | 10.00    | 9.04            | Bes90      | 7.991           | 0.021      | 7.348            | 0.051       | 7.164            | 0.024       | 7.042             | 0.032       | 7.045             | 0.021       | 6.986             | 0.015       | 43.2                 | 2.1                |               |
| 02 05 49           | -30 10 36           | LHS1339          | 12.18           | 11.07    | 9.69            | Win15      | 8.367           | 0.024      | 7.867            | 0.038       | 7.558            | 0.024       | 7.315             | 0.028       | 7.167             | 0.019       | 7.095             | 0.016       | 107.8                | 2.9                |               |
| 02 06 57           | +45 11 04           | GJ0084.2         | 10.29           | 9.39     | 8.51            | Wei96      | 7.397           | 0.027      | 6.802            | 0.026       | 6.598            | 0.021       | 6.434             | 0.042       | 6.372             | 0.021       | 6.333             | 0.015       | 51.3                 | 3.4                |               |
| 02 07 04           | +49 38 44           | LHS050           | 12.27           | 11.13    | 9.75            | 222        | 8.366           | 0.029      | 7.768            | 0.017       | 7.540            | 0.018       | 7.385             | 0.026       | 7.230             | 0.019       | 7.137             | 0.015       | 57.6                 | 2.5                |               |
| 02 07 10           | +04 17 12           | G244-049         | 14.31           | 13.049   | 11.42           | Wei88      | 9.875           | 0.024      | 9.297            | 0.030       | 8.995            | 0.020       | 8.849             | 0.023       | 8.655             | 0.020       | 8.578             | 0.031       | 56.7                 | 1.6                |               |
| 02 07 23           | -66 34 12           | LHS0150          | 11.49           | 10.49    | 9.31            | Win15      | 8.132           | 0.024      | 7.613            | 0.027       | 7.364            | 0.020       | 7.230             | 0.030       | 7.063             | 0.020       | 6.985             | 0.015       | 86.2                 | 1.8                |               |
| 02 08 14           | +49 49 02           | LHS1345          | 17.93           | 16.22    | 14.06           | 111        | 12.043          | 0.023      | 11.476           | 0.023       | 11.136           | 0.018       | 10.942            | 0.024       | 10.707            | 0.020       | 10.386            | 0.060       | 51.1                 | 3.4                |               |
| 02 09 36           | -14 21 33           | LHS1347          | 11.81           | 10.75    | 9.46            | Wei96      | 8.122           | 0.021      | 7.498            | 0.049       | 7.259            | 0.016       | 7.088             | 0.032       | 7.035             | 0.019       | 6.944             | 0.016       | 50.9                 | 2.5                |               |
| 02 10 23           | +68 09 32           | G244-052         | 15.88           | 14.53    | 12.83           | 222        | 11.190          | 0.023      | 10.596           | 0.030       | 10.347           | 0.019       | 10.123            | 0.022       | 9.947             | 0.020       | 9.693             | 0.041       | 41.0                 | 3.3                |               |
| 02 10 35           | +46 42 05           | LHS1349          | 15.71           | 14.337   | 12.543          | Wei96      | 10.916          | 0.023      | 10.392           | 0.021       | 10.101           | 0.017       | 9.909             | 0.024       | 9.662             | 0.021       | 9.534             | 0.035       | 51.5                 | 2.3                |               |
| 02 11 18           | -63 13 41           | LHS1351          | 12.23           | 11.15    | 9.82            | Rie10      | 8.544           | 0.024      | 7.983            | 0.033       | 7.726            | 0.018       | 7.546             | 0.026       | 7.400             | 0.020       | 7.305             | 0.015       | 71.5                 | 1.6                |               |
| 02 12 21           | +03 34 31           | GJ0087           | 10.04           | 9.10     | 7.99            | Bes90      | 6.830           | 0.019      | 6.321            | 0.034       | 6.077            | 0.020       | 6.053             | 0.046       | 5.706             | 0.023       | 5.770             | 0.013       | 95.9                 | 1.4                |               |
| 02 12 32           | +50 06 33           | LHS6043          | 13.83           | 12.60    | 11.13           | 222        | 9.604           | 0.022      | 9.017            | 0.023       | 8.756            | 0.019       | 8.583             | 0.023       | 8.434             | 0.020       | 8.301             | 0.019       | 43.9                 | 1.8                |               |
| 02 12 55           | +00 00 17           | LHS1358          | 13.58           | 12.31    | 10.66           | Rie10      | 9.055           | 0.030      | 8.518            | 0.026       | 8.168            | 0.021       | 7.982             | 0.023       | 7.834             | 0.019       | 7.705             | 0.017       | 70.5                 | 1.9                |               |
| 02 13 54           | -32 02 29           | GJ0091           | 10.31           | 9.32     | 8.15            | Bes90      | 6.961           | 0.020      | 6.327            | 0.026       | 6.093            | 0.016       | 5.980             | 0.047       | 5.827             | 0.021       | 5.826             | 0.014       | 80.0                 | 1.7                |               |
| 02 14 13           | -03 57 44           | LHS1363          | 16.44           | 14.70    | 12.61           | 555        | 10.481          | 0.024      | 9.858            | 0.021       | 9.485            | 0.020       | 9.278             | 0.023       | 9.072             | 0.021       | 8.884             | 0.023       | 82.1                 | 1.1                |               |
| 02 15 00           | +17 25 08           | GJ1045           | 14.44           | 13.19    | 11.57           | Wei96      | 9.966           | 0.023      | 9.377            | 0.021       | 9.100            | 0.020       | 8.867             | 0.024       | 8.731             | 0.020       | 8.598             | 0.022       | 47.6                 | 2.5                |               |
| 02 15 56           | +10 15 18           | LHS1374          | 15.72           | 14.26    | 12.42           | 332        | 10.568          | 0.023      | 9.945            | 0.024       | 9.660            | 0.022       | 9.439             | 0.023       | 9.285             | 0.019       | 9.076             | 0.027       | 59.0                 | 5.5                |               |
| 02 16 30           | +13 35 13           | LHS1375          | 15.84           | 14.13    | 12.00           | 555        | 9.871           | 0.021      | 9.314            | 0.022       | 8.981            | 0.017       | 8.717             | 0.023       | 8.523             | 0.020       | 8.356             | 0.020       | 114.0                | 3.1                |               |
| 02 17 10           | +35 26 33           | LHS1378          | 12.03           | 10.87    | 9.38            | Win15      | 7.987           | 0.029      | 7.320            | 0.027       | 7.131            | 0.021       | 6.935             | 0.035       | 6.802             | 0.020       | 6.698             | 0.014       | 69.8                 | 3.1                |               |
| 02 17 28           | -59 22 44           | WT0084           | 15.76           | 14.21    | 12.28           | 222        | 10.438          | 0.026      | 9.868            | 0.021       | 9.542            | 0.019       | 9.305             | 0.024       | 9.103             | 0.020       | 8.915             | 0.022       | 76.6                 | 3.0                |               |
| 02 17 34           | -53 59 20           | GJ0093           | 11.40           | 10.50    | 9.51            | Bes90      | 8.473           | 0.030      | 7.834            | 0.029       | 7.651            | 0.024       | 7.514             | 0.024       | 7.442             | 0.020       | 7.383             | 0.016       | 44.4                 | 2.5                |               |
| 02 19 02           | +23 52 55           | G035-040         | 14.17           | 12.979   | 11.398          | Wei87      | 9.777           | 0.021      | 9.228            | 0.022       | 8.956            | 0.017       | 8.772             | 0.023       | 8.595             | 0.021       | 8.427             | 0.027       | 48.6                 | 1.9                |               |
| 02 19 03           | +35 21 19           | GJ0094           | 12.55           | 11.43    | 9.96            | Wei96      | 8.662           | 0.027      | 8.137            | 0.033       | 7.897            | 0.024       | 7.721             | 0.023       | 7.544             | 0.020       | 7.462             | 0.018       | 56.4                 | 8.1                |               |
| 02 20 46           | +02 58 38           | G073-045         | 14.82           | 13.46    | 11.73           | 222        | 10.064          | 0.027      | 9.564            | 0.023       | 9.202            | 0.021       | 9.016             | 0.023       | 8.815             | 0.020       | 8.658             | 0.021       | 54.8                 | 1.5                |               |
| 02 22 02           | +30 33 59           | LHS052           | 18.40           | 16.57    | 14.37           | 222        | 12.204          | 0.022      | 11.603           | 0.022       | 11.248           | 0.019       | 11.023            | 0.024       | 10.794            | 0.022       | 10.467            | 0.076       | 45.1                 | 3.0                |               |
| 02 22 06           | +36 51 47           | LSPM0222+3651    | 17.23           | 15.46    | 13.44           | 222        | 11.388          | 0.023      | 10.789           | 0.024       | 10.439           | 0.021       | 10.214            | 0.023       | 10.018            | 0.022       | 9.821             | 0.046       | 45.2                 | 5.1                |               |
| 02 22 15           | +45 42 01           | G134-030         | 14.37           | 13.03    | 11.42           | 333        | 9.904           | 0.023      | 9.315            | 0.030       | 9.038            | 0.021       | 8.837             | 0.022       | 8.668             | 0.021       | 8.529             | 0.022       | 61.5                 | 3.6                |               |
| 02 22 15           | +47 52 48           | GJ0096           | 9.40            | 8.45     | 7.51            | 222        | 6.377           | 0.019      | 5.770            | 0.038       | 5.554            | 0.026       | 5.435             | 0.059       | 5.228             | 0.031       | 5.374             | 0.015       | 84.1                 | 1.1                |               |
| 02 25 38           | +37 32 34           | G074-025         | 14.05           | 12.827   | 11.224          | Wei87      | 9.712           | 0.022      | 9.103            | 0.023       | 8.842            | 0.016       | 8.687             | 0.022       | 8.554             | 0.020       | 8.382             | 0.023       | 46.2                 | 3.0                |               |
| 02 27 30           | -30 54 36           | NLT08065         | 10.89           | 9.93     | 8.88            | Koe10      | 7.761           | 0.021      | 7.111            | 0.046       | 6.932            | 0.024       | 6.718             | 0.038       | 6.732             | 0.020       | 6.680             | 0.015       | 48.5                 | 2.0                |               |
| 02 27 31           | +19 35 26           | LSPM0227+1935    | 16.34           | 14.85    | 12.99           | 111        | 11.210          | 0.022      | 10.622           | 0.020       | 10.307           | 0.017       | 10.082            | 0.023       | 9.899             | 0.020       | 9.771             | 0.047       | 49.9                 | 2.8                |               |
| 02 28 10           | +03 10 58           | LHS1407          | 17.63           | 15.86    | 13.77           | 222        | 11.670          | 0.024      | 11.122           | 0.022       | 10.788           | 0.023       | 10.532            | 0.023       | 10.321            | 0.020       | 10.217            | 0.049       | 46.6                 | 3.5                |               |
| 02 31 05           | +52 45 24           | LSPM0231+5245    | 16.01           | 14.53    | 12.74           | 222        | 10.971          | 0.021      | 10.400           | 0.020       | 10.131           | 0.015       | 9.106             | 0.022       | 9.235             | 0.021       | 9.067             | 0.026       | 41.8                 | 2.0                |               |
| 02 31 28           | +57 22 43           | GJ0101           | 13.22           | 12.07    | 10.58           | Wei96      | 9.218           | 0.037      | 8.637            | 0.057       | 8.418            | 0.020       | 8.243             | 0.022       | 8.066             | 0.021       | 7.971             | 0.020       | 53.3                 | 1.4                |               |
| 02 33 37           | +24 55 38           | GJ0102           | 13.05           | 11.76    | 10.10           | Dav15      | 8.472           | 0.020      | 7.913            | 0.021       | 7.627            | 0.017       | 7.459             | 0.026       | 7.263             | 0.022       | 7.168             | 0.017       | 106.2                | 2.4                |               |
| 02 33 47           | +15 00 17           | L470-030         | 13.82           | 12.62    | 11.14           | 222        | 9.692           | 0.022      | 9.115            | 0.023       | 8.858            | 0.019       | 8.664             | 0.022       | 8.539             | 0.020       | 8.425             | 0.023       | 43.7                 | 2.0                |               |
| 02 34 00           | +41 46 49           | G074-029         | 13.62           | 12.467   | 10.995          | Wei87      | 9.638           | 0.021      | 9.059            | 0.019       | 8.802            | 0.018       | 8.623             | 0.023       | 8.477             | 0.020       | 8.330             | 0.022       | 49.7                 | 3.0                |               |
| 02 34 12           | +17 45 51           | LHS0156          | 14.92           | 13.89    | 12.68           | 222        | 11.431          | 0.022      | 10.950           | 0.022       | 10.716           | 0.017       | 10.534            | 0.022       | 10.350            | 0.020       | 10.333            | 0.059       | 27.3                 | 4.1                | KS            |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 02 35 15           | +02 47 54           | G076-008         | 14.66           | 13.34    | 11.62           | 222        | 10.030          | 0.026      | 9.441            | 0.024              | 9.144            | 0.023              | 8.942             | 0.023              | 8.765             | 0.020              | 8.611             | 0.023              | 56.1                 | 3.1                |               |
| 02 35 53           | +20 13 12           | GJ0104           | 10.66           | 9.65     | 8.44            | Weig3      | 7.208           | 0.020      | 6.572            | 0.020              | 6.328            | 0.020              | 6.176             | 0.047              | 6.095             | 0.021              | 6.089             | 0.014              | 73.2                 | 1.8                |               |
| 02 36 32           | -59 28 06           | APM0237-5928     | 14.47           | 12.96    | 11.08           | Hen06      | 9.282           | 0.022      | 8.695            | 0.046              | 8.341            | 0.023              | 8.123             | 0.023              | 7.935             | 0.021              | 7.773             | 0.016              | 103.7                | 1.1                |               |
| 02 36 44           | +22 40 26           | G036-026         | 15.36           | 13.79    | 11.91           | 111        | 10.081          | 0.018      | 9.520            | 0.019              | 9.194            | 0.018              | 8.988             | 0.022              | 8.802             | 0.019              | 8.669             | 0.026              | 71.0                 | 4.0                |               |
| 02 37 30           | +00 21 28           | LHS1426          | 15.17           | 13.82    | 12.15           | 222        | 10.547          | 0.026      | 9.967            | 0.022              | 9.689            | 0.021              | 9.478             | 0.023              | 9.296             | 0.020              | 9.183             | 0.027              | 40.2                 | 4.3                |               |
| 02 37 53           | -58 45 11           | L174-028         | 12.43           | 11.27    | 9.79            | Win19      | 8.361           | 0.026      | 7.794            | 0.047              | 7.513            | 0.027              | 7.322             | 0.029              | 7.184             | 0.021              | 7.080             | 0.015              | 66.6                 | 3.4                |               |
| 02 39 17           | +07 28 17           | LTT17400         | 14.27           | 13.03    | 11.43           | Weig6      | 9.881           | 0.023      | 9.343            | 0.026              | 9.033            | 0.023              | 8.838             | 0.023              | 8.670             | 0.019              | 8.563             | 0.026              | 50.4                 | 2.1                |               |
| 02 39 51           | -34 07 58           | GJ1050           | 11.76           | 10.68    | 9.35            | Win15      | 8.060           | 0.021      | 7.540            | 0.031              | 7.305            | 0.023              | 7.065             | 0.032              | 6.906             | 0.019              | 6.875             | 0.015              | 92.1                 | 2.9                |               |
| 02 41 15           | -04 32 18           | G075-035         | 13.79           | 12.48    | 10.77           | Win15      | 9.199           | 0.022      | 8.581            | 0.061              | 8.246            | 0.027              | 8.056             | 0.022              | 7.891             | 0.020              | 7.746             | 0.017              | 84.7                 | 1.4                |               |
| 02 42 03           | -44 30 59           | LHS0158          | 13.64           | 12.66    | 11.60           | Jao05      | 10.433          | 0.023      | 9.937            | 0.025              | 9.726            | 0.021              | 9.543             | 0.022              | 9.376             | 0.021              | 9.291             | 0.027              | 20.8                 | 1.0                | KS            |
| 02 43 53           | -08 49 46           | GJ1051           | 11.91           | 10.95    | 9.83            | Koe10      | 8.693           | 0.023      | 8.103            | 0.047              | 7.922            | 0.026              | 7.771             | 0.024              | 7.629             | 0.019              | 7.579             | 0.016              | 40.3                 | 3.9                |               |
| 02 44 16           | +25 31 24           | GJ0109           | 10.57           | 9.48     | 8.11            | Weig6      | 6.752           | 0.018      | 6.197            | 0.017              | 5.961            | 0.021              | 5.782             | 0.058              | 5.536             | 0.032              | 5.609             | 0.015              | 131.7                | 1.9                |               |
| 02 45 11           | -43 44 32           | LP993-115        | 12.38           | 11.17    | 9.61            | Rie14      | 8.141           | 0.021      | 7.553            | 0.040              | 7.270            | 0.024              | 7.133             | 0.027              | 6.958             | 0.019              | 6.862             | 0.014              | 89.6                 | 1.7                |               |
| 02 45 40           | +44 56 56           | LTT17413         | 10.85           | 9.93     | 8.94            | Weig7      | 7.818           | 0.018      | 7.165            | 0.016              | 6.982            | 0.024              | 6.894             | 0.034              | 6.896             | 0.020              | 6.808             | 0.016              | 43.3                 | 2.3                |               |
| 02 46 02           | -70 24 06           | SCR0246-7024     | 14.86           | 13.44    | 11.61           | Win11      | 9.838           | 0.022      | 9.329            | 0.021              | 9.019            | 0.023              | 8.803             | 0.023              | 8.613             | 0.020              | 8.436             | 0.019              | 80.2                 | 1.3                |               |
| 02 46 15           | -04 59 21           | LHS0017          | 16.33           | 14.75    | 12.76           | Win19      | 10.970          | 0.024      | 10.499           | 0.027              | 10.152           | 0.019              | 9.877             | 0.023              | 9.668             | 0.020              | 9.548             | 0.028              | 60.3                 | 8.2                |               |
| 02 46 35           | +16 25 10           | LHS1443          | 16.99           | 15.16    | 12.97           | 222        | 10.971          | 0.020      | 10.519           | 0.028              | 10.185           | 0.020              | 9.976             | 0.023              | 9.714             | 0.020              | 9.519             | 0.039              | 68.6                 | 3.2                |               |
| 02 46 43           | -23 05 12           | LTT01349         | 10.24           | 9.36     | 8.54            | Koe10      | 7.558           | 0.021      | 6.927            | 0.031              | 6.736            | 0.018              | 6.619             | 0.039              | 6.670             | 0.021              | 6.607             | 0.014              | 43.5                 | 1.7                |               |
| 02 48 41           | -16 51 22           | LP771-021        | 19.95           | 17.72    | 15.30           | 222        | 12.551          | 0.022      | 11.872           | 0.022              | 11.422           | 0.021              | 11.171            | 0.022              | 10.984            | 0.021              | 10.797            | 0.066              | 61.6                 | 5.4                |               |
| 02 48 43           | +41 43 32           | LHS1448a         | 14.11           | 12.957   | 11.476          | Weig6      | 10.118          | 0.021      | 9.594            | 0.032              | 9.353            | 0.020              | 9.173             | 0.023              | 8.982             | 0.020              | 8.830             | 0.025              | 45.1                 | 1.4                |               |
| 02 50 10           | -53 08 20           | GJ0114.1         | 10.72           | 9.73     | 8.55            | Bes90      | 7.349           | 0.024      | 6.753            | 0.036              | 6.495            | 0.020              | 6.402             | 0.043              | 6.263             | 0.020              | 6.212             | 0.016              | 76.3                 | 1.6                |               |
| 02 51 15           | -03 52 48           | 2MA0251-0352     | 21.72           | 18.80    | 16.54           | 244        | 13.059          | 0.027      | 12.254           | 0.024              | 11.662           | 0.019              | 11.148            | 0.023              | 10.851            | 0.021              | 10.420            | 0.067              | 90.6                 | 3.0                |               |
| 02 51 50           | +29 29 13           | L298-042         | 13.96           | 12.705   | 11.061          | Weig7      | 9.518           | 0.021      | 8.973            | 0.022              | 8.686            | 0.020              | 8.475             | 0.024              | 8.296             | 0.021              | 8.161             | 0.021              | 44.1                 | 3.5                |               |
| 02 52 22           | -63 40 48           | GJ0118           | 11.39           | 10.32    | 8.99            | 222        | 7.671           | 0.024      | 7.115            | 0.029              | 6.829            | 0.017              | 6.680             | 0.037              | 6.540             | 0.020              | 6.465             | 0.014              | 85.8                 | 2.0                |               |
| 02 52 33           | +25 04 50           | G036-039         | 14.97           | 13.69    | 12.10           | 111        | 10.537          | 0.021      | 9.988            | 0.022              | 9.716            | 0.017              | 9.566             | 0.025              | 9.373             | 0.021              | 9.274             | 0.033              | 41.0                 | 2.6                | KS            |
| 02 52 46           | +01 55 51           | LHS0161          | 14.66           | 13.70    | 12.77           | 323        | 11.714          | 0.023      | 11.198           | 0.021              | 10.995           | 0.019              | 10.797            | 0.024              | 10.663            | 0.021              | 10.686            | 0.077              | 25.3                 | 5.0                |               |
| 02 53 26           | +17 24 32           | L411-018         | 12.74           | 11.59    | 10.14           | 111        | 8.716           | 0.030      | 8.153            | 0.036              | 7.872            | 0.027              | 7.724             | 0.026              | 7.577             | 0.023              | 7.474             | 0.018              | 56.6                 | 2.3                |               |
| 02 56 34           | +55 26 14           | GJ0119           | 10.48           | 9.56     | 8.55            | Weig6      | 7.425           | 0.021      | 6.797            | 0.031              | 6.590            | 0.020              | 6.377             | 0.039              | 6.459             | 0.020              | 6.383             | 0.015              | 48.1                 | 2.9                |               |
| 02 57 18           | +76 33 11           | LHS1478          | 13.39           | 12.282   | 10.885          | Weig6      | 9.615           | 0.026      | 9.028            | 0.029              | 8.767            | 0.022              | 8.583             | 0.024              | 8.415             | 0.019              | 8.319             | 0.020              | 59.2                 | 1.3                |               |
| 02 57 31           | +10 47 25           | GJ0120           | 13.06           | 11.95    | 10.52           | Bes90      | 9.162           | 0.034      | 8.663            | 0.031              | 8.428            | 0.021              | 8.278             | 0.022              | 8.068             | 0.021              | 7.961             | 0.019              | 50.0                 | 5.8                |               |
| 03 00 03           | +02 51 58           | LSPM0300+6251    | 16.23           | 14.50    | 12.82           | 111        | 11.073          | 0.024      | 10.544           | 0.029              | 10.225           | 0.020              | 9.978             | 0.023              | 9.781             | 0.020              | 9.454             | 0.030              | 53.3                 | 2.4                |               |
| 03 01 51           | -16 35 36           | LTT01445         | 11.22           | 10.07    | 8.66            | Hen06      | 7.294           | 0.024      | 6.774            | 0.038              | 6.496            | 0.021              | 5.269             | 0.060              | 4.641             | 0.021              | 4.943             | 0.010              | 143.8                | 2.5                | KS            |
| 03 02 06           | -39 50 52           | LHS1490          | 15.87           | 14.35    | 12.44           | Win15      | 10.705          | 0.021      | 10.178           | 0.025              | 9.885            | 0.023              | 9.642             | 0.024              | 9.445             | 0.020              | 9.246             | 0.026              | 70.8                 | 1.6                |               |
| 03 02 38           | -18 09 59           | GJ0121.1         | 11.80           | 10.76    | 9.46            | Bes90      | 8.208           | 0.030      | 7.587            | 0.042              | 7.337            | 0.023              | 7.158             | 0.031              | 7.080             | 0.020              | 6.994             | 0.015              | 51.8                 | 3.9                |               |
| 03 04 05           | -20 22 43           | LHS1491          | 12.84           | 11.65    | 10.13           | Rie10      | 8.634           | 0.023      | 8.016            | 0.044              | 7.751            | 0.033              | 7.553             | 0.025              | 7.444             | 0.020              | 7.344             | 0.015              | 67.3                 | 1.3                |               |
| 03 05 36           | +19 34 07           | LSPM0305+1934    | 15.06           | 13.82    | 12.26           | 222        | 10.742          | 0.021      | 10.102           | 0.019              | 9.877            | 0.017              | 9.711             | 0.023              | 9.565             | 0.020              | 9.547             | 0.046              | 59.7                 | 4.3                |               |
| 03 06 12           | -36 47 53           | DEN0306-3647     | 19.38           | 16.99    | 14.48           | 222        | 11.690          | 0.024      | 11.068           | 0.023              | 10.631           | 0.024              | 10.350            | 0.023              | 10.126            | 0.020              | 9.868             | 0.031              | 76.5                 | 1.4                |               |
| 03 06 26           | +17 13 29           | L411-054         | 15.45           | 14.16    | 12.53           | 111        | 10.925          | 0.022      | 10.355           | 0.023              | 10.066           | 0.020              | 9.895             | 0.023              | 9.729             | 0.021              | 9.652             | 0.044              | 41.6                 | 2.8                |               |
| 03 07 47           | +24 57 55           | L355-027         | 14.95           | 13.57    | 11.84           | 222        | 10.132          | 0.021      | 9.577            | 0.020              | 9.267            | 0.020              | 9.072             | 0.022              | 8.902             | 0.022              | 8.832             | 0.028              | 46.7                 | 2.6                |               |
| 03 09 00           | +10 01 26           | GJ1055           | 14.85           | 13.44    | 11.61           | Weig6      | 9.926           | 0.026      | 9.333            | 0.029              | 9.066            | 0.021              | 8.831             | 0.025              | 8.635             | 0.021              | 8.511             | 0.026              | 86.3                 | 3.3                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 03 09 04           | +76 02 28           | GJ0122           | 9.83            | 8.99     | 8.16            | Wei96      | 7.129           | 0.023      | 6.477            | 0.034              | 6.311            | 0.024              | 6.271             | 0.046              | 6.271             | 0.020              | 6.233             | 0.016              | 47.1                 | 1.2                |               |
| 03 10 03           | +02 34 27           | L592-010         | 16.50           | 14.99    | 13.05           | 222        | 11.286          | 0.026      | 10.817           | 0.025              | 10.526           | 0.024              | 10.283            | 0.024              | 10.065            | 0.021              | 9.984             | 0.057              | 56.0                 | 3.6                |               |
| 03 10 15           | +05 54 32           | LHS1512          | 11.89           | 10.86    | 9.61            | Wei96      | 8.363           | 0.027      | 7.750            | 0.036              | 7.532            | 0.020              | 7.330             | 0.028              | 7.249             | 0.020              | 7.160             | 0.017              | 59.1                 | 4.7                |               |
| 03 10 39           | +25 40 53           | LP355-032        | 14.23           | 13.03    | 11.51           | 333        | 10.040          | 0.022      | 9.458            | 0.022              | 9.178            | 0.017              | 9.016             | 0.024              | 8.827             | 0.019              | 8.734             | 0.026              | 105.3                | 3.8                |               |
| 03 10 58           | +73 46 29           | GJ1053           | 14.61           | 13.27    | 11.46           | Wei96      | 9.850           | 0.026      | 9.409            | 0.049              | 9.083            | 0.020              | 8.903             | 0.022              | 8.664             | 0.020              | 8.457             | 0.021              | 79.4                 | 2.8                |               |
| 03 11 30           | +43 11 27           | L198-260         | 15.14           | 13.58    | 12.12           | 111        | 10.526          | 0.021      | 9.931            | 0.018              | 9.624            | 0.020              | 9.405             | 0.023              | 9.266             | 0.020              | 9.100             | 0.028              | 40.1                 | 1.8                |               |
| 03 12 30           | -38 05 20           | GJ0130           | 11.43           | 10.40    | 9.18            | Bes90      | 8.028           | 0.029      | 7.423            | 0.021              | 7.185            | 0.018              | 7.013             | 0.035              | 6.909             | 0.019              | 6.820             | 0.015              | 79.6                 | 9.7                |               |
| 03 13 23           | +04 46 29           | GJ1057           | 13.94           | 12.45    | 10.62           | Dav15      | 8.775           | 0.020      | 8.208            | 0.038              | 7.833            | 0.024              | 7.638             | 0.024              | 7.458             | 0.021              | 7.312             | 0.016              | 113.5                | 2.9                |               |
| 03 14 12           | +28 40 40           | LHS1516          | 16.92           | 15.17    | 13.01           | 222        | 10.993          | 0.018      | 10.426           | 0.019              | 10.092           | 0.018              | 9.876             | 0.023              | 9.667             | 0.020              | 9.431             | 0.036              | 78.9                 | 1.7                |               |
| 03 14 45           | +48 31 11           | LTT11051         | 11.45           | 10.46    | 9.38            | 333        | 8.174           | 0.018      | 7.640            | 0.018              | 7.413            | 0.017              | 7.336             | 0.030              | 7.147             | 0.020              | 7.088             | 0.016              | 50.2                 | 9.4                |               |
| 03 16 48           | -21 25 26           | LP831-068        | 11.04           | 10.01    | 8.79            | Win15      | 7.608           | 0.020      | 6.954            | 0.029              | 6.691            | 0.026              | 6.578             | 0.039              | 6.522             | 0.019              | 6.460             | 0.015              | 53.5                 | 2.4                |               |
| 03 17 45           | +25 15 06           | LHS1525          | 11.78           | 10.78    | 9.63            | Koe10      | 8.492           | 0.029      | 7.917            | 0.023              | 7.670            | 0.021              | 7.572             | 0.025              | 7.454             | 0.020              | 7.394             | 0.017              | 46.3                 | 3.0                |               |
| 03 18 04           | -30 24 12           | LP887-070        | 11.00           | 10.05    | 9.05            | Koe10      | 7.986           | 0.026      | 7.356            | 0.023              | 7.115            | 0.027              | 6.979             | 0.034              | 6.933             | 0.019              | 6.876             | 0.015              | 43.5                 | 2.6                |               |
| 03 18 07           | +42 40 09           | G078-030         | 13.49           | 12.28    | 10.81           | 222        | 9.254           | 0.022      | 8.675            | 0.030              | 8.382            | 0.022              | 8.231             | 0.022              | 8.115             | 0.020              | 8.013             | 0.019              | 46.0                 | 1.4                |               |
| 03 18 07           | +38 15 08           | GJ0134           | 10.28           | 9.31     | 8.20            | Wei96      | 7.023           | 0.023      | 6.371            | 0.021              | 6.164            | 0.020              | 6.002             | 0.051              | 6.029             | 0.022              | 5.986             | 0.017              | 61.3                 | 1.9                |               |
| 03 18 58           | -36 23 35           | LTT01577         | 11.88           | 10.82    | 9.51            | Koe10      | 8.206           | 0.024      | 7.633            | 0.051              | 7.395            | 0.020              | 7.244             | 0.030              | 7.113             | 0.020              | 7.025             | 0.015              | 49.6                 | 3.2                |               |
| 03 20 56           | +18 05 31           | L412-030         | 15.48           | 14.238   | 12.608          | Wei86      | 11.050          | 0.020      | 10.467           | 0.016              | 10.187           | 0.017              | 10.002            | 0.022              | 9.836             | 0.019              | 9.783             | 0.048              | 48.2                 | 3.8                |               |
| 03 21 00           | +18 54 23           | LP412-031        | 19.55           | 17.06    | 14.61           | 111        | 11.759          | 0.021      | 11.066           | 0.022              | 10.639           | 0.018              | 10.347            | 0.023              | 10.148            | 0.020              | 9.874             | 0.048              | 68.9                 | 0.6                |               |
| 03 21 22           | +79 58 02           | GJ0133           | 11.21           | 10.06    | 9.12            | Wei99      | 7.704           | 0.027      | 7.117            | 0.036              | 6.890            | 0.024              | 6.742             | 0.039              | 6.654             | 0.020              | 6.574             | 0.016              | 71.6                 | 1.5                |               |
| 03 21 47           | -06 40 24           | G077-046         | 11.32           | 10.29    | 9.07            | Win15      | 7.857           | 0.026      | 7.281            | 0.049              | 6.983            | 0.031              | 6.851             | 0.038              | 6.765             | 0.023              | 6.698             | 0.016              | 54.9                 | 2.5                | KY            |
| 03 22 04           | +02 56 35           | GJ1058           | 14.82           | 13.52    | 11.83           | 222        | 10.314          | 0.024      | 9.806            | 0.025              | 9.508            | 0.023              | 9.314             | 0.023              | 9.110             | 0.020              | 8.986             | 0.029              | 68.1                 | 2.2                |               |
| 03 23 02           | +42 00 27           | GJ1059           | 15.31           | 13.89    | 12.04           | Wei96      | 10.389          | 0.019      | 9.857            | 0.030              | 9.599            | 0.024              | 9.379             | 0.022              | 9.165             | 0.020              | 9.002             | 0.029              | 68.9                 | 2.6                |               |
| 03 23 22           | +11 41 14           | LTT11117         | 12.19           | 11.09    | 9.70            | Wei84      | 8.386           | 0.021      | 7.805            | 0.027              | 7.562            | 0.020              | 7.414             | 0.026              | 7.260             | 0.019              | 7.217             | 0.018              | 54.7                 | 2.4                |               |
| 03 25 40           | -42 59 12           | LTT01628         | 11.25           | 10.33    | 9.35            | Koe10      | 8.303           | 0.019      | 7.726            | 0.040              | 7.483            | 0.023              | 7.326             | 0.029              | 7.244             | 0.019              | 7.181             | 0.015              | 42.9                 | 2.1                |               |
| 03 26 45           | +71 08 29           | L031-120         | 15.29           | 14.00    | 12.44           | 333        | 10.877          | 0.024      | 10.268           | 0.026              | 10.022           | 0.022              | 9.859             | 0.022              | 9.704             | 0.020              | 9.554             | 0.034              | 50.5                 | 3.8                |               |
| 03 26 45           | +19 14 40           | G006-007         | 14.94           | 13.59    | 11.83           | 111        | 10.123          | 0.021      | 9.523            | 0.027              | 9.252            | 0.018              | 9.059             | 0.023              | 8.884             | 0.021              | 8.741             | 0.027              | 52.1                 | 4.1                |               |
| 03 27 21           | +29 00 45           | L300-005         | 14.27           | 13.073   | 11.544          | Wei87      | 10.102          | 0.021      | 9.547            | 0.030              | 9.313            | 0.020              | 9.113             | 0.024              | 8.940             | 0.021              | 8.810             | 0.027              | 40.6                 | 1.6                |               |
| 03 28 50           | +26 29 12           | L356-106         | 13.40           | 12.203   | 10.665          | Wei87      | 9.288           | 0.027      | 8.726            | 0.032              | 8.459            | 0.042              | 8.250             | 0.023              | 8.076             | 0.020              | 7.993             | 0.021              | 66.7                 | 2.8                |               |
| 03 29 20           | -11 40 42           | GJ0143.1         | 9.95            | 9.10     | 8.27            | Bes90      | 7.303           | 0.020      | 6.650            | 0.031              | 6.448            | 0.021              | 6.332             | 0.043              | 6.394             | 0.021              | 6.350             | 0.015              | 45.4                 | 2.0                |               |
| 03 30 45           | +34 01 07           | LHS0174          | 12.76           | 11.86    | 10.93           | Wei96      | 9.844           | 0.021      | 9.350            | 0.022              | 9.143            | 0.018              | 8.996             | 0.023              | 8.852             | 0.020              | 8.805             | 0.029              | 22.6                 | 7.4                | KS            |
| 03 30 49           | +54 13 55           | LEP0330+5413     | 15.94           | 14.26    | 12.18           | 444        | 10.173          | 0.021      | 9.595            | 0.016              | 9.284            | 0.018              | 9.031             | 0.023              | 8.826             | 0.019              | 8.638             | 0.023              | 101.2                | 1.2                |               |
| 03 31 30           | -30 42 39           | LP888-018        | 18.81           | 16.55    | 14.10           | Win15      | 11.360          | 0.022      | 10.700           | 0.022              | 10.264           | 0.019              | 10.045            | 0.023              | 9.822             | 0.020              | 9.550             | 0.027              | 80.3                 | 1.1                |               |
| 03 31 47           | +14 19 18           | GJ0143.3         | 12.27           | 11.23    | 9.96            | Wei96      | 8.695           | 0.029      | 8.149            | 0.033              | 7.907            | 0.016              | 7.730             | 0.024              | 7.608             | 0.020              | 7.546             | 0.017              | 50.1                 | 2.8                |               |
| 03 32 56           | -44 42 07           | GJ0145           | 11.47           | 10.40    | 9.06            | Bes90      | 7.741           | 0.020      | 7.213            | 0.036              | 6.907            | 0.016              | 6.770             | 0.037              | 6.589             | 0.020              | 6.506             | 0.017              | 92.9                 | 1.9                |               |
| 03 34 12           | -49 53 32           | LEHPM1-3396      | 19.38           | 16.85    | 14.39           | Win15      | 11.376          | 0.023      | 10.823           | 0.026              | 10.392           | 0.022              | 10.039            | 0.023              | 9.717             | 0.020              | 9.288             | 0.025              | 120.6                | 3.6                | UB?           |
| 03 35 02           | +23 42 36           | 2MA0335+2342     | 19.02           | 17.01    | 14.73           | 222        | 12.250          | 0.021      | 11.655           | 0.022              | 11.261           | 0.017              | 11.044            | 0.023              | 10.767            | 0.020              | 10.762            | 0.130              | 23.6                 | 1.3                | KY            |
| 03 35 39           | -08 29 23           | LHS0176          | 15.92           | 14.30    | 12.31           | Jao11      | 10.377          | 0.022      | 9.801            | 0.022              | 9.456            | 0.019              | 9.243             | 0.023              | 9.034             | 0.023              | 8.873             | 0.025              | 79.1                 | 1.0                |               |
| 03 35 51           | +71 40 27           | L031-167         | 15.18           | 13.77    | 12.03           | 222        | 10.340          | 0.021      | 9.725            | 0.015              | 9.446            | 0.019              | 9.245             | 0.023              | 9.092             | 0.021              | 8.889             | 0.026              | 61.3                 | 4.2                |               |
| 03 35 53           | +10 17 09           | L473-007         | 15.09           | 13.79    | 12.12           | 222        | 10.570          | 0.022      | 10.021           | 0.031              | 9.750            | 0.023              | 9.522             | 0.023              | 9.325             | 0.021              | 9.049             | 0.029              | 43.8                 | 3.4                |               |
| 03 36 00           | -44 30 45           | GJ1061           | 13.09           | 11.45    | 9.47            | Lur14      | 7.523           | 0.020      | 7.015            | 0.044              | 6.610            | 0.021              | 6.373             | 0.047              | 6.127             | 0.023              | 6.007             | 0.015              | 270.5                | 1.2                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-------------|--------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 03 36 09    | +31 18 49    | LEP0336+3118     | 13.97           | 12.62    | 10.88           | 222        | 9.187           | 0.021      | 8.600            | 0.020              | 8.315            | 0.031              | 8.119             | 0.022              | 7.920             | 0.019              | 7.796             | 0.027              | 78.1                 | 2.4                |               |
| 03 36 22    | +13 50 46    | LHS1568          | 14.89           | 13.731   | 12.173          | Wei96      | 10.714          | 0.020      | 10.285           | 0.022              | 10.002           | 0.019              | 9.828             | 0.023              | 9.599             | 0.021              | 9.632             | 0.054              | 45.5                 | 2.3                |               |
| 03 38 16    | -11 29 14    | GJ1062           | 12.99           | 11.96    | 10.77           | 222        | 9.631           | 0.024      | 9.112            | 0.026              | 8.831            | 0.021              | 8.677             | 0.023              | 8.499             | 0.020              | 8.418             | 0.021              | 62.4                 | 3.3                | KS            |
| 03 39 30    | +24 58 03    | NLT11488         | 12.79           | 11.644   | 10.183          | Wei87      | 8.813           | 0.023      | 8.188            | 0.049              | 7.970            | 0.020              | 7.833             | 0.024              | 7.666             | 0.021              | 7.599             | 0.021              | 52.0                 | 4.2                |               |
| 03 39 35    | -35 25 44    | LP944-020        | 18.70           | 16.39    | 14.00           | Hen18      | 10.725          | 0.021      | 10.017           | 0.021              | 9.548            | 0.023              | 9.133             | 0.022              | 8.808             | 0.019              | 8.272             | 0.017              | 158.5                | 1.0                |               |
| 03 41 37    | +55 13 07    | HIP017248        | 11.28           | 10.38    | 9.50            | 222        | 8.347           | 0.027      | 7.649            | 0.027              | 7.499            | 0.023              | 7.436             | 0.026              | 7.448             | 0.021              | 7.373             | 0.018              | 28.4                 | 2.2                | KY            |
| 03 42 29    | +12 31 34    | LHS0178          | 12.87           | 11.89    | 10.78           | Jao17      | 9.599           | 0.022      | 9.113            | 0.021              | 8.878            | 0.018              | 8.714             | 0.024              | 8.542             | 0.021              | 8.403             | 0.021              | 44.5                 | 2.0                | KS            |
| 03 42 57    | -64 07 57    | SCR0342-6407     | 16.01           | 14.65    | 12.89           | Jao11      | 11.318          | 0.023      | 10.886           | 0.027              | 10.579           | 0.023              | 10.371            | 0.022              | 10.134            | 0.020              | 10.033            | 0.035              | 41.6                 | 2.0                |               |
| 03 43 53    | +16 40 19    | GJ0150.1         | 9.88            | 8.98     | 8.12            | Bes90      | 7.046           | 0.019      | 6.408            | 0.018              | 6.247            | 0.017              | 6.161             | 0.047              | 6.104             | 0.021              | 6.099             | 0.015              | 57.7                 | 1.5                |               |
| 03 44 21    | +07 41 55    | LSPM0344+0741    | 14.93           | 13.56    | 11.84           | 222        | 10.191          | 0.025      | 9.655            | 0.034              | 9.380            | 0.020              | 9.167             | 0.024              | 8.958             | 0.021              | 8.802             | 0.030              | 62.6                 | 4.0                |               |
| 03 46 20    | +26 12 56    | GJ0154           | 9.58            | 8.66     | 7.75            | 222        | 6.689           | 0.021      | 6.046            | 0.018              | 5.844            | 0.018              | 5.727             | 0.060              | 5.628             | 0.028              | 5.725             | 0.015              | 68.1                 | 1.9                |               |
| 03 47 00    | +15 24 17    | L473-026         | 15.54           | 14.21    | 12.46           | 111        | 10.733          | 0.021      | 10.159           | 0.016              | 9.851            | 0.018              | 9.683             | 0.023              | 9.510             | 0.020              | 9.345             | 0.035              | 48.8                 | 3.8                |               |
| 03 47 21    | +08 41 47    | LHS1593          | 14.48           | 13.16    | 11.43           | Wei96      | 9.849           | 0.019      | 9.272            | 0.029              | 9.022            | 0.022              | 8.800             | 0.023              | 8.610             | 0.021              | 8.463             | 0.023              | 80.1                 | 2.6                |               |
| 03 47 23    | -01 58 29    | G080-021         | 11.53           | 10.45    | 9.12            | Koe10      | 7.804           | 0.026      | 7.174            | 0.051              | 6.933            | 0.024              | 6.810             | 0.037              | 6.684             | 0.019              | 6.627             | 0.016              | 62.6                 | 1.9                | KY            |
| 03 47 58    | +02 47 16    | GJ0155.1         | 11.02           | 10.07    | 9.05            | Bes90      | 7.964           | 0.026      | 7.382            | 0.037              | 7.110            | 0.018              | 6.988             | 0.032              | 6.879             | 0.020              | 6.827             | 0.016              | 58.7                 | 2.3                |               |
| 03 48 38    | +73 32 35    | LHS1596          | 11.32           | 10.33    | 9.19            | Wei96      | 7.994           | 0.024      | 7.355            | 0.031              | 7.166            | 0.029              | 7.038             | 0.033              | 6.913             | 0.021              | 6.855             | 0.015              | 60.7                 | 2.0                |               |
| 03 50 44    | -06 05 42    | GJ1065           | 12.82           | 11.60    | 10.04           | Win15      | 8.570           | 0.032      | 7.998            | 0.037              | 7.751            | 0.020              | 7.534             | 0.025              | 7.365             | 0.021              | 7.243             | 0.016              | 105.4                | 1.8                |               |
| 03 51 00    | -00 52 45    | LHS1604          | 18.08           | 16.07    | 13.80           | 222        | 11.302          | 0.024      | 10.609           | 0.022              | 10.232           | 0.024              | 9.968             | 0.023              | 9.758             | 0.021              | 9.587             | 0.040              | 68.1                 | 1.8                |               |
| 03 51 15    | +07 49 39    | L533-059         | 14.30           | 13.13    | 11.62           | 222        | 10.147          | 0.027      | 9.546            | 0.030              | 9.309            | 0.019              | 9.144             | 0.022              | 8.989             | 0.020              | 8.880             | 0.030              | 56.8                 | 1.8                |               |
| 03 54 01    | +33 33 31    | LSPM0354+3333    | 17.92           | 16.06    | 13.92           | 111        | 11.838          | 0.021      | 11.266           | 0.020              | 10.916           | 0.019              | 10.687            | 0.024              | 10.469            | 0.021              | 10.380            | 0.098              | 63.5                 | 5.6                |               |
| 03 54 46    | +24 16 25    | L357-056         | 16.72           | 14.90    | 12.80           | 111        | 10.585          | 0.019      | 9.944            | 0.026              | 9.574            | 0.021              | 9.354             | 0.023              | 9.185             | 0.020              | 8.949             | 0.029              | 72.5                 | 3.9                |               |
| 03 57 20    | +41 07 43    | LSPM0357+4107    | 17.16           | 15.31    | 13.11           | 222        | 10.903          | 0.023      | 10.299           | 0.020              | 9.949            | 0.019              | 9.719             | 0.023              | 9.507             | 0.020              | 9.146             | 0.030              | 73.5                 | 2.8                |               |
| 03 57 41    | +81 55 25    | L003-243         | 15.09           | 13.80    | 12.12           | 222        | 10.553          | 0.019      | 10.001           | 0.027              | 9.716            | 0.025              | 9.524             | 0.023              | 9.342             | 0.020              | 9.196             | 0.026              | 52.1                 | 2.3                |               |
| 03 59 54    | +26 05 24    | GJ0157.1         | 12.62           | 11.51    | 10.09           | Wei96      | 8.714           | 0.023      | 8.081            | 0.021              | 7.821            | 0.020              | 7.705             | 0.024              | 7.609             | 0.019              | 7.524             | 0.019              | 43.8                 | 5.1                |               |
| 04 01 08    | +51 23 19    | LHS1618          | 13.65           | 12.504   | 11.025          | Wei96      | 9.665           | 0.026      | 9.068            | 0.028              | 8.842            | 0.020              | 8.648             | 0.022              | 8.461             | 0.019              | 8.348             | 0.021              | 44.7                 | 1.6                |               |
| 04 04 06    | +30 42 46    | G038-024         | 12.74           | 11.708   | 10.478          | Wei87      | 9.264           | 0.035      | 8.775            | 0.033              | 8.515            | 0.027              | 8.341             | 0.022              | 8.180             | 0.019              | 8.125             | 0.024              | 49.4                 | 2.6                |               |
| 04 05 57    | +71 16 41    | LP031-301        | 13.97           | 12.72    | 11.13           | 222        | 9.527           | 0.031      | 8.891            | 0.027              | 8.691            | 0.029              | 8.011             | 0.022              | 7.816             | 0.019              | 7.769             | 0.017              | 57.1                 | 1.2                |               |
| 04 06 37    | +79 16 02    | LHS1629          | 15.23           | 13.75    | 11.87           | 333        | 10.034          | 0.027      | 9.486            | 0.028              | 9.194            | 0.021              | 8.965             | 0.023              | 8.747             | 0.019              | 8.577             | 0.022              | 78.5                 | 3.5                |               |
| 04 08 24    | +69 10 59    | L031-433         | 15.02           | 13.61    | 11.88           | 222        | 10.263          | 0.022      | 9.735            | 0.018              | 9.398            | 0.016              | 9.188             | 0.023              | 8.997             | 0.019              | 8.784             | 0.023              | 44.2                 | 3.8                |               |
| 04 08 37    | +33 38 13    | GJ0162           | 10.20           | 9.25     | 8.19            | Wei96      | 7.016           | 0.020      | 6.395            | 0.044              | 6.178            | 0.020              | 6.061             | 0.048              | 5.969             | 0.022              | 5.977             | 0.014              | 74.4                 | 2.6                |               |
| 04 08 56    | -31 28 54    | LP889-037        | 14.56           | 13.21    | 11.48           | Win15      | 9.775           | 0.027      | 9.164            | 0.025              | 8.823            | 0.023              | 8.586             | 0.023              | 8.408             | 0.019              | 8.219             | 0.018              | 64.4                 | 1.8                |               |
| 04 09 16    | -53 22 25    | GJ0163           | 11.84           | 10.76    | 9.34            | Bes90      | 7.948           | 0.026      | 7.428            | 0.040              | 7.135            | 0.021              | 7.004             | 0.033              | 6.861             | 0.020              | 6.765             | 0.015              | 66.6                 | 1.8                |               |
| 04 10 28    | -53 36 08    | GJ1068           | 13.60           | 12.18    | 10.42           | Win15      | 8.747           | 0.030      | 8.213            | 0.034              | 7.900            | 0.021              | 7.646             | 0.025              | 7.451             | 0.020              | 7.331             | 0.015              | 143.4                | 1.9                |               |
| 04 11 13    | +49 31 52    | LHS5091          | 13.45           | 12.316   | 10.862          | Wei88      | 9.486           | 0.023      | 8.924            | 0.029              | 8.663            | 0.024              | 8.474             | 0.023              | 8.318             | 0.019              | 8.149             | 0.019              | 44.0                 | 1.3                |               |
| 04 11 27    | -44 18 19    | WT0135           | 14.10           | 13.06    | 11.82           | Jao11      | 10.550          | 0.020      | 10.120           | 0.030              | 9.830            | 0.020              | 9.644             | 0.022              | 9.443             | 0.019              | 9.283             | 0.024              | 39.0                 | 2.4                | KS            |
| 04 12 17    | +64 43 56    | LHS1638          | 13.73           | 12.44    | 10.76           | Wei96      | 9.156           | 0.026      | 8.577            | 0.026              | 8.289            | 0.014              | 8.092             | 0.022              | 7.917             | 0.019              | 7.784             | 0.018              | 85.8                 | 2.1                |               |
| 04 12 35    | +35 29 59    | LSPM0412+3529    | 15.86           | 14.27    | 12.47           | 222        | 10.642          | 0.019      | 10.106           | 0.030              | 9.790            | 0.024              | 9.562             | 0.023              | 9.366             | 0.021              | 9.039             | 0.029              | 40.0                 | 2.3                |               |
| 04 14 02    | +82 15 36    | LHS1643          | 15.27           | 13.78    | 11.90           | 111        | 10.251          | 0.023      | 9.671            | 0.030              | 9.362            | 0.021              | 9.156             | 0.022              | 8.967             | 0.020              | 8.759             | 0.022              | 69.6                 | 2.9                |               |
| 04 14 17    | -09 06 54    | SCR0414-0906     | 13.85           | 12.66    | 11.10           | Win19      | 9.630           | 0.024      | 9.056            | 0.024              | 8.755            | 0.023              | 8.586             | 0.023              | 8.432             | 0.021              | 8.319             | 0.021              | 42.0                 | 2.5                | KY            |
| 04 15 35    | +19 36 00    | L414-139         | 15.54           | 14.21    | 12.47           | 111        | 10.787          | 0.021      | 10.215           | 0.020              | 9.911            | 0.017              | 9.725             | 0.024              | 9.538             | 0.020              | 9.399             | 0.037              | 44.7                 | 1.3                |               |

# Photometry and Parallaxes of the Full Sample

| R.A. | Decl. | Star Name | V | R | I | ref | J | H | K | W1 | W2 | W3 | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag | err | mag |
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# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|-------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 04 49 56           | +71 09 47           | L032-204         | 13.79           | 12.59    | 11.11           | 222        | 9.633           | 0.026      | 9.017            | 0.030              | 8.784            | 0.020              | 8.605             | 0.023              | 8.486             | 0.020       | 8.364             | 0.020              | 41.2                 | 2.0                |               |
| 04 50 51           | +22 07 22           | GJ1072           | 15.20           | 13.71    | 11.80           | Wei96      | 9.896           | 0.021      | 9.311            | 0.022              | 8.977            | 0.018              | 8.759             | 0.023              | 8.589             | 0.021       | 8.447             | 0.028              | 78.1                 | 3.3                |               |
| 04 51 01           | -34 02 15           | 2MA0451-3402     | 22.11           | 19.32    | 16.97           | 133        | 13.541          | 0.023      | 12.826           | 0.023              | 12.294           | 0.026              | 11.920            | 0.023              | 11.658            | 0.022       | 11.003            | 0.078              | 47.5                 | 1.5                |               |
| 04 51 37           | -58 18 52           | APM0452-5819     | 18.51           | 16.43    | 14.14           | Cos05      | 11.691          | 0.024      | 11.089           | 0.023              | 10.705           | 0.022              | 10.458            | 0.022              | 10.258            | 0.020       | 10.063            | 0.024              | 58.1                 | 1.2                |               |
| 04 52 06           | +06 28 36           | GJ0179           | 11.98           | 10.83    | 9.33            | Bes90      | 7.814           | 0.024      | 7.209            | 0.046              | 6.942            | 0.018              | 6.785             | 0.034              | 6.636             | 0.020       | 6.568             | 0.017              | 80.8                 | 3.8                |               |
| 04 52 24           | -16 49 22           | LP776-025        | 11.63           | 10.53    | 9.12            | Win15      | 7.740           | 0.021      | 7.146            | 0.031              | 6.891            | 0.027              | 6.765             | 0.038              | 6.602             | 0.020       | 6.532             | 0.016              | 69.4                 | 1.7                | KY            |
| 04 52 29           | +09 30 29           | L476-186         | 16.11           | 14.70    | 12.94           | 222        | 11.294          | 0.021      | 10.735           | 0.021              | 10.449           | 0.022              | 10.223            | 0.023              | 10.028            | 0.020       | 9.830             | 0.051              | 58.7                 | 7.9                |               |
| 04 52 35           | +40 42 24           | GJ1073           | 13.44           | 12.21    | 10.58           | Wei96      | 9.071           | 0.018      | 8.551            | 0.020              | 8.306            | 0.018              | 8.112             | 0.022              | 7.904             | 0.021       | 7.799             | 0.019              | 78.6                 | 1.5                |               |
| 04 53 31           | -55 51 37           | GJ2036           | 11.07           | 9.99     | 8.57            | Win19      | 7.197           | 0.027      | 6.623            | 0.055              | 6.338            | 0.021              | 5.837             | 0.042              | 5.289             | 0.013       | 5.200             | 0.008              | 90.0                 | 2.0                | KY            |
| 04 53 50           | -17 46 24           | LSPM0453+1549    | 13.21           | 12.11    | 10.77           | 111        | 9.432           | 0.022      | 8.892            | 0.022              | 8.617            | 0.017              | 8.460             | 0.023              | 8.321             | 0.020       | 8.261             | 0.022              | 44.2                 | 1.3                |               |
| 04 53 50           | +15 49 15           | GJ0180           | 10.91           | 9.89     | 8.69            | Bes90      | 7.413           | 0.020      | 6.860            | 0.038              | 6.598            | 0.021              | 6.447             | 0.043              | 6.337             | 0.021       | 6.291             | 0.015              | 82.6                 | 2.3                |               |
| 04 56 04           | +43 13 56           | L202-002         | 13.68           | 12.43    | 10.85           | 111        | 9.304           | 0.026      | 8.772            | 0.040              | 8.497            | 0.021              | 8.261             | 0.023              | 8.114             | 0.019       | 7.988             | 0.019              | 70.8                 | 2.4                |               |
| 04 58 46           | +50 56 38           | GJ1074           | 10.98           | 10.04    | 9.01            | Wei96      | 7.896           | 0.018      | 7.265            | 0.024              | 7.042            | 0.023              | 6.892             | 0.034              | 6.864             | 0.018       | 6.781             | 0.017              | 51.8                 | 2.3                |               |
| 04 58 51           | +49 50 57           | GJ0181           | 9.80            | 8.87     | 7.96            | 333        | 6.925           | 0.020      | 6.241            | 0.031              | 6.104            | 0.020              | 5.990             | 0.055              | 5.966             | 0.023       | 5.972             | 0.015              | 60.9                 | 1.3                |               |
| 04 59 35           | +01 47 01           | GJ0182           | 10.00           | 9.12     | 8.21            | 222        | 7.117           | 0.020      | 6.450            | 0.031              | 6.261            | 0.017              | 6.173             | 0.046              | 6.079             | 0.023       | 6.054             | 0.016              | 39.1                 | 2.5                | KY            |
| 05 00 47           | -57 15 26           | HIP023309        | 10.03           | 9.15     | 8.23            | 222        | 7.095           | 0.021      | 6.429            | 0.029              | 6.244            | 0.024              | 6.129             | 0.050              | 6.093             | 0.022       | 6.061             | 0.014              | 37.3                 | 1.1                | KY            |
| 05 01 18           | +22 37 01           | LSPM0501+2237    | 15.53           | 13.96    | 12.05           | 111        | 10.161          | 0.020      | 9.591            | 0.020              | 9.232            | 0.017              | 9.004             | 0.023              | 8.814             | 0.020       | 8.615             | 0.024              | 73.7                 | 3.2                |               |
| 05 01 57           | -06 56 47           | LHS1723          | 12.20           | 10.86    | 9.18            | Win15      | 7.617           | 0.032      | 7.065            | 0.046              | 6.736            | 0.024              | 6.531             | 0.045              | 6.317             | 0.021       | 6.228             | 0.015              | 187.9                | 1.3                | redS          |
| 05 03 20           | -17 22 25           | LHS1731          | 11.74           | 10.60    | 9.17            | Win15      | 7.819           | 0.023      | 7.242            | 0.034              | 6.936            | 0.021              | 6.788             | 0.040              | 6.637             | 0.019       | 6.562             | 0.015              | 108.7                | 1.7                |               |
| 05 03 24           | +53 07 42           | GJ0184           | 9.98            | 9.08     | 8.11            | Wei96      | 7.001           | 0.023      | 6.414            | 0.034              | 6.172            | 0.021              | 6.080             | 0.047              | 5.971             | 0.024       | 5.973             | 0.014              | 72.6                 | 1.8                |               |
| 05 04 15           | +11 03 24           | G097-015         | 13.76           | 12.43    | 10.74           | Hos15      | 9.144           | 0.022      | 8.609            | 0.028              | 8.311            | 0.025              | 8.100             | 0.023              | 7.922             | 0.019       | 7.757             | 0.020              | 103.6                | 1.0                |               |
| 05 05 25           | +52 47 19           | L119-015         | 16.16           | 14.67    | 12.85           | 222        | 11.085          | 0.022      | 10.512           | 0.030              | 10.188           | 0.021              | 9.947             | 0.021              | 9.767             | 0.019       | 9.634             | 0.038              | 54.9                 | 3.3                |               |
| 05 05 41           | +56 28 49           | LHS1733          | 15.01           | 13.806   | 12.256          | Wei96      | 10.804          | 0.023      | 10.329           | 0.020              | 10.045           | 0.016              | 9.845             | 0.022              | 9.625             | 0.018       | 9.494             | 0.033              | 42.8                 | 1.4                |               |
| 05 06 50           | -21 35 09           | BD-21-01074      | 10.41           | 9.40     | 8.25            | Rie14      | 7.046           | 0.021      | 6.391            | 0.049              | 6.117            | 0.017              | 5.451             | 0.053              | 4.783             | 0.018       | 4.668             | 0.008              | 52.0                 | 1.3                | KY            |
| 05 09 44           | -43 25 17           | SCR0509-4325     | 14.10           | 12.83    | 11.20           | Win17      | 9.605           | 0.024      | 8.996            | 0.026              | 8.735            | 0.019              | 8.537             | 0.023              | 8.389             | 0.019       | 8.263             | 0.017              | 46.5                 | 1.8                |               |
| 05 10 20           | +27 14 02           | LEP0510+2714     | 17.77           | 15.71    | 13.42           | 333        | 10.698          | 0.020      | 9.965            | 0.022              | 9.560            | 0.018              | 9.294             | 0.024              | 9.128             | 0.021       | 8.907             | 0.031              | 101.0                | 1.5                |               |
| 05 10 57           | +18 37 35           | LHS1743          | 14.18           | 12.976   | 11.426          | Wei96      | 9.935           | 0.022      | 9.333            | 0.022              | 9.062            | 0.018              | 8.855             | 0.022              | 8.705             | 0.022       | 8.521             | 0.025              | 57.5                 | 1.0                |               |
| 05 11 41           | -45 01 06           | GJ0191           | 8.85            | 7.90     | 6.90            | Bes90      | 5.821           | 0.026      | 5.316            | 0.027              | 5.049            | 0.021              | 4.949             | 0.077              | 4.415             | 0.047       | 4.717             | 0.014              | 255.7                | 0.9                | 1, KS         |
| 05 12 42           | +19 39 57           | GJ0192           | 10.75           | 9.73     | 8.53            | Koe10      | 7.299           | 0.024      | 6.695            | 0.040              | 6.470            | 0.024              | 6.314             | 0.044              | 6.206             | 0.023       | 6.165             | 0.015              | 77.1                 | 3.2                |               |
| 05 15 08           | -07 20 49           | LHS1747          | 11.54           | 10.57    | 9.51            | Koe10      | 8.355           | 0.023      | 7.815            | 0.046              | 7.518            | 0.020              | 7.381             | 0.030              | 7.311             | 0.022       | 7.244             | 0.016              | 44.5                 | 4.1                |               |
| 05 15 31           | +59 11 18           | LEP0515+5911     | 18.11           | 16.07    | 13.77           | 222        | 11.320          | 0.025      | 10.661           | 0.019              | 10.319           | 0.018              | 10.022            | 0.023              | 9.808             | 0.020       | 9.477             | 0.035              | 66.1                 | 1.3                |               |
| 05 15 47           | -31 17 45           | LHS1748          | 12.08           | 11.06    | 9.83            | Rie10      | 8.592           | 0.020      | 7.990            | 0.049              | 7.733            | 0.023              | 7.634             | 0.023              | 7.534             | 0.021       | 7.431             | 0.017              | 43.2                 | 1.4                |               |
| 05 17 00           | -78 17 20           | GJ1077           | 11.90           | 10.81    | 9.42            | Jao11      | 8.066           | 0.021      | 7.441            | 0.023              | 7.199            | 0.018              | 7.082             | 0.033              | 6.962             | 0.020       | 6.884             | 0.015              | 65.7                 | 1.9                |               |
| 05 17 21           | -42 52 47           | SCR0517-4252     | 11.92           | 10.87    | 9.61            | Win15      | 8.341           | 0.020      | 7.730            | 0.055              | 7.446            | 0.021              | 7.339             | 0.028              | 7.268             | 0.020       | 7.193             | 0.016              | 47.6                 | 1.6                |               |
| 05 17 38           | -33 49 03           | 2MA0517-3349     | 19.75           | 17.38    | 14.96           | Win15      | 12.004          | 0.022      | 11.317           | 0.024              | 10.832           | 0.024              | 10.514            | 0.023              | 10.273            | 0.020       | 9.827             | 0.034              | 61.6                 | 1.5                |               |
| 05 20 41           | +58 47 33           | LHS1758          | 13.45           | 12.272   | 10.761          | Wei96      | 9.295           | 0.027      | 8.718            | 0.034              | 8.426            | 0.018              | 8.050             | 0.019              | 7.735             | 0.014       | 7.913             | 0.018              | 41.9                 | 0.6                |               |
| 05 23 38           | -14 03 02           | 2MA0523-1403     | 20.99           | 18.70    | 16.52           | 222        | 13.084          | 0.024      | 12.220           | 0.022              | 11.638           | 0.027              | 11.156            | 0.023              | 10.864            | 0.020       | 10.498            | 0.072              | 81.0                 | 1.8                |               |
| 05 23 49           | +22 32 39           | GJ1078           | 15.53           | 14.13    | 12.37           | 222        | 10.703          | 0.022      | 10.191           | 0.022              | 9.850            | 0.017              | 9.647             | 0.024              | 9.442             | 0.020       | 9.253             | 0.037              | 42.2                 | 2.3                |               |
| 05 28 00           | +09 38 38           | GJ0203           | 12.46           | 11.27    | 9.78            | Dav15      | 8.311           | 0.021      | 7.840            | 0.033              | 7.542            | 0.017              | 7.354             | 0.029              | 7.169             | 0.020       | 7.077             | 0.016              | 104.8                | 1.5                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 05 28 15           | +02 58 14           | GJ1080           | 12.85           | 11.74    | 10.32           | 222        | 8.979           | 0.021      | 8.496            | 0.031              | 8.224            | 0.024              | 7.989             | 0.023              | 7.785             | 0.021              | 7.717             | 0.018              | 51.2                 | 1.4                |               |
| 05 29 27           | +15 34 38           | GJ2043           | 10.63           | 9.72     | 8.73            | Wei91a     | 7.557           | 0.018      | 7.001            | 0.076              | 6.782            | 0.031              | 6.630             | 0.038              | 6.548             | 0.019              | 6.517             | 0.016              | 57.8                 | 1.8                |               |
| 05 29 45           | -32 39 14           | SCR0529-3239     | 13.79           | 12.50    | 10.80           | Rie14      | 9.215           | 0.026      | 8.609            | 0.042              | 8.316            | 0.027              | 8.126             | 0.023              | 7.932             | 0.020              | 7.793             | 0.017              | 38.2                 | 1.6                | KY            |
| 05 29 52           | -03 26 30           | GJ0204-2         | 12.03           | 10.94    | 9.60            | Bes90      | 8.276           | 0.021      | 7.687            | 0.031              | 7.437            | 0.016              | 7.294             | 0.027              | 7.161             | 0.021              | 7.038             | 0.016              | 56.8                 | 6.5                |               |
| 05 29 53           | +32 04 51           | LHS1765          | 12.24           | 11.202   | 9.921           | Wei96      | 8.649           | 0.019      | 8.057            | 0.017              | 7.844            | 0.023              | 7.697             | 0.024              | 7.578             | 0.021              | 7.543             | 0.021              | 47.0                 | 2.1                |               |
| 05 31 04           | -30 11 45           | LHS1767          | 13.11           | 11.93    | 10.45           | Rie10      | 9.046           | 0.021      | 8.489            | 0.053              | 8.190            | 0.024              | 8.037             | 0.024              | 7.877             | 0.020              | 7.769             | 0.017              | 65.3                 | 1.5                |               |
| 05 31 27           | -03 40 38           | GJ0205           | 7.95            | 6.97     | 5.88            | Bes90      | 4.999           | 0.300      | 4.149            | 0.212              | 4.039            | 0.260              | 3.743             | 0.120              | 3.143             | 0.077              | 3.703             | 0.015              | 176.0                | 1.0                |               |
| 05 32 52           | +33 49 47           | LHS5108          | 13.49           | 12.28    | 10.82           | 222        | 9.391           | 0.021      | 8.816            | 0.029              | 8.558            | 0.017              | 8.359             | 0.024              | 8.195             | 0.020              | 8.094             | 0.022              | 75.6                 | 1.3                |               |
| 05 33 45           | +01 56 43           | GJ0207.1         | 11.53           | 10.45    | 9.11            | Bes90      | 7.764           | 0.023      | 7.147            | 0.053              | 6.855            | 0.021              | 6.720             | 0.036              | 6.601             | 0.022              | 6.539             | 0.016              | 62.8                 | 2.2                |               |
| 05 34 52           | +13 52 47           | LTT11684         | 11.81           | 10.67    | 9.21            | Wei99      | 7.781           | 0.018      | 7.189            | 0.017              | 6.936            | 0.016              | 6.739             | 0.039              | 6.608             | 0.020              | 6.552             | 0.016              | 80.6                 | 9.8                |               |
| 05 36 00           | -07 38 59           | LHS109           | 12.86           | 11.62    | 10.05           | Win15      | 8.464           | 0.023      | 7.825            | 0.040              | 7.567            | 0.024              | 7.396             | 0.028              | 7.275             | 0.020              | 7.157             | 0.017              | 68.0                 | 1.5                |               |
| 05 36 31           | +11 19 40           | GJ0208           | 8.87            | 8.00     | 7.18            | 444        | 6.126           | 0.023      | 5.436            | 0.024              | 5.269            | 0.023              | 5.185             | 0.074              | 4.983             | 0.035              | 5.148             | 0.015              | 88.6                 | 1.0                |               |
| 05 37 40           | -61 54 44           | WT0178           | 14.81           | 13.47    | 11.77           | Rie10      | 10.141          | 0.027      | 9.534            | 0.023              | 9.227            | 0.019              | 9.048             | 0.022              | 8.873             | 0.020              | 8.705             | 0.018              | 62.0                 | 0.9                |               |
| 05 38 12           | +79 31 19           | LHS207           | 18.28           | 16.53    | 14.27           | 111        | 12.137          | 0.019      | 11.638           | 0.028              | 11.330           | 0.021              | 11.130            | 0.022              | 10.882            | 0.021              | 10.690            | 0.070              | 45.1                 | 1.4                |               |
| 05 39 25           | +40 38 43           | LSPM0539+4038    | 18.57           | 16.29    | 13.70           | 111        | 11.109          | 0.021      | 10.446           | 0.021              | 10.044           | 0.018              | 9.815             | 0.023              | 9.612             | 0.022              | 9.437             | 0.039              | 96.5                 | 3.8                |               |
| 05 40 54           | +08 54 18           | LSPM0540+0854    | 15.76           | 14.20    | 12.30           | 222        | 10.455          | 0.024      | 9.891            | 0.024              | 9.589            | 0.023              | 9.348             | 0.023              | 9.146             | 0.019              | 8.956             | 0.029              | 66.8                 | 2.7                |               |
| 05 41 59           | +15 20 14           | HIP026844        | 10.61           | 9.72     | 8.81            | Wei93      | 7.690           | 0.018      | 7.075            | 0.020              | 6.880            | 0.016              | 6.757             | 0.035              | 6.776             | 0.019              | 6.714             | 0.015              | 46.8                 | 2.3                |               |
| 05 42 09           | +12 29 22           | GJ0213           | 11.55           | 10.31    | 8.68            | 333        | 7.124           | 0.021      | 6.627            | 0.018              | 6.389            | 0.016              | 6.226             | 0.045              | 5.938             | 0.023              | 5.904             | 0.016              | 170.9                | 1.0                |               |
| 05 42 13           | -05 27 56           | GJ2045           | 15.34           | 13.84    | 11.93           | Win15      | 10.206          | 0.023      | 9.694            | 0.023              | 9.371            | 0.019              | 9.154             | 0.023              | 8.936             | 0.019              | 8.801             | 0.027              | 79.6                 | 1.2                |               |
| 05 42 30           | +07 31 09           | G099-025         | 14.62           | 13.42    | 11.92           | 333        | 10.470          | 0.022      | 9.912            | 0.025              | 9.634            | 0.025              | 9.465             | 0.023              | 9.299             | 0.022              | 9.177             | 0.032              | 58.7                 | 2.0                |               |
| 05 43 47           | -41 08 08           | APM0544-4108     | 14.12           | 12.85    | 11.25           | Rie10      | 9.739           | 0.024      | 9.155            | 0.021              | 8.870            | 0.025              | 8.674             | 0.023              | 8.489             | 0.020              | 8.355             | 0.018              | 48.4                 | 0.8                |               |
| 05 45 48           | +62 14 13           | GJ0215           | 9.03            | 8.18     | 7.35            | Wei96      | 6.353           | 0.029      | 5.654            | 0.018              | 5.495            | 0.016              | 5.441             | 0.064              | 5.268             | 0.033              | 5.424             | 0.014              | 72.9                 | 0.9                |               |
| 05 46 38           | +44 07 29           | LHS1784          | 12.79           | 11.586   | 10.009          | Wei96      | 8.459           | 0.027      | 7.801            | 0.027              | 7.578            | 0.024              | 7.381             | 0.027              | 7.256             | 0.021              | 7.159             | 0.016              | 47.4                 | 1.6                |               |
| 05 47 09           | -05 12 11           | LHS1785          | 14.62           | 13.29    | 11.63           | Win19      | 10.039          | 0.024      | 9.514            | 0.023              | 9.177            | 0.019              | 8.996             | 0.023              | 8.827             | 0.019              | 8.710             | 0.030              | 58.8                 | 1.9                |               |
| 05 47 41           | -36 19 43           | GJ0218           | 10.74           | 9.77     | 8.62            | Bes90      | 7.409           | 0.026      | 6.808            | 0.034              | 6.615            | 0.020              | 6.469             | 0.043              | 6.348             | 0.021              | 6.321             | 0.015              | 67.0                 | 1.4                |               |
| 05 48 32           | +21 19 18           | G100-038         | 14.03           | 12.77    | 11.26           | 111        | 9.811           | 0.023      | 9.206            | 0.030              | 8.992            | 0.025              | 8.778             | 0.022              | 8.596             | 0.021              | 8.503             | 0.024              | 49.6                 | 1.8                |               |
| 05 53 14           | +24 15 32           | GJ0220           | 10.84           | 9.85     | 8.71            | Wei96      | 7.485           | 0.021      | 6.829            | 0.017              | 6.633            | 0.021              | 6.536             | 0.040              | 6.444             | 0.019              | 6.397             | 0.014              | 51.5                 | 4.6                |               |
| 05 53 23           | +22 12 59           | L361-006         | 14.32           | 13.07    | 11.48           | 111        | 9.910           | 0.020      | 9.377            | 0.021              | 9.087            | 0.017              | 8.934             | 0.025              | 8.749             | 0.020              | 8.636             | 0.029              | 43.9                 | 1.8                |               |
| 05 54 49           | +80 05 41           | LSPM0554+8005    | 15.17           | 13.83    | 12.05           | 222        | 10.306          | 0.023      | 9.746            | 0.026              | 9.438            | 0.020              | 9.235             | 0.023              | 9.068             | 0.020              | 8.914             | 0.023              | 57.2                 | 2.6                |               |
| 05 55 43           | -26 51 23           | LP837-053        | 10.82           | 9.78     | 8.47            | Koe10      | 7.175           | 0.029      | 6.475            | 0.023              | 6.288            | 0.020              | 6.171             | 0.048              | 6.057             | 0.023              | 6.026             | 0.015              | 68.6                 | 2.2                |               |
| 05 56 57           | +11 44 33           | LSPM0556+1144    | 15.87           | 14.23    | 12.29           | 222        | 10.369          | 0.026      | 9.821            | 0.026              | 9.496            | 0.025              | 9.283             | 0.023              | 9.074             | 0.021              | 8.924             | 0.038              | 76.0                 | 1.7                |               |
| 05 57 19           | +17 08 39           | G100-049         | 14.04           | 12.87    | 11.38           | 111        | 9.990           | 0.025      | 9.483            | 0.023              | 9.248            | 0.024              | 9.046             | 0.024              | 8.860             | 0.020              | 8.745             | 0.030              | 42.9                 | 3.0                |               |
| 05 59 38           | +58 35 35           | G192-011         | 10.24           | 9.29     | 8.22            | Wei91a     | 7.068           | 0.021      | 6.416            | 0.023              | 6.212            | 0.018              | 6.137             | 0.048              | 5.985             | 0.024              | 5.981             | 0.015              | 73.9                 | 1.6                |               |
| 06 00 04           | +02 42 24           | LTT17897         | 11.31           | 10.04    | 8.43            | Rie14      | 6.905           | 0.020      | 6.308            | 0.023              | 6.042            | 0.023              | 5.941             | 0.051              | 5.595             | 0.029              | 5.607             | 0.015              | 190.3                | 1.8                |               |
| 06 00 49           | +68 09 23           | LHS0214          | 12.94           | 11.80    | 10.33           | Wei96      | 8.922           | 0.023      | 8.351            | 0.027              | 8.075            | 0.015              | 7.908             | 0.025              | 7.766             | 0.021              | 7.667             | 0.018              | 49.8                 | 1.1                |               |
| 06 01 11           | +59 35 51           | LHS1805          | 11.71           | 10.52    | 8.99            | Wei96      | 7.465           | 0.023      | 6.949            | 0.029              | 6.639            | 0.018              | 6.532             | 0.041              | 6.307             | 0.022              | 6.221             | 0.015              | 130.6                | 1.7                |               |
| 06 02 23           | -20 19 44           | LHS1807          | 13.26           | 12.10    | 10.62           | Rie10      | 9.215           | 0.024      | 8.667            | 0.047              | 8.374            | 0.025              | 8.178             | 0.024              | 8.005             | 0.020              | 7.884             | 0.017              | 71.0                 | 1.6                |               |
| 06 02 26           | +66 20 49           | LHS1808          | 14.52           | 13.213   | 11.513          | Wei96      | 9.855           | 0.021      | 9.242            | 0.019              | 8.929            | 0.019              | 8.707             | 0.024              | 8.559             | 0.021              | 8.446             | 0.020              | 58.1                 | 2.2                |               |
| 06 02 29           | +49 51 56           | LHS1809          | 14.53           | 13.04    | 11.13           | Wei96      | 9.350           | 0.023      | 8.768            | 0.029              | 8.435            | 0.020              | 8.203             | 0.022              | 8.044             | 0.020              | 7.870             | 0.019              | 109.0                | 2.0                |               |
| 06 03 30           | +47 48 15           | LHS1813          | 13.94           | 12.743   | 11.186          | Wei96      | 9.691           | 0.022      | 9.154            | 0.021              | 8.935            | 0.020              | 8.738             | 0.023              | 8.551             | 0.019              | 8.455             | 0.024              | 43.2                 | 1.1                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>mag | I<br>mag | ref   | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(20) | Notes |
|-------------|--------------|---------------|----------|----------|----------|-------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)   | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)  |
| 06 03 49    | +30 19 21    | LSPM0603+3019 | 13.97    | 12.75    | 11.20    | 111   | 9.735    | 0.023      | 9.128    | 0.028       | 8.845    | 0.022       | 8.706     | 0.024       | 8.536     | 0.020       | 8.403     | 0.035       | 42.0         | 1.0         |       |
| 06 04 52    | -34 33 36    | APCOL         | 12.98    | 11.50    | 9.60     | Hen18 | 7.742    | 0.027      | 7.183    | 0.018       | 6.866    | 0.021       | 6.642     | 0.039       | 6.404     | 0.021       | 6.289     | 0.015       | 119.2        | 1.0         | KY    |
| 06 05 29    | +60 49 22    | LHS1817       | 13.69    | 12.506   | 10.873   | We96  | 9.096    | 0.020      | 8.464    | 0.021       | 8.176    | 0.016       | 7.983     | 0.023       | 7.786     | 0.019       | 7.450     | 0.018       | 71.3         | 2.2         |       |
| 06 07 32    | +47 12 26    | LSPM0607+4712 | 14.37    | 13.06    | 11.35    | 222   | 9.723    | 0.020      | 9.161    | 0.023       | 8.887    | 0.020       | 8.730     | 0.024       | 8.533     | 0.019       | 8.383     | 0.024       | 45.2         | 2.6         |       |
| 06 07 44    | -25 44 42    | LP838-016     | 11.89    | 10.79    | 9.39     | Koe10 | 8.018    | 0.032      | 7.499    | 0.061       | 7.169    | 0.023       | 7.032     | 0.034       | 6.882     | 0.020       | 6.786     | 0.015       | 88.1         | 2.5         |       |
| 06 09 52    | +23 19 13    | LSR0609+2319  | 17.65    | 16.33    | 14.65    | Jao17 | 13.156   | 0.021      | 12.645   | 0.022       | 12.407   | 0.024       | 12.194    | 0.025       | 11.978    | 0.025       | 12.250    | .           | 22.6         | 1.4         | KS    |
| 06 10 20    | +82 06 25    | GJ0226        | 10.49    | 9.45     | 8.18     | We96  | 6.869    | 0.023      | 6.295    | 0.017       | 6.061    | 0.018       | 5.937     | 0.051       | 5.706     | 0.025       | 5.751     | 0.015       | 106.6        | 1.2         |       |
| 06 10 53    | -43 24 18    | GJ1088        | 12.28    | 11.11    | 9.61     | Rie10 | 8.173    | 0.024      | 7.582    | 0.065       | 7.312    | 0.016       | 7.129     | 0.028       | 6.961     | 0.019       | 6.868     | 0.015       | 87.0         | 1.3         |       |
| 06 11 56    | +33 25 51    | LHS6100       | 14.92    | 13.55    | 11.88    | 222   | 10.163   | 0.019      | 9.591    | 0.024       | 9.345    | 0.025       | 9.171     | 0.022       | 8.981     | 0.023       | 8.797     | 0.026       | 52.8         | 2.1         |       |
| 06 13 11    | +53 17 55    | L120-046      | 16.74    | 15.08    | 13.16    | 111   | 11.161   | 0.021      | 10.565   | 0.023       | 10.230   | 0.018       | 10.031    | 0.025       | 9.847     | 0.021       | 9.631     | 0.036       | 50.1         | 2.5         |       |
| 06 14 02    | +51 40 08    | LHS0216       | 14.67    | 13.67    | 12.57    | 222   | 11.372   | 0.020      | 10.884   | 0.016       | 10.661   | 0.019       | 10.283    | 0.022       | 10.174    | 0.020       | 10.559    | 0.146       | 30.1         | 3.1         | KS    |
| 06 14 02    | +15 09 54    | G192-022      | 12.86    | 11.72    | 10.27    | We18  | 8.860    | 0.020      | 8.360    | 0.023       | 8.122    | 0.038       | 7.917     | 0.024       | 7.749     | 0.021       | 7.658     | 0.018       | 67.2         | 1.9         |       |
| 06 17 05    | +83 53 35    | LSPM0617+8353 | 13.20    | 11.98    | 10.45    | 111   | 8.961    | 0.021      | 8.365    | 0.020       | 8.110    | 0.015       | 7.943     | 0.024       | 7.782     | 0.020       | 7.671     | 0.017       | 72.0         | 4.5         |       |
| 06 18 04    | +43 57 07    | G101-032      | 14.22    | 13.02    | 11.47    | 222   | 9.972    | 0.020      | 9.418    | 0.015       | 9.180    | 0.019       | 8.968     | 0.023       | 8.793     | 0.021       | 8.690     | 0.024       | 45.2         | 1.0         |       |
| 06 19 21    | -06 39 22    | GJ0231.3      | 13.06    | 11.92    | 10.50    | Bes90 | 9.122    | 0.023      | 8.537    | 0.044       | 8.238    | 0.026       | 8.084     | 0.023       | 7.935     | 0.020       | 7.831     | 0.017       | 68.2         | 8.9         |       |
| 06 19 57    | +20 22 29    | L419-001      | 15.43    | 14.04    | 12.36    | 111   | 10.740   | 0.022      | 10.200   | 0.030       | 9.885    | 0.019       | 9.691     | 0.023       | 9.488     | 0.019       | 9.045     | 0.035       | 41.8         | 1.7         |       |
| 06 21 37    | +16 18 36    | L420-005      | 11.67    | 10.70    | 9.63     | 111   | 8.482    | 0.060      | 7.829    | 0.049       | 7.650    | 0.024       | 7.517     | 0.025       | 7.443     | 0.019       | 7.390     | 0.020       | 43.4         | 1.5         |       |
| 06 24 41    | +23 25 59    | GJ0232        | 13.16    | 11.86    | 10.21    | Dav15 | 8.662    | 0.020      | 8.156    | 0.061       | 7.911    | 0.016       | 7.695     | 0.023       | 7.502     | 0.021       | 7.381     | 0.019       | 118.2        | 1.9         |       |
| 06 25 53    | +56 10 25    | LHS1848       | 14.62    | 13.37    | 11.76    | We96  | 10.257   | 0.022      | 9.653    | 0.026       | 9.359    | 0.018       | 9.199     | 0.023       | 9.036     | 0.019       | 8.858     | 0.026       | 53.3         | 3.2         |       |
| 06 27 13    | +41 38 14    | LSPM0627+4138 | 14.12    | 12.96    | 11.41    | 222   | 9.852    | 0.026      | 9.218    | 0.047       | 9.022    | 0.023       | 8.825     | 0.023       | 8.665     | 0.021       | 8.542     | 0.022       | 51.8         | 1.5         |       |
| 06 30 57    | +67 21 18    | L057-173      | 15.90    | 14.49    | 12.77    | 222   | 11.052   | 0.028      | 10.452   | 0.033       | 10.142   | 0.020       | 9.938     | 0.023       | 9.765     | 0.019       | 9.589     | 0.033       | 43.7         | 3.1         |       |
| 06 31 31    | -88 11 37    | SCR0631-8811  | 15.65    | 14.05    | 12.04    | Win11 | 10.042   | 0.021      | 9.459    | 0.024       | 9.069    | 0.021       | 8.889     | 0.023       | 8.695     | 0.019       | 8.489     | 0.019       | 63.3         | 2.1         |       |
| 06 32 31    | +64 06 20    | LHS1853       | 14.06    | 12.882   | 11.343   | We96  | 9.811    | 0.022      | 9.221    | 0.021       | 8.941    | 0.014       | 8.784     | 0.023       | 8.648     | 0.019       | 8.484     | 0.022       | 46.8         | 1.9         |       |
| 06 33 43    | -75 37 48    | L032-009      | 10.44    | 9.37     | 8.04     | Win15 | 6.725    | 0.023      | 6.146    | 0.026       | 5.862    | 0.024       | 5.697     | 0.058       | 5.456     | 0.027       | 5.552     | 0.014       | 111.1        | 2.2         |       |
| 06 35 50    | -58 31 43    | GJ0238        | 11.66    | 10.61    | 9.28     | Bes90 | 7.898    | 0.023      | 7.312    | 0.034       | 7.030    | 0.023       | 6.884     | 0.037       | 6.790     | 0.021       | 6.707     | 0.015       | 60.9         | 1.9         |       |
| 06 36 06    | +11 37 03    | LHS1857       | 14.24    | 13.00    | 11.35    | We96  | 9.794    | 0.022      | 9.307    | 0.022       | 8.994    | 0.021       | 8.721     | 0.039       | 8.597     | 0.020       | 8.484     | 0.020       | 54.7         | 2.4         |       |
| 06 36 18    | -40 00 24    | LP381-004     | 10.59    | 9.66     | 8.72     | Koe10 | 7.620    | 0.026      | 7.075    | 0.042       | 6.790    | 0.023       | 6.698     | 0.037       | 6.614     | 0.021       | 6.541     | 0.015       | 51.2         | 1.7         |       |
| 06 36 37    | +06 19 10    | LSPM0636+0619 | 16.97    | 15.31    | 13.33    | 222   | 11.242   | 0.022      | 10.673   | 0.027       | 10.321   | 0.023       | 9.979     | 0.024       | 9.844     | 0.020       | 10.081    | 0.176       | 52.7         | 3.2         |       |
| 06 37 11    | +17 33 53    | GJ0239        | 9.64     | 8.72     | 7.75     | We96  | 6.674    | 0.024      | 6.031    | 0.016       | 5.862    | 0.024       | 5.722     | 0.054       | 5.502     | 0.030       | 5.596     | 0.020       | 102.5        | 1.5         |       |
| 06 37 55    | +08 58 59    | LSPM0637+0858 | 15.85    | 14.52    | 12.84    | 222   | 11.163   | 0.023      | 10.554   | 0.027       | 10.262   | 0.023       | 10.070    | 0.024       | 9.915     | 0.019       | 9.464     | 0.059       | 62.7         | 4.0         |       |
| 06 39 37    | -21 01 33    | LP780-032     | 12.77    | 11.55    | 9.99     | Win15 | 8.507    | 0.024      | 7.912    | 0.027       | 7.650    | 0.016       | 7.509     | 0.053       | 7.362     | 0.025       | 7.282     | 0.014       | 63.4         | 0.6         |       |
| 06 39 38    | -55 36 35    | NLT16863      | 9.81     | 8.88     | 7.93     | Koe10 | 6.861    | 0.020      | 6.276    | 0.031       | 6.027    | 0.017       | 5.909     | 0.053       | 5.762     | 0.025       | 5.782     | 0.014       | 75.2         | 1.1         |       |
| 06 40 14    | -05 52 23    | SCR0640-0552  | 10.22    | 9.22     | 8.03     | Win11 | 6.835    | 0.023      | 6.207    | 0.034       | 5.962    | 0.017       | 5.774     | 0.062       | 5.663     | 0.028       | 5.685     | 0.015       | 85.8         | 3.0         |       |
| 06 41 18    | -43 22 33    | SIF0641-4322  | 22.20    | 19.45    | 17.08    | 133   | 13.751   | 0.026      | 12.941   | 0.034       | 12.451   | 0.029       | 12.073    | 0.024       | 11.784    | 0.022       | 11.212    | 0.086       | 55.7         | 5.7         |       |
| 06 41 41    | +26 40 14    | LSPM0641+2640 | 16.00    | 14.58    | 12.84    | 111   | 11.170   | 0.023      | 10.600   | 0.030       | 10.374   | 0.021       | 10.140    | 0.025       | 9.936     | 0.020       | 9.796     | 0.060       | 45.7         | 5.0         |       |
| 06 42 11    | +03 34 53    | G108-021      | 12.06    | 10.96    | 9.55     | We91a | 8.166    | 0.021      | 7.615    | 0.034       | 7.334    | 0.031       | 7.182     | 0.030       | 7.037     | 0.020       | 6.943     | 0.015       | 79.6         | 2.7         |       |
| 06 42 27    | -67 07 29    | SCR0642-0707  | 16.01    | 14.43    | 12.42    | Win11 | 10.615   | 0.026      | 10.151   | 0.021       | 9.807    | 0.019       | 9.625     | 0.022       | 9.373     | 0.020       | 9.230     | 0.019       | 73.0         | 1.0         |       |
| 06 43 35    | +16 41 35    | G110-014      | 14.46    | 13.12    | 11.45    | 222   | 9.776    | 0.022      | 9.240    | 0.023       | 8.888    | 0.020       | 8.685     | 0.024       | 8.512     | 0.020       | 8.410     | 0.026       | 45.3         | 2.5         |       |
| 06 43 41    | -26 24 41    | LTT02631      | 12.92    | 11.76    | 10.31    | Win15 | 8.905    | 0.026      | 8.434    | 0.061       | 8.129    | 0.021       | 7.929     | 0.024       | 7.776     | 0.019       | 7.670     | 0.018       | 55.4         | 1.0         |       |
| 06 44 18    | +41 28 17    | LSPM0644+4128 | 16.46    | 14.67    | 13.07    | 111   | 11.233   | 0.022      | 10.623   | 0.021       | 10.327   | 0.019       | 10.110    | 0.022       | 9.922     | 0.021       | 9.929     | 0.090       | 41.2         | 2.6         |       |



# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 06 44 46           | +71 53 16           | GJ2050           | 10.95           | 10.02    | 8.99            | Wei96      | 7.846           | 0.026      | 7.254            | 0.049              | 7.003            | 0.020              | 6.856             | 0.036              | 6.792             | 0.020              | 6.733             | 0.015              | 45.3                 | 2.1                |               |
| 06 46 34           | +79 11 51           | G251-015         | 15.31           | 14.04    | 12.22           | 111        | 10.570          | 0.021      | 10.051           | 0.015              | 9.744            | 0.022              | 9.553             | 0.023              | 9.356             | 0.020              | 9.220             | 0.028              | 43.8                 | 2.3                |               |
| 06 47 18           | +23 46 46           | LTT11918         | 12.65           | 11.68    | 10.64           | 222        | 9.538           | 0.021      | 8.921            | 0.026              | 8.710            | 0.021              | 8.537             | 0.023              | 8.489             | 0.021              | 8.397             | 0.023              | 46.3                 | 9.9                |               |
| 06 47 18           | +05 24 28           | G108-027         | 13.75           | 12.52    | 10.98           | 222        | 9.453           | 0.021      | 8.820            | 0.025              | 8.547            | 0.021              | 8.374             | 0.021              | 8.280             | 0.020              | 8.153             | 0.020              | 44.6                 | 1.0                |               |
| 06 48 26           | +03 26 24           | LSPM0648+0326    | 17.75           | 15.88    | 13.74           | 111        | 11.555          | 0.023      | 10.943           | 0.025              | 10.585           | 0.022              | 10.376            | 0.024              | 10.169            | 0.020              | 9.760             | 0.042              | 40.2                 | 3.2                |               |
| 06 49 05           | +37 06 51           | GJ1092           | 13.78           | 12.58    | 11.00           | Wei96      | 9.561           | 0.021      | 9.053            | 0.016              | 8.773            | 0.017              | 8.610             | 0.022              | 8.410             | 0.017              | 8.301             | 0.020              | 73.2                 | 1.5                |               |
| 06 50 34           | +50 59 52           | L121-051         | 15.26           | 13.92    | 12.33           | 111        | 10.723          | 0.023      | 10.126           | 0.032              | 9.830            | 0.022              | 9.632             | 0.023              | 9.504             | 0.020              | 9.332             | 0.034              | 55.5                 | 5.5                |               |
| 06 51 59           | +03 12 55           | G108-036         | 13.00           | 11.88    | 10.49           | 222        | 9.139           | 0.024      | 8.573            | 0.051              | 8.318            | 0.020              | 8.162             | 0.023              | 8.027             | 0.022              | 7.919             | 0.020              | 45.0                 | 1.3                |               |
| 06 52 17           | +62 46 59           | G250-025         | 13.59           | 12.33    | 10.83           | 111        | 9.416           | 0.022      | 8.852            | 0.023              | 8.575            | 0.014              | 8.404             | 0.023              | 8.250             | 0.020              | 8.134             | 0.017              | 41.4                 | 1.3                |               |
| 06 52 20           | -25 34 51           | DEN0652-2534     | 20.70           | 18.35    | 15.95           | 344        | 12.759          | 0.023      | 12.020           | 0.022              | 11.516           | 0.021              | 11.120            | 0.024              | 10.772            | 0.021              | 10.388            | 0.056              | 63.8                 | 0.9                |               |
| 06 54 49           | +33 16 05           | GJ0251           | 10.02           | 8.90     | 7.49            | Wei96      | 6.104           | 0.024      | 5.526            | 0.016              | 5.275            | 0.023              | 5.160             | 0.067              | 4.625             | 0.038              | 4.915             | 0.017              | 178.1                | 1.4                |               |
| 06 56 23           | +54 58 28           | LHS1882          | 12.47           | 11.45    | 10.24           | Wei96      | 9.002           | 0.026      | 8.486            | 0.033              | 8.259            | 0.016              | 8.055             | 0.023              | 7.909             | 0.019              | 7.877             | 0.022              | 58.0                 | 6.9                |               |
| 06 56 31           | +44 01 56           | LHS1883          | 14.39           | 13.148   | 11.527          | Wei96      | 9.923           | 0.022      | 9.359            | 0.023              | 9.073            | 0.018              | 8.922             | 0.023              | 8.748             | 0.021              | 8.630             | 0.024              | 46.8                 | 3.5                |               |
| 06 57 05           | +30 45 23           | GJ0254           | 9.81            | 8.96     | 8.13            | 111        | 7.097           | 0.018      | 6.437            | 0.023              | 6.280            | 0.021              | 6.198             | 0.048              | 6.158             | 0.022              | 6.178             | 0.015              | 54.7                 | 1.9                |               |
| 06 59 29           | +19 20 56           | GJ1093           | 14.94           | 13.25    | 11.24           | Dav15      | 9.160           | 0.024      | 8.547            | 0.024              | 8.230            | 0.023              | 7.980             | 0.024              | 7.799             | 0.019              | 7.630             | 0.019              | 128.8                | 3.5                |               |
| 07 00 38           | +33 34 58           | LSPM0700+3334    | 14.04           | 12.73    | 11.22           | 111        | 9.625           | 0.022      | 9.024            | 0.016              | 8.761            | 0.019              | 8.571             | 0.022              | 8.431             | 0.021              | 8.251             | 0.021              | 42.7                 | 1.0                |               |
| 07 01 06           | +59 50 00           | HIP033805        | 10.97           | 10.09    | 9.23            | Wei93      | 8.129           | 0.019      | 7.543            | 0.016              | 7.355            | 0.021              | 7.195             | 0.028              | 7.136             | 0.019              | 7.110             | 0.018              | 42.9                 | 2.2                |               |
| 07 02 31           | +21 54 39           | LSPM0702+2154    | 16.44           | 14.91    | 13.04           | 111        | 11.138          | 0.021      | 10.571           | 0.022              | 10.257           | 0.021              | 10.062            | 0.022              | 9.859             | 0.021              | 9.665             | 0.049              | 53.5                 | 1.6                |               |
| 07 02 37           | -40 06 28           | WT0207           | 15.15           | 13.92    | 12.28           | Win19      | 10.736          | 0.022      | 10.256           | 0.025              | 9.961            | 0.019              | 9.791             | 0.023              | 9.568             | 0.021              | 9.441             | 0.029              | 40.4                 | 1.3                |               |
| 07 02 50           | -61 02 48           | SCR0702-6102     | 16.62           | 14.77    | 12.50           | Win17      | 10.359          | 0.024      | 9.854            | 0.024              | 9.522            | 0.021              | 9.311             | 0.023              | 9.067             | 0.020              | 8.860             | 0.022              | 59.5                 | 0.7                | UB?           |
| 07 03 23           | +34 41 51           | L255-011         | 13.17           | 11.934   | 10.335          | Wei87      | 8.773           | 0.020      | 8.178            | 0.017              | 7.914            | 0.016              | 7.732             | 0.024              | 7.568             | 0.022              | 7.467             | 0.018              | 73.2                 | 1.8                |               |
| 07 04 26           | +68 17 29           | GJ0258           | 11.96           | 10.71    | 9.63            | Wei99      | 8.170           | 0.034      | 7.594            | 0.026              | 7.269            | 0.020              | 7.083             | 0.032              | 6.995             | 0.019              | 6.921             | 0.015              | 67.0                 | 2.5                |               |
| 07 04 34           | +16 57 27           | LSPM0704+1657    | 15.46           | 14.03    | 12.26           | 111        | 10.521          | 0.022      | 9.965            | 0.023              | 9.639            | 0.016              | 9.428             | 0.025              | 9.245             | 0.021              | 9.127             | 0.032              | 53.2                 | 1.8                |               |
| 07 07 23           | -21 27 27           | GJ2055           | 11.08           | 10.09    | 8.87            | Koe10      | 7.628           | 0.026      | 7.027            | 0.034              | 6.799            | 0.017              | 6.629             | 0.039              | 6.588             | 0.020              | 6.517             | 0.014              | 57.8                 | 2.4                |               |
| 07 07 38           | +48 41 14           | G107-048         | 13.40           | 12.158   | 10.565          | Wei88      | 9.106           | 0.019      | 8.530            | 0.016              | 8.259            | 0.019              | 8.057             | 0.023              | 7.883             | 0.020              | 7.756             | 0.019              | 92.4                 | 3.5                |               |
| 07 07 50           | +67 12 05           | LTT11972         | 11.18           | 10.19    | 9.08            | Wei93      | 7.872           | 0.024      | 7.267            | 0.038              | 7.032            | 0.027              | 6.881             | 0.035              | 6.783             | 0.020              | 6.704             | 0.015              | 56.8                 | 2.1                |               |
| 07 07 53           | -49 00 50           | ESO207-061       | 21.15           | 18.72    | 16.25           | 222        | 13.228          | 0.026      | 12.538           | 0.030              | 12.105           | 0.026              | 11.830            | 0.023              | 11.558            | 0.021              | 11.336            | 0.102              | 60.9                 | 3.0                |               |
| 07 09 38           | -57 03 42           | APM0710-5704     | 13.64           | 12.36    | 10.73           | Win15      | 9.254           | 0.024      | 8.629            | 0.061              | 8.297            | 0.021              | 8.111             | 0.023              | 7.934             | 0.019              | 7.809             | 0.016              | 59.1                 | 1.1                | A05           |
| 07 10 14           | +37 40 11           | LTT17942         | 14.67           | 13.39    | 11.82           | 222        | 10.297          | 0.030      | 9.760            | 0.030              | 9.473            | 0.018              | 9.295             | 0.024              | 9.082             | 0.020              | 8.942             | 0.028              | 41.7                 | 1.3                |               |
| 07 13 11           | -05 11 49           | SCR0713-0511     | 11.13           | 10.08    | 8.86            | Win11      | 7.649           | 0.026      | 7.077            | 0.027              | 6.819            | 0.020              | 6.697             | 0.038              | 6.508             | 0.022              | 6.456             | 0.016              | 90.9                 | 1.6                |               |
| 07 13 22           | +23 03 58           | G109-051         | 14.11           | 12.84    | 11.26           | 111        | 9.686           | 0.021      | 9.001            | 0.024              | 8.741            | 0.021              | 8.596             | 0.023              | 8.484             | 0.020              | 8.396             | 0.023              | 45.7                 | 1.7                |               |
| 07 14 04           | +37 02 46           | LSPM0714+3702    | 19.96           | 17.32    | 14.79           | 111        | 11.976          | 0.023      | 11.252           | 0.030              | 10.838           | 0.019              | 10.566            | 0.024              | 10.346            | 0.020              | 10.202            | 0.057              | 80.1                 | 4.8                | A05           |
| 07 16 18           | +33 09 10           | GJ1096           | 14.59           | 13.17    | 11.43           | 222        | 9.763           | 0.023      | 9.175            | 0.028              | 8.879            | 0.023              | 8.692             | 0.023              | 8.515             | 0.019              | 8.348             | 0.022              | 66.9                 | 4.1                |               |
| 07 17 17           | -05 01 04           | SCR0717-0501     | 13.30           | 12.02    | 10.40           | Hen18      | 8.873           | 0.027      | 8.349            | 0.059              | 8.045            | 0.021              | 7.842             | 0.025              | 7.657             | 0.020              | 7.541             | 0.018              | 92.7                 | 1.7                |               |
| 07 17 30           | +19 34 17           | LTT17957         | 12.83           | 11.72    | 10.35           | Hos15      | 9.017           | 0.024      | 8.430            | 0.020              | 8.162            | 0.021              | 8.005             | 0.022              | 7.884             | 0.020              | 7.796             | 0.019              | 52.7                 | 2.4                |               |
| 07 18 08           | +39 16 29           | LTT12003         | 10.38           | 9.38     | 8.35            | 333        | 7.209           | 0.023      | 6.588            | 0.026              | 6.369            | 0.023              | 6.264             | 0.042              | 6.189             | 0.022              | 6.142             | 0.015              | 69.0                 | 2.1                |               |
| 07 19 31           | +32 49 48           | GJ0270           | 10.08           | 9.18     | 8.27            | Wei96      | 7.184           | 0.020      | 6.541            | 0.034              | 6.376            | 0.020              | 6.263             | 0.043              | 6.238             | 0.022              | 6.192             | 0.015              | 52.2                 | 2.0                |               |
| 07 20 52           | -62 10 12           | LTT02816         | 12.35           | 11.19    | 9.74            | 444        | 8.381           | 0.037      | 7.838            | 0.057              | 7.515            | 0.033              | 7.352             | 0.028              | 7.189             | 0.021              | 7.087             | 0.015              | 88.8                 | 2.6                |               |
| 07 22 17           | +08 51 57           | LSPM0722+0851    | 15.49           | 14.09    | 12.33           | 111        | 10.603          | 0.024      | 10.057           | 0.024              | 9.753            | 0.024              | 9.550             | 0.022              | 9.365             | 0.021              | 9.208             | 0.033              | 41.2                 | 3.5                |               |
| 07 22 32           | +73 05 05           | LSPM0722+7305    | 15.40           | 13.96    | 12.15           | 222        | 10.344          | 0.022      | 9.760            | 0.021              | 9.445            | 0.016              | 9.232             | 0.022              | 9.081             | 0.020              | 8.955             | 0.029              | 45.7                 | 2.5                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(20) | mas<br>(21) | err<br>(22) | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------------|-------------|-------|
| 07 22 42    | +30 40 12    | LHS1914       | 13.38    | 12.27    | 10.82    | Wei96      | 9.506    | 0.024      | 8.917    | 0.032       | 8.687    | 0.021       | 8.533     | 0.023       | 8.360     | 0.020       | 8.277     | 0.022       | 41.5         | 2.5         |             |             |       |
| 07 23 15    | +46 05 15    | GJ0272        | 10.59    | 9.57     | 8.50     | 333        | 7.343    | 0.023      | 6.683    | 0.034       | 6.462    | 0.016       | 6.352     | 0.044       | 6.334     | 0.021       | 6.274     | 0.014       | 61.1         | 1.7         |             |             |       |
| 07 27 25    | +05 13 33    | GJ0273        | 9.88     | 8.68     | 7.14     | Dav15      | 5.714    | 0.032      | 5.219    | 0.063       | 4.857    | 0.023       | 4.723     | 0.074       | 4.108     | 0.041       | 4.461     | 0.016       | 266.2        | 0.7         |             |             |       |
| 07 27 29    | +22 02 38    | LTT12020      | 11.25    | 10.26    | 9.09     | Wei84      | 7.818    | 0.021      | 7.174    | 0.021       | 6.946    | 0.033       | 6.851     | 0.035       | 6.807     | 0.019       | 6.740     | 0.016       | 51.7         | 1.9         |             |             |       |
| 07 28 45    | -03 17 53    | GJ1097        | 11.43    | 10.33    | 8.93     | Wei96      | 7.544    | 0.020      | 6.976    | 0.031       | 6.704    | 0.027       | 6.560     | 0.041       | 6.413     | 0.021       | 6.372     | 0.015       | 86.1         | 1.8         |             |             |       |
| 07 29 19    | +75 54 03    | L017-044      | 18.01    | 16.37    | 14.11    | 111        | 12.040   | 0.023      | 11.464   | 0.023       | 11.131   | 0.019       | 10.904    | 0.024       | 10.684    | 0.021       | 10.465    | 0.048       | 52.8         | 4.2         |             |             |       |
| 07 30 29    | +62 47 27    | LSPM0730+6247 | 16.64    | 14.93    | 13.15    | 222        | 11.313   | 0.023      | 10.679   | 0.023       | 10.321   | 0.020       | 10.091    | 0.023       | 9.920     | 0.022       | 9.765     | 0.038       | 48.0         | 2.0         |             |             |       |
| 07 31 29    | +02 49 08    | LSPM0731+0249 | 17.09    | 15.34    | 13.28    | 222        | 11.166   | 0.023      | 10.638   | 0.025       | 10.237   | 0.023       | 10.017    | 0.023       | 9.820     | 0.021       | 9.685     | 0.044       | 72.8         | 2.8         |             |             |       |
| 07 31 38    | +16 44 02    | LHS6126       | 14.77    | 13.45    | 11.79    | 111        | 10.124   | 0.020      | 9.493    | 0.020       | 9.206    | 0.017       | 9.023     | 0.024       | 8.886     | 0.019       | 8.738     | 0.026       | 44.0         | 2.1         |             |             |       |
| 07 32 02    | +68 37 16    | GJ0275.1      | 10.89    | 9.95     | 8.89     | Wei93      | 7.745    | 0.018      | 7.087    | 0.029       | 6.860    | 0.020       | 6.678     | 0.038       | 6.764     | 0.020       | 6.702     | 0.016       | 40.1         | 2.3         |             |             |       |
| 07 32 02    | +57 55 44    | LHS1923       | 17.21    | 16.03    | 13.90    | 111        | 11.920   | 0.025      | 11.379   | 0.030       | 11.092   | 0.018       | 10.906    | 0.023       | 10.651    | 0.020       | 10.425    | 0.060       | 46.1         | 1.6         |             |             |       |
| 07 33 28    | +41 30 03    | G111-015      | 14.20    | 13.054   | 11.593   | Wei87      | 10.171   | 0.022      | 9.642    | 0.021       | 9.367    | 0.018       | 9.193     | 0.022       | 9.041     | 0.021       | 8.913     | 0.026       | 46.2         | 1.2         |             |             |       |
| 07 34 18    | +00 59 09    | GJ1099        | 11.91    | 10.84    | 9.52     | Wei96      | 8.261    | 0.024      | 7.672    | 0.029       | 7.434    | 0.021       | 7.286     | 0.029       | 7.133     | 0.020       | 7.066     | 0.016       | 68.7         | 2.6         |             |             |       |
| 07 34 27    | +62 56 39    | GJ0277.1      | 10.49    | 9.54     | 8.51     | Wei93      | 7.340    | 0.026      | 6.782    | 0.016       | 6.556    | 0.018       | 6.399     | 0.041       | 6.267     | 0.020       | 6.249     | 0.014       | 84.3         | 2.1         |             |             |       |
| 07 35 22    | +54 50 59    | HIP036915     | 11.29    | 10.25    | 9.00     | Wei93      | 7.772    | 0.024      | 7.222    | 0.033       | 6.955    | 0.023       | 6.781     | 0.039       | 6.674     | 0.022       | 6.606     | 0.016       | 78.1         | 2.7         |             |             |       |
| 07 36 12    | -51 55 21    | LHS1932       | 12.48    | 11.36    | 9.92     | Rie10      | 8.554    | 0.020      | 8.036    | 0.049       | 7.755    | 0.024       | 7.629     | 0.024       | 7.458     | 0.020       | 7.365     | 0.016       | 61.9         | 1.0         |             |             |       |
| 07 36 57    | -30 24 16    | SCR0736-3024  | 13.67    | 12.42    | 10.85    | Win17      | 9.359    | 0.020      | 8.789    | 0.033       | 8.495    | 0.021       | 8.300     | 0.023       | 8.130     | 0.021       | 7.967     | 0.019       | 75.1         | 1.0         |             |             |       |
| 07 38 10    | -31 12 19    | L528-016      | 11.89    | 10.80    | 9.48     | Win15      | 8.181    | 0.024      | 7.562    | 0.023       | 7.298    | 0.020       | 7.171     | 0.026       | 7.046     | 0.019       | 6.930     | 0.013       | 67.0         | 1.3         |             |             |       |
| 07 38 29    | +24 00 09    | 2MA0738+2400  | 12.98    | 11.82    | 10.35    | 333        | 8.928    | 0.027      | 8.346    | 0.016       | 8.122    | 0.018       | 7.949     | 0.024       | 7.787     | 0.018       | 7.697     | 0.018       | 56.1         | 1.9         |             |             |       |
| 07 38 41    | -21 13 28    | LHS1935       | 11.72    | 10.62    | 9.23     | Wei96      | 7.848    | 0.019      | 7.334    | 0.036       | 7.063    | 0.023       | 6.878     | 0.035       | 6.735     | 0.021       | 6.619     | 0.015       | 94.3         | 3.3         |             |             |       |
| 07 38 51    | +18 29 20    | LSPM0738+1829 | 16.48    | 14.78    | 12.80    | 111        | 10.794   | 0.022      | 10.149   | 0.023       | 9.808    | 0.018       | 9.615     | 0.023       | 9.452     | 0.020       | 9.229     | 0.032       | 62.3         | 2.9         |             |             | KY    |
| 07 39 23    | +02 11 01    | GJ0281        | 9.58     | 8.69     | 7.80     | Bes90      | 6.769    | 0.027      | 6.092    | 0.036       | 5.872    | 0.021       | 5.803     | 0.053       | 5.708     | 0.026       | 5.768     | 0.015       | 68.8         | 1.4         |             |             |       |
| 07 40 12    | -42 57 40    | SCR0740-4257  | 13.81    | 12.36    | 10.50    | Win11      | 8.681    | 0.027      | 8.092    | 0.027       | 7.768    | 0.026       | 7.571     | 0.025       | 7.394     | 0.021       | 7.239     | 0.018       | 127.7        | 0.8         |             |             |       |
| 07 41 07    | +17 38 45    | LHS1937       | 19.02    | 16.89    | 14.53    | 111        | 12.011   | 0.022      | 11.348   | 0.022       | 10.942   | 0.018       | 10.719    | 0.024       | 10.527    | 0.022       | 10.266    | 0.068       | 63.8         | 5.2         |             |             |       |
| 07 41 20    | +67 18 44    | L058-260      | 15.70    | 14.28    | 12.44    | 111        | 10.690   | 0.025      | 10.056   | 0.023       | 9.780    | 0.016       | 9.586     | 0.022       | 9.384     | 0.020       | 9.209     | 0.028       | 48.8         | 2.1         |             |             |       |
| 07 44 40    | +03 33 09    | GJ0285        | 11.19    | 9.91     | 8.22     | Dav15      | 6.581    | 0.024      | 6.005    | 0.038       | 5.698    | 0.017       | 5.509     | 0.056       | 5.168     | 0.029       | 5.288     | 0.014       | 167.2        | 2.1         |             |             |       |
| 07 46 42    | +57 26 53    | G193-065      | 14.47    | 13.11    | 11.35    | 333        | 9.699    | 0.023      | 9.108    | 0.029       | 8.823    | 0.020       | 8.634     | 0.022       | 8.434     | 0.020       | 8.269     | 0.019       | 48.8         | 1.9         |             |             |       |
| 07 47 06    | +76 03 19    | L017-075      | 14.14    | 12.89    | 11.41    | 222        | 9.976    | 0.022      | 9.388    | 0.019       | 9.113    | 0.019       | 8.961     | 0.023       | 8.792     | 0.019       | 8.693     | 0.023       | 51.2         | 2.5         |             |             |       |
| 07 48 16    | +20 22 05    | GJ0289        | 11.45    | 10.47    | 9.34     | Wei96      | 8.120    | 0.024      | 7.610    | 0.024       | 7.396    | 0.024       | 7.266     | 0.029       | 7.099     | 0.021       | 7.061     | 0.016       | 67.2         | 1.7         |             |             |       |
| 07 49 13    | -76 42 07    | L034-026      | 11.31    | 10.19    | 8.79     | Rie14      | 7.406    | 0.021      | 6.862    | 0.031       | 6.579    | 0.018       | 6.467     | 0.046       | 6.279     | 0.021       | 6.215     | 0.015       | 94.4         | 2.1         |             |             |       |
| 07 51 51    | +05 32 57    | LHS1950       | 14.72    | 13.37    | 11.61    | Wei96      | 9.966    | 0.023      | 9.404    | 0.023       | 9.089    | 0.021       | 8.849     | 0.021       | 8.678     | 0.019       | 8.520     | 0.022       | 69.0         | 2.0         |             |             |       |
| 07 51 55    | -00 00 13    | GJ1103        | 13.26    | 11.89    | 10.19    | Jao14      | 8.496    | 0.023      | 7.939    | 0.053       | 7.661    | 0.021       | 7.424     | 0.028       | 7.257     | 0.022       | 7.145     | 0.017       | 114.0        | 3.3         |             |             |       |
| 07 52 24    | +16 12 15    | LP423-031     | 17.04    | 15.32    | 13.21    | 222        | 10.879   | 0.020      | 10.197   | 0.022       | 9.846    | 0.019       | 9.606     | 0.023       | 9.448     | 0.020       | 9.256     | 0.032       | 54.4         | 0.9         |             |             |       |
| 07 54 11    | -25 18 12    | LTT02976      | 9.77     | 8.91     | 8.08     | Wei99      | 7.021    | 0.020      | 6.372    | 0.044       | 6.169    | 0.021       | 6.079     | 0.051       | 6.076     | 0.021       | 6.075     | 0.015       | 55.1         | 0.8         |             |             |       |
| 07 54 55    | -38 09 38    | SCR0754-3809  | 15.46    | 13.91    | 11.98    | Win11      | 10.012   | 0.024      | 9.418    | 0.024       | 9.077    | 0.019       | 8.853     | 0.024       | 8.676     | 0.020       | 8.572     | 0.028       | 80.5         | 0.9         |             |             |       |
| 07 55 12    | +52 57 54    | LSPM0755+5257 | 14.34    | 13.09    | 11.53    | 111        | 9.988    | 0.019      | 9.353    | 0.028       | 9.060    | 0.024       | 8.896     | 0.023       | 8.755     | 0.021       | 8.628     | 0.023       | 42.1         | 2.2         |             |             |       |
| 07 55 54    | +83 23 05    | GJ1101        | 13.13    | 11.89    | 10.29    | Wei96      | 8.744    | 0.026      | 8.144    | 0.018       | 7.912    | 0.023       | 7.709     | 0.024       | 7.531     | 0.019       | 7.423     | 0.016       | 80.3         | 3.0         |             |             |       |
| 07 57 27    | +12 01 27    | 2MA0757+1201  | 12.70    | 11.63    | 10.32    | 222        | 9.060    | 0.032      | 8.443    | 0.017       | 8.199    | 0.026       | 8.045     | 0.024       | 7.925     | 0.021       | 7.834     | 0.018       | 43.7         | 2.0         |             |             |       |
| 07 57 33    | -71 14 54    | SCR0757-7114  | 12.45    | 11.28    | 9.77     | Rie14      | 8.319    | 0.023      | 7.745    | 0.038       | 7.423    | 0.021       | 7.239     | 0.030       | 7.129     | 0.020       | 7.032     | 0.015       | 45.3         | 2.0         |             |             |       |
| 07 58 09    | +07 17 02    | G050-012      | 13.77    | 12.489   | 10.826   | Wei86      | 9.272    | 0.027      | 8.639    | 0.044       | 8.381    | 0.038       | 8.177     | 0.023       | 7.988     | 0.020       | 7.870     | 0.018       | 83.0         | 2.2         |             |             |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-------------|--------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 07 58 13    | +41 18 13    | GJ1105           | 11.98           | 10.78    | 9.24            | We96       | 7.734           | 0.023      | 7.133            | 0.034              | 6.878            | 0.031              | 6.699             | 0.039              | 6.527             | 0.021              | 6.439             | 0.016              | 120.8                | 1.9                |               |
| 07 58 18    | +87 57 49    | LHS1962          | 14.07           | 12.879   | 11.326          | We96       | 9.876           | 0.022      | 9.264            | 0.028              | 9.020            | 0.024              | 8.851             | 0.023              | 8.689             | 0.021              | 8.539             | 0.020              | 51.9                 | 4.6                |               |
| 07 58 23    | +49 39 53    | LHS1964          | 13.16           | 11.924   | 10.325          | We96       | 8.706           | 0.021      | 8.174            | 0.033              | 7.847            | 0.024              | 7.679             | 0.023              | 7.537             | 0.020              | 7.427             | 0.016              | 72.4                 | 2.4                |               |
| 08 01 21    | +56 24 04    | L089-187         | 17.73           | 16.04    | 13.86           | 222        | 11.767          | 0.023      | 11.158           | 0.020              | 10.827           | 0.018              | 10.588            | 0.023              | 10.390            | 0.021              | 10.101            | 0.048              | 57.9                 | 3.2                |               |
| 08 03 45    | +08 27 00    | L544-017         | 17.54           | 15.83    | 13.81           | 111        | 11.831          | 0.022      | 11.276           | 0.028              | 11.007           | 0.022              | 10.751            | 0.023              | 10.539            | 0.021              | 10.292            | 0.062              | 46.9                 | 2.2                |               |
| 08 05 46    | +59 12 50    | SCR0805-5912     | 14.69           | 13.38    | 11.68           | Win11      | 10.070          | 0.022      | 9.515            | 0.022              | 9.215            | 0.021              | 9.019             | 0.023              | 8.834             | 0.020              | 8.663             | 0.020              | 60.5                 | 0.9                |               |
| 08 05 57    | +04 17 04    | LSPM0805+0417    | 18.04           | 16.16    | 14.02           | 111        | 11.882          | 0.026      | 11.221           | 0.024              | 10.865           | 0.021              | 10.654            | 0.022              | 10.453            | 0.020              | 10.242            | 0.055              | 46.8                 | 7.7                |               |
| 08 06 55    | +42 17 33    | G111-056         | 14.22           | 12.94    | 11.31           | 111        | 9.724           | 0.022      | 9.140            | 0.021              | 8.862            | 0.020              | 8.680             | 0.023              | 8.517             | 0.018              | 8.406             | 0.022              | 52.2                 | 1.2                |               |
| 08 07 26    | +32 13 10    | L310-034         | 19.46           | 17.26    | 14.86           | 111        | 12.168          | 0.024      | 11.455           | 0.030              | 11.051           | 0.025              | 10.784            | 0.024              | 10.588            | 0.022              | 10.296            | 0.063              | 77.8                 | 5.2                |               |
| 08 09 31    | +21 54 17    | L1321-040        | 11.78           | 10.76    | 9.56            | Koe10      | 8.332           | 0.021      | 7.724            | 0.020              | 7.514            | 0.015              | 7.374             | 0.024              | 7.298             | 0.021              | 7.226             | 0.016              | 44.9                 | 3.4                |               |
| 08 09 58    | +52 58 05    | GJ0298           | 11.81           | 10.73    | 9.34            | Bes90      | 7.992           | 0.032      | 7.441            | 0.042              | 7.135            | 0.023              | 7.007             | 0.034              | 6.879             | 0.020              | 6.795             | 0.015              | 60.0                 | 2.4                |               |
| 08 10 54    | +03 58 34    | G050-021         | 13.51           | 12.306   | 10.756          | We86       | 9.238           | 0.026      | 8.568            | 0.023              | 8.293            | 0.020              | 8.113             | 0.023              | 8.018             | 0.021              | 7.901             | 0.019              | 48.1                 | 1.1                |               |
| 08 11 15    | +36 07 28    | NLT119066        | 14.37           | 12.98    | 11.40           | 111        | 9.889           | 0.019      | 9.309            | 0.016              | 9.055            | 0.017              | 8.881             | 0.023              | 8.692             | 0.020              | 8.572             | 0.024              | 40.8                 | 1.1                |               |
| 08 12 32    | +24 44 43    | DEN0812-2444     | 21.81           | 19.41    | 17.15           | 222        | 13.817          | 0.029      | 12.929           | 0.027              | 12.391           | 0.024              | 12.041            | 0.024              | 11.833            | 0.023              | 11.656            | 0.202              | 45.5                 | 1.0                |               |
| 08 12 41    | +21 33 07    | GJ0300           | 12.14           | 10.85    | 9.22            | Hen18      | 7.601           | 0.020      | 6.964            | 0.033              | 6.705            | 0.027              | 6.517             | 0.042              | 6.353             | 0.026              | 6.241             | 0.018              | 125.8                | 1.0                |               |
| 08 13 43    | +76 07 49    | LHS1992          | 11.87           | 10.82    | 9.48            | 222        | 8.158           | 0.026      | 7.595            | 0.053              | 7.297            | 0.021              | 7.165             | 0.031              | 7.038             | 0.020              | 6.948             | 0.015              | 61.9                 | 1.8                |               |
| 08 13 45    | +79 18 12    | LHS1993          | 14.80           | 13.44    | 11.66           | We96       | 10.011          | 0.027      | 9.498            | 0.032              | 9.128            | 0.023              | 8.916             | 0.023              | 8.738             | 0.021              | 8.575             | 0.020              | 71.7                 | 4.3                |               |
| 08 16 08    | +01 18 09    | GJ2066           | 10.11           | 9.08     | 7.85            | 333        | 6.625           | 0.026      | 6.036            | 0.031              | 5.766            | 0.024              | 5.614             | 0.059              | 5.297             | 0.031              | 5.486             | 0.014              | 109.8                | 1.5                |               |
| 08 18 08    | +68 18 47    | L098-059         | 11.71           | 10.61    | 9.25            | Win15      | 7.933           | 0.027      | 7.359            | 0.049              | 7.101            | 0.018              | 6.938             | 0.031              | 6.781             | 0.020              | 6.705             | 0.015              | 101.8                | 2.4                |               |
| 08 18 53    | +21 27 04    | LSPM0818+2127    | 15.36           | 14.01    | 12.35           | 111        | 10.676          | 0.021      | 10.108           | 0.022              | 9.832            | 0.021              | 9.631             | 0.021              | 9.461             | 0.019              | 9.141             | 0.032              | 45.2                 | 5.8                |               |
| 08 20 13    | +09 20 15    | LHS6145          | 15.19           | 13.84    | 12.15           | 111        | 10.465          | 0.021      | 9.851            | 0.026              | 9.565            | 0.022              | 9.355             | 0.023              | 9.212             | 0.019              | 9.010             | 0.029              | 42.1                 | 2.2                |               |
| 08 21 28    | +52 20 59    | L124-025         | 17.38           | 15.87    | 13.72           | 111        | 11.759          | 0.023      | 11.178           | 0.028              | 10.847           | 0.025              | 10.607            | 0.022              | 10.416            | 0.022              | 10.235            | 0.053              | 45.5                 | 2.1                |               |
| 08 21 57    | +17 48 56    | LHS2002          | 15.71           | 14.343   | 12.526          | We96       | 10.902          | 0.020      | 10.317           | 0.022              | 10.037           | 0.020              | 9.821             | 0.023              | 9.597             | 0.020              | 9.410             | 0.039              | 62.1                 | 3.0                |               |
| 08 23 37    | +64 13 38    | L059-527         | 15.67           | 14.26    | 12.49           | 111        | 10.826          | 0.023      | 10.268           | 0.033              | 9.957            | 0.021              | 9.742             | 0.023              | 9.546             | 0.019              | 9.405             | 0.029              | 45.4                 | 1.9                |               |
| 08 24 27    | +25 55 37    | L367-217         | 15.34           | 13.99    | 12.30           | 111        | 10.618          | 0.019      | 9.991            | 0.026              | 9.705            | 0.022              | 9.511             | 0.023              | 9.361             | 0.021              | 9.182             | 0.029              | 52.8                 | 3.0                |               |
| 08 24 31    | +39 00 54    | L209-002         | 16.71           | 15.05    | 13.06           | 111        | 11.088          | 0.023      | 10.488           | 0.021              | 10.137           | 0.016              | 9.921             | 0.023              | 9.737             | 0.020              | 9.588             | 0.039              | 50.1                 | 3.5                |               |
| 08 25 53    | +69 02 01    | LHS0246          | 15.76           | 14.09    | 12.07           | 333        | 10.078          | 0.021      | 9.496            | 0.019              | 9.161            | 0.014              | 8.918             | 0.023              | 8.717             | 0.018              | 8.495             | 0.029              | 84.0                 | 2.3                |               |
| 08 28 13    | +20 08 22    | GJ1110           | 13.12           | 12.05    | 10.70           | We96       | 9.397           | 0.021      | 8.866            | 0.021              | 8.681            | 0.017              | 8.523             | 0.022              | 8.328             | 0.020              | 8.263             | 0.021              | 43.9                 | 1.6                |               |
| 08 28 34    | +13 09 29    | SSS0829-1309     | 21.40           | 18.39    | 16.11           | 333        | 12.803          | 0.030      | 11.851           | 0.022              | 11.297           | 0.021              | 10.916            | 0.024              | 10.667            | 0.022              | 10.132            | 0.048              | 88.0                 | 0.8                |               |
| 08 29 56    | +61 43 33    | GJ0308.1         | 10.33           | 9.49     | 8.64            | We96       | 7.607           | 0.030      | 6.959            | 0.018              | 6.781            | 0.017              | 6.712             | 0.036              | 6.672             | 0.021              | 6.624             | 0.015              | 50.1                 | 1.8                |               |
| 08 30 33    | +09 47 16    | LHS2021          | 19.17           | 16.99    | 14.66           | 444        | 11.890          | 0.022      | 11.165           | 0.021              | 10.756           | 0.023              | 10.508            | 0.022              | 10.331            | 0.023              | 10.190            | 0.098              | 63.1                 | 1.1                |               |
| 08 31 30    | +73 03 46    | LHS2025          | 12.92           | 11.736   | 10.212          | We96       | 8.780           | 0.026      | 8.243            | 0.031              | 8.004            | 0.024              | 7.824             | 0.022              | 7.641             | 0.021              | 7.522             | 0.017              | 68.5                 | 3.4                |               |
| 08 32 30    | +01 34 39    | LHS2026          | 18.94           | 16.69    | 14.32           | Bes91      | 12.035          | 0.023      | 11.477           | 0.021              | 11.142           | 0.020              | 10.912            | 0.024              | 10.698            | 0.021              | 10.585            | 0.081              | 50.8                 | 0.5                |               |
| 08 33 25    | +18 31 45    | LHS2027          | 14.73           | 13.482   | 11.831          | We96       | 10.263          | 0.023      | 9.779            | 0.025              | 9.513            | 0.020              | 9.307             | 0.024              | 9.111             | 0.021              | 8.948             | 0.030              | 50.8                 | 2.2                |               |
| 08 34 26    | +01 08 49    | GJ2070           | 12.74           | 11.59    | 10.15           | Win19      | 8.810           | 0.020      | 8.322            | 0.040              | 8.031            | 0.029              | 7.852             | 0.023              | 7.633             | 0.020              | 7.594             | 0.018              | 73.4                 | 9.6                |               |
| 08 34 42    | +45 29 07    | LSPM0834+4529    | 14.94           | 13.64    | 11.97           | 111        | 10.415          | 0.019      | 9.849            | 0.030              | 9.557            | 0.025              | 9.343             | 0.023              | 9.173             | 0.021              | 9.063             | 0.028              | 47.0                 | 3.1                |               |
| 08 35 20    | +14 08 33    | LSPM0835+1408    | 13.99           | 12.62    | 10.91           | 111        | 9.163           | 0.021      | 8.578            | 0.031              | 8.282            | 0.038              | 8.097             | 0.023              | 7.956             | 0.020              | 7.831             | 0.021              | 42.0                 | 1.4                |               |
| 08 37 08    | +15 07 46    | LHS2029          | 11.79           | 10.74    | 9.43            | We96       | 8.122           | 0.026      | 7.574            | 0.049              | 7.321            | 0.017              | 7.186             | 0.030              | 7.084             | 0.020              | 7.006             | 0.017              | 52.7                 | 3.7                |               |
| 08 37 30    | +03 33 46    | LSPM0837+0333    | 14.41           | 13.10    | 11.47           | 222        | 9.853           | 0.024      | 9.248            | 0.022              | 8.973            | 0.019              | 8.767             | 0.022              | 8.634             | 0.020              | 8.439             | 0.023              | 55.4                 | 1.9                |               |
| 08 39 25    | +29 53 18    | L321-016         | 14.82           | 13.48    | 11.87           | 111        | 10.310          | 0.020      | 9.761            | 0.021              | 9.492            | 0.018              | 9.279             | 0.024              | 9.086             | 0.021              | 8.941             | 0.027              | 58.5                 | 2.0                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 08 40 16           | +31 27 07           | LSPM0840+3127    | 12.30           | 11.12    | 9.60            | 111        | 8.122           | 0.021      | 7.561            | 0.040              | 7.302            | 0.021              | 7.158             | 0.029              | 6.965             | 0.020              | 6.890             | 0.016              | 90.2                 | 1.8                |               |
| 08 40 30           | +18 24 09           | GJ0316.1         | 17.67           | 15.72    | 13.44           | Die14      | 11.053          | 0.022      | 10.419           | 0.023              | 10.046           | 0.018              | 9.800             | 0.022              | 9.626             | 0.021              | 9.457             | 0.048              | 72.3                 | 0.9                |               |
| 08 40 59           | +27 27 33           | GJ0317           | 12.01           | 10.84    | 9.37            | Lur14      | 7.934           | 0.027      | 7.321            | 0.071              | 7.028            | 0.020              | 6.879             | 0.037              | 6.782             | 0.020              | 6.701             | 0.015              | 65.3                 | 0.4                |               |
| 08 41 04           | +63 39 29           | LHS2038          | 14.66           | 13.41    | 11.82           | Weig6      | 10.290          | 0.022      | 9.720            | 0.021              | 9.411            | 0.016              | 9.236             | 0.023              | 9.077             | 0.020              | 8.981             | 0.030              | 42.1                 | 1.8                |               |
| 08 41 20           | +59 29 51           | LHS0252          | 15.05           | 13.48    | 11.47           | Weig6      | 9.615           | 0.023      | 8.996            | 0.028              | 8.668            | 0.021              | 8.443             | 0.024              | 8.241             | 0.019              | 8.062             | 0.018              | 105.7                | 1.7                |               |
| 08 44 45           | +18 13 07           | LHS1140          | 13.06           | 11.88    | 10.38           | 111        | 8.942           | 0.026      | 8.322            | 0.020              | 8.088            | 0.021              | 7.931             | 0.022              | 7.798             | 0.021              | 7.720             | 0.020              | 41.7                 | 3.4                |               |
| 08 48 30           | +61 09 06           | LHS2051          | 15.14           | 13.813   | 12.124          | Weig6      | 10.608          | 0.023      | 10.028           | 0.028              | 9.767            | 0.022              | 9.550             | 0.024              | 9.342             | 0.020              | 9.191             | 0.027              | 62.2                 | 2.9                |               |
| 08 51 44           | +18 07 39           | GJ1114           | 11.55           | 10.57    | 9.44            | Weig6      | 8.281           | 0.029      | 7.723            | 0.020              | 7.525            | 0.027              | 7.379             | 0.028              | 7.226             | 0.019              | 7.199             | 0.017              | 58.6                 | 2.6                |               |
| 08 52 25           | +38 09 24           | LSPM0852+3809    | 13.92           | 12.72    | 11.28           | 222        | 9.909           | 0.021      | 9.362            | 0.022              | 9.087            | 0.017              | 8.911             | 0.024              | 8.773             | 0.022              | 8.650             | 0.024              | 42.7                 | 1.5                |               |
| 08 53 29           | +39 24 41           | SCR0853-3924     | 12.33           | 11.23    | 9.87            | Win17      | 8.512           | 0.029      | 7.939            | 0.031              | 7.717            | 0.023              | 7.557             | 0.024              | 7.431             | 0.019              | 7.351             | 0.017              | 58.6                 | 1.2                |               |
| 08 53 36           | +03 29 32           | LHS2065          | 19.14           | 16.78    | 14.46           | 444        | 11.212          | 0.026      | 10.469           | 0.026              | 9.942            | 0.024              | 9.615             | 0.024              | 9.382             | 0.020              | 8.928             | 0.026              | 117.2                | 0.6                | KS            |
| 08 53 57           | +24 46 54           | LHS2067          | 17.94           | 16.29    | 14.20           | Sub17      | 12.386          | 0.024      | 11.879           | 0.021              | 11.571           | 0.023              | 11.361            | 0.024              | 11.132            | 0.020              | 11.661            | 0.186              | 39.3                 | 0.9                |               |
| 08 55 08           | +01 32 47           | GJ0328           | 9.98            | 9.09     | 8.22            | Bes90      | 7.191           | 0.027      | 6.523            | 0.018              | 6.352            | 0.026              | 6.302             | 0.043              | 6.282             | 0.021              | 6.271             | 0.015              | 49.6                 | 1.7                |               |
| 08 56 18           | +23 26 57           | LP844-033        | 15.95           | 14.40    | 12.52           | 222        | 10.696          | 0.023      | 10.126           | 0.023              | 9.818            | 0.021              | 9.577             | 0.023              | 9.389             | 0.020              | 9.170             | 0.029              | 42.4                 | 2.9                |               |
| 08 56 30           | +43 36 03           | LHS2074          | 15.67           | 14.28    | 12.53           | 111        | 10.867          | 0.021      | 10.388           | 0.024              | 10.091           | 0.016              | 9.869             | 0.024              | 9.637             | 0.021              | 9.487             | 0.034              | 49.8                 | 2.4                |               |
| 08 58 35           | +07 58 56           | L546-024         | 17.34           | 15.66    | 13.65           | 222        | 11.643          | 0.023      | 11.079           | 0.029              | 10.713           | 0.017              | 10.490            | 0.023              | 10.309            | 0.021              | 9.995             | 0.053              | 50.3                 | 4.1                |               |
| 08 58 51           | +38 44 26           | GJ115-038        | 14.32           | 13.129   | 11.612          | Weig7      | 10.116          | 0.020      | 9.517            | 0.020              | 9.280            | 0.017              | 9.109             | 0.023              | 8.978             | 0.019              | 8.845             | 0.025              | 51.7                 | 2.1                |               |
| 08 59 05           | +31 13 27           | GJ1118           | 13.79           | 12.56    | 10.95           | Ja005      | 9.408           | 0.026      | 8.862            | 0.023              | 8.586            | 0.023              | 8.372             | 0.022              | 8.219             | 0.019              | 8.077             | 0.018              | 56.2                 | 1.8                |               |
| 08 59 36           | +53 43 51           | G194-047         | 13.31           | 12.06    | 10.50           | 111        | 9.014           | 0.039      | 8.365            | 0.029              | 8.128            | 0.024              | 7.947             | 0.023              | 7.783             | 0.020              | 7.670             | 0.017              | 58.1                 | 2.0                |               |
| 08 59 56           | +06 10 05           | L546-025         | 14.60           | 13.29    | 11.66           | 122        | 10.047          | 0.023      | 9.461            | 0.030              | 9.170            | 0.024              | 8.959             | 0.022              | 8.827             | 0.021              | 8.629             | 0.024              | 46.6                 | 1.7                |               |
| 08 59 56           | +72 57 37           | LHS2088          | 14.34           | 13.03    | 11.33           | 333        | 9.731           | 0.021      | 9.239            | 0.017              | 8.975            | 0.015              | 8.728             | 0.024              | 8.530             | 0.019              | 8.410             | 0.021              | 73.4                 | 2.0                |               |
| 09 00 24           | +21 50 05           | LHS2090          | 16.11           | 14.12    | 11.84           | Die14      | 9.436           | 0.020      | 8.836            | 0.023              | 8.437            | 0.021              | 8.227             | 0.025              | 8.026             | 0.019              | 7.801             | 0.019              | 157.3                | 1.1                | redS          |
| 09 00 49           | +05 14 41           | GJ0333.2         | 12.42           | 11.37    | 10.00           | Weig6      | 8.604           | 0.023      | 8.031            | 0.018              | 7.741            | 0.020              | 7.578             | 0.025              | 7.401             | 0.020              | 7.270             | 0.016              | 99.6                 | 1.7                |               |
| 09 01 50           | +09 05 11           | G041-017         | 15.03           | 13.69    | 12.04           | 111        | 10.417          | 0.022      | 9.803            | 0.022              | 9.530            | 0.019              | 9.313             | 0.023              | 9.166             | 0.020              | 9.100             | 0.031              | 42.6                 | 2.3                |               |
| 09 02 07           | +00 33 29           | LHS1542          | 18.57           | 16.80    | 14.53           | 111        | 12.106          | 0.024      | 11.538           | 0.023              | 11.161           | 0.021              | 10.935            | 0.023              | 10.709            | 0.021              | 10.474            | 0.074              | 50.1                 | 3.8                |               |
| 09 02 20           | +08 28 06           | LHS2094          | 11.77           | 10.72    | 9.42            | Weig6      | 8.145           | 0.026      | 7.528            | 0.046              | 7.310            | 0.020              | 7.174             | 0.032              | 7.077             | 0.020              | 6.996             | 0.016              | 51.3                 | 3.7                |               |
| 09 02 53           | +68 03 47           | LP060-179        | 12.65           | 11.47    | 9.92            | Weig8      | 8.453           | 0.029      | 7.985            | 0.023              | 7.711            | 0.018              | 7.504             | 0.024              | 7.338             | 0.021              | 7.229             | 0.015              | 86.1                 | 2.7                |               |
| 09 03 43           | +52 02 53           | G194-052         | 13.03           | 11.88    | 10.38           | 222        | 8.964           | 0.030      | 8.394            | 0.024              | 8.156            | 0.020              | 7.980             | 0.024              | 7.836             | 0.021              | 7.704             | 0.017              | 58.9                 | 1.8                |               |
| 09 07 03           | +22 08 50           | LHS2106          | 14.21           | 12.87    | 11.13           | Rie10      | 9.533           | 0.027      | 8.998            | 0.023              | 8.645            | 0.023              | 8.448             | 0.023              | 8.246             | 0.021              | 8.104             | 0.020              | 66.2                 | 1.2                |               |
| 09 08 49           | +11 51 41           | LHS1144          | 15.33           | 13.97    | 12.30           | 111        | 10.739          | 0.026      | 10.170           | 0.023              | 9.899            | 0.023              | 9.663             | 0.022              | 9.475             | 0.019              | 9.372             | 0.036              | 53.8                 | 2.0                |               |
| 09 09 24           | +40 06 05           | GJ1121           | 14.53           | 13.27    | 11.65           | Weig6      | 10.135          | 0.021      | 9.624            | 0.019              | 9.305            | 0.019              | 9.114             | 0.023              | 8.923             | 0.019              | 8.774             | 0.025              | 46.6                 | 2.9                |               |
| 09 09 57           | +06 58 19           | DEN0909-0658     | 21.55           | 19.46    | 17.18           | Win19      | 13.890          | 0.024      | 13.090           | 0.021              | 12.539           | 0.026              | 12.207            | 0.023              | 11.957            | 0.022              | 11.300            | 0.153              | 42.5                 | 4.2                |               |
| 09 10 01           | +09 01 38           | G046-023         | 15.44           | 14.02    | 12.29           | 111        | 10.597          | 0.022      | 10.069           | 0.023              | 9.765            | 0.019              | 9.574             | 0.023              | 9.380             | 0.020              | 9.265             | 0.032              | 47.8                 | 2.2                |               |
| 09 11 31           | +46 37 01           | GJ0336.1         | 10.94           | 10.02    | 9.04            | Weig3      | 7.900           | 0.023      | 7.261            | 0.016              | 7.058            | 0.024              | 6.991             | 0.035              | 6.937             | 0.020              | 6.901             | 0.015              | 40.7                 | 2.4                |               |
| 09 13 23           | +03 40 43           | LHS6166          | 14.32           | 13.10    | 11.58           | 111        | 10.135          | 0.027      | 9.541            | 0.024              | 9.253            | 0.025              | 9.070             | 0.022              | 8.909             | 0.021              | 8.793             | 0.026              | 51.5                 | 1.5                |               |
| 09 14 17           | +41 34 38           | SCR0914-4134     | 15.01           | 13.57    | 11.72           | Win11      | 9.983           | 0.026      | 9.423            | 0.023              | 9.120            | 0.023              | 8.899             | 0.023              | 8.703             | 0.021              | 8.554             | 0.025              | 83.4                 | 0.7                | UB?           |
| 09 16 21           | +18 37 33           | L749-034         | 10.73           | 9.72     | 8.54            | Win15      | 7.351           | 0.021      | 6.759            | 0.047              | 6.492            | 0.024              | 6.345             | 0.043              | 6.246             | 0.021              | 6.194             | 0.015              | 77.6                 | 2.4                |               |
| 09 16 26           | +02 04 16           | LHS2122          | 12.57           | 11.43    | 9.94            | Win10      | 8.465           | 0.024      | 7.834            | 0.027              | 7.545            | 0.029              | 7.414             | 0.026              | 7.321             | 0.021              | 7.202             | 0.015              | 58.6                 | 2.6                |               |
| 09 17 05           | +77 49 23           | GJ1123           | 13.15           | 11.79    | 10.05           | Hen18      | 8.329           | 0.024      | 7.768            | 0.038              | 7.448            | 0.021              | 7.270             | 0.030              | 7.076             | 0.020              | 6.948             | 0.016              | 110.9                | 2.0                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 09 17 07           | +20 07 54           | G041-030         | 14.76           | 13.55    | 11.934          | Wei87      | 10.335          | 0.020      | 9.833            | 0.022              | 9.602            | 0.021              | 9.392             | 0.022              | 9.202             | 0.020              | 9.069             | 0.032              | 67.2                 | 3.6                |               |
| 09 17 46           | +58 25 22           | LHS0265          | 15.21           | 13.75    | 11.95           | Wei96      | 10.261          | 0.022      | 9.698            | 0.023              | 9.402            | 0.020              | 9.178             | 0.022              | 8.991             | 0.021              | 8.823             | 0.023              | 68.2                 | 2.2                |               |
| 09 19 19           | +38 31 23           | GJ1122           | 14.52           | 13.21    | 11.52           | Wei91a     | 10.048          | 0.020      | 9.439            | 0.029              | 9.150            | 0.026              | 8.064             | 0.015              | 7.775             | 0.013              | 8.117             | 0.023              | 56.3                 | 1.6                |               |
| 09 19 20           | +21 54 32           | L369-027         | 18.13           | 16.45    | 14.27           | 111        | 12.225          | 0.022      | 11.637           | 0.024              | 11.349           | 0.022              | 11.130            | 0.022              | 10.886            | 0.021              | 10.704            | 0.095              | 44.0                 | 3.4                |               |
| 09 20 22           | +26 43 43           | LHS0266          | 15.60           | 14.29    | 12.59           | 222        | 11.073          | 0.025      | 10.571           | 0.023              | 10.290           | 0.020              | 10.100            | 0.022              | 9.874             | 0.020              | 9.721             | 0.045              | 51.0                 | 2.9                |               |
| 09 20 58           | +03 22 07           | LHS0267          | 13.32           | 12.18    | 10.70           | 222        | 9.363           | 0.023      | 8.798            | 0.046              | 8.520            | 0.025              | 8.357             | 0.024              | 8.192             | 0.021              | 8.063             | 0.019              | 55.2                 | 1.8                |               |
| 09 21 14           | -21 04 44           | 2MA0921-2104     | 20.98           | 18.52    | 16.16           | 333        | 12.779          | 0.024      | 12.152           | 0.022              | 11.690           | 0.023              | 11.237            | 0.023              | 10.930            | 0.021              | 10.378            | 0.061              | 81.1                 | 1.0                |               |
| 09 21 19           | +73 06 39           | LHS2126          | 15.09           | 13.70    | 11.99           | 111        | 10.365          | 0.020      | 9.798            | 0.019              | 9.522            | 0.020              | 9.319             | 0.023              | 9.134             | 0.020              | 9.030             | 0.026              | 89.1                 | 3.0                |               |
| 09 21 38           | -60 16 55           | GJ0341           | 9.49            | 8.55     | 7.54            | Bes90      | 6.442           | 0.023      | 5.793            | 0.033              | 5.587            | 0.021              | 5.443             | 0.062              | 5.227             | 0.032              | 5.336             | 0.015              | 95.7                 | 0.9                | UB?           |
| 09 28 53           | -07 22 16           | GJ0347           | 12.10           | 11.05    | 9.72            | Bes90      | 8.446           | 0.018      | 7.888            | 0.031              | 7.630            | 0.021              | 7.486             | 0.027              | 7.331             | 0.020              | 7.267             | 0.017              | 61.1                 | 2.9                |               |
| 09 29 11           | +25 58 09           | LHS0269          | 16.43           | 14.83    | 12.86           | 222        | 10.906          | 0.023      | 10.310           | 0.023              | 9.958            | 0.018              | 9.745             | 0.023              | 9.543             | 0.021              | 9.362             | 0.034              | 56.6                 | 0.9                |               |
| 09 30 14           | +26 30 25           | LSPM0930+2630    | 12.81           | 11.66    | 10.23           | 111        | 8.866           | 0.020      | 8.284            | 0.024              | 8.020            | 0.021              | 7.908             | 0.024              | 7.776             | 0.019              | 7.684             | 0.019              | 42.6                 | 1.1                |               |
| 09 30 45           | +00 19 22           | GJ1125           | 11.72           | 10.58    | 9.13            | Wei96      | 7.697           | 0.020      | 7.182            | 0.029              | 6.871            | 0.024              | 6.676             | 0.040              | 6.524             | 0.019              | 6.466             | 0.016              | 96.6                 | 1.9                |               |
| 09 31 56           | +36 19 13           | GJ0353           | 10.22           | 9.28     | 8.26            | Wei96      | 7.121           | 0.023      | 6.569            | 0.055              | 6.302            | 0.020              | 6.178             | 0.052              | 6.125             | 0.022              | 6.081             | 0.015              | 71.1                 | 1.7                |               |
| 09 33 20           | +78 47 03           | LSPM0933+7847    | 13.71           | 12.55    | 11.14           | 111        | 9.773           | 0.026      | 9.200            | 0.028              | 8.957            | 0.020              | 8.807             | 0.023              | 8.648             | 0.021              | 8.536             | 0.021              | 41.8                 | 2.2                |               |
| 09 36 02           | -21 39 39           | GJ0357           | 10.92           | 9.86     | 8.57            | Win15      | 7.337           | 0.034      | 6.740            | 0.033              | 6.475            | 0.017              | 6.286             | 0.046              | 6.146             | 0.020              | 6.117             | 0.017              | 110.7                | 1.9                |               |
| 09 37 04           | +40 34 39           | L211-022         | 14.03           | 12.833   | 11.267          | Wei87      | 9.766           | 0.023      | 9.173            | 0.022              | 8.883            | 0.018              | 8.703             | 0.021              | 8.565             | 0.020              | 8.455             | 0.022              | 51.9                 | 1.0                |               |
| 09 39 23           | +29 43 27           | L314-044         | 18.62           | 16.75    | 14.28           | 111        | 11.984          | 0.021      | 11.416           | 0.027              | 11.071           | 0.022              | 10.838            | 0.025              | 10.591            | 0.022              | 10.431            | 0.067              | 62.2                 | 3.0                |               |
| 09 39 24           | +31 45 17           | G117-034         | 11.87           | 10.82    | 9.67            | 222        | 8.486           | 0.032      | 7.887            | 0.021              | 7.680            | 0.015              | 7.526             | 0.026              | 7.416             | 0.020              | 7.340             | 0.017              | 41.7                 | 3.8                | KY            |
| 09 39 46           | -41 04 03           | GJ0358           | 10.78           | 9.66     | 8.27            | Win15      | 6.902           | 0.029      | 6.321            | 0.049              | 6.056            | 0.023              | 5.908             | 0.053              | 5.699             | 0.027              | 5.736             | 0.016              | 105.5                | 1.6                |               |
| 09 41 02           | +22 01 28           | GJ0359           | 14.24           | 12.93    | 11.19           | Wei96      | 9.627           | 0.021      | 9.088            | 0.021              | 8.813            | 0.021              | 8.604             | 0.023              | 8.391             | 0.021              | 8.243             | 0.020              | 81.3                 | 2.7                |               |
| 09 41 10           | +13 12 35           | GJ0361           | 10.40           | 9.39     | 8.20            | Wei96      | 6.971           | 0.020      | 6.369            | 0.044              | 6.128            | 0.020              | 5.959             | 0.054              | 5.826             | 0.026              | 5.856             | 0.015              | 88.3                 | 1.6                |               |
| 09 42 23           | +55 59 01           | GJ0363           | 12.50           | 11.34    | 9.83            | Wei96      | 8.374           | 0.020      | 7.805            | 0.020              | 7.530            | 0.020              | 7.353             | 0.026              | 7.230             | 0.019              | 7.136             | 0.015              | 59.4                 | 3.0                |               |
| 09 42 35           | +70 02 02           | GJ0360           | 10.58           | 9.53     | 8.24            | Wei96      | 6.917           | 0.018      | 6.326            | 0.015              | 6.075            | 0.017              | 5.962             | 0.052              | 5.834             | 0.026              | 5.811             | 0.015              | 83.5                 | 1.3                |               |
| 09 42 36           | -19 14 05           | LHS2177          | 11.96           | 10.90    | 9.60            | Wei96      | 8.298           | 0.018      | 7.723            | 0.029              | 7.495            | 0.024              | 7.313             | 0.028              | 7.193             | 0.019              | 7.112             | 0.017              | 63.5                 | 3.5                |               |
| 09 42 46           | -68 53 06           | GJ1128           | 12.74           | 11.36    | 9.62            | Lur14      | 7.953           | 0.024      | 7.385            | 0.051              | 7.037            | 0.017              | 6.804             | 0.032              | 6.663             | 0.020              | 6.512             | 0.014              | 154.3                | 0.8                |               |
| 09 42 50           | -63 37 56           | LHS156           | 13.30           | 11.98    | 10.28           | Rie10      | 8.615           | 0.032      | 8.099            | 0.047              | 7.771            | 0.023              | 7.609             | 0.025              | 7.411             | 0.020              | 7.280             | 0.015              | 95.2                 | 1.2                |               |
| 09 43 46           | -17 47 06           | LHS2181          | 13.16           | 12.10    | 10.87           | Jao11      | 9.616           | 0.024      | 9.118            | 0.023              | 8.874            | 0.021              | 8.683             | 0.022              | 8.504             | 0.020              | 8.403             | 0.023              | 69.4                 | 1.0                | KS            |
| 09 43 56           | +26 58 09           | LHS2181          | 12.05           | 10.92    | 9.47            | Wei96      | 8.035           | 0.026      | 7.461            | 0.024              | 7.190            | 0.023              | 7.021             | 0.033              | 6.874             | 0.020              | 6.785             | 0.015              | 71.3                 | 4.5                |               |
| 09 44 24           | -73 58 38           | WT0244           | 15.17           | 13.80    | 12.02           | Rie10      | 10.228          | 0.024      | 9.712            | 0.024              | 9.375            | 0.019              | 9.213             | 0.023              | 9.007             | 0.020              | 8.822             | 0.017              | 43.3                 | 1.5                |               |
| 09 44 30           | -45 46 36           | GJ0367           | 10.12           | 9.10     | 7.86            | Win15      | 6.632           | 0.023      | 6.045            | 0.044              | 5.780            | 0.020              | 5.601             | 0.057              | 5.361             | 0.029              | 5.478             | 0.015              | 102.6                | 2.9                |               |
| 09 44 47           | -18 12 49           | GJ1129           | 12.46           | 11.24    | 9.67            | Jao11      | 8.122           | 0.026      | 7.536            | 0.038              | 7.257            | 0.020              | 7.067             | 0.032              | 6.944             | 0.020              | 6.838             | 0.015              | 93.9                 | 2.5                | KY            |
| 09 45 09           | +71 44 51           | L036-276         | 16.00           | 14.49    | 12.55           | Bar17      | 8.496           | 0.024      | 7.919            | 0.024              | 7.601            | 0.022              | 7.408             | 0.027              | 7.202             | 0.020              | 7.062             | 0.015              | 74.1                 | 1.4                |               |
| 09 45 09           | +12 20 54           | G161-071         | 13.76           | 12.26    | 10.36           | 111        | 10.678          | 0.023      | 10.070           | 0.017              | 9.769            | 0.022              | 9.568             | 0.023              | 9.344             | 0.019              | 9.161             | 0.026              | 40.7                 | 2.9                |               |
| 09 45 58           | -32 53 39           | WT2458           | 14.04           | 12.66    | 10.89           | Win15      | 9.204           | 0.024      | 8.603            | 0.031              | 8.279            | 0.026              | 8.088             | 0.023              | 7.913             | 0.020              | 7.764             | 0.017              | 83.4                 | 0.8                |               |
| 09 46 48           | +76 02 38           | GJ0366           | 10.64           | 9.69     | 8.59            | Wei96      | 7.437           | 0.029      | 6.841            | 0.018              | 6.629            | 0.024              | 6.533             | 0.042              | 6.411             | 0.021              | 6.379             | 0.015              | 62.6                 | 1.3                |               |
| 09 47 35           | +12 56 39           | L488-037         | 13.38           | 12.227   | 10.718          | Wei86      | 9.267           | 0.021      | 8.724            | 0.029              | 8.451            | 0.021              | 8.285             | 0.025              | 8.123             | 0.019              | 8.011             | 0.026              | 49.3                 | 2.8                |               |
| 09 48 50           | +15 38 45           | G043-002         | 13.24           | 12.07    | 10.65           | 444        | 9.303           | 0.022      | 8.731            | 0.029              | 8.470            | 0.025              | 8.297             | 0.024              | 8.133             | 0.021              | 8.017             | 0.020              | 56.9                 | 3.2                |               |
| 09 49 22           | +08 06 45           | LHS2195          | 19.76           | 17.66    | 15.20           | 111        | 12.305          | 0.023      | 11.633           | 0.025              | 11.206           | 0.029              | 11.681            | 0.024              | 11.697            | 0.023              | 12.306            | 0.357              | 60.3                 | 1.7                |               |
| 09 50 41           | -13 48 39           | LP728-070        | 12.71           | 11.52    | 9.99            | Win15      | 8.579           | 0.034      | 7.972            | 0.034              | 7.717            | 0.023              | 7.531             | 0.026              | 7.375             | 0.020              | 7.284             | 0.016              | 51.1                 | 1.9                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.     | Decl.     | Star Name     | V     | R      | I      | ref   | J      | err   | H      | err   | K      | err   | W1     | err   | W2     | err   | W3     | err   | π     | err  | mas  | err  | mas  | err  | Notes |
|----------|-----------|---------------|-------|--------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-------|------|------|------|------|------|-------|
| (1)      | (2)       | (3)           | (4)   | (5)    | (6)    | (7)   | (8)    | (9)   | (10)   | (11)  | (12)   | (13)  | (14)   | (15)  | (16)   | (17)  | (18)   | (19)  | (20)  | (21) | (22) | (23) | (24) | (25) |       |
| 09 51 10 | -12 19 48 | GJ0369        | 10.06 | 9.13   | 8.11   | Bes90 | 6.988  | 0.024 | 6.400  | 0.036 | 6.150  | 0.026 | 6.066  | 0.047 | 5.898  | 0.024 | 5.916  | 0.015 | 73.0  | 1.7  |      |      |      |      |       |
| 09 53 28 | -31 45 08 | GJ1130        | 10.16 | 9.30   | 8.43   | 222   | 7.402  | 0.026 | 6.771  | 0.042 | 6.568  | 0.018 | 6.514  | 0.044 | 6.478  | 0.019 | 6.437  | 0.012 | 41.5  | 1.6  |      |      |      |      |       |
| 09 53 55 | +20 56 47 | LHS2206       | 14.02 | 12.63  | 10.85  | Hen06 | 9.208  | 0.022 | 8.600  | 0.021 | 8.326  | 0.018 | 8.115  | 0.023 | 7.918  | 0.021 | 7.792  | 0.018 | 107.3 | 1.7  |      |      |      |      |       |
| 09 55 24 | -27 15 41 | LP847-048     | 12.08 | 10.90  | 9.43   | Win19 | 8.032  | 0.023 | 7.433  | 0.038 | 7.143  | 0.021 | 6.933  | 0.034 | 6.802  | 0.021 | 6.722  | 0.016 | 88.3  | 3.2  |      |      |      |      |       |
| 09 56 09 | +62 47 19 | GJ0373        | 8.97  | 8.07   | 7.11   | Wei96 | 6.030  | 0.024 | 5.369  | 0.044 | 5.200  | 0.024 | 5.074  | 0.067 | 4.840  | 0.036 | 5.043  | 0.013 | 92.8  | 1.1  |      |      |      |      |       |
| 09 58 57 | +05 58 00 | L549-006      | 14.77 | 13.34  | 11.59  | 222   | 9.937  | 0.023 | 9.394  | 0.027 | 9.039  | 0.021 | 8.868  | 0.023 | 8.671  | 0.021 | 8.525  | 0.024 | 68.2  | 2.4  |      |      |      |      |       |
| 09 59 19 | +43 50 26 | G116-072      | 13.89 | 12.712 | 11.173 | Wei87 | 9.682  | 0.022 | 9.126  | 0.023 | 8.859  | 0.016 | 8.656  | 0.022 | 8.464  | 0.020 | 8.390  | 0.021 | 40.1  | 1.8  |      |      |      |      |       |
| 09 59 46 | +47 12 11 | G146-005      | 14.09 | 12.867 | 11.282 | Wei88 | 9.756  | 0.025 | 9.199  | 0.021 | 8.922  | 0.016 | 8.727  | 0.022 | 8.557  | 0.020 | 8.428  | 0.021 | 46.8  | 1.8  |      |      |      |      |       |
| 09 59 52 | +02 46 49 | L549-010      | 14.07 | 12.873 | 11.381 | Wei86 | 9.992  | 0.024 | 9.427  | 0.024 | 9.133  | 0.021 | 8.966  | 0.024 | 8.792  | 0.019 | 8.668  | 0.025 | 54.6  | 2.5  |      |      |      |      |       |
| 10 01 11 | -30 23 25 | L006-124      | 15.27 | 13.86  | 12.07  | 111   | 10.291 | 0.027 | 9.715  | 0.032 | 9.410  | 0.021 | 9.186  | 0.023 | 8.996  | 0.020 | 8.837  | 0.021 | 60.1  | 3.7  |      |      |      |      |       |
| 10 01 11 | +81 09 23 | GJ0377        | 11.44 | 10.35  | 8.95   | 111   | 7.598  | 0.020 | 6.994  | 0.065 | 6.700  | 0.020 | 6.545  | 0.039 | 6.496  | 0.021 | 6.426  | 0.015 | 62.2  | 2.5  |      |      |      |      |       |
| 10 02 06 | +69 45 29 | L037-057      | 14.32 | 13.00  | 11.34  | 222   | 9.768  | 0.018 | 9.183  | 0.017 | 8.897  | 0.022 | 8.689  | 0.023 | 8.532  | 0.020 | 8.379  | 0.019 | 69.7  | 1.7  |      |      |      |      |       |
| 10 02 07 | +49 57 44 | L166-055      | 17.39 | 15.83  | 13.68  | 111   | 11.506 | 0.021 | 10.883 | 0.015 | 10.505 | 0.015 | 10.249 | 0.022 | 10.075 | 0.020 | 9.891  | 0.044 | 45.4  | 5.7  |      |      |      |      |       |
| 10 02 22 | +48 05 19 | GJ0378        | 10.10 | 9.18   | 8.13   | Wei96 | 6.949  | 0.020 | 6.355  | 0.024 | 6.160  | 0.016 | 6.089  | 0.047 | 5.946  | 0.024 | 5.965  | 0.015 | 66.4  | 1.5  |      |      |      |      |       |
| 10 02 42 | +14 59 13 | G043-023      | 14.23 | 12.93  | 11.30  | 111   | 9.649  | 0.026 | 9.084  | 0.030 | 8.803  | 0.018 | 8.596  | 0.024 | 8.413  | 0.021 | 8.282  | 0.021 | 77.2  | 3.8  |      |      |      |      |       |
| 10 02 49 | +48 27 33 | LHS6180       | 15.45 | 13.95  | 11.94  | 222   | 9.963  | 0.019 | 9.333  | 0.016 | 9.005  | 0.015 | 8.796  | 0.023 | 8.592  | 0.020 | 8.405  | 0.021 | 60.1  | 2.3  |      |      |      |      |       |
| 10 04 39 | -33 35 19 | LHS5166       | 14.36 | 13.08  | 11.41  | Win15 | 9.849  | 0.024 | 9.303  | 0.023 | 9.026  | 0.021 | 8.838  | 0.022 | 8.643  | 0.018 | 8.522  | 0.021 | 54.8  | 5.6  |      |      |      |      |       |
| 10 04 51 | -31 05 28 | LP903-021     | 12.00 | 10.97  | 9.75   | Koe10 | 8.459  | 0.020 | 7.861  | 0.055 | 7.620  | 0.026 | 7.466  | 0.028 | 7.393  | 0.021 | 7.312  | 0.016 | 43.5  | 3.4  |      |      |      |      |       |
| 10 05 16 | +17 03 26 | L429-028      | 16.11 | 14.67  | 12.85  | 111   | 11.130 | 0.021 | 10.563 | 0.021 | 10.256 | 0.016 | 10.027 | 0.025 | 9.823  | 0.021 | 9.694  | 0.049 | 40.6  | 2.8  |      |      |      |      |       |
| 10 06 44 | +41 42 53 | LHS2220       | 11.33 | 10.39  | 9.36   | Wei96 | 8.209  | 0.020 | 7.620  | 0.016 | 7.403  | 0.020 | 7.267  | 0.029 | 7.198  | 0.020 | 7.132  | 0.016 | 48.4  | 2.7  |      |      |      |      |       |
| 10 07 59 | +69 14 46 | GJ1131        | 14.35 | 13.11  | 11.54  | Wei96 | 10.096 | 0.023 | 9.575  | 0.023 | 9.302  | 0.016 | 9.098  | 0.022 | 8.907  | 0.021 | 8.794  | 0.022 | 57.6  | 2.8  |      |      |      |      |       |
| 10 09 30 | +51 17 29 | LHS2224       | 13.48 | 12.27  | 10.71  | Wei96 | 9.299  | 0.026 | 8.714  | 0.023 | 8.523  | 0.021 | 8.301  | 0.023 | 8.111  | 0.020 | 7.991  | 0.018 | 75.2  | 3.2  |      |      |      |      |       |
| 10 11 44 | +35 18 44 | G118-037      | 14.50 | 13.264 | 11.655 | Wei99 | 10.112 | 0.022 | 9.523  | 0.022 | 9.233  | 0.016 | 9.059  | 0.022 | 8.897  | 0.018 | 8.773  | 0.024 | 56.8  | 2.0  |      |      |      |      |       |
| 10 12 18 | -03 44 44 | GJ0382        | 9.29  | 8.28   | 7.11   | Bes90 | 5.888  | 0.021 | 5.258  | 0.016 | 5.015  | 0.020 | 4.908  | 0.079 | 4.515  | 0.041 | 4.758  | 0.015 | 126.1 | 1.8  |      |      |      |      |       |
| 10 13 07 | -13 56 20 | SSS1013-1356  | 20.23 | 18.34  | 16.32  | 222   | 14.621 | 0.032 | 14.382 | 0.049 | 14.398 | 0.078 | 13.782 | 0.028 | 13.545 | 0.035 | 12.680 | 0.510 | 20.3  | 2.0  |      |      |      |      |       |
| 10 13 21 | +46 47 26 | L167-017      | 16.50 | 14.93  | 12.82  | 111   | 10.873 | 0.023 | 10.309 | 0.021 | 9.982  | 0.016 | 9.730  | 0.023 | 9.524  | 0.021 | 9.427  | 0.033 | 56.8  | 2.9  |      |      |      |      |       |
| 10 14 19 | +21 04 29 | GJ2079        | 10.04 | 9.16   | 8.24   | Koe10 | 7.074  | 0.023 | 6.448  | 0.020 | 6.261  | 0.023 | 6.140  | 0.048 | 6.069  | 0.022 | 6.054  | 0.015 | 43.3  | 1.8  |      |      |      |      |       |
| 10 14 52 | -47 09 24 | GJ1132        | 13.49 | 12.26  | 10.69  | Jao05 | 9.245  | 0.026 | 8.666  | 0.031 | 8.322  | 0.027 | 8.162  | 0.022 | 7.995  | 0.020 | 7.883  | 0.018 | 83.1  | 1.7  |      |      |      |      |       |
| 10 16 46 | -11 57 42 | GJ0386        | 10.97 | 9.94   | 8.60   | Wei96 | 7.323  | 0.019 | 6.711  | 0.042 | 6.452  | 0.018 | 6.347  | 0.041 | 6.205  | 0.022 | 6.182  | 0.015 | 75.4  | 2.5  |      |      |      |      |       |
| 10 19 17 | +05 49 57 | G235-066      | 15.12 | 13.95  | 12.28  | 111   | 10.751 | 0.023 | 10.256 | 0.027 | 10.021 | 0.021 | 9.827  | 0.022 | 9.623  | 0.020 | 9.511  | 0.030 | 45.6  | 1.8  |      |      |      |      |       |
| 10 19 36 | +19 52 12 | GJ0388        | 9.29  | 8.17   | 6.78   | 333   | 5.449  | 0.027 | 4.843  | 0.020 | 4.593  | 0.017 | 4.423  | 0.085 | 3.912  | 0.054 | 4.265  | 0.015 | 204.6 | 2.8  |      |      |      |      |       |
| 10 19 51 | -41 48 46 | LTT03790      | 11.64 | 10.66  | 9.52   | Win15 | 8.359  | 0.021 | 7.724  | 0.034 | 7.489  | 0.017 | 7.379  | 0.058 | 7.306  | 0.020 | 7.221  | 0.017 | 44.5  | 2.7  |      |      |      |      |       |
| 10 22 25 | -60 10 38 | GJ0389        | 10.72 | 9.82   | 8.80   | Bes90 | 7.707  | 0.029 | 7.079  | 0.034 | 6.848  | 0.023 | 6.763  | 0.037 | 6.743  | 0.021 | 6.710  | 0.017 | 50.4  | 1.8  |      |      |      |      |       |
| 10 23 52 | +43 53 33 | L212-062      | 15.28 | 13.79  | 11.92  | 111   | 10.039 | 0.022 | 9.431  | 0.026 | 9.127  | 0.020 | 8.915  | 0.022 | 8.763  | 0.020 | 8.586  | 0.022 | 64.0  | 3.2  |      |      |      |      |       |
| 10 25 11 | -10 13 43 | GJ0390        | 10.17 | 9.19   | 8.10   | Bes90 | 6.895  | 0.019 | 6.264  | 0.033 | 6.032  | 0.017 | 5.916  | 0.051 | 5.782  | 0.027 | 5.800  | 0.014 | 81.3  | 1.8  |      |      |      |      |       |
| 10 25 26 | +05 12 39 | LSPM1025+0512 | 17.85 | 16.04  | 13.93  | 222   | 11.715 | 0.027 | 11.141 | 0.026 | 10.788 | 0.024 | 10.563 | 0.024 | 10.344 | 0.021 | 10.345 | 0.095 | 45.6  | 4.6  |      |      |      |      |       |
| 10 27 00 | +55 06 53 | LHS5170       | 14.28 | 13.03  | 11.46  | 111   | 9.973  | 0.027 | 9.431  | 0.033 | 9.117  | 0.020 | 8.922  | 0.023 | 8.750  | 0.020 | 8.623  | 0.022 | 40.0  | 2.5  |      |      |      |      |       |
| 10 28 28 | +48 14 29 | LHS2268       | 13.25 | 12.06  | 10.52  | Wei96 | 9.055  | 0.021 | 8.474  | 0.017 | 8.229  | 0.021 | 8.025  | 0.022 | 7.862  | 0.019 | 7.726  | 0.018 | 47.7  | 2.2  |      |      |      |      |       |
| 10 28 56 | +00 50 28 | GJ0393        | 9.63  | 8.62   | 7.40   | Bes90 | 6.176  | 0.021 | 5.605  | 0.033 | 5.311  | 0.023 | 5.229  | 0.067 | 4.840  | 0.035 | 5.048  | 0.014 | 140.3 | 2.0  |      |      |      |      |       |
|          |           |               |       |        |        |       |        |       |        |       |        |       |        |       |        |       |        |       |       |      |      |      |      | KY   |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(21) | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)  |
| 10 30 51    | -35 46 39    | LTT03855      | 11.24    | 10.28    | 9.26     | Win19      | 8.191    | 0.026      | 7.493    | 0.033       | 7.292    | 0.024       | 7.174     | 0.029       | 7.177     | 0.020       | 7.111     | 0.017       | 40.6         | 2.0         |       |
| 10 32 33    | +06 30 08    | L550-135      | 15.89    | 14.35    | 12.46    | 111        | 10.507   | 0.024      | 9.901    | 0.022       | 9.544    | 0.019       | 9.401     | 0.024       | 9.224     | 0.021       | 9.041     | 0.031       | 55.1         | 9.9         |       |
| 10 34 30    | +46 18 09    | L167-064      | 13.13    | 12.003   | 10.56    | We188      | 9.195    | 0.020      | 8.729    | 0.055       | 8.344    | 0.023       | 8.167     | 0.033       | 8.052     | 0.020       | 7.931     | 0.018       | 49.3         | 1.1         |       |
| 10 35 27    | +69 26 59    | LHS0283       | 11.95    | 10.83    | 9.33     | Bes90      | 7.898    | 0.019      | 7.389    | 0.016       | 7.161    | 0.020       | 6.988     | 0.032       | 6.785     | 0.021       | 6.702     | 0.015       | 81.8         | 2.5         |       |
| 10 36 01    | +05 07 13    | GJ0398        | 12.69    | 11.48    | 9.92     | 222        | 8.463    | 0.024      | 7.875    | 0.027       | 7.598    | 0.023       | 7.448     | 0.024       | 7.294     | 0.020       | 7.187     | 0.016       | 68.8         | 6.3         |       |
| 10 36 48    | +50 55 04    | L127-502      | 14.57    | 13.23    | 11.53    | 222        | 9.866    | 0.021      | 9.327    | 0.023       | 9.018    | 0.019       | 8.815     | 0.024       | 8.627     | 0.020       | 8.450     | 0.021       | 50.1         | 1.3         |       |
| 10 37 45    | -27 46 39    | LTT03896      | 13.14    | 11.84    | 10.19    | Win15      | 8.595    | 0.023      | 8.035    | 0.051       | 7.719    | 0.029       | 7.504     | 0.028       | 7.354     | 0.020       | 7.235     | 0.016       | 66.6         | 1.3         |       |
| 10 38 48    | -86 32 44    | LEHPM2-2758   | 13.24    | 12.02    | 10.46    | Win15      | 8.972    | 0.030      | 8.399    | 0.047       | 8.112    | 0.027       | 7.904     | 0.024       | 7.738     | 0.021       | 7.636     | 0.018       | 74.8         | 2.6         |       |
| 10 39 41    | -06 55 26    | GJ0399        | 11.31    | 10.27    | 8.99     | Bes90      | 7.664    | 0.029      | 7.054    | 0.053       | 6.818    | 0.024       | 6.648     | 0.037       | 6.566     | 0.021       | 6.504     | 0.016       | 63.9         | 2.8         |       |
| 10 41 38    | +37 36 39    | GJ1134        | 12.98    | 11.72    | 10.07    | We196      | 8.493    | 0.027      | 8.005    | 0.038       | 7.714    | 0.024       | 7.505     | 0.026       | 7.316     | 0.019       | 7.209     | 0.016       | 96.7         | 2.3         |       |
| 10 41 52    | -36 38 00    | GJ1136        | 10.15    | 9.25     | 8.31     | Win19      | 7.233    | 0.018      | 6.642    | 0.049       | 6.387    | 0.020       | 6.237     | 0.046       | 6.278     | 0.023       | 6.246     | 0.016       | 61.8         | 4.1         |       |
| 10 44 21    | -61 12 36    | LHS0288       | 13.90    | 12.31    | 10.27    | Hen06      | 8.492    | 0.021      | 8.054    | 0.044       | 7.728    | 0.027       | 7.502     | 0.025       | 7.259     | 0.019       | 7.092     | 0.017       | 209.7        | 2.7         |       |
| 10 45 17    | -30 48 27    | LP905-056     | 11.22    | 10.21    | 9.03     | Koe10      | 7.816    | 0.020      | 7.216    | 0.036       | 6.992    | 0.016       | 6.824     | 0.037       | 6.746     | 0.021       | 6.670     | 0.014       | 71.4         | 2.4         |       |
| 10 48 13    | -11 20 19    | LHS0292       | 15.78    | 13.63    | 11.25    | Die14      | 8.857    | 0.021      | 8.263    | 0.036       | 7.926    | 0.033       | 7.713     | 0.023       | 7.505     | 0.020       | 7.296     | 0.017       | 220.3        | 3.6         |       |
| 10 48 15    | -39 56 07    | DEN1048-3956  | 17.39    | 14.99    | 12.48    | Hen18      | 9.538    | 0.022      | 8.905    | 0.044       | 8.447    | 0.023       | 8.103     | 0.024       | 7.814     | 0.021       | 7.462     | 0.018       | 247.8        | 0.6         |       |
| 10 49 03    | +05 02 23    | LHS2314       | 19.13    | 17.10    | 14.90    | 222        | 12.535   | 0.024      | 11.970   | 0.024       | 11.596   | 0.019       | 11.384    | 0.024       | 11.171    | 0.020       | 11.108    | 0.140       | 41.1         | 2.3         |       |
| 10 50 26    | +33 06 04    | LHS2317       | 13.07    | 11.90    | 10.38    | We196      | 8.899    | 0.021      | 8.256    | 0.024       | 8.012    | 0.016       | 7.838     | 0.024       | 7.731     | 0.022       | 7.621     | 0.017       | 43.6         | 2.8         |       |
| 10 50 52    | +06 48 29    | GJ0402        | 11.71    | 10.43    | 8.84     | Dav15      | 7.319    | 0.023      | 6.707    | 0.051       | 6.371    | 0.016       | 6.258     | 0.048       | 6.054     | 0.022       | 5.982     | 0.015       | 147.2        | 3.0         | KY    |
| 10 52 04    | +13 59 51    | GJ0403        | 12.72    | 11.54    | 10.06    | 333        | 8.607    | 0.023      | 8.064    | 0.021       | 7.795    | 0.026       | 7.650     | 0.024       | 7.476     | 0.020       | 7.370     | 0.017       | 76.4         | 1.9         |       |
| 10 52 14    | +05 55 19    | LHS2320       | 14.85    | 13.41    | 11.57    | 111        | 9.834    | 0.024      | 9.279    | 0.023       | 8.941    | 0.023       | 8.736     | 0.023       | 8.547     | 0.020       | 8.397     | 0.025       | 86.1         | 1.9         |       |
| 10 54 00    | +16 06 06    | L431-032      | 17.06    | 15.48    | 13.55    | 111        | 11.606   | 0.021      | 11.077   | 0.021       | 10.731   | 0.022       | 10.474    | 0.022       | 10.286    | 0.020       | 10.211    | 0.061       | 44.6         | 3.1         |       |
| 10 55 34    | -09 21 26    | LHS2328       | 13.55    | 12.37    | 10.86    | Rie10      | 9.419    | 0.023      | 8.874    | 0.024       | 8.609    | 0.024       | 8.403     | 0.023       | 8.251     | 0.021       | 8.128     | 0.021       | 53.8         | 1.5         |       |
| 10 56 29    | +07 00 53    | GJ0406        | 13.61    | 11.66    | 9.46     | Hen18      | 7.085    | 0.024      | 6.482    | 0.042       | 6.084    | 0.017       | 5.807     | 0.055       | 5.487     | 0.031       | 5.481     | 0.015       | 417.5        | 2.0         | redS  |
| 10 56 46    | +32 46 28    | LSPM1056+3246 | 15.45    | 14.09    | 12.37    | 111        | 10.653   | 0.018      | 10.096   | 0.016       | 9.817    | 0.018       | 9.624     | 0.023       | 9.424     | 0.020       | 9.304     | 0.032       | 53.2         | 3.1         |       |
| 10 57 04    | +22 17 20    | L373-035      | 16.72    | 15.15    | 13.22    | 111        | 11.287   | 0.021      | 10.693   | 0.020       | 10.350   | 0.022       | 10.165    | 0.022       | 9.996     | 0.020       | 9.797     | 0.047       | 44.0         | 2.5         |       |
| 10 57 38    | +69 35 48    | GJ0406.1      | 10.27    | 9.39     | 8.74     | We196      | 7.514    | 0.018      | 6.867    | 0.016       | 6.711    | 0.021       | 6.625     | 0.041       | 6.646     | 0.020       | 6.591     | 0.015       | 43.7         | 1.5         |       |
| 10 58 28    | -10 46 31    | LP731-076     | 14.44    | 13.05    | 11.24    | Hos15      | 9.512    | 0.023      | 8.965    | 0.022       | 8.640    | 0.021       | 8.460     | 0.022       | 8.278     | 0.020       | 8.160     | 0.020       | 73.2         | 1.7         |       |
| 10 58 35    | -31 08 38    | LHS2335       | 11.93    | 10.90    | 9.63     | Rie10      | 8.361    | 0.023      | 7.762    | 0.049       | 7.470    | 0.027       | 7.321     | 0.028       | 7.241     | 0.021       | 7.128     | 0.017       | 50.6         | 1.6         |       |
| 10 58 48    | -15 48 17    | DEN1058-1548  | 23.02    | 19.96    | 17.76    | 233        | 14.155   | 0.035      | 13.226   | 0.025       | 12.532   | 0.029       | 12.066    | 0.025       | 11.766    | 0.022       | 11.417    | 0.157       | 58.1         | 1.0         |       |
| 10 59 06    | +30 15 12    | LHS2337       | 15.41    | 14.08    | 12.28    | 222        | 10.543   | 0.021      | 9.940    | 0.019       | 9.651    | 0.018       | 9.461     | 0.024       | 9.285     | 0.022       | 9.128     | 0.026       | 44.8         | 2.4         |       |
| 11 00 04    | +22 49 59    | GJ0408        | 10.02    | 8.96     | 7.63     | We194      | 6.314    | 0.023      | 5.760    | 0.020       | 5.495    | 9.995       | 5.376     | 0.060       | 5.021     | 0.033       | 5.189     | 0.014       | 149.3        | 1.6         | KY    |
| 11 00 36    | +37 28 50    | LHS2340       | 15.36    | 14.047   | 12.318   | We196      | 10.659   | 0.022      | 10.041   | 0.021       | 9.746    | 0.015       | 9.574     | 0.023       | 9.394     | 0.021       | 9.250     | 0.031       | 40.1         | 1.7         |       |
| 11 00 50    | +12 04 11    | LSPM1100+1204 | 15.96    | 14.38    | 12.48    | 222        | 10.676   | 0.024      | 10.117   | 0.022       | 9.782    | 0.021       | 9.561     | 0.022       | 9.354     | 0.021       | 9.213     | 0.038       | 51.0         | 3.3         |       |
| 11 01 20    | +03 00 17    | LHS0296       | 14.06    | 12.82    | 11.21    | We196      | 9.708    | 0.027      | 9.230    | 0.026       | 8.907    | 0.021       | 8.705     | 0.023       | 8.502     | 0.019       | 8.386     | 0.024       | 69.4         | 2.4         |       |
| 11 02 19    | +16 30 39    | GJ1141        | 11.49    | 10.52    | 9.44     | We193      | 8.270    | 0.026      | 7.692    | 0.044       | 7.440    | 0.023       | 7.304     | 0.028       | 7.269     | 0.021       | 7.196     | 0.016       | 51.6         | 6.7         |       |
| 11 02 38    | +21 58 02    | GJ0410        | 9.57     | 8.64     | 7.63     | Koe10      | 6.522    | 0.020      | 5.899    | 0.018       | 5.688    | 0.021       | 5.645     | 0.054       | 5.415     | 0.025       | 5.520     | 0.014       | 85.0         | 1.0         | KY    |
| 11 03 10    | +36 39 09    | L263-064      | 13.67    | 12.498   | 10.962   | We187      | 9.464    | 0.020      | 8.909    | 0.022       | 8.631    | 0.017       | 8.484     | 0.022       | 8.315     | 0.020       | 8.210     | 0.021       | 41.6         | 1.5         |       |
| 11 03 21    | +13 37 57    | LP491-051     | 12.96    | 11.75    | 10.25    | 222        | 8.759    | 0.034      | 8.181    | 0.047       | 7.914    | 0.033       | 7.704     | 0.024       | 7.534     | 0.022       | 7.425     | 0.017       | 64.6         | 2.6         |       |
| 11 05 29    | +43 31 37    | GJ0412        | 8.77     | 7.79     | 6.73     | We196      | 5.538    | 0.019      | 5.002    | 0.021       | 4.769    | 0.020       | 4.638     | 0.085       | 4.122     | 0.043       | 4.461     | 0.014       | 205.7        | 0.9         |       |
| 11 05 43    | +10 14 19    | LHS2348       | 12.37    | 11.28    | 9.92     | We196      | 8.643    | 0.021      | 8.049    | 0.053       | 7.797    | 0.026       | 7.601     | 0.024       | 7.482     | 0.021       | 7.396     | 0.017       | 50.9         | 4.6         |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 11 06 19           | +04 28 33           | LHS2351          | 19.45           | 17.26    | 14.84           | 222        | 12.329          | 0.022      | 11.716           | 0.027              | 11.332           | 0.023              | 11.099            | 0.023              | 10.865            | 0.020              | 10.638            | 0.089              | 48.1                 | 3.1                |               |
| 11 07 28           | -19 17 39           | NLT26359         | 10.38           | 9.46     | 8.52            | Koe10      | 7.449           | 0.020      | 6.853            | 0.065              | 6.620            | 0.020              | 6.495             | 0.041              | 6.480             | 0.021              | 6.432             | 0.016              | 53.5                 | 1.6                |               |
| 11 08 49           | +39 55 13           | L214-042         | 16.00           | 14.60    | 12.60           | 111        | 10.747          | 0.022      | 10.170           | 0.016              | 9.842            | 0.018              | 9.624             | 0.023              | 9.233             | 0.020              | 9.233             | 0.028              | 42.7                 | 3.2                |               |
| 11 09 31           | -24 35 55           | GJ0413.1         | 10.44           | 9.42     | 8.19            | Bes90      | 6.948           | 0.021      | 6.358            | 0.038              | 6.097            | 0.023              | 5.966             | 0.052              | 5.766             | 0.025              | 5.807             | 0.016              | 93.2                 | 1.7                |               |
| 11 11 52           | +33 32 11           | GJ119-062        | 12.38           | 11.221   | 9.718           | Wei87      | 8.297           | 0.029      | 7.758            | 0.029              | 7.497            | 0.021              | 7.334             | 0.026              | 7.166             | 0.019              | 7.076             | 0.015              | 73.5                 | 2.2                |               |
| 11 12 39           | +03 38 46           | L552-018         | 15.93           | 14.57    | 12.85           | 222        | 11.098          | 0.024      | 10.551           | 0.022              | 10.243           | 0.019              | 10.054            | 0.024              | 9.849             | 0.020              | 9.643             | 0.041              | 40.2                 | 2.6                |               |
| 11 13 01           | +10 25 06           | 2MA1113+1025     | 14.52           | 13.23    | 11.60           | 333        | 10.032          | 0.021      | 9.489            | 0.025              | 9.199            | 0.023              | 9.004             | 0.023              | 8.831             | 0.019              | 8.708             | 0.025              | 42.2                 | 2.0                |               |
| 11 16 00           | -57 32 52           | GJ0422           | 11.63           | 10.53    | 9.14            | 222        | 7.811           | 0.020      | 7.304            | 0.053              | 7.035            | 0.031              | 6.942             | 0.036              | 6.762             | 0.021              | 6.653             | 0.015              | 78.8                 | 2.5                |               |
| 11 16 07           | -30 10 41           | NLT26813         | 10.38           | 9.52     | 8.68            | 222        | 7.664           | 0.024      | 7.019            | 0.033              | 6.808            | 0.021              | 5.801             | 0.056              | 5.253             | 0.030              | 4.958             | 0.015              | 43.1                 | 2.1                |               |
| 11 16 22           | -14 41 36           | GJ1144           | 9.98            | 9.09     | 8.28            | Koe10      | 7.281           | 0.021      | 6.651            | 0.033              | 6.456            | 0.026              | 6.296             | 0.045              | 6.315             | 0.020              | 6.287             | 0.015              | 55.8                 | 1.5                |               |
| 11 17 07           | -27 48 49           | GJ1145           | 9.76            | 8.88     | 8.07            | Koe10      | 7.055           | 0.018      | 6.422            | 0.031              | 6.195            | 0.020              | 6.131             | 0.048              | 6.100             | 0.023              | 6.096             | 0.014              | 56.5                 | 1.3                |               |
| 11 19 31           | +46 41 43           | LHS2395          | 15.78           | 14.10    | 12.00           | Wei96      | 10.087          | 0.022      | 9.534            | 0.021              | 9.199            | 0.017              | 8.966             | 0.023              | 8.731             | 0.020              | 8.591             | 0.021              | 97.0                 | 2.6                |               |
| 11 20 05           | +65 50 47           | GJ0424           | 9.32            | 8.42     | 7.43            | Wei96      | 6.306           | 0.018      | 5.730            | 0.020              | 5.534            | 0.017              | 5.415             | 0.066              | 5.074             | 0.034              | 5.282             | 0.014              | 112.1                | 1.0                |               |
| 11 21 38           | +06 08 26           | GJ1146           | 13.57           | 12.49    | 11.11           | Wei96      | 9.766           | 0.024      | 9.264            | 0.024              | 8.969            | 0.023              | 8.804             | 0.023              | 8.623             | 0.019              | 8.531             | 0.023              | 54.2                 | 4.2                |               |
| 11 22 36           | +35 46 19           | L264-044         | 14.62           | 13.372   | 11.775          | Wei87      | 10.243          | 0.022      | 9.614            | 0.020              | 9.346            | 0.018              | 9.155             | 0.023              | 9.035             | 0.021              | 8.923             | 0.028              | 43.6                 | 1.4                |               |
| 11 22 43           | -32 05 40           | LHS2400          | 16.35           | 14.84    | 12.93           | 111        | 11.036          | 0.024      | 10.519           | 0.026              | 10.167           | 0.019              | 9.955             | 0.022              | 9.768             | 0.020              | 9.539             | 0.033              | 44.3                 | 2.3                |               |
| 11 23 08           | +25 53 37           | LHS0302          | 15.14           | 13.77    | 11.97           | Wei96      | 10.294          | 0.020      | 9.745            | 0.017              | 9.459            | 0.022              | 9.231             | 0.023              | 9.046             | 0.020              | 8.900             | 0.026              | 63.7                 | 2.2                |               |
| 11 23 45           | +08 33 48           | GJ2085           | 11.15           | 10.19    | 9.12            | 111        | 7.994           | 0.021      | 7.395            | 0.034              | 7.161            | 0.023              | 6.980             | 0.033              | 6.942             | 0.022              | 6.903             | 0.016              | 46.2                 | 2.3                |               |
| 11 25 00           | +40 00 13           | HIP05718         | 10.24           | 9.37     | 8.58            | 344        | 7.542           | 0.019      | 6.885            | 0.021              | 6.731            | 0.020              | 6.650             | 0.039              | 6.679             | 0.020              | 6.632             | 0.015              | 43.3                 | 1.3                |               |
| 11 25 01           | +43 19 39           | LHS2403          | 15.08           | 13.74    | 11.993          | Wei96      | 9.172           | 0.023      | 8.588            | 0.033              | 8.322            | 0.026              | 8.134             | 0.024              | 7.988             | 0.020              | 7.903             | 0.019              | 54.5                 | 2.5                |               |
| 11 25 29           | +78 15 56           | LHS2405          | 12.15           | 11.16    | 9.94            | Wei96      | 8.733           | 0.026      | 8.169            | 0.027              | 7.932            | 0.018              | 7.802             | 0.024              | 7.657             | 0.019              | 7.591             | 0.016              | 44.9                 | 8.0                |               |
| 11 30 06           | +48 48 23           | L169-051         | 17.89           | 16.15    | 14.09           | 111        | 12.085          | 0.021      | 11.490           | 0.019              | 11.146           | 0.020              | 10.922            | 0.023              | 10.715            | 0.021              | 10.443            | 0.058              | 44.1                 | 3.8                |               |
| 11 30 42           | -08 05 43           | LP672-042        | 12.06           | 10.89    | 9.45            | Win19      | 8.033           | 0.019      | 7.457            | 0.026              | 7.152            | 0.017              | 6.999             | 0.037              | 6.877             | 0.026              | 6.802             | 0.018              | 75.8                 | 4.2                |               |
| 11 31 08           | -14 57 21           | LHS0306          | 14.19           | 12.81    | 11.05           | Jao14      | 9.359           | 0.026      | 8.764            | 0.044              | 8.497            | 0.023              | 8.247             | 0.024              | 8.076             | 0.020              | 7.940             | 0.019              | 89.0                 | 1.7                |               |
| 11 31 43           | +22 40 02           | GJ0430.1         | 10.27           | 9.33     | 8.29            | Koe10      | 7.171           | 0.030      | 6.545            | 0.044              | 6.322            | 0.017              | 6.238             | 0.044              | 6.147             | 0.021              | 6.117             | 0.016              | 62.9                 | 1.4                |               |
| 11 31 47           | -41 02 47           | GJ0431           | 11.52           | 10.35    | 8.85            | 333        | 7.366           | 0.027      | 6.765            | 0.038              | 6.511            | 0.034              | 6.419             | 0.044              | 6.224             | 0.021              | 6.168             | 0.015              | 96.4                 | 2.3                |               |
| 11 32 19           | -16 58 07           | LP792-033        | 11.45           | 10.49    | 9.43            | Koe10      | 8.278           | 0.026      | 7.678            | 0.036              | 7.470            | 0.033              | 7.301             | 0.031              | 7.243             | 0.020              | 7.194             | 0.015              | 43.9                 | 2.7                |               |
| 11 32 41           | -26 51 56           | TWA008           | 12.23           | 11.14    | 9.79            | Rie14      | 8.337           | 0.024      | 7.663            | 0.042              | 7.430            | 0.017              | 7.364             | 0.029              | 7.223             | 0.019              | 7.130             | 0.013              | 22.4                 | 0.8                | KY            |
| 11 34 38           | -23 52 15           | LHS2427          | 11.17           | 10.22    | 9.21            | Wei96      | 8.086           | 0.029      | 7.480            | 0.040              | 7.256            | 0.029              | 7.095             | 0.029              | 7.002             | 0.020              | 6.956             | 0.016              | 56.1                 | 2.0                |               |
| 11 35 27           | -32 32 24           | GJ0433           | 9.84            | 8.84     | 7.69            | Bes90      | 6.471           | 0.018      | 5.856            | 0.036              | 5.623            | 0.021              | 5.464             | 0.066              | 5.249             | 0.031              | 5.340             | 0.015              | 112.1                | 1.4                | UB?           |
| 11 36 16           | +56 24 02           | LSPM1136+5624    | 15.01           | 13.67    | 11.88           | 222        | 10.233          | 0.023      | 9.675            | 0.023              | 9.375            | 0.018              | 9.158             | 0.023              | 8.980             | 0.021              | 8.795             | 0.024              | 56.7                 | 1.7                |               |
| 11 38 17           | -77 21 43           | SCR1138-7721     | 14.78           | 13.20    | 11.24           | Hen06      | 9.399           | 0.022      | 8.890            | 0.022              | 8.521            | 0.019              | 8.343             | 0.023              | 8.127             | 0.019              | 7.960             | 0.017              | 120.4                | 1.0                |               |
| 11 38 25           | -41 22 33           | GJ1147           | 13.72           | 12.49    | 10.91           | Rie10      | 9.436           | 0.024      | 8.864            | 0.044              | 8.543            | 0.019              | 8.363             | 0.023              | 8.195             | 0.020              | 8.052             | 0.018              | 66.1                 | 1.1                |               |
| 11 39 51           | -31 59 22           | TWA026           | 20.45           | 18.39    | 15.87           | 333        | 12.686          | 0.026      | 11.996           | 0.022              | 11.503           | 0.023              | 11.155            | 0.023              | 10.793            | 0.020              | 10.626            | 0.075              | 26.3                 | 1.0                | KY            |
| 11 41 22           | -36 24 35           | SIP1141-3624     | 13.10           | 11.79    | 10.10           | Win15      | 8.490           | 0.026      | 7.967            | 0.038              | 7.699            | 0.023              | 7.475             | 0.023              | 7.272             | 0.020              | 7.169             | 0.015              | 116.1                | 1.3                |               |
| 11 41 45           | +42 45 07           | GJ1148           | 11.92           | 10.73    | 9.18            | Wei96      | 7.608           | 0.018      | 7.069            | 0.023              | 6.822            | 0.016              | 6.665             | 0.041              | 6.511             | 0.021              | 6.445             | 0.015              | 88.8                 | 2.1                |               |
| 11 42 11           | +26 42 24           | GJ0436           | 10.65           | 9.58     | 8.25            | Wei96      | 6.900           | 0.024      | 6.319            | 0.023              | 6.073            | 0.016              | 5.987             | 0.052              | 5.703             | 0.025              | 5.757             | 0.014              | 99.0                 | 2.1                |               |
| 11 43 20           | -51 50 26           | GJ0438           | 10.35           | 9.36     | 8.27            | Rie10      | 7.144           | 0.019      | 6.580            | 0.040              | 6.320            | 0.021              | 6.193             | 0.038              | 6.026             | 0.022              | 6.021             | 0.014              | 92.2                 | 2.0                |               |
| 11 45 34           | -20 21 12           | LP793-033        | 11.78           | 10.77    | 9.53            | Win19      | 8.311           | 0.026      | 7.706            | 0.047              | 7.444            | 0.024              | 7.299             | 0.027              | 7.192             | 0.020              | 7.134             | 0.018              | 51.9                 | 3.4                |               |



# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name    | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>mag | $\pi$<br>mas | err<br>mas | Notes |
|-------------|--------------|--------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|------------|--------------|------------|-------|
| (1)         | (2)          | (3)          | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)       | (20)         | (21)       | (22)  |
| 11 46 43    | -14 00 52    | GJ0443       | 11.69    | 10.64    | 9.28     | Bes90      | 7.965    | 0.027      | 7.275    | 0.042       | 7.069    | 0.021       | 6.951     | 0.035       | 6.877     | 0.021       | 6.813     | 0.017      | 51.3         | 3.0        |       |
| 11 47 41    | +00 15 20    | L613-049     | 13.25    | 12.04    | 10.478   | We186      | 8.991    | 0.035      | 8.399    | 0.049       | 8.098    | 0.029       | 7.945     | 0.024       | 7.789     | 0.022       | 7.691     | 0.019      | 50.3         | 2.8        |       |
| 11 47 41    | +78 41 27    | GJ0445       | 10.79    | 9.63     | 8.13     | We196      | 6.724    | 0.023      | 6.217    | 0.044       | 5.954    | 0.027       | 5.751     | 0.059       | 5.450     | 0.026       | 5.512     | 0.015      | 187.3        | 1.6        |       |
| 11 47 44    | +00 48 18    | GJ0447       | 11.15    | 9.79     | 8.13     | Dav15      | 6.505    | 0.024      | 5.945    | 0.024       | 5.654    | 0.024       | 5.457     | 0.064       | 5.012     | 0.034       | 5.176     | 0.013      | 298.1        | 1.4        |       |
| 11 47 52    | +17 42 49    | L433-054     | 14.73    | 13.456   | 11.867   | We186      | 10.406   | 0.021      | 9.893    | 0.023       | 9.609    | 0.021       | 9.371     | 0.023       | 9.188     | 0.020       | 9.078     | 0.028      | 43.6         | 1.8        |       |
| 11 48 35    | +07 41 40    | G010-052     | 13.70    | 12.48    | 10.93    | 222        | 9.476    | 0.024      | 8.882    | 0.022       | 8.600    | 0.021       | 8.444     | 0.024       | 8.280     | 0.022       | 8.166     | 0.021      | 43.2         | 1.5        |       |
| 11 50 58    | +48 22 39    | GJ1151       | 13.24    | 11.91    | 10.17    | We196      | 8.488    | 0.029      | 7.952    | 0.027       | 7.637    | 0.017       | 7.437     | 0.027       | 7.260     | 0.020       | 7.124     | 0.016      | 124.8        | 2.1        |       |
| 11 51 07    | +35 16 19    | GJ0450       | 9.74     | 8.74     | 7.64     | 333        | 6.419    | 0.020      | 5.828    | 0.020       | 5.606    | 0.017       | 5.493     | 0.061       | 5.130     | 0.024       | 5.344     | 0.016      | 116.2        | 1.2        |       |
| 11 53 16    | -07 22 28    | GJ0452       | 11.86    | 10.83    | 9.55     | Bes90      | 8.303    | 0.026      | 7.701    | 0.047       | 7.445    | 0.020       | 7.281     | 0.028       | 7.192     | 0.022       | 7.135     | 0.017      | 52.8         | 3.5        |       |
| 11 53 53    | +06 59 56    | LHS2471      | 18.07    | 16.02    | 13.75    | 333        | 11.256   | 0.022      | 10.660   | 0.027       | 10.262   | 0.022       | 10.021    | 0.022       | 9.823     | 0.020       | 9.613     | 0.041      | 69.5         | 2.2        |       |
| 11 54 08    | +09 48 23    | GJ0452.1     | 12.81    | 11.61    | 10.12    | Bes90      | 8.699    | 0.030      | 8.193    | 0.047       | 7.872    | 0.018       | 7.668     | 0.023       | 7.522     | 0.020       | 7.422     | 0.017      | 88.5         | 3.7        |       |
| 11 55 40    | -37 27 36    | 2MA1155-3727 | 20.95    | 18.38    | 16.17    | Hen18      | 12.811   | 0.024      | 12.040   | 0.026       | 11.462   | 0.021       | 11.040    | 0.023       | 10.733    | 0.020       | 10.335    | 0.056      | 84.5         | 1.9        |       |
| 11 55 43    | -22 24 59    | LP851-346    | 18.15    | 15.94    | 13.50    | 222        | 10.930   | 0.023      | 10.295   | 0.023       | 9.881    | 0.019       | 9.646     | 0.021       | 9.448     | 0.019       | 9.235     | 0.030      | 89.5         | 1.8        |       |
| 11 55 49    | -38 16 49    | GJ2086       | 11.96    | 10.98    | 9.91     | Koe10      | 8.765    | 0.021      | 8.177    | 0.023       | 7.945    | 0.031       | 7.831     | 0.024       | 7.714     | 0.021       | 7.630     | 0.017      | 41.1         | 2.9        |       |
| 11 57 33    | +11 49 49    | LHS2482      | 11.84    | 10.82    | 9.64     | 222        | 8.429    | 0.021      | 7.794    | 0.024       | 7.574    | 0.018       | 7.432     | 0.024       | 7.390     | 0.020       | 7.316     | 0.017      | 41.1         | 2.8        |       |
| 11 57 46    | -01 49 03    | SCR1157-0149 | 15.99    | 14.54    | 12.68    | Win11      | 10.740   | 0.022      | 10.354   | 0.024       | 10.024   | 0.019       | 9.819     | 0.022       | 9.625     | 0.020       | 9.439     | 0.038      | 50.8         | 1.5        |       |
| 12 02 34    | +08 25 51    | LHS0320      | 14.00    | 13.03    | 11.87    | 111        | 10.740   | 0.030      | 10.184   | 0.024       | 9.986    | 0.027       | 9.834     | 0.025       | 9.639     | 0.021       | 9.643     | 0.040      | 25.8         | 3.6        | KS    |
| 12 03 18    | +38 52 47    | LHS2503      | 14.66    | 13.46    | 11.89    | We196      | 10.329   | 0.020      | 9.762    | 0.016       | 9.477    | 0.019       | 9.319     | 0.024       | 9.136     | 0.020       | 9.007     | 0.025      | 42.7         | 1.2        |       |
| 12 05 30    | +69 32 23    | LTT13356     | 13.07    | 11.85    | 10.27    | We188      | 8.740    | 0.029      | 8.164    | 0.021       | 7.895    | 0.024       | 7.740     | 0.024       | 7.575     | 0.019       | 7.452     | 0.016      | 66.5         | 3.6        |       |
| 12 05 36    | +56 23 45    | LP094-367    | 16.21    | 14.62    | 12.71    | 111        | 10.755   | 0.021      | 10.162   | 0.023       | 9.847    | 0.019       | 9.614     | 0.023       | 9.446     | 0.019       | 9.218     | 0.026      | 51.7         | 4.3        |       |
| 12 06 59    | -35 00 52    | SCR1206-3500 | 14.67    | 13.35    | 11.66    | Win11      | 10.010   | 0.023      | 9.401    | 0.022       | 9.127    | 0.024       | 8.878     | 0.021       | 8.740     | 0.020       | 8.601     | 0.022      | 42.4         | 1.4        |       |
| 12 07 58    | +77 15 01    | LHS2513      | 13.49    | 12.36    | 10.89    | We196      | 9.514    | 0.023      | 9.012    | 0.024       | 8.756    | 0.016       | 8.619     | 0.023       | 8.420     | 0.021       | 8.320     | 0.018      | 49.3         | 2.0        |       |
| 12 08 22    | -00 28 58    | GJ0456       | 11.23    | 10.34    | 9.46     | Bes90      | 8.396    | 0.018      | 7.807    | 0.049       | 7.593    | 0.034       | 7.486     | 0.030       | 7.470     | 0.021       | 7.386     | 0.017      | 40.2         | 2.5        |       |
| 12 09 07    | +47 36 05    | LHS2516      | 15.04    | 13.73    | 11.91    | 222        | 10.239   | 0.025      | 9.641    | 0.028       | 9.346    | 0.023       | 9.154     | 0.024       | 8.958     | 0.022       | 8.794     | 0.023      | 52.9         | 1.4        |       |
| 12 10 06    | -15 04 17    | LHS2520      | 12.09    | 10.89    | 9.30     | 443        | 7.768    | 0.029      | 7.137    | 0.040       | 6.863    | 0.024       | 6.712     | 0.037       | 6.555     | 0.020       | 6.490     | 0.016      | 77.9         | 2.4        |       |
| 12 10 57    | +41 03 28    | G123-008     | 10.67    | 9.83     | 8.95     | We193      | 7.851    | 0.021      | 7.291    | 0.024       | 7.090    | 0.018       | 6.968     | 0.034       | 6.924     | 0.020       | 6.872     | 0.015      | 46.3         | 1.8        |       |
| 12 11 12    | -19 57 38    | L758-108     | 11.69    | 10.60    | 9.22     | Win19      | 7.895    | 0.027      | 7.359    | 0.034       | 7.044    | 0.016       | 6.864     | 0.036       | 6.749     | 0.022       | 6.691     | 0.016      | 79.4         | 2.4        |       |
| 12 12 21    | +54 29 09    | GJ0458       | 9.79     | 8.91     | 8.00     | We193      | 6.875    | 0.027      | 6.245    | 0.017       | 6.059    | 0.017       | 5.846     | 0.056       | 5.852     | 0.022       | 5.887     | 0.016      | 64.5         | 1.4        |       |
| 12 12 59    | +74 16 49    | LP020-304    | 13.96    | 12.75    | 11.32    | 222        | 9.905    | 0.023      | 9.373    | 0.023       | 9.087    | 0.014       | 8.882     | 0.024       | 8.731     | 0.020       | 8.621     | 0.019      | 51.2         | 1.3        |       |
| 12 13 33    | -25 55 25    | LP852-057    | 11.47    | 10.51    | 9.49     | Koe10      | 8.384    | 0.026      | 7.736    | 0.038       | 7.547    | 0.020       | 7.406     | 0.028       | 7.337     | 0.021       | 7.266     | 0.016      | 42.7         | 2.0        |       |
| 12 14 09    | -23 45 17    | SCR1214-2345 | 13.96    | 12.57    | 10.78    | Rie14      | 9.067    | 0.022      | 8.564    | 0.047       | 8.234    | 0.025       | 7.984     | 0.023       | 7.780     | 0.021       | 7.612     | 0.018      | 91.4         | 1.6        |       |
| 12 14 17    | +00 37 26    | GJ1154       | 13.66    | 12.17    | 10.31    | Hen18      | 8.456    | 0.026      | 7.860    | 0.049       | 7.540    | 0.027       | 7.325     | 0.029       | 7.139     | 0.021       | 7.016     | 0.018      | 119.4        | 3.5        |       |
| 12 14 40    | -46 03 14    | SCR1214-4603 | 15.66    | 14.14    | 12.23    | Win11      | 10.320   | 0.023      | 9.751    | 0.025       | 9.441    | 0.023       | 9.207     | 0.022       | 9.046     | 0.019       | 8.786     | 0.020      | 65.8         | 0.8        |       |
| 12 15 09    | +48 43 57    | GJ0458.2     | 10.53    | 9.63     | 8.70     | We193      | 7.610    | 0.023      | 6.973    | 0.027       | 6.773    | 0.016       | 6.688     | 0.037       | 6.667     | 0.021       | 6.608     | 0.015      | 40.2         | 2.0        |       |
| 12 18 59    | +11 07 34    | GJ1156       | 13.92    | 12.33    | 10.38    | 444        | 8.525    | 0.027      | 7.880    | 0.029       | 7.570    | 0.031       | 7.332     | 0.029       | 7.132     | 0.020       | 6.992     | 0.017      | 151.9        | 2.6        |       |
| 12 20 34    | -82 25 58    | NLT730359    | 11.96    | 10.76    | 9.20     | Win15      | 7.701    | 0.032      | 7.135    | 0.033       | 6.842    | 0.027       | 6.670     | 0.040       | 6.505     | 0.020       | 6.404     | 0.014      | 79.7         | 2.6        |       |
| 12 23 00    | +64 01 51    | GJ0463       | 11.59    | 10.56    | 9.25     | We196      | 7.937    | 0.029      | 7.343    | 0.020       | 7.122    | 0.018       | 6.997     | 0.032       | 6.893     | 0.019       | 6.823     | 0.016      | 54.9         | 1.9        |       |
| 12 23 01    | -46 37 09    | GJ1157       | 13.59    | 12.35    | 10.71    | Rie10      | 9.168    | 0.023      | 8.627    | 0.027       | 8.362    | 0.023       | 8.196     | 0.023       | 8.002     | 0.021       | 7.862     | 0.016      | 62.4         | 0.6        |       |
| 12 23 54    | +12 34 49    | GJ0464       | 10.39    | 9.49     | 8.59     | Bes90      | 7.483    | 0.019      | 6.861    | 0.021       | 6.634    | 0.017       | 6.570     | 0.038       | 6.572     | 0.020       | 6.532     | 0.015      | 47.6         | 2.5        |       |
| 12 24 27    | -04 43 37    | LHS0326      | 14.92    | 13.98    | 13.05    | Win15      | 11.927   | 0.022      | 11.430   | 0.021       | 11.234   | 0.023       | 11.085    | 0.024       | 10.900    | 0.022       | 11.135    | 0.168      | 20.4         | 1.9        | KS    |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | π<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|-------------|------------------|--------------------|-------------------|-------------|-------------------|--------------------|-------------------|--------------------|------------------|--------------------|---------------|
| 12 24 52           | -18 14 32           | BRI222-1221      | 20.52           | 18.00    | 15.59           | Win19      | 12.571          | 0.024      | 11.822           | 0.026       | 11.353           | 0.025              | 11.013            | 0.022       | 10.792            | 0.021              | 10.444            | 0.075              | 58.6             | 3.8                |               |
| 12 24 52           | -12 38 36           | GJ0465           | 11.29           | 10.24    | 8.98            | 333        | 7.734           | 0.021      | 7.247            | 0.021       | 6.950            | 0.021              | 6.836             | 0.038       | 6.636             | 0.021              | 6.597             | 0.016              | 111.7            | 1.7                |               |
| 12 29 14           | +53 32 45           | LHS0331          | 14.16           | 12.98    | 11.43           | Wei96      | 9.983           | 0.023      | 9.499            | 0.021       | 9.223            | 0.014              | 9.047             | 0.023       | 8.832             | 0.020              | 8.728             | 0.021              | 40.1             | 0.9                |               |
| 12 29 27           | +22 59 47           | LP377-100        | 14.18           | 12.95    | 11.35           | Wei87      | 9.823           | 0.024      | 9.268            | 0.034       | 9.003            | 0.021              | 8.820             | 0.024       | 8.650             | 0.020              | 8.511             | 0.021              | 44.4             | 1.9                |               |
| 12 29 35           | -55 59 37           | GJ1158           | 13.26           | 12.02    | 10.41           | Jao11      | 8.890           | 0.034      | 8.354            | 0.044       | 8.065            | 0.021              | 7.882             | 0.023       | 7.717             | 0.020              | 7.588             | 0.016              | 76.2             | 1.4                |               |
| 12 29 54           | -05 27 24           | LHS2567          | 13.08           | 11.87    | 10.33           | Rie10      | 8.818           | 0.029      | 8.267            | 0.051       | 7.962            | 0.029              | 7.539             | 0.015       | 7.227             | 0.013              | 7.364             | 0.015              | 47.7             | 1.3                |               |
| 12 31 16           | +08 48 38           | GJ0471           | 9.66            | 8.76     | 7.85            | Bes90      | 6.782           | 0.034      | 6.091            | 0.027       | 5.892            | 0.020              | 5.834             | 0.054       | 5.695             | 0.026              | 5.768             | 0.015              | 73.1             | 1.3                |               |
| 12 34 53           | +05 03 54           | LHS0335          | 16.61           | 15.64    | 14.72           | 222        | 13.646          | 0.030      | 13.143           | 0.036       | 13.000           | 0.030              | 12.778            | 0.024       | 12.612            | 0.028              | 12.231            | 0.381              | 22.3             | 5.4                | KS            |
| 12 35 01           | +09 49 43           | GJ0476           | 11.41           | 10.41    | 9.20            | Bes90      | 7.995           | 0.023      | 7.369            | 0.026       | 7.153            | 0.017              | 7.023             | 0.031       | 6.906             | 0.019              | 6.863             | 0.016              | 54.7             | 3.1                |               |
| 12 36 29           | +35 12 01           | G123-045         | 13.80           | 12.45    | 10.77           | 111        | 9.113           | 0.020      | 8.542            | 0.018       | 8.261            | 0.015              | 8.035             | 0.024       | 7.862             | 0.020              | 7.680             | 0.017              | 88.2             | 1.7                |               |
| 12 37 52           | -52 00 06           | GJ0479           | 10.68           | 9.58     | 8.22            | 333        | 6.864           | 0.019      | 6.285            | 0.027       | 6.020            | 0.021              | 5.925             | 0.053       | 5.668             | 0.026              | 5.692             | 0.014              | 104.2            | 2.2                | KY            |
| 12 38 36           | +05 21 39           | LHS2593          | 15.26           | 13.92    | 12.30           | 111        | 10.768          | 0.024      | 10.229           | 0.023       | 9.891            | 0.023              | 9.693             | 0.025       | 9.508             | 0.020              | 9.376             | 0.034              | 44.8             | 2.3                |               |
| 12 38 47           | -04 19 17           | GJ1162           | 13.56           | 12.37    | 10.82           | Re02       | 9.329           | 0.023      | 8.760            | 0.025       | 8.455            | 0.023              | 8.263             | 0.022       | 8.138             | 0.021              | 8.004             | 0.020              | 50.7             | 3.1                |               |
| 12 38 49           | -38 22 54           | LHS0337          | 12.75           | 11.44    | 9.74            | Hen06      | 8.174           | 0.024      | 7.756            | 0.055       | 7.386            | 0.021              | 7.241             | 0.030       | 6.988             | 0.020              | 6.860             | 0.016              | 156.8            | 2.0                |               |
| 12 38 52           | +11 41 46           | GJ0480           | 11.51           | 10.41    | 8.98            | Bes90      | 7.581           | 0.019      | 6.939            | 0.036       | 6.691            | 0.036              | 6.518             | 0.040       | 6.431             | 0.019              | 6.377             | 0.017              | 71.3             | 2.5                |               |
| 12 39 05           | +47 02 23           | G123-049         | 12.14           | 11.10    | 9.84            | Wei88      | 8.649           | 0.026      | 7.991            | 0.020       | 7.786            | 0.017              | 7.631             | 0.024       | 7.526             | 0.019              | 7.447             | 0.017              | 45.9             | 4.5                |               |
| 12 40 46           | -43 33 59           | GJ0480.1         | 12.24           | 11.05    | 9.58            | 333        | 8.217           | 0.029      | 7.703            | 0.044       | 7.413            | 0.021              | 7.201             | 0.030       | 7.011             | 0.020              | 6.909             | 0.015              | 125.6            | 3.8                |               |
| 12 41 29           | +19 05 01           | G059-034         | 15.06           | 13.73    | 12.03           | 111        | 10.368          | 0.022      | 9.792            | 0.026       | 9.477            | 0.018              | 9.314             | 0.023       | 9.136             | 0.019              | 8.978             | 0.025              | 47.3             | 4.1                |               |
| 12 43 36           | +25 06 22           | LTT18236         | 12.91           | 11.78    | 10.35           | Wei87      | 8.972           | 0.026      | 8.405            | 0.018       | 8.129            | 0.017              | 7.959             | 0.024       | 7.810             | 0.020              | 7.702             | 0.017              | 43.1             | 2.7                |               |
| 12 44 01           | -11 10 30           | LHS5226          | 14.22           | 12.84    | 11.14           | Win17      | 9.516           | 0.023      | 8.969            | 0.022       | 8.674            | 0.023              | 8.457             | 0.024       | 8.275             | 0.020              | 8.124             | 0.019              | 72.2             | 1.7                |               |
| 12 45 47           | +52 55 19           | LP131-055        | 14.42           | 13.22    | 11.61           | Win17      | 9.516           | 0.023      | 8.969            | 0.022       | 8.674            | 0.023              | 8.457             | 0.024       | 8.275             | 0.020              | 8.124             | 0.019              | 72.2             | 1.7                |               |
| 12 45 53           | -55 06 50           | SCR1245-5506     | 13.66           | 12.32    | 10.61           | Win11      | 10.068          | 0.022      | 9.485            | 0.021       | 9.203            | 0.016              | 9.028             | 0.024       | 8.862             | 0.019              | 8.741             | 0.022              | 40.0             | 1.6                |               |
| 12 46 52           | +31 48 11           | LHS2632          | 18.91           | 16.89    | 14.67           | 111        | 12.227          | 0.022      | 11.583           | 0.022       | 11.209           | 0.019              | 10.953            | 0.024       | 10.774            | 0.022              | 10.513            | 0.066              | 53.3             | 2.3                |               |
| 12 47 01           | -03 34 18           | LHS2633          | 11.76           | 10.71    | 9.40            | Wei96      | 8.104           | 0.020      | 7.472            | 0.024       | 7.223            | 0.017              | 7.084             | 0.033       | 7.009             | 0.019              | 6.943             | 0.016              | 47.8             | 2.4                |               |
| 12 47 10           | -03 34 18           | LHS2634          | 12.60           | 11.51    | 10.11           | Win15      | 8.767           | 0.020      | 8.156            | 0.038       | 7.886            | 0.034              | 7.726             | 0.023       | 7.626             | 0.021              | 7.537             | 0.017              | 45.8             | 2.0                |               |
| 12 47 15           | -05 25 13           | SCR1247-0525     | 14.78           | 13.45    | 11.73           | Win15      | 10.126          | 0.027      | 9.620            | 0.026       | 9.291            | 0.021              | 9.115             | 0.022       | 8.901             | 0.021              | 8.796             | 0.025              | 50.0             | 1.1                |               |
| 12 47 57           | +09 45 05           | GJ0486           | 11.42           | 10.22    | 8.68            | 333        | 7.195           | 0.026      | 6.666            | 0.046       | 6.362            | 0.018              | 6.193             | 0.047       | 5.999             | 0.024              | 5.986             | 0.014              | 119.6            | 2.6                |               |
| 12 50 44           | -00 46 05           | GJ0488           | 8.47            | 7.59     | 6.76            | Bes90      | 5.753           | 0.020      | 5.215            | 0.084       | 4.882            | 0.020              | 4.889             | 0.071       | 4.622             | 0.040              | 4.836             | 0.015              | 94.3             | 0.8                |               |
| 12 50 53           | -21 21 14           | LEHPM2-0174      | 18.36           | 16.18    | 13.82           | 444        | 11.160          | 0.023      | 10.550           | 0.023       | 10.128           | 0.021              | 9.889             | 0.023       | 9.678             | 0.021              | 9.380             | 0.029              | 57.8             | 1.7                |               |
| 12 51 04           | +29 17 57           | LP321-150        | 15.01           | 13.69    | 12.05           | 111        | 10.533          | 0.022      | 9.926            | 0.027       | 9.689            | 0.023              | 9.511             | 0.023       | 9.323             | 0.019              | 9.191             | 0.031              | 54.9             | 2.1                |               |
| 12 51 29           | +24 16 36           | G149-014         | 15.06           | 13.70    | 12.01           | 111        | 10.753          | 0.021      | 10.068           | 0.027       | 9.810            | 0.019              | 9.648             | 0.024       | 9.536             | 0.020              | 9.385             | 0.032              | 40.8             | 3.6                |               |
| 12 54 32           | +44 59 35           | LHS2650          | 15.94           | 14.57    | 12.64           | 111        | 10.874          | 0.021      | 10.301           | 0.026       | 9.986            | 0.020              | 8.058             | 0.023       | 8.146             | 0.021              | 8.054             | 0.018              | 62.4             | 3.0                |               |
| 12 55 57           | +50 55 22           | LHS2651          | 14.42           | 13.25    | 11.76           | Wei96      | 10.380          | 0.019      | 9.880            | 0.027       | 9.605            | 0.024              | 9.440             | 0.023       | 9.230             | 0.020              | 9.122             | 0.025              | 47.9             | 1.8                |               |
| 12 57 51           | +37 59 51           | LHS2655          | 15.85           | 14.40    | 12.63           | 111        | 10.948          | 0.020      | 10.353           | 0.016       | 10.002           | 0.018              | 9.857             | 0.023       | 9.660             | 0.020              | 9.529             | 0.032              | 52.0             | 2.2                |               |
| 12 59 05           | -43 36 25           | SIP1259-4336     | 18.01           | 15.74    | 13.29           | Win15      | 10.534          | 0.022      | 9.954            | 0.021       | 9.520            | 0.021              | 9.213             | 0.023       | 8.908             | 0.021              | 8.620             | 0.021              | 127.9            | 0.5                |               |
| 12 59 50           | +16 10 33           | LP436-065        | 15.06           | 13.75    | 12.07           | 111        | 10.412          | 0.021      | 9.888            | 0.022       | 9.583            | 0.017              | 9.379             | 0.024       | 9.203             | 0.020              | 9.081             | 0.029              | 46.3             | 1.4                |               |
| 13 00 26           | -34 36 24           | HIP063480        | 10.63           | 9.69     | 8.70            | Koe10      | 7.598           | 0.023      | 6.975            | 0.031       | 6.715            | 0.015              | 6.645             | 0.038       | 6.634             | 0.020              | 6.575             | 0.015              | 50.7             | 2.0                |               |
| 13 00 34           | +05 41 08           | GJ0493.1         | 13.43           | 12.04    | 10.27           | Hen18      | 8.553           | 0.035      | 7.966            | 0.047       | 7.660            | 0.031              | 7.460             | 0.028       | 7.289             | 0.021              | 7.158             | 0.016              | 122.9            | 2.2                |               |
| 13 01 20           | -03 11 42           | LHS2668          | 10.93           | 9.96     | 8.90            | Koe10      | 7.757           | 0.024      | 7.149            | 0.040       | 6.934            | 0.023              | 6.751             | 0.029       | 6.694             | 0.019              | 6.593             | 0.018              | 58.2             | 2.4                |               |
| 13 01 44           | +26 20 30           | G149-030         | 14.38           | 13.17    | 11.64           | 222        | 10.163          | 0.026      | 9.588            | 0.030       | 9.359            | 0.020              | 9.178             | 0.022       | 8.996             | 0.020              | 8.873             | 0.025              | 41.2             | 1.7                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(21) | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)  |
| 13 02 16    | +87 06 58    | LP001-324     | 14.30    | 13.10    | 11.57    | 111        | 10.110   | 0.020      | 9.531    | 0.017       | 9.287    | 0.020       | 9.097     | 0.023       | 8.943     | 0.020       | 8.851     | 0.021       | 46.2         | 2.2         |       |
| 13 05 37    | +19 34 57    | LSPM1305+1934 | 18.18    | 16.33    | 14.32    | 222        | 12.126   | 0.021      | 11.511   | 0.021       | 11.143   | 0.023       | 10.880    | 0.023       | 10.678    | 0.021       | 10.572    | 0.073       | 42.6         | 4.1         |       |
| 13 06 50    | +30 50 54    | LHS2674a      | 15.46    | 14.07    | 12.06    | 111        | 10.226   | 0.022      | 9.619    | 0.016       | 9.315    | 0.017       | 9.095     | 0.021       | 8.904     | 0.020       | 8.783     | 0.022       | 55.0         | 4.4         |       |
| 13 09 20    | -40 09 27    | LHS0346       | 12.86    | 11.72    | 10.23    | 222        | 8.793    | 0.029      | 8.242    | 0.031       | 7.989    | 0.021       | 7.840     | 0.022       | 7.662     | 0.021       | 7.571     | 0.015       | 61.8         | 1.1         | UB?   |
| 13 09 22    | -23 30 36    | CE303         | 19.50    | 17.00    | 14.57    | 222        | 11.785   | 0.022      | 11.082   | 0.022       | 10.669   | 0.024       | 10.440    | 0.022       | 10.215    | 0.020       | 9.991     | 0.042       | 69.3         | 1.3         |       |
| 13 09 35    | +28 59 07    | GJ1167        | 14.20    | 12.77    | 11.10    | Win19      | 9.476    | 0.027      | 8.912    | 0.031       | 8.612    | 0.019       | 8.393     | 0.024       | 8.204     | 0.020       | 8.078     | 0.018       | 80.9         | 1.3         | KY    |
| 13 10 13    | +47 45 19    | LHS2686       | 14.53    | 13.11    | 11.28    | Wei96      | 9.584    | 0.020      | 8.995    | 0.017       | 8.687    | 0.016       | 8.466     | 0.024       | 8.292     | 0.021       | 8.114     | 0.018       | 81.0         | 2.3         |       |
| 13 13 09    | -41 30 49    | WTO392        | 12.90    | 11.60    | 9.95     | Win15      | 8.292    | 0.020      | 7.684    | 0.027       | 7.412    | 0.024       | 7.236     | 0.031       | 7.082     | 0.019       | 6.932     | 0.015       | 83.6         | 1.6         |       |
| 13 14 06    | +03 53 59    | LHS2699       | 13.50    | 12.35    | 10.87    | Wei96      | 9.490    | 0.024      | 8.912    | 0.027       | 8.590    | 0.021       | 8.445     | 0.021       | 8.301     | 0.020       | 8.192     | 0.019       | 51.1         | 1.7         |       |
| 13 14 24    | +66 22 33    | LP065-357     | 17.35    | 15.80    | 13.53    | 111        | 11.429   | 0.022      | 10.833   | 0.021       | 10.508   | 0.017       | 10.277    | 0.023       | 10.078    | 0.020       | 9.878     | 0.035       | 60.3         | 3.0         |       |
| 13 16 33    | +27 52 39    | GJ1169        | 13.26    | 12.11    | 10.64    | Wei96      | 9.267    | 0.019      | 8.728    | 0.029       | 8.444    | 0.020       | 8.253     | 0.023       | 8.088     | 0.019       | 7.999     | 0.018       | 63.9         | 1.5         |       |
| 13 17 58    | +36 17 57    | GJ1170        | 11.29    | 10.37    | 9.31     | Wei93      | 8.112    | 0.019      | 7.524    | 0.016       | 7.346    | 0.020       | 7.224     | 0.030       | 7.157     | 0.021       | 7.101     | 0.016       | 46.3         | 2.1         |       |
| 13 18 02    | +02 14 01    | LP557-046     | 12.97    | 11.77    | 10.23    | Wei86      | 8.787    | 0.026      | 8.211    | 0.031       | 7.924    | 0.026       | 7.770     | 0.024       | 7.587     | 0.020       | 7.485     | 0.018       | 47.4         | 2.5         |       |
| 13 18 54    | +22 50 05    | LP378-1017    | 14.98    | 13.78    | 12.24    | 222        | 10.743   | 0.023      | 10.122   | 0.028       | 9.830    | 0.024       | 9.647     | 0.023       | 9.543     | 0.020       | 9.420     | 0.032       | 49.5         | 4.7         |       |
| 13 19 40    | +33 20 48    | GJ0507.1      | 10.64    | 9.63     | 8.50     | 555        | 7.266    | 0.027      | 6.635    | 0.026       | 6.393    | 0.018       | 6.256     | 0.049       | 6.259     | 0.021       | 6.205     | 0.014       | 58.6         | 1.5         |       |
| 13 20 04    | -35 24 44    | LHS2718       | 12.84    | 11.70    | 10.24    | Rie10      | 8.831    | 0.029      | 8.247    | 0.046       | 7.981    | 0.033       | 7.812     | 0.023       | 7.662     | 0.020       | 7.552     | 0.017       | 73.0         | 0.8         |       |
| 13 20 25    | -01 39 27    | L977-016      | 11.57    | 10.61    | 9.51     | Win15      | 8.394    | 0.024      | 7.791    | 0.040       | 7.527    | 0.018       | 7.389     | 0.029       | 7.325     | 0.020       | 7.254     | 0.016       | 46.4         | 3.2         |       |
| 13 20 58    | +34 16 44    | GJ0508.2      | 10.63    | 9.68     | 8.59     | Wei96      | 7.398    | 0.023      | 6.793    | 0.018       | 6.555    | 0.017       | 6.503     | 0.040       | 6.422     | 0.020       | 6.361     | 0.015       | 62.2         | 1.8         | A05   |
| 13 21 38    | +39 59 49    | LP218-084     | 15.23    | 13.92    | 12.25    | 222        | 10.608   | 0.022      | 10.012   | 0.019       | 9.767    | 0.017       | 9.587     | 0.024       | 9.408     | 0.021       | 9.243     | 0.027       | 44.5         | 4.6         |       |
| 13 22 19    | +39 02 38    | LP218-089     | 17.40    | 15.69    | 13.62    | 111        | 11.635   | 0.021      | 11.044   | 0.016       | 10.730   | 0.017       | 10.526    | 0.022       | 10.317    | 0.021       | 10.131    | 0.047       | 50.6         | 2.9         |       |
| 13 22 57    | +24 28 03    | LHS0350       | 12.96    | 11.77    | 10.21    | Wei96      | 8.728    | 0.021      | 8.162    | 0.051       | 7.957    | 0.033       | 7.790     | 0.024       | 7.587     | 0.020       | 7.481     | 0.017       | 73.1         | 2.7         |       |
| 13 23 38    | -25 54 45    | LHS2729       | 12.89    | 11.68    | 10.14    | Rie10      | 8.664    | 0.026      | 8.066    | 0.055       | 7.781    | 0.031       | 7.655     | 0.024       | 7.499     | 0.021       | 7.371     | 0.016       | 71.5         | 1.5         |       |
| 13 25 49    | -28 22 26    | GJ0510        | 11.00    | 10.01    | 8.86     | Bes90      | 7.717    | 0.023      | 7.131    | 0.038       | 6.876    | 0.024       | 6.693     | 0.038       | 6.600     | 0.021       | 6.544     | 0.015       | 59.8         | 2.4         |       |
| 13 27 54    | -26 57 01    | LP855-014     | 11.78    | 10.78    | 9.60     | Koe10      | 8.383    | 0.024      | 7.760    | 0.059       | 7.543    | 0.027       | 7.394     | 0.028       | 7.293     | 0.021       | 7.226     | 0.015       | 47.4         | 2.8         |       |
| 13 29 21    | +11 26 27    | GJ0513        | 12.11    | 11.05    | 9.64     | Bes90      | 8.368    | 0.024      | 7.820    | 0.049       | 7.535    | 0.027       | 7.414     | 0.026       | 7.260     | 0.019       | 7.217     | 0.018       | 62.9         | 6.7         |       |
| 13 30 00    | +10 22 38    | GJ0514        | 9.05     | 8.00     | 7.01     | Bes90      | 5.902    | 0.018      | 5.300    | 0.033       | 5.036    | 0.027       | 4.955     | 0.074       | 4.472     | 0.045       | 4.798     | 0.014       | 131.7        | 1.0         |       |
| 13 30 31    | +19 09 34    | GJ1171        | 14.71    | 13.39    | 11.67    | Wei96      | 10.065   | 0.022      | 9.543    | 0.032       | 9.221    | 0.022       | 9.038     | 0.024       | 8.847     | 0.020       | 8.667     | 0.022       | 68.7         | 4.4         |       |
| 13 30 41    | -20 39 03    | LEP1330-2039  | 12.46    | 11.27    | 9.75     | Win15      | 8.279    | 0.021      | 7.650    | 0.024       | 7.393    | 0.024       | 7.231     | 0.031       | 7.102     | 0.019       | 6.991     | 0.015       | 59.2         | 1.5         |       |
| 13 32 00    | +66 36 01    | LHS2748       | 14.05    | 12.85    | 11.34    | Wei96      | 9.916    | 0.022      | 9.362    | 0.024       | 9.060    | 0.016       | 8.883     | 0.022       | 8.724     | 0.020       | 8.586     | 0.019       | 42.9         | 1.3         |       |
| 13 33 16    | +62 25 38    | LHS2751       | 14.51    | 13.33    | 11.80    | Wei96      | 10.293   | 0.022      | 9.633    | 0.023       | 9.379    | 0.019       | 9.188     | 0.022       | 9.126     | 0.020       | 8.986     | 0.021       | 43.4         | 3.2         |       |
| 13 34 22    | +04 40 03    | GJ1172        | 9.93     | 9.05     | 8.21     | Koe10      | 7.213    | 0.027      | 6.561    | 0.067       | 6.338    | 0.023       | 6.290     | 0.045       | 6.296     | 0.021       | 6.274     | 0.014       | 46.8         | 1.5         |       |
| 13 35 40    | +60 51 46    | LSPM1335+6051 | 14.16    | 12.97    | 11.40    | 222        | 9.898    | 0.025      | 9.391    | 0.034       | 9.101    | 0.020       | 8.904     | 0.023       | 8.734     | 0.020       | 8.601     | 0.020       | 52.5         | 1.0         | KY    |
| 13 37 29    | +35 43 04    | GJ0519        | 9.03     | 8.13     | 7.32     | 222        | 6.263    | 0.020      | 5.660    | 0.016       | 5.486    | 0.021       | 5.396     | 0.061       | 5.133     | 0.031       | 5.302     | 0.015       | 91.5         | 1.1         |       |
| 13 38 59    | -06 14 13    | NLT34755      | 10.72    | 9.82     | 8.93     | Koe10      | 7.889    | 0.019      | 7.269    | 0.046       | 7.062    | 0.029       | 6.946     | 0.033       | 6.934     | 0.020       | 6.891     | 0.016       | 42.4         | 2.2         |       |
| 13 40 07    | -04 11 19    | GJ0521.1      | 9.63     | 8.76     | 7.92     | Bes90      | 6.900    | 0.024      | 6.251    | 0.067       | 6.037    | 0.018       | 5.927     | 0.052       | 5.873     | 0.023       | 5.904     | 0.016       | 67.7         | 1.2         |       |
| 13 40 09    | +43 46 38    | GJ1174        | 12.78    | 11.61    | 10.07    | Bes90      | 8.599    | 0.018      | 8.041    | 0.046       | 7.794    | 0.027       | 7.583     | 0.026       | 7.414     | 0.021       | 7.321     | 0.016       | 62.7         | 3.8         |       |
| 13 40 19    | +47 12 29    | LHS2777       | 15.42    | 14.09    | 12.38    | 111        | 10.685   | 0.021      | 10.152   | 0.016       | 9.864    | 0.014       | 9.721     | 0.024       | 9.518     | 0.020       | 9.329     | 0.027       | 45.8         | 2.1         |       |
| 13 41 11    | +30 01 26    | LHS0358       | 15.87    | 14.53    | 12.82    | 111        | 11.184   | 0.021      | 10.742   | 0.019       | 10.478   | 0.019       | 10.297    | 0.023       | 10.067    | 0.020       | 9.926     | 0.040       | 48.1         | 1.9         |       |
| 13 41 28    | +32 27 22    | LTT13989      | 14.23    | 13.10    | 11.61    | Wei87      | 10.162   | 0.022      | 9.594    | 0.019       | 9.338    | 0.017       | 9.168     | 0.024       | 9.011     | 0.020       | 8.869     | 0.023       | 40.2         | 1.5         |       |
| 13 42 43    | +33 17 24    | LHS2784       | 11.97    | 10.79    | 9.27     | Wei96      | 7.787    | 0.020      | 7.212    | 0.024       | 6.982    | 0.020       | 6.776     | 0.036       | 6.636     | 0.019       | 6.529     | 0.015       | 108.5        | 3.1         |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(8) | H<br>mag | err<br>(9) | K<br>mag | err<br>(10) | W1<br>mag | err<br>(11) | W2<br>mag | err<br>(12) | W3<br>mag | err<br>(13) | W4<br>mag | err<br>(14) | W5<br>mag | err<br>(15) | W6<br>mag | err<br>(16) | W7<br>mag | err<br>(17) | W8<br>mag | err<br>(18) | W9<br>mag | err<br>(19) | W10<br>mag | err<br>(20) | W11<br>mag | err<br>(21) | Notes |       |       |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|------------|-------------|------------|-------------|-------|-------|-------|
| 13 43 41    | -40 02 29    | SCR1343-4002  | 15.06    | 13.67    | 11.88    | Win17      | 10.137   | 0.024      | 9.610    | 0.022      | 9.248    | 0.019       | 9.074     | 0.023       | 8.882     | 0.020       | 8.738     | 0.021       | 8.583     | 0.015       | 8.435     | 0.015       | 8.287     | 0.020       | 8.138     | 0.019       | 7.988     | 0.018       | 7.838     | 0.017       | 7.688      | 0.016       | 7.538      | 0.015       | 7.388 | 0.014 | 7.238 |
| 13 45 05    | +17 47 08    | GJ0525        | 9.81     | 8.92     | 8.04     | Wei96      | 6.997    | 0.024      | 6.401    | 0.015      | 6.220    | 0.016       | 6.176     | 0.043       | 5.996     | 0.021       | 5.983     | 0.015       | 5.978     | 0.015       | 5.973     | 0.015       | 5.968     | 0.021       | 5.963     | 0.015       | 5.958     | 0.015       | 5.953     | 0.015       | 5.948      | 0.015       | 5.943      | 0.015       | 5.938 | 0.015 | 5.933 |
| 13 45 44    | +14 53 29    | GJ0526        | 8.46     | 7.50     | 6.39     | Wei96      | 5.181    | 0.037      | 4.775    | 0.206      | 4.415    | 0.017       | 4.372     | 0.095       | 3.777     | 0.065       | 4.194     | 0.014       | 4.184     | 0.014       | 4.179     | 0.014       | 4.174     | 0.065       | 4.169     | 0.014       | 4.164     | 0.014       | 4.159     | 0.014       | 4.154      | 0.014       | 4.149      | 0.014       | 4.144 | 0.014 | 4.139 |
| 13 45 51    | -17 58 06    | LHS2794       | 11.87    | 10.69    | 9.18     | 333        | 7.745    | 0.021      | 7.192    | 0.046      | 6.902    | 0.044       | 6.756     | 0.036       | 6.613     | 0.019       | 6.517     | 0.015       | 6.506     | 0.015       | 6.501     | 0.015       | 6.496     | 0.019       | 6.491     | 0.015       | 6.486     | 0.015       | 6.481     | 0.015       | 6.476      | 0.015       | 6.471      | 0.015       | 6.466 | 0.015 | 6.461 |
| 13 46 19    | +07 13 38    | LSPM1346+0713 | 15.39    | 14.06    | 12.39    | 222        | 10.726   | 0.026      | 10.123   | 0.021      | 9.792    | 0.020       | 9.634     | 0.023       | 9.479     | 0.020       | 9.346     | 0.027       | 9.291     | 0.027       | 9.286     | 0.027       | 9.281     | 0.020       | 9.276     | 0.027       | 9.271     | 0.027       | 9.266     | 0.027       | 9.261      | 0.027       | 9.256      | 0.027       | 9.251 | 0.027 | 9.246 |
| 13 48 13    | +23 36 49    | GJ11179       | 15.32    | 13.83    | 11.87    | Wei96      | 10.082   | 0.024      | 9.506    | 0.031      | 9.179    | 0.021       | 8.978     | 0.023       | 8.783     | 0.020       | 8.578     | 0.021       | 8.373     | 0.021       | 8.168     | 0.021       | 7.963     | 0.020       | 7.758     | 0.020       | 7.553     | 0.020       | 7.348     | 0.020       | 7.143      | 0.020       | 6.938      | 0.020       | 6.733 | 0.020 | 6.528 |
| 13 48 49    | +04 06 02    | LTT14031      | 14.34    | 13.00    | 11.29    | Wei86      | 9.755    | 0.023      | 9.162    | 0.022      | 8.882    | 0.019       | 8.685     | 0.023       | 8.503     | 0.020       | 8.341     | 0.019       | 8.136     | 0.019       | 7.931     | 0.019       | 7.726     | 0.020       | 7.521     | 0.019       | 7.316     | 0.019       | 7.111     | 0.019       | 6.906      | 0.019       | 6.701      | 0.019       | 6.496 | 0.019 | 6.291 |
| 13 50 52    | +36 44 17    | LTT14045      | 13.65    | 12.41    | 10.81    | Wei87      | 9.299    | 0.020      | 8.697    | 0.024      | 8.422    | 0.017       | 8.261     | 0.024       | 8.106     | 0.021       | 7.978     | 0.018       | 7.773     | 0.018       | 7.568     | 0.018       | 7.363     | 0.021       | 7.158     | 0.018       | 6.953     | 0.018       | 6.748     | 0.018       | 6.543      | 0.018       | 6.338      | 0.018       | 6.133 | 0.018 | 5.928 |
| 13 52 51    | +66 49 06    | LHS2819       | 15.77    | 14.26    | 12.39    | 222        | 10.539   | 0.020      | 9.954    | 0.015      | 9.647    | 0.019       | 9.424     | 0.023       | 9.244     | 0.021       | 9.079     | 0.021       | 8.874     | 0.021       | 8.669     | 0.021       | 8.464     | 0.021       | 8.259     | 0.021       | 8.054     | 0.021       | 7.849     | 0.021       | 7.644      | 0.021       | 7.439      | 0.021       | 7.234 | 0.021 | 7.029 |
| 13 52 53    | -18 20 17    | LP798-051     | 11.77    | 10.79    | 9.64     | Koe10      | 8.463    | 0.021      | 7.869    | 0.040      | 7.610    | 0.021       | 7.472     | 0.026       | 7.403     | 0.021       | 7.353     | 0.017       | 7.304     | 0.017       | 7.255     | 0.017       | 7.206     | 0.021       | 7.157     | 0.017       | 7.108     | 0.017       | 7.059     | 0.017       | 7.010      | 0.017       | 6.961      | 0.017       | 6.912 | 0.017 | 6.863 |
| 13 53 11    | +55 28 33    | LP133-172     | 15.19    | 13.91    | 12.12    | 111        | 10.400   | 0.020      | 9.792    | 0.021      | 9.491    | 0.019       | 9.313     | 0.023       | 9.157     | 0.019       | 8.986     | 0.023       | 8.811     | 0.023       | 8.636     | 0.023       | 8.461     | 0.019       | 8.286     | 0.023       | 8.111     | 0.023       | 7.936     | 0.023       | 7.761      | 0.023       | 7.586      | 0.023       | 7.411 | 0.023 | 7.236 |
| 13 53 39    | +77 37 08    | LP021-224     | 12.91    | 11.71    | 10.11    | 222        | 8.635    | 0.019      | 8.056    | 0.017      | 7.795    | 0.021       | 7.623     | 0.025       | 7.440     | 0.019       | 7.322     | 0.015       | 7.273     | 0.015       | 7.224     | 0.015       | 7.175     | 0.019       | 7.126     | 0.015       | 7.077     | 0.015       | 7.028     | 0.015       | 6.979      | 0.015       | 6.930      | 0.015       | 6.881 | 0.015 | 6.832 |
| 13 53 47    | +78 51 07    | GJ0534.2      | 10.61    | 9.71     | 8.76     | Wei93      | 7.639    | 0.023      | 6.984    | 0.021      | 6.809    | 0.018       | 6.704     | 0.040       | 6.718     | 0.019       | 6.651     | 0.015       | 6.602     | 0.015       | 6.553     | 0.015       | 6.504     | 0.019       | 6.455     | 0.015       | 6.406     | 0.015       | 6.357     | 0.015       | 6.308      | 0.015       | 6.259      | 0.015       | 6.210 | 0.015 | 6.161 |
| 13 58 05    | -39 37 55    | SSS1358-3938  | 14.04    | 12.80    | 11.20    | Win15      | 9.720    | 0.024      | 9.226    | 0.024      | 8.948    | 0.020       | 8.779     | 0.022       | 8.541     | 0.020       | 8.435     | 0.020       | 8.329     | 0.020       | 8.227     | 0.020       | 8.125     | 0.020       | 8.023     | 0.020       | 7.921     | 0.020       | 7.819     | 0.020       | 7.717      | 0.020       | 7.615      | 0.020       | 7.513 | 0.020 | 7.411 |
| 13 58 16    | -12 02 59    | LP739-002     | 14.46    | 13.10    | 11.39    | Win15      | 9.728    | 0.021      | 9.174    | 0.021      | 8.887    | 0.020       | 8.709     | 0.023       | 8.522     | 0.021       | 8.356     | 0.020       | 8.181     | 0.020       | 7.996     | 0.020       | 7.821     | 0.021       | 7.646     | 0.020       | 7.471     | 0.020       | 7.296     | 0.020       | 7.121      | 0.020       | 6.946      | 0.020       | 6.771 | 0.020 | 6.596 |
| 13 59 10    | -19 50 04    | LHS2836       | 12.88    | 11.60    | 9.90     | Rie10      | 8.334    | 0.037      | 7.761    | 0.061      | 7.445    | 0.026       | 7.286     | 0.029       | 7.094     | 0.020       | 6.973     | 0.015       | 6.924     | 0.015       | 6.875     | 0.015       | 6.826     | 0.020       | 6.777     | 0.015       | 6.728     | 0.015       | 6.679     | 0.015       | 6.630      | 0.015       | 6.581      | 0.015       | 6.532 | 0.015 | 6.483 |
| 14 01 03    | -02 39 18    | GJ0536        | 9.68     | 8.73     | 7.65     | Bes90      | 6.516    | 0.018      | 5.935    | 0.036      | 5.683    | 0.020       | 5.567     | 0.057       | 5.312     | 0.028       | 5.438     | 0.014       | 5.389     | 0.014       | 5.340     | 0.014       | 5.291     | 0.028       | 5.242     | 0.014       | 5.193     | 0.014       | 5.144     | 0.014       | 5.095      | 0.014       | 5.046      | 0.014       | 4.997 | 0.014 | 4.948 |
| 14 02 20    | +13 41 23    | HIP068570     | 10.66    | 9.76     | 8.74     | Wei93      | 7.563    | 0.027      | 6.894    | 0.017      | 6.706    | 0.017       | 6.602     | 0.041       | 6.594     | 0.020       | 6.523     | 0.016       | 6.474     | 0.016       | 6.425     | 0.016       | 6.376     | 0.020       | 6.327     | 0.016       | 6.278     | 0.016       | 6.229     | 0.016       | 6.180      | 0.016       | 6.131      | 0.016       | 6.082 | 0.016 | 6.033 |
| 14 02 23    | +43 00 59    | LSPM1402+4300 | 15.71    | 14.46    | 12.72    | 111        | 11.037   | 0.023      | 10.415   | 0.021      | 10.126   | 0.016       | 9.919     | 0.023       | 9.790     | 0.020       | 9.645     | 0.017       | 9.596     | 0.017       | 9.547     | 0.017       | 9.498     | 0.020       | 9.449     | 0.017       | 9.399     | 0.017       | 9.350     | 0.017       | 9.301      | 0.017       | 9.252      | 0.017       | 9.203 | 0.017 | 9.154 |
| 14 02 47    | -24 31 59    | LHS2852       | 12.13    | 11.08    | 9.85     | Win15      | 8.635    | 0.026      | 8.103    | 0.031      | 7.840    | 0.023       | 7.652     | 0.024       | 7.475     | 0.020       | 7.396     | 0.017       | 7.347     | 0.017       | 7.298     | 0.017       | 7.249     | 0.020       | 7.199     | 0.017       | 7.150     | 0.017       | 7.101     | 0.017       | 7.052      | 0.017       | 6.993      | 0.017       | 6.944 | 0.017 | 6.895 |
| 14 06 51    | +31 33 47    | LP324-070     | 15.77    | 14.34    | 12.60    | 111        | 10.893   | 0.027      | 10.352   | 0.023      | 10.038   | 0.018       | 9.834     | 0.023       | 9.647     | 0.020       | 9.479     | 0.020       | 9.320     | 0.020       | 9.161     | 0.020       | 9.002     | 0.020       | 8.843     | 0.020       | 8.684     | 0.020       | 8.525     | 0.020       | 8.366      | 0.020       | 8.207      | 0.020       | 8.048 | 0.020 | 7.889 |
| 14 06 56    | +38 36 56    | LHS0364       | 14.56    | 13.56    | 12.62    | Wei96      | 9.875    | 0.021      | 9.313    | 0.019      | 9.045    | 0.019       | 8.868     | 0.024       | 8.688     | 0.021       | 8.534     | 0.019       | 8.379     | 0.019       | 8.220     | 0.019       | 8.061     | 0.021       | 7.902     | 0.019       | 7.743     | 0.019       | 7.584     | 0.019       | 7.425      | 0.019       | 7.266      | 0.019       | 7.107 | 0.019 | 6.948 |
| 14 07 48    | +57 11 45    | LHS2864       | 14.20    | 12.97    | 11.38    | Wei96      | 8.755    | 0.021      | 8.193    | 0.019      | 7.925    | 0.021       | 7.767     | 0.021       | 7.608     | 0.021       | 7.449     | 0.021       | 7.290     | 0.021       | 7.131     | 0.021       | 6.972     | 0.021       | 6.813     | 0.021       | 6.654     | 0.021       | 6.495     | 0.021       | 6.336      | 0.021       | 6.177      | 0.021       | 6.018 | 0.021 | 5.859 |
| 14 08 13    | +80 35 50    | GJ0540        | 10.35    | 9.40     | 8.33     | Wei96      | 7.179    | 0.018      | 6.532    | 0.031      | 6.327    | 0.021       | 6.300     | 0.046       | 6.210     | 0.023       | 6.167     | 0.015       | 6.118     | 0.015       | 6.069     | 0.015       | 6.020     | 0.023       | 5.971     | 0.015       | 5.922     | 0.015       | 5.873     | 0.015       | 5.824      | 0.015       | 5.775      | 0.015       | 5.726 | 0.015 | 5.677 |
| 14 08 23    | +75 51 07    | LHS2866       | 11.59    | 10.61    | 9.51     | Wei96      | 8.349    | 0.020      | 7.785    | 0.017      | 7.563    | 0.024       | 7.396     | 0.029       | 7.284     | 0.020       | 7.205     | 0.015       | 7.136     | 0.015       | 7.067     | 0.015       | 7.008     | 0.020       | 6.939     | 0.015       | 6.870     | 0.015       | 6.801     | 0.015       | 6.732      | 0.015       | 6.663      | 0.015       | 6.594 | 0.015 | 6.525 |
| 14 10 57    | -31 17 25    | NLT36465      | 10.83    | 9.85     | 8.73     | Koe10      | 7.554    | 0.023      | 6.942    | 0.047      | 6.693    | 0.021       | 6.544     | 0.039       | 6.479     | 0.019       | 6.426     | 0.014       | 6.377     | 0.014       | 6.328     | 0.014       | 6.279     | 0.019       | 6.230     | 0.014       | 6.181     | 0.014       | 6.132     | 0.014       | 6.083      | 0.014       | 6.034      | 0.014       | 5.985 | 0.014 | 5.936 |
| 14 13 13    | -56 44 32    | GJ2106        | 10.19    | 9.21     | 8.11     | Koe10      | 6.951    | 0.026      | 6.394    | 0.047      | 6.136    | 0.027       | 5.939     | 0.050       | 5.817     | 0.027       | 5.835     | 0.014       | 5.786     | 0.014       | 5.737     | 0.014       | 5.688     | 0.027       | 5.639     | 0.014       | 5.590     | 0.014       | 5.541     | 0.014       | 5.492      | 0.014       | 5.443      | 0.014       | 5.394 | 0.014 | 5.345 |
| 14 13 31    | -06 57 32    | LTT05574      | 10.17    | 9.30     | 8.45     | Wei93      | 7.386    | 0.027      | 6.780    | 0.038      | 6.571    | 0.018       | 6.431     | 0.040       | 6.428     | 0.020       | 6.402     | 0.015       | 6.353     | 0.015       | 6.304     | 0.015       | 6.255     | 0.020       | 6.206     | 0.015       | 6.157     | 0.015       | 6.108     | 0.015       | 6.059      | 0.015       | 6.010      | 0.015       | 5.961 | 0.015 | 5.912 |
| 14 15 17    | +45 00 53    | LHS2884       | 11.86    | 10.78    | 9.39     | Wei96      | 8.014    | 0.018      | 7.474    | 0.018      | 7.227    | 0.017       | 7.120     | 0.032       | 6.965     | 0.020       | 6.900     | 0.015       | 6.851     | 0.015       | 6.802     | 0.015       | 6.753     | 0.020       | 6.704     | 0.015       | 6.655     | 0.015       | 6.606     | 0.015       | 6.557      | 0.015       | 6.508      | 0.015       | 6.459 | 0.015 | 6.410 |
| 14 15 33    | +04 39 31    | GJ1182        | 14.30    | 12.95    | 11.09    | Wei96      | 9.433    | 0.026      | 8.936    | 0.022      | 8.618    | 0.025       | 8.440     | 0.023       | 8.217     | 0.020       | 8.053     | 0.019       | 7.888     | 0.019       | 7.729     | 0.019       | 7.570     | 0.020       | 7.411     | 0.019       | 7.252     | 0.019       | 7.093     | 0.019       | 6.934      | 0.019       | 6.775      | 0.019       | 6.616 | 0.019 | 6.457 |
| 14 17 24    | +45 26 40    | GJ0541.2      | 10.25    | 9.36     | 8.48     | Wei91a     | 7.389    | 0.020      | 6.781    | 0.021      | 6.601    | 0.016       | 6.471     | 0.042       | 6.466     | 0.021       | 6.422     | 0.014       | 6.373     |             |           |             |           |             |           |             |           |             |           |             |            |             |            |             |       |       |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 14 23 06           | -08 22 58           | GJ2107           | 10.22           | 9.34     | 8.46            | 222        | 7.421           | 0.021      | 6.815            | 0.042              | 6.559            | 0.020              | 6.458             | 0.043              | 6.463             | 0.022              | 6.408             | 0.015              | 42.6                 | 1.5                |               |
| 14 24 56           | +08 53 16           | LHS2913          | 12.23           | 11.11    | 9.71            | Wei96      | 8.420           | 0.034      | 7.802            | 0.038              | 7.590            | 0.027              | 7.396             | 0.028              | 7.259             | 0.020              | 7.184             | 0.015              | 72.8                 | 4.5                |               |
| 14 25 43           | +23 37 01           | GJ0548           | 9.76            | 8.86     | 7.91            | Wei96      | 6.769           | 0.023      | 6.162            | 0.038              | 5.973            | 0.016              | 5.915             | 0.054              | 5.834             | 0.025              | 5.847             | 0.015              | 62.0                 | 1.1                |               |
| 14 27 56           | -00 22 31           | GJ1183           | 13.95           | 12.65    | 10.93           | Wei91a     | 9.305           | 0.026      | 8.700            | 0.038              | 8.403            | 0.021              | 8.214             | 0.026              | 8.058             | 0.022              | 7.931             | 0.020              | 61.7                 | 3.2                |               |
| 14 28 04           | +13 56 13           | LHS2919          | 17.64           | 15.60    | 13.33           | 222        | 11.014          | 0.021      | 10.390           | 0.015              | 10.026           | 0.020              | 9.812             | 0.023              | 9.599             | 0.020              | 9.386             | 0.028              | 77.8                 | 3.2                |               |
| 14 28 32           | +45 54 33           | LHS2921          | 16.94           | 15.39    | 13.40           | 222        | 11.336          | 0.021      | 10.746           | 0.018              | 10.434           | 0.012              | 10.200            | 0.022              | 9.988             | 0.021              | 9.711             | 0.031              | 48.0                 | 4.1                |               |
| 14 29 30           | +15 31 58           | GJ0552           | 10.68           | 9.67     | 8.46            | Wei96      | 7.229           | 0.021      | 6.605            | 0.031              | 6.393            | 0.018              | 6.218             | 0.047              | 6.144             | 0.022              | 6.116             | 0.015              | 70.9                 | 1.9                |               |
| 14 29 43           | -62 40 47           | Proxima Centauri | 11.13           | 9.45     | 7.41            | Hen18      | 5.357           | 0.023      | 4.835            | 0.057              | 4.384            | 0.033              | 4.195             | 0.086              | 3.571             | 0.031              | 3.826             | 0.015              | 768.7                | 0.3                | 2             |
| 14 30 48           | -08 38 47           | GJ0553           | 9.38            | 8.51     | 7.67            | Bes90      | 6.616           | 0.021      | 6.007            | 0.044              | 5.769            | 0.021              | 5.796             | 0.057              | 5.630             | 0.027              | 5.705             | 0.015              | 59.5                 | 1.4                |               |
| 14 30 56           | +08 58 02           | LP500-046        | 17.24           | 15.61    | 13.64           | 222        | 11.679          | 0.025      | 11.036           | 0.022              | 10.739           | 0.023              | 10.513            | 0.024              | 10.316            | 0.019              | 10.145            | 0.052              | 40.8                 | 3.2                |               |
| 14 31 01           | -12 17 46           | GJ0553.1         | 11.96           | 10.76    | 9.26            | 333        | 7.803           | 0.026      | 7.259            | 0.049              | 6.961            | 0.021              | 6.800             | 0.035              | 6.647             | 0.020              | 6.571             | 0.015              | 91.8                 | 3.7                |               |
| 14 31 13           | +75 26 42           | LSPM1431+7526    | 14.23           | 12.94    | 11.33           | 111        | 9.792           | 0.018      | 9.252            | 0.015              | 8.961            | 0.022              | 8.765             | 0.023              | 8.573             | 0.020              | 8.415             | 0.019              | 68.8                 | 3.1                |               |
| 14 31 38           | -25 25 33           | LHS0375          | 15.64           | 14.56    | 13.35           | Win15      | 12.150          | 0.022      | 11.674           | 0.022              | 11.507           | 0.022              | 11.269            | 0.023              | 11.083            | 0.022              | 10.953            | 0.090              | 41.7                 | 1.0                | KS            |
| 14 32 09           | +08 11 31           | LHS2935          | 15.68           | 14.08    | 12.09           | Hos15      | 10.108          | 0.024      | 9.529            | 0.022              | 9.166            | 0.021              | 8.947             | 0.023              | 8.762             | 0.020              | 8.580             | 0.021              | 77.4                 | 1.0                |               |
| 14 32 15           | +49 39 06           | LHS2936          | 13.26           | 12.12    | 10.64           | Wei96      | 9.277           | 0.027      | 8.782            | 0.053              | 8.561            | 0.020              | 8.361             | 0.024              | 8.158             | 0.020              | 8.043             | 0.018              | 58.2                 | 1.6                |               |
| 14 34 17           | -12 31 10           | GJ0555           | 11.34           | 10.06    | 8.44            | Win15      | 6.838           | 0.019      | 6.262            | 0.044              | 5.939            | 0.034              | 5.793             | 0.055              | 5.484             | 0.027              | 5.538             | 0.015              | 160.8                | 2.0                |               |
| 14 39 00           | +18 39 39           | LHS0377          | 18.18           | 16.75    | 14.82           | 111        | 13.194          | 0.029      | 12.733           | 0.030              | 12.479           | 0.025              | 12.298            | 0.027              | 12.051            | 0.025              | 11.668            | 0.109              | 28.4                 | 0.7                | KS            |
| 14 39 28           | +19 29 16           | 2MA1439+1929     | 21.66           | 18.44    | 16.11           | 122        | 12.759          | 0.019      | 12.041           | 0.019              | 11.546           | 0.022              | 11.189            | 0.023              | 10.953            | 0.021              | 10.529            | 0.048              | 69.6                 | 0.5                |               |
| 14 40 23           | +13 39 23           | 2MA1440+1339     | 18.99           | 17.05    | 14.80           | 222        | 12.395          | 0.022      | 11.710           | 0.020              | 11.337           | 0.020              | 11.092            | 0.023              | 10.925            | 0.020              | 10.701            | 0.063              | 45.0                 | 1.1                |               |
| 14 44 07           | -34 26 47           | SCR1444-3426     | 14.17           | 12.89    | 11.26           | Win11      | 9.737           | 0.022      | 9.183            | 0.023              | 8.883            | 0.021              | 8.697             | 0.022              | 8.519             | 0.021              | 8.414             | 0.022              | 65.4                 | 1.0                |               |
| 14 44 20           | -20 19 26           | SSS1444-2019     | 20.25           | 17.62    | 14.95           | Win15      | 12.546          | 0.026      | 12.142           | 0.026              | 11.933           | 0.026              | 11.464            | 0.024              | 11.211            | 0.022              | 10.967            | 0.090              | 60.2                 | 1.6                | KS            |
| 14 46 01           | +46 33 25           | LHS2973          | 14.77           | 13.42    | 11.74           | 111        | 10.138          | 0.021      | 9.592            | 0.020              | 9.308            | 0.017              | 9.112             | 0.023              | 8.912             | 0.020              | 8.730             | 0.019              | 60.6                 | 3.3                |               |
| 14 47 55           | -03 09 36           | GJ1185           | 13.33           | 12.28    | 10.99           | Wei96      | 9.780           | 0.026      | 9.279            | 0.024              | 9.060            | 0.024              | 8.845             | 0.023              | 8.652             | 0.020              | 8.581             | 0.022              | 50.8                 | 3.6                |               |
| 14 49 33           | -26 06 21           | GJ0563.2         | 11.68           | 10.70    | 9.62            | Bes90      | 8.438           | 0.024      | 7.864            | 0.038              | 7.640            | 0.031              | 7.528             | 0.027              | 7.390             | 0.021              | 7.323             | 0.015              | 50.9                 | 7.8                |               |
| 14 50 29           | -08 38 37           | LHS0381          | 15.10           | 14.11    | 13.07           | Win15      | 11.970          | 0.023      | 11.460           | 0.021              | 11.237           | 0.021              | 11.092            | 0.023              | 10.895            | 0.020              | 10.826            | 0.080              | 27.4                 | 5.4                | KS            |
| 14 51 57           | +63 07 59           | LP067-182        | 15.06           | 13.68    | 11.94           | 222        | 10.220          | 0.026      | 9.668            | 0.031              | 9.373            | 0.022              | 9.168             | 0.022              | 8.972             | 0.020              | 8.801             | 0.019              | 49.6                 | 8.0                |               |
| 14 53 37           | +11 34 13           | GJ1186           | 15.37           | 13.98    | 12.23           | 222        | 10.577          | 0.028      | 9.974            | 0.023              | 9.652            | 0.019              | 9.486             | 0.023              | 9.303             | 0.019              | 9.134             | 0.024              | 56.8                 | 3.5                |               |
| 14 55 36           | -15 33 44           | LHS0385          | 14.61           | 13.67    | 12.78           | Win15      | 11.738          | 0.026      | 11.277           | 0.020              | 11.062           | 0.023              | 10.894            | 0.024              | 10.748            | 0.020              | 10.442            | 0.064              | 24.4                 | 1.5                | KS            |
| 14 56 27           | +17 54 60           | LHS0001          | 15.81           | 14.35    | 12.52           | Riel0      | 10.742          | 0.025      | 10.150           | 0.030              | 9.852            | 0.020              | 9.481             | 0.019              | 9.298             | 0.017              | 9.221             | 0.025              | 57.2                 | 0.9                |               |
| 14 56 38           | -28 09 49           | LHS3003          | 16.98           | 14.91    | 12.55           | Hen18      | 9.965           | 0.026      | 9.315            | 0.022              | 8.928            | 0.027              | 8.686             | 0.022              | 8.487             | 0.020              | 8.274             | 0.023              | 152.5                | 2.0                |               |
| 14 57 21           | +14 58 55           | LHS3005          | 14.83           | 13.56    | 12.00           | 222        | 10.483          | 0.023      | 9.901            | 0.031              | 9.658            | 0.022              | 9.449             | 0.023              | 9.296             | 0.019              | 9.157             | 0.024              | 42.6                 | 2.6                |               |
| 14 57 33           | -06 19 25           | LP681-091        | 11.47           | 10.59    | 9.73            | Wei93      | 8.654           | 0.039      | 8.002            | 0.042              | 7.836            | 0.036              | 7.711             | 0.024              | 7.749             | 0.020              | 7.676             | 0.017              | 40.8                 | 4.6                |               |
| 14 57 54           | +56 39 25           | GJ1187           | 15.53           | 13.99    | 11.98           | Wei96      | 10.207          | 0.029      | 9.635            | 0.029              | 9.269            | 0.020              | 9.062             | 0.023              | 8.852             | 0.020              | 8.676             | 0.018              | 94.4                 | 3.5                |               |
| 15 01 08           | +22 50 02           | TVL513-46546     | 19.85           | 17.45    | 15.04           | 444        | 11.866          | 0.022      | 11.181           | 0.030              | 10.706           | 0.024              | 10.352            | 0.022              | 10.053            | 0.020              | 9.618             | 0.029              | 94.5                 | 0.6                |               |
| 15 02 08           | +75 27 53           | LP022-174        | 16.55           | 14.99    | 12.84           | 111        | 10.782          | 0.021      | 10.156           | 0.019              | 9.837            | 0.016              | 9.610             | 0.023              | 9.388             | 0.020              | 9.178             | 0.021              | 58.2                 | 2.5                |               |
| 15 03 25           | +03 46 57           | GJ1188           | 12.04           | 11.13    | 10.22           | 222        | 9.225           | 0.026      | 8.669            | 0.044              | 8.426            | 0.027              | 8.292             | 0.022              | 8.179             | 0.019              | 8.142             | 0.017              | 47.0                 | 4.1                |               |
| 15 03 35           | +84 38 27           | LHS3017          | 14.15           | 13.02    | 11.50           | Wei96      | 10.071          | 0.022      | 9.555            | 0.021              | 9.313            | 0.017              | 9.151             | 0.023              | 8.955             | 0.022              | 8.848             | 0.021              | 51.2                 | 1.6                |               |
| 15 04 19           | +60 23 05           | LHS3018          | 10.99           | 10.02    | 8.88            | Wei96      | 7.701           | 0.029      | 7.091            | 0.018              | 6.889            | 0.020              | 6.756             | 0.038              | 6.681             | 0.020              | 6.611             | 0.015              | 56.0                 | 1.3                |               |
| 15 07 24           | +24 56 08           | GJ0579           | 10.05           | 9.19     | 8.32            | Wei96      | 7.296           | 0.023      | 6.647            | 0.023              | 6.474            | 0.017              | 6.379             | 0.043              | 6.391             | 0.020              | 6.336             | 0.014              | 59.8                 | 3.6                |               |
| 15 07 28           | -20 00 43           | 2MA1507-2000     | 18.82           | 16.70    | 14.29           | Hos15      | 11.713          | 0.023      | 11.045           | 0.022              | 10.661           | 0.021              | 10.437            | 0.023              | 10.234            | 0.021              | 10.050            | 0.068              | 42.5                 | 0.6                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>mag | K<br>mag | err<br>mag | W1<br>mag | err<br>mag | W2<br>mag | err<br>mag | W3<br>mag | err<br>mag | $\pi$<br>mas | err<br>mas | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|--------------|------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)       | (12)     | (13)       | (14)      | (15)       | (16)      | (17)       | (18)      | (19)       | (20)         | (21)       | (22)  |
| 15 09 36    | +03 10 01    | LHS3030       | 11.47    | 10.41    | 9.05     | Koe10      | 7.720    | 0.024      | 7.134    | 0.034      | 6.858    | 0.018      | 6.720     | 0.038      | 6.606     | 0.020      | 6.530     | 0.015      | 70.0         | 2.5        |       |
| 15 10 05    | +19 21 28    | LP442-010     | 13.35    | 12.15    | 10.56    | Wei86      | 9.056    | 0.022      | 8.517    | 0.026      | 8.250    | 0.017      | 8.083     | 0.022      | 7.913     | 0.021      | 7.798     | 0.016      | 58.9         | 2.7        |       |
| 15 10 12    | +46 24 06    | LHS3031       | 15.18    | 13.87    | 12.18    | Wei96      | 10.629   | 0.020      | 10.116   | 0.021      | 9.810    | 0.019      | 9.600     | 0.023      | 9.407     | 0.020      | 9.271     | 0.023      | 44.7         | 2.6        |       |
| 15 11 51    | -10 14 18    | LHS0392       | 14.26    | 12.95    | 11.28    | Wei96      | 9.651    | 0.024      | 9.127    | 0.023      | 8.867    | 0.019      | 8.690     | 0.024      | 8.488     | 0.020      | 8.346     | 0.019      | 67.4         | 3.1        |       |
| 15 14 47    | +64 33 44    | LHS3044       | 13.98    | 12.75    | 11.20    | Wei96      | 9.785    | 0.020      | 9.237    | 0.017      | 8.965    | 0.016      | 8.766     | 0.023      | 8.580     | 0.020      | 8.454     | 0.018      | 57.2         | 0.9        |       |
| 15 15 44    | -07 25 21    | G151-037      | 12.93    | 11.68    | 10.09    | Win17      | 8.566    | 0.021      | 8.015    | 0.042      | 7.706    | 0.021      | 7.565     | 0.026      | 7.389     | 0.020      | 7.278     | 0.017      | 59.2         | 1.1        |       |
| 15 16 37    | +53 55 46    | G201-045      | 15.62    | 14.33    | 12.47    | 111        | 10.759   | 0.019      | 10.191   | 0.028      | 9.934    | 0.023      | 9.727     | 0.023      | 9.535     | 0.020      | 9.374     | 0.023      | 47.1         | 2.6        |       |
| 15 16 41    | +39 10 49    | LP222-065     | 17.11    | 15.50    | 13.11    | 111        | 10.796   | 0.021      | 10.188   | 0.016      | 9.813    | 0.018      | 9.608     | 0.022      | 9.378     | 0.020      | 9.158     | 0.022      | 64.2         | 2.7        |       |
| 15 17 03    | +69 51 59    | LP041-530     | 14.96    | 13.62    | 12.01    | 333        | 10.412   | 0.020      | 9.836    | 0.017      | 9.569    | 0.020      | 9.375     | 0.023      | 9.202     | 0.020      | 9.074     | 0.021      | 45.9         | 1.3        |       |
| 15 17 56    | +55 53 27    | LP135-222     | 15.27    | 14.08    | 12.43    | 111        | 10.843   | 0.022      | 10.274   | 0.021      | 9.984    | 0.020      | 9.808     | 0.022      | 9.638     | 0.019      | 9.477     | 0.026      | 42.5         | 2.8        |       |
| 15 19 27    | -07 43 20    | GJ0581        | 10.56    | 9.44     | 8.03     | Lur14      | 6.706    | 0.026      | 6.095    | 0.033      | 5.837    | 0.023      | 5.694     | 0.055      | 5.411     | 0.028      | 5.478     | 0.014      | 159.3        | 1.3        |       |
| 15 21 01    | +50 53 23    | LP135-272     | 19.57    | 17.64    | 14.78    | 111        | 12.014   | 0.024      | 11.327   | 0.015      | 10.922   | 0.019      | 10.639    | 0.023      | 10.419    | 0.020      | 10.112    | 0.034      | 46.6         | 4.5        |       |
| 15 21 16    | +39 45 17    | LP222-070     | 16.48    | 14.77    | 12.86    | 111        | 10.732   | 0.023      | 10.082   | 0.020      | 9.745    | 0.016      | 9.536     | 0.023      | 9.379     | 0.020      | 9.142     | 0.021      | 44.7         | 1.3        |       |
| 15 21 53    | +20 58 49    | HIP075187     | 10.11    | 9.09     | 7.89     | Wei93      | 6.610    | 0.021      | 5.960    | 0.016      | 5.756    | 0.018      | 5.558     | 0.058      | 5.444     | 0.029      | 5.527     | 0.015      | 87.8         | 1.8        |       |
| 15 23 51    | +17 27 57    | GJ0585        | 13.72    | 12.43    | 10.72    | Bes90      | 9.105    | 0.024      | 8.620    | 0.032      | 8.279    | 0.023      | 8.124     | 0.024      | 7.919     | 0.020      | 7.752     | 0.017      | 89.6         | 2.4        |       |
| 15 26 33    | +55 22 21    | LP135-316     | 15.63    | 14.29    | 12.45    | 111        | 10.703   | 0.020      | 10.126   | 0.017      | 9.822    | 0.019      | 9.598     | 0.031      | 9.429     | 0.019      | 9.251     | 0.022      | 41.6         | 3.8        |       |
| 15 28 01    | +25 47 24    | GJ0587.1      | 11.12    | 10.20    | 9.24     | Wei93      | 8.143    | 0.032      | 7.462    | 0.040      | 7.290    | 0.016      | 7.171     | 0.023      | 7.150     | 0.020      | 7.075     | 0.015      | 40.7         | 2.6        |       |
| 15 29 07    | -17 22 55    | LP802-069     | 10.51    | 9.59     | 8.70     | 222        | 7.639    | 0.019      | 6.968    | 0.031      | 6.802    | 0.018      | 6.659     | 0.037      | 6.715     | 0.021      | 6.659     | 0.016      | 40.2         | 2.5        |       |
| 15 29 44    | +42 52 49    | LHS3075       | 14.21    | 12.91    | 11.22    | Wei96      | 9.587    | 0.021      | 9.016    | 0.021      | 8.719    | 0.018      | 8.517     | 0.023      | 8.344     | 0.020      | 8.188     | 0.017      | 51.2         | 1.9        |       |
| 15 30 30    | +09 26 01    | LP502-056     | 15.15    | 13.52    | 11.52    | 333        | 9.569    | 0.025      | 9.006    | 0.025      | 8.661    | 0.025      | 8.423     | 0.023      | 8.229     | 0.020      | 8.031     | 0.018      | 123.2        | 4.3        |       |
| 15 32 13    | -41 16 32    | GJ0588        | 9.31     | 8.25     | 6.93     | Bes90      | 5.647    | 0.021      | 5.025    | 0.024      | 4.759    | 0.024      | 4.702     | 0.074      | 4.117     | 0.053      | 4.460     | 0.013      | 168.5        | 1.3        |       |
| 15 33 39    | +46 15 03    | LP176-055     | 13.58    | 12.40    | 10.87    | Wei88      | 9.417    | 0.021      | 8.795    | 0.023      | 8.531    | 0.018      | 8.371     | 0.023      | 8.246     | 0.020      | 8.126     | 0.016      | 45.8         | 2.0        |       |
| 15 34 12    | +46 19 43    | LSPM1534+4619 | 13.77    | 12.56    | 11.17    | 222        | 9.739    | 0.021      | 9.210    | 0.016      | 8.947    | 0.016      | 8.788     | 0.023      | 8.626     | 0.020      | 8.503     | 0.018      | 42.3         | 2.2        |       |
| 15 34 31    | +14 16 18    | GJ1193        | 13.91    | 12.69    | 11.13    | 222        | 9.642    | 0.022      | 9.060    | 0.022      | 8.809    | 0.018      | 8.676     | 0.022      | 8.500     | 0.020      | 8.373     | 0.019      | 48.9         | 2.5        |       |
| 15 34 51    | +18 00 12    | LP443-017     | 15.72    | 14.21    | 12.37    | 222        | 10.595   | 0.022      | 10.010   | 0.020      | 9.713    | 0.019      | 9.524     | 0.022      | 9.326     | 0.019      | 9.123     | 0.022      | 60.4         | 3.4        |       |
| 15 34 57    | -14 18 49    | 2MA1534-1418  | 19.15    | 16.71    | 14.16    | Win15      | 11.380   | 0.023      | 10.732   | 0.022      | 10.305   | 0.023      | 10.018    | 0.024      | 9.785     | 0.021      | 9.467     | 0.040      | 91.5         | 0.8        |       |
| 15 35 21    | +17 42 47    | GJ0589        | 12.34    | 11.26    | 9.95     | Bes90      | 8.694    | 0.026      | 8.149    | 0.017      | 7.940    | 0.018      | 7.751     | 0.022      | 7.592     | 0.019      | 7.519     | 0.016      | 68.2         | 1.4        |       |
| 15 35 46    | +22 09 04    | LHS3091       | 12.73    | 11.59    | 10.11    | Wei96      | 8.681    | 0.023      | 8.108    | 0.047      | 7.920    | 0.017      | 7.786     | 0.023      | 7.611     | 0.019      | 7.522     | 0.016      | 53.8         | 3.5        |       |
| 15 36 34    | -37 54 23    | GJ0590        | 12.79    | 11.55    | 9.93     | Win15      | 8.440    | 0.024      | 7.903    | 0.036      | 7.671    | 0.024      | 7.475     | 0.027      | 7.267     | 0.020      | 7.175     | 0.017      | 100.4        | 1.2        |       |
| 15 36 59    | -14 08 02    | GJ0592        | 12.75    | 11.50    | 9.96     | 111        | 8.432    | 0.021      | 7.871    | 0.036      | 7.572    | 0.023      | 7.386     | 0.025      | 7.252     | 0.021      | 7.149     | 0.016      | 74.9         | 3.8        |       |
| 15 40 30    | -26 13 43    | SIP1540-2613  | 19.00    | 16.57    | 14.13    | Win19      | 11.646   | 0.026      | 11.145   | 0.026      | 10.730   | 0.019      | 10.490    | 0.023      | 10.234    | 0.020      | 10.025    | 0.054      | 66.9         | 1.1        |       |
| 15 40 44    | -51 01 36    | WIS1540-5101  | 15.34    | 13.40    | 11.19    | Hen18      | 8.961    | 0.025      | 8.299    | 0.038      | 7.943    | 0.040      | 7.651     | 0.024      | 7.459     | 0.023      | 7.252     | 0.019      | 188.2        | 1.3        | KS    |
| 15 43 18    | -20 15 33    | GJ2116        | 13.06    | 12.07    | 10.93    | Jao05      | 9.780    | 0.023      | 9.232    | 0.023      | 9.018    | 0.021      | 8.855     | 0.024      | 8.688     | 0.020      | 8.621     | 0.026      | 46.7         | 1.7        | KS    |
| 15 43 48    | +25 52 38    | G167-054      | 14.53    | 13.22    | 11.59    | 111        | 10.022   | 0.020      | 9.491    | 0.015      | 9.233    | 0.020      | 9.004     | 0.023      | 8.821     | 0.019      | 8.667     | 0.019      | 44.6         | 1.7        |       |
| 15 45 40    | -20 36 17    | LHS0407       | 16.61    | 15.49    | 14.12    | 111        | 12.820   | 0.026      | 12.336   | 0.023      | 12.087   | 0.023      | 11.904    | 0.025      | 11.726    | 0.025      | 11.189    | 0.163      | 33.5         | 2.0        | KS    |
| 15 46 32    | -47 14 01    | LHS3114       | 10.74    | 9.84     | 8.97     | Win19      | 7.917    | 0.023      | 7.263    | 0.031      | 7.088    | 0.029      | 6.978     | 0.031      | 7.053     | 0.020      | 7.036     | 0.019      | 41.1         | 3.2        |       |
| 15 47 15    | +01 49 22    | LP623-040     | 16.69    | 14.92    | 12.83    | 222        | 10.637   | 0.026      | 10.010   | 0.024      | 9.667    | 0.019      | 9.404     | 0.023      | 9.196     | 0.022      | 8.940     | 0.029      | 60.4         | 3.7        |       |
| 15 48 04    | +59 39 02    | G224-084      | 14.01    | 12.68    | 11.16    | 111        | 9.584    | 0.021      | 8.974    | 0.018      | 8.686    | 0.020      | 8.481     | 0.023      | 8.367     | 0.020      | 8.218     | 0.018      | 45.6         | 2.2        |       |
| 15 49 36    | +51 02 57    | G202-016      | 12.05    | 10.91    | 9.94     | Wei91b     | 8.573    | 0.032      | 8.021    | 0.044      | 7.755    | 0.024      | 7.591     | 0.026      | 7.498     | 0.020      | 7.405     | 0.015      | 52.4         | 3.1        |       |
| 15 49 38    | +34 48 57    | LHS3122       | 13.20    | 11.96    | 10.34    | Wei96      | 8.728    | 0.023      | 8.145    | 0.024      | 7.837    | 0.021      | 7.635     | 0.024      | 7.512     | 0.020      | 7.362     | 0.015      | 58.9         | 3.8        |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | π<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|------------------|--------------------|---------------|
| 15 49 55           | +79 39 52           | LP022-420        | 14.76           | 13.27    | 11.51           | 111        | 9.721           | 0.021      | 9.155            | 0.021              | 8.864            | 0.014              | 8.662             | 0.023              | 8.466             | 0.021              | 8.326             | 0.017              | 80.4             | 5.0                |               |
| 15 51 22           | +29 31 06           | LHS3124          | 13.03           | 11.87    | 10.39           | Hos15      | 8.961           | 0.024      | 8.380            | 0.040              | 8.151            | 0.017              | 7.954             | 0.023              | 7.803             | 0.021              | 7.681             | 0.015              | 53.2             | 1.9                |               |
| 15 52 45           | -26 23 14           | LHS5303          | 16.54           | 14.64    | 12.49           | 333        | 10.258          | 0.021      | 9.676            | 0.022              | 9.315            | 0.021              | 9.101             | 0.023              | 8.907             | 0.021              | 8.733             | 0.032              | 94.6             | 0.7                |               |
| 15 53 06           | +34 45 14           | LHS3129          | 11.76           | 10.68    | 9.33            | We96       | 8.001           | 0.035      | 7.338            | 0.057              | 7.092            | 0.023              | 6.954             | 0.034              | 6.875             | 0.020              | 6.783             | 0.015              | 44.7             | 2.3                |               |
| 15 55 05           | +33 50 51           | LHS3132          | 15.98           | 14.60    | 12.88           | 333        | 11.198          | 0.020      | 10.783           | 0.022              | 10.499           | 0.017              | 10.319            | 0.022              | 10.084            | 0.019              | 9.934             | 0.033              | 41.5             | 4.0                |               |
| 15 55 16           | -09 56 06           | 2MA1555-0956     | 21.04           | 18.28    | 15.82           | Die14      | 12.557          | 0.024      | 11.984           | 0.024              | 11.443           | 0.019              | 11.137            | 0.023              | 10.857            | 0.022              | 10.702            | 0.106              | 74.5             | 1.2                |               |
| 15 59 51           | +14 59 48           | LHS3142          | 14.05           | 12.91    | 11.46           | 222        | 10.074          | 0.024      | 9.564            | 0.022              | 9.320            | 0.019              | 9.163             | 0.023              | 8.981             | 0.018              | 8.876             | 0.025              | 40.0             | 5.1                |               |
| 15 59 53           | -08 15 11           | GJ0606           | 10.49           | 9.51     | 8.39            | Bes90      | 7.185           | 0.030      | 6.601            | 0.047              | 6.343            | 0.029              | 6.205             | 0.044              | 6.098             | 0.021              | 6.089             | 0.014              | 72.6             | 1.9                |               |
| 16 01 44           | +30 10 51           | LTT14770         | 12.52           | 11.42    | 10.02           | We99       | 8.666           | 0.018      | 8.086            | 0.023              | 7.873            | 0.033              | 7.693             | 0.024              | 7.565             | 0.020              | 7.458             | 0.016              | 55.5             | 5.0                |               |
| 16 02 42           | +01 31 58           | LSPM1602+0131    | 16.56           | 14.94    | 12.89           | 222        | 10.887          | 0.024      | 10.386           | 0.022              | 10.033           | 0.019              | 9.839             | 0.023              | 9.619             | 0.019              | 9.396             | 0.034              | 62.9             | 6.9                |               |
| 16 02 51           | +20 35 21           | GJ0609           | 12.59           | 11.33    | 9.71            | 333        | 8.132           | 0.020      | 7.648            | 0.023              | 7.369            | 0.017              | 7.202             | 0.029              | 7.015             | 0.020              | 6.919             | 0.015              | 100.3            | 3.1                |               |
| 16 04 20           | -06 16 46           | LHS3149          | 15.66           | 14.13    | 12.29           | Win19      | 10.452          | 0.019      | 9.880            | 0.025              | 9.548            | 0.020              | 9.345             | 0.023              | 9.162             | 0.018              | 8.978             | 0.030              | 59.7             | 4.4                |               |
| 16 04 23           | -33 03 49           | LP917-019        | 10.08           | 9.22     | 8.41            | Koe10      | 7.382           | 0.018      | 6.748            | 0.029              | 6.557            | 0.015              | 6.484             | 0.041              | 6.441             | 0.018              | 6.416             | 0.016              | 43.7             | 2.1                |               |
| 16 07 31           | -04 42 19           | SIP1607-0442     | 19.79           | 17.27    | 14.83           | Win19      | 11.896          | 0.022      | 11.187           | 0.022              | 10.717           | 0.025              | 10.473            | 0.024              | 10.285            | 0.021              | 10.089            | 0.053              | 63.9             | 1.5                |               |
| 16 08 15           | -10 62 14           | GJ1198           | 14.69           | 13.43    | 11.78           | Win15      | 10.257          | 0.022      | 9.749            | 0.025              | 9.529            | 0.026              | 9.339             | 0.024              | 9.126             | 0.021              | 9.017             | 0.030              | 47.1             | 2.7                |               |
| 16 09 03           | +52 56 38           | HIP079126        | 10.19           | 9.27     | 8.31            | We93       | 7.185           | 0.020      | 6.525            | 0.020              | 6.331            | 0.018              | 6.244             | 0.047              | 6.191             | 0.021              | 6.163             | 0.014              | 59.1             | 1.0                |               |
| 16 10 02           | +06 04 47           | LSPM1610+0604    | 14.24           | 13.11    | 11.69           | 222        | 10.264          | 0.022      | 9.711            | 0.022              | 9.460            | 0.023              | 9.292             | 0.024              | 9.144             | 0.022              | 9.104             | 0.027              | 40.1             | 2.8                |               |
| 16 11 28           | +07 04 00           | LP564-045        | 13.72           | 12.60    | 11.15           | 222        | 9.769           | 0.023      | 9.280            | 0.024              | 9.015            | 0.021              | 8.833             | 0.023              | 8.668             | 0.021              | 8.570             | 0.022              | 40.0             | 1.5                |               |
| 16 12 03           | +31 58 48           | G168-035         | 14.49           | 13.33    | 11.76           | 222        | 10.272          | 0.022      | 9.674            | 0.022              | 9.429            | 0.018              | 9.224             | 0.022              | 9.094             | 0.018              | 8.961             | 0.024              | 44.7             | 1.5                |               |
| 16 12 42           | -18 52 32           | LP804-027        | 11.37           | 10.29    | 8.92            | Koe10      | 7.555           | 0.026      | 6.855            | 0.044              | 6.589            | 0.018              | 6.487             | 0.042              | 6.413             | 0.023              | 6.331             | 0.016              | 69.5             | 3.1                |               |
| 16 13 06           | -70 09 08           | LHS3167          | 13.71           | 12.45    | 10.82           | Rie10      | 9.262           | 0.027      | 8.735            | 0.053              | 8.388            | 0.033              | 8.228             | 0.023              | 8.058             | 0.021              | 7.899             | 0.016              | 60.3             | 1.0                |               |
| 16 14 22           | -28 30 37           | LHS3169          | 12.95           | 11.80    | 10.29           | Rie10      | 8.917           | 0.024      | 8.356            | 0.031              | 8.114            | 0.029              | 7.938             | 0.022              | 7.768             | 0.020              | 7.669             | 0.019              | 53.4             | 1.5                |               |
| 16 14 33           | +19 06 11           | GJ1200           | 12.92           | 11.79    | 10.36           | 222        | 8.990           | 0.023      | 8.478            | 0.017              | 8.262            | 0.020              | 8.100             | 0.022              | 7.899             | 0.020              | 7.802             | 0.018              | 59.0             | 1.9                |               |
| 16 15 10           | +31 51 48           | LSPM1615+3151    | 15.10           | 13.79    | 11.98           | 222        | 10.336          | 0.022      | 9.849            | 0.020              | 9.546            | 0.018              | 9.328             | 0.024              | 9.094             | 0.020              | 8.963             | 0.024              | 66.5             | 1.6                |               |
| 16 16 43           | +67 14 29           | GJ0617           | 8.59            | 7.68     | 6.84            | 111        | 5.779           | 0.019      | 5.136            | 0.034              | 4.953            | 0.018              | 4.915             | 0.070              | 4.610             | 0.041              | 4.874             | 0.015              | 93.8             | 0.7                | UB?           |
| 16 20 04           | -37 31 45           | GJ0618           | 10.61           | 9.50     | 8.14            | Win19      | 6.793           | 0.023      | 6.223            | 0.021              | 5.950            | 0.021              | 5.629             | 0.051              | 5.337             | 0.027              | 5.492             | 0.015              | 120.5            | 2.4                |               |
| 16 20 15           | -01 16 49           | LHS3181          | 17.11           | 16.14    | 14.97           | 222        | 13.830          | 0.029      | 13.350           | 0.027              | 13.184           | 0.034              | 12.931            | 0.025              | 12.747            | 0.029              | 12.201            | 0.381              | 28.7             | 3.0                | KS            |
| 16 21 25           | +24 43 21           | LP385-066        | 17.22           | 15.64    | 13.85           | 111        | 11.980          | 0.027      | 11.485           | 0.034              | 11.150           | 0.020              | 10.926            | 0.023              | 10.727            | 0.020              | 10.702            | 0.082              | 43.6             | 4.8                |               |
| 16 21 32           | +35 19 37           | LP275-020        | 17.27           | 15.76    | 13.63           | 222        | 11.633          | 0.021      | 11.078           | 0.022              | 10.777           | 0.019              | 10.552            | 0.023              | 10.324            | 0.021              | 10.163            | 0.047              | 54.9             | 2.7                | W09           |
| 16 22 41           | -48 39 20           | GJ0618.4         | 11.84           | 10.85    | 9.70            | Bes90      | 8.480           | 0.021      | 7.872            | 0.047              | 7.637            | 0.018              | 7.500             | 0.025              | 7.414             | 0.021              | 7.420             | 0.042              | 42.1             | 3.4                |               |
| 16 23 08           | -24 42 35           | GJ0620           | 10.22           | 9.30     | 8.34            | Bes90      | 7.260           | 0.024      | 6.586            | 0.040              | 6.393            | 0.020              | 6.238             | 0.050              | 6.229             | 0.022              | 6.220             | 0.018              | 60.7             | 2.1                |               |
| 16 25 13           | -21 56 14           | GJ0622           | 10.41           | 9.50     | 8.63            | Bes90      | 7.550           | 0.027      | 6.918            | 0.027              | 6.725            | 0.020              | 6.570             | 0.037              | 6.566             | 0.020              | 6.543             | 0.017              | 55.4             | 2.3                |               |
| 16 25 25           | +54 18 15           | GJ0625           | 10.12           | 9.08     | 7.89            | 333        | 6.608           | 0.020      | 6.063            | 0.018              | 5.833            | 0.024              | 5.675             | 0.058              | 5.377             | 0.031              | 5.462             | 0.015              | 153.1            | 0.9                |               |
| 16 26 52           | -38 12 33           | SCR1626-3812     | 15.75           | 14.23    | 12.29           | Win15      | 10.365          | 0.024      | 9.800            | 0.024              | 9.443            | 0.019              | 9.243             | 0.023              | 9.048             | 0.020              | 8.861             | 0.031              | 71.2             | 1.6                |               |
| 16 27 33           | -10 00 29           | GJ2120           | 10.85           | 9.89     | 8.84            | Koe10      | 7.690           | 0.019      | 7.040            | 0.036              | 6.834            | 0.027              | 6.674             | 0.037              | 6.712             | 0.021              | 6.631             | 0.016              | 43.7             | 3.1                |               |
| 16 30 18           | -12 39 45           | GJ0628           | 10.07           | 8.89     | 7.37            | Win15      | 5.950           | 0.024      | 5.373            | 0.040              | 5.075            | 0.024              | 4.914             | 0.066              | 4.338             | 0.039              | 4.671             | 0.014              | 234.4            | 1.5                |               |
| 16 31 19           | +40 51 52           | G180-060         | 14.76           | 13.27    | 11.29           | We18       | 9.461           | 0.023      | 8.869            | 0.023              | 8.506            | 0.016              | 8.290             | 0.024              | 8.136             | 0.020              | 7.953             | 0.018              | 83.2             | 2.6                |               |
| 16 31 28           | +47 10 21           | LSPM1631+4710    | 13.79           | 12.50    | 10.90           | 222        | 9.397           | 0.022      | 8.772            | 0.026              | 8.513            | 0.022              | 8.345             | 0.023              | 8.176             | 0.020              | 8.034             | 0.016              | 65.7             | 1.8                |               |
| 16 31 35           | +17 33 49           | GJ1202           | 12.82           | 11.69    | 10.29           | 222        | 8.926           | 0.019      | 8.431            | 0.016              | 8.178            | 0.017              | 8.009             | 0.022              | 7.824             | 0.019              | 7.722             | 0.017              | 59.0             | 2.1                |               |
| 16 32 35           | +40 24 04           | LSPM1632+4024    | 15.61           | 14.51    | 13.05           | 111        | 11.697          | 0.024      | 11.183           | 0.029              | 10.967           | 0.022              | 10.782            | 0.022              | 10.578            | 0.020              | 10.432            | 0.055              | 60.0             | 4.0                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>(11) | K<br>mag<br>(12) | err<br>(13) | W1<br>mag<br>(14) | err<br>(15) | W2<br>mag<br>(16) | err<br>(17) | W3<br>mag<br>(18) | err<br>(19) | π<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|-------------|------------------|-------------|-------------------|-------------|-------------------|-------------|-------------------|-------------|------------------|--------------------|---------------|
| 16 32 45           | +12 36 46           | GJ1203           | 12.16           | 11.12    | 9.77            | Koe10      | 8.429           | 0.019      | 7.902            | 0.024       | 7.675            | 0.024       | 7.567             | 0.026       | 7.392             | 0.020       | 7.325             | 0.016       | 55.6             | 2.5                |               |
| 16 32 53           | +09 50 26           | G138-040         | 13.04           | 11.89    | 10.40           | Wei86      | 8.988           | 0.029      | 8.455            | 0.031       | 8.160            | 0.023       | 7.980             | 0.023       | 7.822             | 0.020       | 7.724             | 0.018       | 72.6             | 2.3                |               |
| 16 32 59           | -06 31 48           | SlP1632-0631     | 20.20           | 18.06    | 15.56           | 222        | 12.742          | 0.023      | 12.045           | 0.023       | 11.621           | 0.024       | 11.331            | 0.023       | 11.118            | 0.021       | 11.197            | 0.235       | 53.3             | 1.5                |               |
| 16 33 42           | -09 33 12           | LP745-070        | 11.19           | 10.30    | 9.42            | 222        | 8.377           | 0.021      | 7.779            | 0.051       | 7.547            | 0.026       | 7.449             | 0.024       | 7.443             | 0.021       | 7.401             | 0.019       | 32.6             | 2.5                | KY            |
| 16 35 25           | -27 18 55           | LHS3218          | 14.18           | 12.93    | 11.28           | Rie10      | 9.777           | 0.022      | 9.265            | 0.022       | 8.998            | 0.023       | 8.811             | 0.023       | 8.609             | 0.019       | 8.474             | 0.026       | 53.9             | 0.8                |               |
| 16 35 40           | -30 51 20           | LHS0423          | 12.66           | 11.58    | 10.16           | Win15      | 8.887           | 0.026      | 8.359            | 0.047       | 8.075            | 0.027       | 7.932             | 0.024       | 7.746             | 0.020       | 7.662             | 0.019       | 51.4             | 2.9                |               |
| 16 36 06           | +08 48 49           | GJ1204           | 13.81           | 12.56    | 10.92           | Wei96      | 9.419           | 0.027      | 8.803            | 0.042       | 8.510            | 0.025       | 8.307             | 0.024       | 8.122             | 0.022       | 8.000             | 0.018       | 65.2             | 4.2                |               |
| 16 36 58           | -40 41 09           | SCR1636-4041     | 13.44           | 12.24    | 10.70           | Win17      | 9.198           | 0.019      | 8.573            | 0.049       | 8.312            | 0.033       | 8.158             | 0.022       | 8.038             | 0.019       | 7.788             | 0.023       | 46.4             | 1.5                |               |
| 16 39 30           | +50 34 04           | LHS3319          | 11.83           | 10.78    | 9.95            | Wei91b     | 8.628           | 0.021      | 8.116            | 0.017       | 7.858            | 0.023       | 7.714             | 0.024       | 7.599             | 0.020       | 7.520             | 0.015       | 47.5             | 2.0                |               |
| 16 40 06           | +00 42 19           | LP625-034        | 13.70           | 12.39    | 10.70           | Wei86      | 9.116           | 0.037      | 8.585            | 0.034       | 8.209            | 0.024       | 8.048             | 0.023       | 7.875             | 0.019       | 7.741             | 0.018       | 90.8             | 1.8                |               |
| 16 40 21           | +67 36 05           | LP069-457        | 15.65           | 14.00    | 11.93           | Wei87      | 9.854           | 0.023      | 9.294            | 0.021       | 8.950            | 0.014       | 8.730             | 0.024       | 8.543             | 0.021       | 8.327             | 0.017       | 74.2             | 2.4                |               |
| 16 40 32           | +05 51 45           | G138-052         | 14.50           | 13.29    | 11.73           | 222        | 10.231          | 0.024      | 9.607            | 0.022       | 9.382            | 0.025       | 9.187             | 0.023       | 9.020             | 0.020       | 8.931             | 0.027       | 40.2             | 1.4                |               |
| 16 40 45           | -45 59 59           | GJ0633           | 12.67           | 11.56    | 10.20           | Rie10      | 8.893           | 0.024      | 8.305            | 0.026       | 8.050            | 0.034       | 7.829             | 0.023       | 7.665             | 0.023       | 7.565             | 0.039       | 59.8             | 1.2                |               |
| 16 40 49           | +36 19 00           | LTT14949         | 11.50           | 10.38    | 9.45            | Wei91b     | 8.069           | 0.021      | 7.416            | 0.017       | 7.204            | 0.020       | 7.052             | 0.032       | 7.017             | 0.020       | 6.934             | 0.015       | 52.0             | 2.3                |               |
| 16 41 28           | -43 59 11           | GJ0634           | 11.58           | 10.57    | 9.38            | Bes90      | 8.144           | 0.029      | 7.620            | 0.033       | 7.334            | 0.026       | 7.147             | 0.027       | 7.048             | 0.021       | 7.011             | 0.020       | 57.4             | 6.6                |               |
| 16 42 04           | +10 25 59           | LHS0425          | 15.12           | 14.11    | 12.93           | 222        | 11.741          | 0.024      | 11.251           | 0.023       | 11.003           | 0.021       | 10.848            | 0.024       | 10.673            | 0.022       | 10.597            | 0.081       | 25.8             | 5.0                | KS            |
| 16 42 15           | +41 59 43           | G203-021         | 15.12           | 13.91    | 12.20           | 111        | 10.500          | 0.025      | 9.914            | 0.022       | 9.618            | 0.015       | 9.437             | 0.023       | 9.277             | 0.020       | 9.144             | 0.025       | 46.5             | 1.9                |               |
| 16 45 22           | -13 19 52           | 2MA1645-1319     | 20.60           | 17.97    | 15.72           | Hen18      | 12.451          | 0.028      | 11.685           | 0.025       | 11.145           | 0.026       | 10.747            | 0.023       | 10.489            | 0.021       | 9.920             | 0.054       | 90.5             | 0.8                |               |
| 16 45 43           | +04 44 49           | LHS5321          | 15.91           | 14.42    | 12.56           | 222        | 10.713          | 0.024      | 10.081           | 0.026       | 9.791            | 0.021       | 9.545             | 0.022       | 9.371             | 0.019       | 9.216             | 0.032       | 63.5             | 4.4                |               |
| 16 46 14           | +16 28 41           | LHS3240          | 11.65           | 10.59    | 9.27            | Koe10      | 7.951           | 0.018      | 7.293            | 0.026       | 7.094            | 0.021       | 6.936             | 0.032       | 6.839             | 0.020       | 6.762             | 0.016       | 62.5             | 3.0                |               |
| 16 46 32           | +34 34 55           | LHS3241          | 16.72           | 14.92    | 12.74           | 222        | 10.533          | 0.018      | 9.968            | 0.017       | 9.606            | 0.020       | 9.376             | 0.024       | 9.148             | 0.021       | 8.947             | 0.023       | 84.3             | 0.7                |               |
| 16 47 55           | -65 09 12           | LP154-205        | 13.98           | 12.73    | 11.16           | Win15      | 9.695           | 0.022      | 9.170            | 0.027       | 8.879            | 0.025       | 8.648             | 0.021       | 8.490             | 0.019       | 8.334             | 0.020       | 66.7             | 2.0                |               |
| 16 48 24           | -72 58 34           | GJ0637           | 11.35           | 10.37    | 9.26            | Bes90      | 8.040           | 0.024      | 7.479            | 0.049       | 7.224            | 0.020       | 7.078             | 0.033       | 6.984             | 0.022       | 6.921             | 0.016       | 63.1             | 2.9                |               |
| 16 48 46           | -15 44 20           | LP806-008        | 10.94           | 9.97     | 8.84            | Wei91b     | 7.656           | 0.023      | 7.001            | 0.026       | 6.774            | 0.027       | 6.620             | 0.039       | 6.620             | 0.019       | 6.562             | 0.017       | 54.9             | 2.2                |               |
| 16 49 01           | +08 38 33           | LP566-006        | 14.13           | 12.95    | 11.42           | Wei86      | 9.911           | 0.026      | 9.351            | 0.030       | 9.101            | 0.024       | 8.887             | 0.023       | 8.760             | 0.019       | 8.645             | 0.023       | 40.4             | 1.5                |               |
| 16 49 20           | +51 01 18           | G203-028         | 14.75           | 13.53    | 11.93           | 222        | 10.296          | 0.021      | 9.647            | 0.017       | 9.376            | 0.014       | 9.194             | 0.023       | 9.067             | 0.019       | 8.915             | 0.022       | 55.1             | 2.2                | W09           |
| 16 50 57           | +35 55 58           | LSPM1650+3555E   | 11.42           | 10.53    | 9.60            | 222        | 8.514           | 0.032      | 7.858            | 0.026       | 7.674            | 0.021       | 7.582             | 0.026       | 7.615             | 0.021       | 7.531             | 0.017       | 51.6             | 3.7                |               |
| 16 50 58           | +22 27 06           | G169-029         | 14.08           | 12.69    | 10.91           | Hos15      | 9.136           | 0.017      | 8.571            | 0.023       | 8.309            | 0.021       | 8.108             | 0.024       | 7.921             | 0.022       | 7.765             | 0.017       | 95.7             | 0.8                |               |
| 16 51 07           | +78 09 18           | LHS3247          | 17.14           | 15.63    | 13.53           | 111        | 11.441          | 0.018      | 10.839           | 0.019       | 10.462           | 0.022       | 10.253            | 0.023       | 10.076            | 0.019       | 9.879             | 0.028       | 65.0             | 2.6                |               |
| 16 52 49           | +63 04 39           | LSPM1652+6304    | 14.38           | 13.04    | 11.29           | 222        | 9.592           | 0.023      | 9.028            | 0.028       | 8.756            | 0.024       | 8.537             | 0.022       | 8.346             | 0.020       | 8.206             | 0.016       | 78.3             | 4.0                |               |
| 16 53 15           | +00 00 15           | LP626-013        | 18.45           | 16.47    | 14.25           | 222        | 11.875          | 0.023      | 11.256           | 0.032       | 10.873           | 0.022       | 10.650            | 0.024       | 10.438            | 0.021       | 10.094            | 0.050       | 42.6             | 3.8                |               |
| 16 53 39           | +56 03 27           | G226-033         | 14.05           | 12.91    | 11.40           | 222        | 9.859           | 0.021      | 9.347            | 0.027       | 9.098            | 0.023       | 8.928             | 0.023       | 8.743             | 0.020       | 8.626             | 0.017       | 58.0             | 1.9                | W09           |
| 16 54 12           | +11 54 53           | GJ0642           | 10.75           | 9.85     | 8.96            | Bes90      | 7.886           | 0.026      | 7.318            | 0.047       | 7.106            | 0.021       | 6.989             | 0.032       | 6.915             | 0.020       | 6.866             | 0.016       | 51.5             | 2.1                |               |
| 16 55 38           | -32 04 04           | LTT06745         | 9.57            | 8.70     | 7.90            | Koe10      | 6.917           | 0.020      | 6.251            | 0.029       | 6.050            | 0.024       | 6.050             | 0.041       | 6.003             | 0.024       | 5.991             | 0.015       | 54.8             | 1.2                |               |
| 16 56 34           | -20 46 37           | SCR1656-2046     | 17.32           | 15.55    | 13.39           | Win17      | 11.299          | 0.024      | 10.713           | 0.023       | 10.368           | 0.026       | 10.129            | 0.022       | 9.941             | 0.019       | 9.636             | 0.069       | 62.7             | 1.4                |               |
| 16 56 45           | -37 03 39           | GJ0645           | 11.44           | 10.46    | 9.34            | Bes90      | 8.172           | 0.021      | 7.574            | 0.038       | 7.344            | 0.021       | 7.185             | 0.030       | 7.119             | 0.020       | 7.085             | 0.021       | 58.3             | 9.0                |               |
| 16 57 06           | -04 20 56           | GJ1207           | 12.25           | 10.99    | 9.43            | Dav15      | 7.971           | 0.023      | 7.442            | 0.080       | 7.120            | 0.021       | 6.937             | 0.035       | 6.764             | 0.021       | 6.682             | 0.016       | 115.3            | 1.5                |               |
| 16 58 09           | +25 44 39           | GJ0649           | 9.69            | 8.72     | 7.63            | Wei96      | 6.448           | 0.021      | 5.865            | 0.020       | 5.624            | 0.016       | 5.502             | 0.065       | 5.289             | 0.032       | 5.376             | 0.015       | 97.3             | 1.3                |               |
| 16 59 28           | -69 58 18           | SCR1659-6958     | 15.36           | 13.93    | 12.15           | Win15      | 10.535          | 0.024      | 9.995            | 0.025       | 9.696            | 0.021       | 9.478             | 0.023       | 9.287             | 0.022       | 9.147             | 0.031       | 48.9             | 0.9                |               |
| 17 01 34           | +07 09 48           | G139-007         | 15.03           | 13.79    | 12.22           | 222        | 10.665          | 0.022      | 10.112           | 0.022       | 9.808            | 0.021       | 9.641             | 0.023       | 9.471             | 0.022       | 9.357             | 0.034       | 47.6             | 2.4                |               |



# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 17 01 46           | +74 11 51           | LP043-292        | 13.71           | 12.46    | 10.97           | 222        | 9.435           | 0.020      | 8.895            | 0.015              | 8.624            | 0.020              | 8.425             | 0.023              | 8.258             | 0.020              | 8.118             | 0.016              | 66.9                 | 2.5                |               |
| 17 02 50           | -06 04 07           | HIP083405        | 10.85           | 9.92     | 8.92            | Wei91b     | 7.802           | 0.027      | 7.163            | 0.038              | 6.945            | 0.023              | 6.837             | 0.034              | 6.788             | 0.020              | 6.719             | 0.015              | 52.8                 | 2.0                |               |
| 17 03 24           | +51 24 23           | LHS3262          | 13.54           | 12.21    | 10.47           | Wei96      | 8.768           | 0.029      | 8.193            | 0.018              | 7.921            | 0.021              | 7.692             | 0.024              | 7.520             | 0.020              | 7.372             | 0.017              | 107.0                | 2.0                |               |
| 17 04 22           | +16 55 56           | GJ1209           | 12.29           | 11.22    | 9.89            | Wei96      | 8.571           | 0.029      | 8.073            | 0.029              | 7.795            | 0.016              | 7.639             | 0.024              | 7.462             | 0.020              | 7.390             | 0.017              | 58.2                 | 3.2                |               |
| 17 07 08           | +21 33 14           | GJ0655           | 11.68           | 10.58    | 9.24            | Koe10      | 7.875           | 0.020      | 7.289            | 0.021              | 7.042            | 0.016              | 6.869             | 0.034              | 6.764             | 0.019              | 6.685             | 0.016              | 71.3                 | 2.1                |               |
| 17 07 13           | +41 36 45           | LP226-038        | 15.60           | 14.13    | 12.42           | 222        | 10.690          | 0.023      | 10.122           | 0.031              | 9.826            | 0.022              | 9.620             | 0.023              | 9.426             | 0.021              | 9.328             | 0.028              | 47.2                 | 2.8                |               |
| 17 09 26           | +39 09 37           | LHS3267          | 13.82           | 12.67    | 11.21           | Wei96      | 9.842           | 0.022      | 9.291            | 0.020              | 9.034            | 0.019              | 8.843             | 0.022              | 8.676             | 0.020              | 8.559             | 0.020              | 44.2                 | 3.0                |               |
| 17 10 59           | -52 30 56           | L268-067         | 10.02           | 9.06     | 8.00            | Koe10      | 6.866           | 0.024      | 6.229            | 0.024              | 6.026            | 0.021              | 5.931             | 0.046              | 5.751             | 0.025              | 5.807             | 0.016              | 80.2                 | 1.8                |               |
| 17 11 35           | +38 26 34           | LTT15087         | 11.61           | 10.48    | 9.03            | Wei87      | 7.630           | 0.023      | 7.041            | 0.016              | 6.801            | 0.021              | 6.601             | 0.042              | 6.483             | 0.021              | 6.406             | 0.014              | 83.3                 | 2.0                |               |
| 17 11 46           | +40 29 02           | G203-050         | 15.90           | 14.44    | 12.75           | 222        | 11.074          | 0.020      | 10.562           | 0.022              | 10.271           | 0.019              | 10.018            | 0.022              | 9.798             | 0.019              | 9.586             | 0.029              | 73.8                 | 5.1                |               |
| 17 15 19           | +04 57 50           | GJ1214           | 14.71           | 13.27    | 11.50           | Lur14      | 9.750           | 0.024      | 9.094            | 0.024              | 8.782            | 0.020              | 8.583             | 0.023              | 8.434             | 0.021              | 8.257             | 0.021              | 71.0                 | 1.1                |               |
| 17 16 01           | +11 03 28           | L1205-067        | 10.83           | 9.86     | 8.77            | Koe10      | 7.634           | 0.021      | 7.020            | 0.029              | 6.816            | 0.016              | 6.653             | 0.038              | 6.593             | 0.019              | 6.524             | 0.017              | 56.2                 | 2.3                |               |
| 17 16 41           | +08 03 30           | GJ2128           | 11.53           | 10.48    | 9.22            | Koe10      | 7.933           | 0.019      | 7.389            | 0.027              | 7.106            | 0.020              | 6.954             | 0.035              | 6.828             | 0.020              | 6.748             | 0.017              | 67.1                 | 2.7                |               |
| 17 19 53           | +41 42 59           | GJ0671           | 11.41           | 10.34    | 9.02            | Wei96      | 7.712           | 0.024      | 7.132            | 0.020              | 6.915            | 0.018              | 6.773             | 0.038              | 6.613             | 0.020              | 6.543             | 0.015              | 80.4                 | 1.6                |               |
| 17 19 54           | +26 30 03           | GJ0669           | 11.42           | 10.26    | 8.76            | Wei91a     | 7.273           | 0.020      | 6.710            | 0.031              | 6.422            | 0.018              | 6.218             | 0.046              | 6.102             | 0.022              | 6.027             | 0.014              | 90.7                 | 1.7                |               |
| 17 20 46           | +49 15 20           | GJ1216           | 14.53           | 13.29    | 11.70           | Bes90      | 10.124          | 0.021      | 9.641            | 0.015              | 9.376            | 0.018              | 9.163             | 0.022              | 8.957             | 0.021              | 8.830             | 0.021              | 60.6                 | 2.6                |               |
| 17 21 03           | +12 58 44           | LP507-015        | 16.10           | 14.66    | 12.86           | 222        | 11.064          | 0.021      | 10.501           | 0.022              | 10.170           | 0.018              | 9.994             | 0.023              | 9.803             | 0.022              | 9.764             | 0.066              | 45.4                 | 3.0                |               |
| 17 21 55           | +21 25 48           | G170-036         | 13.84           | 12.59    | 10.96           | Wei87      | 9.344           | 0.021      | 8.764            | 0.022              | 8.492            | 0.018              | 8.288             | 0.023              | 8.150             | 0.021              | 8.006             | 0.018              | 74.6                 | 2.5                |               |
| 17 22 18           | +59 50 04           | LP102-072        | 14.83           | 13.58    | 12.10           | 222        | 10.577          | 0.029      | 9.993            | 0.030              | 9.704            | 0.020              | 9.502             | 0.023              | 9.342             | 0.019              | 9.231             | 0.025              | 49.2                 | 3.0                | W09           |
| 17 22 43           | +60 08 21           | LP102-071        | 14.44           | 13.20    | 11.64           | 333        | 10.050          | 0.023      | 9.419            | 0.021              | 9.162            | 0.018              | 9.000             | 0.023              | 8.893             | 0.021              | 8.749             | 0.021              | 49.1                 | 1.7                |               |
| 17 23 49           | -32 15 16           | GJ0672.1         | 11.64           | 10.67    | 9.55            | Bes90      | 8.376           | 0.027      | 7.822            | 0.044              | 7.519            | 0.024              | 7.090             | 0.017              | 6.495             | 0.012              | 6.690             | 0.017              | 42.4                 | 3.9                |               |
| 17 23 57           | +13 38 20           | LSPM1723+1338    | 13.77           | 12.55    | 11.00           | 222        | 9.504           | 0.021      | 8.944            | 0.020              | 8.668            | 0.017              | 8.479             | 0.023              | 8.314             | 0.021              | 8.193             | 0.020              | 56.2                 | 1.2                |               |
| 17 24 40           | +61 47 51           | LSPM1724+6147    | 13.40           | 12.29    | 10.84           | 222        | 9.449           | 0.021      | 8.856            | 0.027              | 8.612            | 0.019              | 8.447             | 0.022              | 8.318             | 0.020              | 8.225             | 0.016              | 48.5                 | 2.6                |               |
| 17 24 42           | +04 22 49           | LP567-029        | 15.87           | 14.44    | 12.63           | 222        | 10.794          | 0.022      | 10.160           | 0.029              | 9.847            | 0.019              | 9.665             | 0.023              | 9.471             | 0.020              | 9.236             | 0.030              | 43.7                 | 3.8                |               |
| 17 26 36           | +20 31 25           | LP447-051        | 16.23           | 14.75    | 12.90           | 222        | 11.044          | 0.022      | 10.488           | 0.023              | 10.140           | 0.019              | 9.931             | 0.023              | 9.741             | 0.021              | 9.503             | 0.032              | 41.6                 | 4.4                |               |
| 17 27 40           | +14 29 02           | GJ1219           | 13.75           | 12.61    | 11.12           | 333        | 9.693           | 0.022      | 9.218            | 0.021              | 8.958            | 0.018              | 8.767             | 0.024              | 8.571             | 0.021              | 8.454             | 0.020              | 56.7                 | 1.6                |               |
| 17 28 07           | -62 27 15           | GJ1218           | 12.74           | 11.54    | 9.96            | Win15      | 8.422           | 0.023      | 7.847            | 0.059              | 7.567            | 0.017              | 7.419             | 0.027              | 7.276             | 0.020              | 7.189             | 0.015              | 61.3                 | 1.1                |               |
| 17 28 40           | -46 53 43           | GJ0674           | 9.39            | 8.30     | 6.98            | 333        | 5.711           | 0.019      | 5.154            | 0.033              | 4.855            | 0.018              | 4.707             | 0.077              | 4.184             | 0.045              | 4.502             | 0.015              | 220.1                | 1.4                | KY            |
| 17 29 27           | -80 08 57           | LHS3295          | 12.18           | 11.02    | 9.53            | Rie10      | 8.088           | 0.029      | 7.523            | 0.024              | 7.299            | 0.017              | 7.138             | 0.030              | 6.963             | 0.019              | 6.900             | 0.016              | 80.0                 | 1.8                |               |
| 17 30 06           | +54 39 32           | LSPM1730+5439    | 13.11           | 11.97    | 10.49           | 333        | 9.044           | 0.025      | 8.358            | 0.024              | 8.121            | 0.020              | 7.929             | 0.023              | 7.838             | 0.020              | 7.719             | 0.016              | 43.0                 | 1.7                |               |
| 17 30 11           | -51 38 13           | GJ0676           | 9.59            | 8.68     | 7.76            | Koe10      | 6.711           | 0.020      | 6.082            | 0.024              | 5.825            | 0.029              | 5.763             | 0.053              | 5.713             | 0.025              | 5.742             | 0.015              | 61.3                 | 1.6                |               |
| 17 30 23           | +05 32 55           | GJ0678.1         | 9.30            | 8.37     | 7.40            | Bes90      | 6.240           | 0.020      | 5.654            | 0.042              | 5.422            | 0.029              | 5.341             | 0.064              | 5.049             | 0.026              | 5.237             | 0.015              | 100.6                | 1.0                |               |
| 17 30 27           | +33 44 53           | LSPM1730+3344    | 13.49           | 12.35    | 10.86           | 222        | 9.456           | 0.020      | 8.815            | 0.023              | 8.577            | 0.017              | 8.428             | 0.023              | 8.291             | 0.019              | 8.175             | 0.018              | 46.9                 | 2.0                |               |
| 17 31 04           | -24 52 44           | SCRI731-2452     | 13.20           | 12.07    | 10.63           | Win17      | 9.266           | 0.023      | 8.612            | 0.044              | 8.376            | 0.029              | 8.213             | 0.022              | 8.111             | 0.022              | 8.078             | 0.026              | 40.2                 | 3.2                |               |
| 17 31 04           | +35 04 08           | LSPM1731+3504    | 15.65           | 14.37    | 12.58           | 222        | 10.863          | 0.021      | 10.270           | 0.019              | 9.959            | 0.017              | 9.792             | 0.024              | 9.608             | 0.021              | 9.427             | 0.028              | 46.7                 | 4.8                |               |
| 17 31 17           | +82 05 20           | GJ1220           | 14.13           | 12.84    | 11.11           | Wei96      | 9.572           | 0.019      | 9.020            | 0.017              | 8.730            | 0.016              | 8.527             | 0.022              | 8.347             | 0.019              | 8.183             | 0.017              | 77.9                 | 2.5                |               |
| 17 31 30           | +27 21 23           | LSPM1731+2721    | 19.86           | 17.67    | 15.36           | Hen18      | 12.094          | 0.027      | 11.391           | 0.030              | 10.914           | 0.021              | 10.597            | 0.023              | 10.322            | 0.020              | 9.889             | 0.037              | 85.5                 | 1.7                |               |
| 17 31 45           | +30 56 05           | LP332-033        | 15.67           | 14.28    | 12.58           | 222        | 10.926          | 0.022      | 10.335           | 0.019              | 10.067           | 0.018              | 9.825             | 0.023              | 9.652             | 0.020              | 9.475             | 0.030              | 53.2                 | 2.6                |               |
| 17 32 29           | +10 23 02           | LSPM1732+1023    | 14.87           | 13.62    | 12.06           | 222        | 10.494          | 0.023      | 9.892            | 0.022              | 9.634            | 0.021              | 9.461             | 0.022              | 9.298             | 0.018              | 9.141             | 0.028              | 42.6                 | 2.1                |               |
| 17 36 18           | +13 46 23           | LP508-014        | 14.84           | 13.61    | 12.00           | Wei86      | 10.412          | 0.021      | 9.814            | 0.026              | 9.538            | 0.022              | 9.316             | 0.024              | 9.182             | 0.019              | 9.015             | 0.027              | 45.4                 | 2.6                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-------------|--------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 17 36 26    | +68 20 21    | GJ0687           | 9.17            | 8.08     | 6.67            | Wei96      | 5.335           | 0.021      | 4.766            | 0.033              | 4.548            | 0.021              | 4.397             | 0.094              | 3.763             | 0.061              | 4.182             | 0.015              | 220.5                | 0.8                |               |
| 17 37 36    | +22 05 50    | G170-054         | 14.08           | 12.86    | 11.27           | Wei87      | 9.764           | 0.021      | 9.173            | 0.016              | 8.888            | 0.018              | 8.713             | 0.023              | 8.560             | 0.019              | 8.427             | 0.021              | 53.7                 | 1.9                |               |
| 17 37 53    | +18 35 30    | GJ0686           | 9.61            | 8.64     | 7.55            | Wei96      | 6.360           | 0.023      | 5.790            | 0.020              | 5.572            | 0.020              | 5.479             | 0.070              | 5.154             | 0.035              | 5.269             | 0.015              | 124.2                | 1.5                |               |
| 17 38 33    | -58 32 34    | L204-148         | 12.52           | 11.38    | 9.91            | Wei96      | 8.479           | 0.023      | 7.933            | 0.046              | 7.667            | 0.027              | 7.539             | 0.026              | 7.380             | 0.020              | 7.293             | 0.018              | 63.0                 | 1.3                |               |
| 17 39 31    | +27 45 44    | L1422-016        | 11.12           | 10.14    | 9.37            | Wei91a     | 8.097           | 0.029      | 7.471            | 0.033              | 7.257            | 0.018              | 7.165             | 0.027              | 7.173             | 0.019              | 7.101             | 0.017              | 40.1                 | 2.5                |               |
| 17 41 54    | +09 40 54    | LP508-020        | 18.89           | 16.71    | 14.36           | 222        | 11.914          | 0.023      | 11.336           | 0.029              | 10.968           | 0.020              | 10.725            | 0.023              | 10.511            | 0.020              | 10.500            | 0.095              | 73.6                 | 2.9                |               |
| 17 42 11    | -08 49 00    | LHS3315          | 13.66           | 12.48    | 11.12           | Win19      | 9.812           | 0.023      | 9.324            | 0.023              | 9.065            | 0.021              | 8.884             | 0.023              | 8.692             | 0.021              | 8.598             | 0.024              | 42.9                 | 3.2                |               |
| 17 42 32    | -16 38 25    | GJ0690.1         | 13.00           | 11.96    | 10.68           | Bes90      | 9.441           | 0.022      | 8.934            | 0.024              | 8.678            | 0.022              | 8.532             | 0.023              | 8.362             | 0.019              | 8.308             | 0.028              | 51.5                 | 5.2                |               |
| 17 42 42    | +75 37 19    | LP024-054        | 14.30           | 13.00    | 11.30           | Wei96      | 9.680           | 0.021      | 9.117            | 0.017              | 8.824            | 0.019              | 8.631             | 0.023              | 8.459             | 0.020              | 8.308             | 0.017              | 72.6                 | 2.5                |               |
| 17 43 56    | +43 22 43    | GJ0694           | 10.45           | 9.39     | 8.09            | Wei96      | 6.812           | 0.024      | 6.221            | 0.018              | 5.964            | 0.020              | 5.820             | 0.055              | 5.623             | 0.029              | 5.664             | 0.015              | 105.0                | 1.1                |               |
| 17 45 34    | +46 51 29    | GJ0694.2         | 10.72           | 9.79     | 8.80            | Wei93      | 7.636           | 0.026      | 7.004            | 0.027              | 6.795            | 0.018              | 6.700             | 0.038              | 6.675             | 0.020              | 6.592             | 0.016              | 46.6                 | 1.1                |               |
| 17 46 05    | +24 39 05    | LHS3324          | 12.68           | 11.57    | 10.15           | Wei96      | 8.814           | 0.024      | 8.305            | 0.033              | 8.059            | 0.026              | 7.898             | 0.024              | 7.699             | 0.019              | 7.617             | 0.019              | 69.9                 | 2.2                |               |
| 17 46 13    | -32 06 09    | GJ2130           | 10.50           | 9.49     | 8.34            | Hen06      | 7.113           | 0.018      | 6.528            | 0.033              | 6.251            | 0.026              | 6.157             | 0.055              | 6.072             | 0.027              | 6.042             | 0.022              | 70.6                 | 1.6                |               |
| 17 46 29    | -08 42 37    | LTT07077         | 12.72           | 11.44    | 9.78            | Win15      | 8.198           | 0.024      | 7.693            | 0.042              | 7.353            | 0.021              | 7.198             | 0.027              | 7.007             | 0.021              | 6.907             | 0.015              | 77.2                 | 1.7                |               |
| 17 46 34    | -57 19 09    | GJ0693           | 10.77           | 9.63     | 8.21            | 333        | 6.855           | 0.021      | 6.297            | 0.036              | 6.016            | 0.017              | 5.918             | 0.055              | 5.542             | 0.032              | 5.600             | 0.015              | 171.1                | 2.2                |               |
| 17 46 41    | -32 14 04    | SCR1746-3214     | 16.15           | 14.47    | 12.40           | Win15      | 10.350          | 0.024      | 9.739            | 0.025              | 9.381            | 0.022              | 9.164             | 0.025              | 9.014             | 0.025              | 8.913             | 0.110              | 88.5                 | 2.1                |               |
| 17 49 59    | +22 41 07    | LHS3332          | 18.84           | 16.82    | 14.51           | 222        | 12.171          | 0.027      | 11.670           | 0.032              | 11.287           | 0.023              | 11.060            | 0.023              | 10.790            | 0.020              | 10.584            | 0.073              | 60.5                 | 4.1                |               |
| 17 50 15    | +23 45 51    | LHS3333          | 13.52           | 12.33    | 10.81           | 222        | 9.320           | 0.023      | 8.634            | 0.036              | 8.450            | 0.021              | 8.257             | 0.022              | 8.128             | 0.020              | 7.980             | 0.017              | 44.8                 | 4.1                |               |
| 17 50 34    | -06 03 01    | GJ0696           | 10.16           | 9.27     | 8.39            | Bes90      | 7.384           | 0.027      | 6.704            | 0.034              | 6.541            | 0.021              | 6.430             | 0.043              | 6.462             | 0.022              | 6.410             | 0.015              | 46.1                 | 2.0                | KY            |
| 17 54 17    | +07 22 45    | GJ1222           | 13.12           | 11.93    | 10.36           | Wei96      | 8.772           | 0.018      | 8.246            | 0.037              | 7.974            | 0.029              | 7.829             | 0.025              | 7.663             | 0.019              | 7.556             | 0.018              | 65.3                 | 1.6                |               |
| 17 55 33    | +58 24 28    | LHS3339          | 17.98           | 16.20    | 14.03           | Dah02      | 11.819          | 0.023      | 11.227           | 0.023              | 10.875           | 0.016              | 10.642            | 0.024              | 10.431            | 0.020              | 10.205            | 0.038              | 47.3                 | 1.0                | Vref          |
| 17 56 52    | +19 05 56    | LSPM1756+1905    | 15.49           | 14.10    | 12.37           | 111        | 10.625          | 0.021      | 10.042           | 0.017              | 9.740            | 0.022              | 9.521             | 0.022              | 9.356             | 0.020              | 9.198             | 0.029              | 40.0                 | 1.7                |               |
| 17 57 14    | -41 59 29    | LTT07138         | 11.28           | 10.30    | 9.17            | Win15      | 7.962           | 0.021      | 7.366            | 0.036              | 7.143            | 0.024              | 7.035             | 0.029              | 6.941             | 0.019              | 6.872             | 0.016              | 58.3                 | 1.1                |               |
| 17 57 15    | +70 42 01    | LP044-162        | 18.72           | 16.47    | 14.07           | 122        | 11.452          | 0.021      | 10.835           | 0.019              | 10.397           | 0.021              | 10.133            | 0.023              | 9.891             | 0.019              | 9.667             | 0.021              | 52.4                 | 1.1                |               |
| 17 57 49    | +04 41 36    | BARNARDS         | 9.54            | 8.31     | 6.74            | Win19      | 5.244           | 0.020      | 4.834            | 0.034              | 4.524            | 0.020              | 4.386             | 0.073              | 3.600             | 0.062              | 4.036             | 0.016              | 545.5                | 0.3                | 4             |
| 17 57 51    | +46 35 19    | LHS3343          | 11.68           | 10.58    | 9.19            | Wei96      | 7.847           | 0.020      | 7.254            | 0.023              | 7.000            | 0.017              | 6.826             | 0.037              | 6.731             | 0.019              | 6.648             | 0.015              | 70.0                 | 1.4                |               |
| 17 58 57    | +80 42 44    | LHS3344          | 12.88           | 11.76    | 10.33           | Wei96      | 8.994           | 0.018      | 8.407            | 0.027              | 8.122            | 0.020              | 7.959             | 0.023              | 7.833             | 0.020              | 7.716             | 0.015              | 44.4                 | 2.3                |               |
| 18 02 17    | +64 15 44    | LP071-082        | 13.47           | 12.07    | 10.26           | 222        | 8.541           | 0.024      | 7.962            | 0.023              | 7.652            | 0.020              | 7.450             | 0.027              | 7.244             | 0.020              | 7.107             | 0.014              | 117.8                | 3.7                |               |
| 18 02 46    | +37 31 03    | GJ1223           | 14.79           | 13.39    | 11.55           | Wei96      | 9.720           | 0.021      | 9.189            | 0.022              | 8.887            | 0.018              | 8.664             | 0.024              | 8.448             | 0.021              | 8.271             | 0.018              | 92.7                 | 3.0                |               |
| 18 04 11    | +83 50 28    | LSPM1804+8350    | 13.11           | 11.99    | 10.48           | 333        | 9.023           | 0.020      | 8.420            | 0.026              | 8.165            | 0.015              | 8.004             | 0.023              | 7.875             | 0.021              | 7.770             | 0.017              | 60.0                 | 4.4                |               |
| 18 04 18    | +35 57 26    | G182-037         | 10.83           | 9.81     | 8.99            | Wei91b     | 7.728           | 0.024      | 7.052            | 0.018              | 6.869            | 0.024              | 6.719             | 0.041              | 6.727             | 0.022              | 6.658             | 0.015              | 47.3                 | 1.7                |               |
| 18 04 39    | +13 54 14    | LSPM1804+1354    | 13.22           | 12.12    | 10.76           | 222        | 9.469           | 0.026      | 8.882            | 0.030              | 8.639            | 0.019              | 8.457             | 0.023              | 8.300             | 0.022              | 8.211             | 0.020              | 52.9                 | 0.9                |               |
| 18 05 08    | -03 01 53    | GJ0701           | 9.37            | 8.38     | 7.30            | Bes90      | 6.161           | 0.019      | 5.571            | 0.040              | 5.306            | 0.021              | 5.178             | 0.066              | 4.803             | 0.032              | 5.053             | 0.015              | 128.7                | 1.4                |               |
| 18 05 29    | +01 32 36    | LTT15340         | 13.13           | 11.98    | 10.52           | 222        | 9.107           | 0.035      | 8.483            | 0.057              | 8.261            | 0.026              | 8.050             | 0.023              | 7.918             | 0.022              | 7.837             | 0.020              | 54.5                 | 2.1                |               |
| 18 06 49    | +17 20 47    | LP449-010        | 13.87           | 12.62    | 11.03           | 222        | 9.490           | 0.023      | 8.917            | 0.029              | 8.652            | 0.022              | 8.460             | 0.023              | 8.296             | 0.022              | 8.156             | 0.020              | 79.4                 | 2.0                |               |
| 18 07 33    | -15 57 47    | GJ1224           | 13.51           | 12.11    | 10.32           | Hen18      | 8.639           | 0.024      | 8.085            | 0.044              | 7.827            | 0.027              | 7.494             | 0.026              | 7.292             | 0.018              | 7.105             | 0.019              | 127.0                | 1.0                |               |
| 18 08 12    | +11 34 47    | LSPM1808+1134    | 15.69           | 14.26    | 12.48           | 222        | 10.634          | 0.023      | 10.042           | 0.025              | 9.715            | 0.023              | 9.522             | 0.022              | 9.364             | 0.020              | 9.176             | 0.029              | 52.2                 | 2.0                |               |
| 18 09 18    | +27 06 26    | LP390-006        | 15.02           | 13.73    | 12.10           | 111        | 10.461          | 0.024      | 9.911            | 0.033              | 9.572            | 0.021              | 9.414             | 0.022              | 9.244             | 0.020              | 9.115             | 0.028              | 44.1                 | 1.6                |               |
| 18 09 41    | +31 52 13    | LP334-011        | 11.39           | 10.42    | 9.39            | 222        | 8.232           | 0.018      | 7.660            | 0.020              | 7.434            | 0.024              | 7.302             | 0.028              | 7.242             | 0.018              | 7.148             | 0.016              | 46.6                 | 3.2                |               |
| 18 13 07    | +26 01 52    | LP390-016        | 13.32           | 12.10    | 10.49           | Wei87      | 8.899           | 0.020      | 8.313            | 0.033              | 8.065            | 0.023              | 7.905             | 0.022              | 7.747             | 0.020              | 7.628             | 0.017              | 57.1                 | 1.5                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-------------|--------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 18 13 41    | +21 05 41    | LHS3368          | 14.54           | 13.36    | 11.87           | 111        | 10.422          | 0.024      | 9.921            | 0.030              | 9.676            | 0.018              | 9.491             | 0.024              | 9.303             | 0.021              | 9.098             | 0.027              | 45.8                 | 1.5                |               |
| 18 13 53    | -77 08 21    | LHS3370          | 15.33           | 14.13    | 12.62           | 111        | 11.132          | 0.023      | 10.618           | 0.025              | 10.352           | 0.020              | 10.195            | 0.024              | 10.000            | 0.022              | 9.905             | 0.045              | 42.9                 | 4.3                |               |
| 18 14 48    | +78 43 26    | LP024-194        | 14.23           | 13.01    | 11.48           | 333        | 9.973           | 0.020      | 9.424            | 0.017              | 9.145            | 0.019              | 8.960             | 0.023              | 8.811             | 0.021              | 8.665             | 0.019              | 50.1                 | 3.1                |               |
| 18 15 00    | +19 39 26    | LP449-015        | 13.04           | 11.98    | 10.72           | 111        | 9.435           | 0.026      | 8.926            | 0.030              | 8.681            | 0.020              | 8.508             | 0.023              | 8.345             | 0.020              | 8.288             | 0.020              | 52.7                 | 1.2                |               |
| 18 15 44    | +18 56 29    | LTT15403         | 10.82           | 9.88     | 8.90            | 111        | 7.757           | 0.026      | 7.172            | 0.023              | 6.964            | 0.017              | 6.834             | 0.035              | 6.747             | 0.019              | 6.680             | 0.015              | 43.9                 | 2.4                |               |
| 18 16 02    | +13 54 48    | GJ0708.2         | 10.19           | 9.32     | 8.43            | Wei96      | 7.343           | 0.021      | 6.747            | 0.038              | 6.557            | 0.031              | 6.432             | 0.043              | 6.403             | 0.020              | 6.364             | 0.015              | 54.8                 | 1.5                |               |
| 18 16 18    | +01 31 28    | GJ0708.3         | 12.51           | 11.42    | 10.09           | Bes90      | 8.738           | 0.024      | 8.194            | 0.059              | 7.891            | 0.016              | 7.802             | 0.028              | 7.649             | 0.026              | 7.570             | 0.022              | 60.1                 | 7.2                |               |
| 18 16 31    | +45 33 28    | GJ0709           | 10.28           | 9.30     | 9.55            | Wei91a     | 7.264           | 0.030      | 6.655            | 0.020              | 6.455            | 0.016              | 6.365             | 0.047              | 6.293             | 0.022              | 6.251             | 0.015              | 58.7                 | 1.0                |               |
| 18 16 32    | +04 52 46    | G140-051         | 14.70           | 13.30    | 11.55           | 222        | 9.798           | 0.027      | 9.148            | 0.024              | 8.832            | 0.023              | 8.609             | 0.023              | 8.449             | 0.020              | 8.261             | 0.021              | 77.1                 | 1.2                |               |
| 18 17 15    | +68 33 19    | GJ1225           | 15.39           | 14.06    | 12.35           | Wei96      | 10.783          | 0.020      | 10.283           | 0.015              | 10.036           | 0.022              | 9.817             | 0.023              | 9.595             | 0.020              | 9.489             | 0.020              | 54.1                 | 2.9                |               |
| 18 18 04    | +38 46 33    | LHS0462          | 11.88           | 10.78    | 9.42            | Wei96      | 8.040           | 0.017      | 7.487            | 0.026              | 7.222            | 0.020              | 6.762             | 0.031              | 6.828             | 0.019              | 6.673             | 0.015              | 92.1                 | 2.3                |               |
| 18 18 57    | +66 11 33    | LHS3376          | 13.49           | 12.15    | 10.43           | Wei96      | 8.740           | 0.021      | 8.264            | 0.049              | 7.948            | 0.018              | 7.711             | 0.024              | 7.523             | 0.019              | 7.382             | 0.014              | 138.6                | 2.3                |               |
| 18 22 07    | +06 20 38    | GJ0712           | 12.60           | 11.48    | 10.03           | Bes90      | 8.671           | 0.021      | 8.132            | 0.047              | 7.935            | 0.027              | 7.736             | 0.024              | 7.548             | 0.020              | 7.447             | 0.017              | 71.8                 | 1.6                |               |
| 18 22 27    | +62 03 02    | GJ1227           | 13.46           | 12.12    | 10.35           | Bes90      | 8.640           | 0.032      | 8.047            | 0.024              | 7.743            | 0.023              | 7.531             | 0.027              | 7.359             | 0.020              | 7.213             | 0.016              | 119.8                | 2.1                |               |
| 18 23 28    | +28 10 04    | LTT15435         | 12.49           | 11.31    | 9.80            | Wei99      | 8.306           | 0.020      | 7.740            | 0.017              | 7.472            | 0.020              | 7.272             | 0.028              | 7.126             | 0.021              | 7.021             | 0.015              | 75.0                 | 2.3                |               |
| 18 25 05    | +24 38 05    | LTT15449         | 10.79           | 9.87     | 8.92            | Wei87      | 7.899           | 0.067      | 7.170            | 0.036              | 6.980            | 0.024              | 6.841             | 0.037              | 6.879             | 0.020              | 6.788             | 0.016              | 45.8                 | 1.9                |               |
| 18 25 32    | +38 21 13    | LHS3385          | 11.27           | 10.36    | 9.37            | Wei96      | 8.285           | 0.021      | 7.657            | 0.016              | 7.493            | 0.029              | 7.345             | 0.028              | 7.274             | 0.019              | 7.210             | 0.016              | 40.8                 | 1.8                |               |
| 18 26 17    | +01 46 21    | LP630-081        | 14.90           | 13.52    | 11.79           | 222        | 10.044          | 0.023      | 9.469            | 0.022              | 9.165            | 0.023              | 8.938             | 0.023              | 8.768             | 0.021              | 8.620             | 0.024              | 55.9                 | 1.5                |               |
| 18 26 20    | -65 47 41    | WT0562           | 15.36           | 13.93    | 12.13           | Rie10      | 10.347          | 0.024      | 9.814            | 0.024              | 9.445            | 0.019              | 9.246             | 0.023              | 9.071             | 0.021              | 8.884             | 0.023              | 58.4                 | 0.9                |               |
| 18 26 47    | -65 42 49    | SCR1826-0542     | 17.35           | 15.28    | 12.96           | Win11      | 10.569          | 0.026      | 9.960            | 0.022              | 9.547            | 0.019              | 9.332             | 0.022              | 9.121             | 0.020              | 8.849             | 0.024              | 66.4                 | 0.8                |               |
| 18 30 12    | -58 16 28    | LTT07341         | 9.81            | 8.90     | 7.93            | Win15      | 6.870           | 0.020      | 6.240            | 0.047              | 5.963            | 0.023              | 5.878             | 0.054              | 5.801             | 0.027              | 5.828             | 0.015              | 69.0                 | 2.7                | KY            |
| 18 30 55    | +47 36 00    | LP182-004        | 16.45           | 14.90    | 13.03           | 111        | 11.258          | 0.020      | 10.664           | 0.018              | 10.384           | 0.014              | 10.160            | 0.023              | 9.974             | 0.020              | 9.834             | 0.029              | 51.0                 | 3.1                |               |
| 18 31 56    | +77 30 37    | LP024-256        | 14.77           | 13.39    | 11.73           | 222        | 10.113          | 0.018      | 9.538            | 0.017              | 9.262            | 0.021              | 9.076             | 0.023              | 8.894             | 0.021              | 8.723             | 0.018              | 59.7                 | 6.2                | W09           |
| 18 32 33    | +04 04 21    | LTT15471         | 14.09           | 12.95    | 11.53           | 222        | 10.137          | 0.023      | 9.578            | 0.021              | 9.327            | 0.021              | 9.154             | 0.023              | 8.989             | 0.020              | 8.860             | 0.030              | 45.8                 | 1.2                |               |
| 18 35 18    | +45 44 39    | GJ0720           | 9.86            | 8.95     | 7.99            | Wei96      | 6.881           | 0.020      | 6.260            | 0.021              | 6.082            | 0.016              | 6.003             | 0.055              | 5.916             | 0.024              | 5.921             | 0.015              | 65.9                 | 0.8                |               |
| 18 35 38    | +32 59 53    | LEP1835+3259     | 18.24           | 15.82    | 13.37           | 222        | 10.270          | 0.022      | 9.617            | 0.021              | 9.171            | 0.018              | 8.803             | 0.022              | 8.539             | 0.019              | 8.160             | 0.019              | 176.7                | 0.5                |               |
| 18 35 52    | +80 05 49    | LP025-002        | 13.17           | 11.97    | 10.44           | 233        | 8.989           | 0.018      | 8.419            | 0.023              | 8.163            | 0.014              | 7.983             | 0.024              | 7.820             | 0.021              | 7.715             | 0.016              | 67.1                 | 2.2                |               |
| 18 36 19    | +13 36 26    | LTT15483         | 12.45           | 11.23    | 9.69            | Hos15      | 8.186           | 0.021      | 7.605            | 0.027              | 7.367            | 0.021              | 7.186             | 0.031              | 7.015             | 0.020              | 6.907             | 0.015              | 86.1                 | 2.0                |               |
| 18 37 32    | +20 30 42    | LSPM1837+2030    | 16.77           | 15.08    | 13.08           | 111        | 11.083          | 0.022      | 10.429           | 0.018              | 10.149           | 0.016              | 9.912             | 0.023              | 9.718             | 0.020              | 9.542             | 0.034              | 70.5                 | 3.0                |               |
| 18 39 33    | +29 52 17    | LP335-012        | 18.00           | 15.89    | 13.47           | 111        | 11.011          | 0.023      | 10.383           | 0.028              | 10.005           | 0.021              | 9.748             | 0.022              | 9.514             | 0.022              | 9.273             | 0.027              | 84.1                 | 0.9                |               |
| 18 39 48    | +16 48 59    | LSPM1839+1648    | 16.77           | 15.22    | 13.31           | 222        | 11.425          | 0.022      | 10.830           | 0.021              | 10.528           | 0.018              | 10.307            | 0.023              | 10.116            | 0.021              | 9.947             | 0.045              | 40.1                 | 2.8                |               |
| 18 40 00    | +33 24 54    | LTT15504         | 13.12           | 11.98    | 10.53           | Wei84      | 9.131           | 0.022      | 8.523            | 0.023              | 8.264            | 0.018              | 8.099             | 0.023              | 7.969             | 0.019              | 7.853             | 0.017              | 47.9                 | 2.5                |               |
| 18 40 02    | +72 40 54    | LP044-334        | 17.51           | 15.57    | 13.31           | 111        | 10.974          | 0.020      | 10.379           | 0.017              | 10.006           | 0.020              | 9.766             | 0.026              | 9.554             | 0.020              | 9.330             | 0.023              | 58.0                 | 2.0                |               |
| 18 40 18    | -10 27 55    | GJ0723           | 11.47           | 10.46    | 9.38            | Bes90      | 8.262           | 0.020      | 7.689            | 0.027              | 7.460            | 0.026              | 7.237             | 0.026              | 7.132             | 0.018              | 7.091             | 0.017              | 46.1                 | 5.8                |               |
| 18 40 57    | -13 22 47    | GJ0724           | 10.62           | 9.63     | 8.56            | Bes90      | 7.397           | 0.018      | 6.728            | 0.053              | 6.546            | 0.021              | 6.431             | 0.036              | 6.373             | 0.022              | 6.328             | 0.016              | 60.6                 | 2.0                |               |
| 18 41 10    | -43 47 33    | SCR1841-4347     | 16.46           | 14.72    | 12.59           | Win11      | 10.477          | 0.023      | 9.939            | 0.026              | 9.603            | 0.021              | 9.354             | 0.025              | 9.159             | 0.020              | 8.954             | 0.028              | 82.3                 | 0.7                |               |
| 18 41 37    | +39 42 12    | G205-035         | 13.42           | 12.20    | 10.61           | Wei87      | 9.216           | 0.030      | 8.639            | 0.024              | 8.375            | 0.019              | 8.172             | 0.023              | 7.990             | 0.021              | 7.848             | 0.017              | 87.3                 | 1.4                |               |
| 18 41 48    | +24 22 00    | LSPM1841+2421    | 17.59           | 15.86    | 13.72           | 111        | 11.716          | 0.023      | 11.089           | 0.031              | 10.759           | 0.021              | 10.539            | 0.022              | 10.345            | 0.020              | 10.253            | 0.060              | 58.8                 | 2.9                |               |
| 18 41 59    | +31 49 59    | LTT15513         | 11.31           | 10.21    | 8.86            | 333        | 7.523           | 0.020      | 6.977            | 0.016              | 6.722            | 0.020              | 6.541             | 0.043              | 6.404             | 0.021              | 6.340             | 0.015              | 87.9                 | 2.6                |               |
| 18 42 45    | +13 54 17    | G141-029         | 12.84           | 11.57    | 9.94            | 333        | 8.361           | 0.018      | 7.813            | 0.038              | 7.551            | 0.021              | 7.339             | 0.027              | 7.177             | 0.021              | 7.051             | 0.016              | 90.1                 | 1.9                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|-------------|--------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|-------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 18 43 07    | -54 36 48    | LHS5341          | 12.97           | 11.68    | 10.03           | Win15      | 8.415           | 0.026      | 7.789            | 0.023              | 7.488            | 0.018              | 7.290             | 0.028              | 7.157             | 0.020       | 7.011             | 0.016              | 101.6                | 1.0                |               |
| 18 43 13    | -33 22 46    | LTT07419         | 10.25           | 9.30     | 8.28            | Win15      | 7.192           | 0.021      | 6.535            | 0.026              | 6.328            | 0.024              | 6.176             | 0.045              | 6.135             | 0.021       | 6.120             | 0.015              | 67.3                 | 2.5                |               |
| 18 44 54    | +74 08 55    | LSPM1844+7408    | 16.58           | 15.05    | 13.10           | 111        | 11.196          | 0.024      | 10.626           | 0.028              | 10.324           | 0.022              | 10.126            | 0.023              | 9.929             | 0.020       | 9.703             | 0.027              | 62.9                 | 5.6                |               |
| 18 45 23    | +18 51 59    | G184-024         | 13.73           | 12.46    | 10.84           | 222        | 9.273           | 0.037      | 8.639            | 0.036              | 8.431            | 0.022              | 8.224             | 0.022              | 8.052             | 0.020       | 7.917             | 0.018              | 77.8                 | 0.9                |               |
| 18 45 52    | +52 27 41    | LHS3409          | 15.13           | 13.92    | 12.38           | We196      | 10.967          | 0.022      | 10.485           | 0.017              | 10.229           | 0.014              | 10.023            | 0.023              | 9.810             | 0.021       | 9.729             | 0.027              | 51.1                 | 1.2                | KS            |
| 18 48 18    | +07 41 21    | G141-036         | 14.26           | 12.69    | 10.78           | 333        | 8.853           | 0.024      | 8.261            | 0.027              | 7.913            | 0.021              | 7.696             | 0.025              | 7.522             | 0.019       | 7.343             | 0.018              | 139.5                | 2.9                |               |
| 18 48 51    | -82 14 42    | SIP1848-8214     | 18.55           | 16.33    | 14.00           | Win15      | 11.482          | 0.023      | 10.922           | 0.024              | 10.503           | 0.023              | 10.279            | 0.023              | 10.076            | 0.020       | 9.756             | 0.033              | 56.5                 | 1.6                |               |
| 18 49 06    | -03 15 18    | LP691-015        | 14.23           | 12.91    | 11.22           | Win15      | 9.613           | 0.027      | 8.981            | 0.022              | 8.702            | 0.021              | 8.458             | 0.023              | 8.306             | 0.020       | 7.615             | 0.032              | 69.3                 | 6.4                |               |
| 18 49 49    | -23 50 10    | GJ0729           | 10.50           | 9.26     | 7.68            | Win15      | 6.222           | 0.018      | 5.655            | 0.034              | 5.370            | 0.016              | 5.164             | 0.062              | 4.754             | 0.033       | 4.911             | 0.014              | 337.2                | 2.0                |               |
| 18 49 51    | -57 26 49    | LHS413           | 12.68           | 11.44    | 9.88            | Rie10      | 8.317           | 0.023      | 7.703            | 0.044              | 7.455            | 0.020              | 7.311             | 0.029              | 7.158             | 0.021       | 7.054             | 0.015              | 82.2                 | 2.0                |               |
| 18 50 01    | +03 05 17    | GJ0730           | 10.74           | 9.78     | 8.80            | Bes90      | 7.724           | 0.024      | 7.075            | 0.034              | 6.857            | 0.023              | 6.708             | 0.031              | 6.702             | 0.019       | 6.669             | 0.020              | 48.3                 | 2.0                |               |
| 18 50 27    | -62 03 04    | HIP092451        | 10.70           | 9.73     | 8.69            | Koe10      | 7.562           | 0.023      | 6.983            | 0.038              | 6.704            | 0.021              | 6.553             | 0.041              | 6.513             | 0.020       | 6.460             | 0.014              | 61.8                 | 2.1                |               |
| 18 51 45    | +26 41 57    | LSPM1851+2641    | 17.50           | 15.85    | 13.73           | 111        | 11.786          | 0.024      | 11.221           | 0.032              | 10.879           | 0.019              | 10.685            | 0.023              | 10.476            | 0.021       | 10.142            | 0.044              | 46.0                 | 1.9                |               |
| 18 51 51    | +16 35 00    | GJ0731           | 10.15           | 9.22     | 8.28            | Bes90      | 7.162           | 0.027      | 6.525            | 0.026              | 6.319            | 0.024              | 6.186             | 0.046              | 6.145             | 0.022       | 6.132             | 0.015              | 65.6                 | 1.6                |               |
| 18 52 25    | -37 30 36    | L489-043         | 12.71           | 11.49    | 9.86            | Win15      | 8.377           | 0.035      | 7.857            | 0.038              | 7.559            | 0.018              | 7.366             | 0.026              | 7.177             | 0.020       | 7.092             | 0.016              | 65.9                 | 1.1                |               |
| 18 52 34    | +45 38 33    | G205-040         | 15.07           | 13.76    | 12.05           | We196      | 10.493          | 0.020      | 9.937            | 0.018              | 9.673            | 0.013              | 9.477             | 0.023              | 9.277             | 0.020       | 9.125             | 0.022              | 46.1                 | 2.3                |               |
| 18 53 31    | +20 22 36    | LSPM1853+2022    | 15.43           | 14.07    | 12.38           | 222        | 10.761          | 0.023      | 10.213           | 0.031              | 9.952            | 0.020              | 9.700             | 0.023              | 9.515             | 0.021       | 9.407             | 0.032              | 53.9                 | 1.5                |               |
| 18 55 48    | -69 14 15    | SCR1855-6914     | 16.61           | 14.79    | 12.66           | Win11      | 10.466          | 0.021      | 9.877            | 0.021              | 9.512            | 0.021              | 9.266             | 0.022              | 9.096             | 0.020       | 8.913             | 0.025              | 86.4                 | 0.7                |               |
| 18 56 26    | +46 22 54    | G205-047         | 13.95           | 12.72    | 11.15           | We188      | 9.598           | 0.021      | 9.010            | 0.017              | 8.717            | 0.015              | 8.529             | 0.022              | 8.363             | 0.020       | 8.218             | 0.017              | 65.3                 | 2.3                |               |
| 18 58 00    | +05 54 29    | GJ0740           | 9.21            | 8.28     | 7.31            | Bes90      | 6.239           | 0.019      | 5.587            | 0.029              | 5.357            | 0.021              | 5.259             | 0.068              | 5.032             | 0.034       | 5.219             | 0.017              | 91.7                 | 1.5                |               |
| 18 58 45    | +15 04 59    | LSPM1858+1504    | 15.38           | 14.04    | 12.34           | 222        | 10.710          | 0.026      | 10.115           | 0.032              | 9.838            | 0.018              | 9.640             | 0.023              | 9.454             | 0.020       | 6.386             | 0.016              | 70.5                 | 2.4                |               |
| 18 59 07    | -48 16 28    | GJ0739           | 11.14           | 10.10    | 8.80            | K107       | 7.520           | 0.023      | 6.932            | 0.047              | 6.700            | 0.024              | 6.553             | 0.041              | 6.441             | 0.020       | 6.386             | 0.016              | 70.5                 | 2.4                |               |
| 18 59 39    | +08 29 00    | G141-053         | 15.40           | 14.00    | 12.25           | 222        | 10.571          | 0.022      | 9.968            | 0.024              | 9.706            | 0.025              | 9.262             | 0.023              | 9.091             | 0.020       | 8.964             | 0.032              | 61.4                 | 6.6                |               |
| 19 03 17    | -13 34 05    | GJ0741           | 14.78           | 13.63    | 12.08           | Bes90      | 10.375          | 0.023      | 9.803            | 0.024              | 9.537            | 0.019              | 9.298             | 0.023              | 9.101             | 0.019       | 9.027             | 0.040              | 52.4                 | 3.8                | VR/x?         |
| 19 05 17    | +45 07 15    | G205-055         | 13.89           | 12.71    | 11.21           | We196      | 9.850           | 0.021      | 9.300            | 0.019              | 9.027            | 0.014              | 8.848             | 0.023              | 8.670             | 0.020       | 8.540             | 0.019              | 49.6                 | 2.9                |               |
| 19 06 54    | +23 54 14    | LSPM1906+2354    | 15.04           | 13.78    | 12.28           | 111        | 10.803          | 0.027      | 10.270           | 0.033              | 9.985            | 0.020              | 9.792             | 0.023              | 9.632             | 0.020       | 9.461             | 0.033              | 70.9                 | 2.3                |               |
| 19 07 06    | +20 53 17    | GJ0745           | 10.78           | 9.75     | 8.54            | We196      | 7.295           | 0.020      | 6.726            | 0.061              | 6.521            | 0.021              | 6.401             | 0.036              | 6.197             | 0.020       | 6.182             | 0.015              | 115.5                | 1.5                |               |
| 19 07 13    | +44 16 07    | LP230-029        | 15.21           | 13.95    | 12.15           | 222        | 10.447          | 0.020      | 9.855            | 0.016              | 9.559            | 0.016              | 9.345             | 0.022              | 9.194             | 0.020       | 9.054             | 0.023              | 58.1                 | 1.8                |               |
| 19 07 22    | +04 43 55    | LP571-164        | 17.67           | 15.82    | 13.78           | 222        | 11.507          | 0.023      | 10.918           | 0.025              | 10.601           | 0.025              | 10.310            | 0.023              | 10.131            | 0.023       | 10.512            | 0.135              | 49.7                 | 2.9                |               |
| 19 08 16    | +26 35 06    | GJ1231           | 15.14           | 13.79    | 12.06           | We196      | 10.361          | 0.024      | 9.762            | 0.031              | 9.471            | 0.022              | 9.244             | 0.022              | 9.080             | 0.020       | 8.922             | 0.025              | 54.8                 | 2.2                |               |
| 19 09 51    | +17 40 06    | GJ1232           | 13.50           | 12.18    | 10.46           | We196      | 8.819           | 0.029      | 8.199            | 0.023              | 7.902            | 0.020              | 6.017             | 0.050              | 5.214             | 0.033       | 3.420             | 0.010              | 95.7                 | 1.9                |               |
| 19 12 25    | -55 52 08    | GJ0747.4         | 11.30           | 10.34    | 9.35            | Bes90      | 8.221           | 0.020      | 7.613            | 0.034              | 7.378            | 0.021              | 7.272             | 0.029              | 7.222             | 0.019       | 7.144             | 0.016              | 46.7                 | 3.2                |               |
| 19 12 28    | +38 26 16    | LSPM1912+3826    | 16.73           | 15.07    | 13.12           | 222        | 11.201          | 0.023      | 10.647           | 0.022              | 10.311           | 0.017              | 10.101            | 0.027              | 9.903             | 0.020       | 9.610             | 0.030              | 49.3                 | 2.4                |               |
| 19 12 29    | +35 33 52    | G207-022         | 12.02           | 10.96    | 9.68            | We187      | 8.399           | 0.024      | 7.824            | 0.024              | 7.606            | 0.017              | 7.446             | 0.023              | 7.310             | 0.021       | 7.243             | 0.016              | 58.3                 | 2.9                |               |
| 19 12 39    | -36 14 57    | WIS1912-3615     | 13.91           | 12.64    | 11.00           | Win15      | 9.523           | 0.022      | 9.008            | 0.037              | 8.769            | 0.019              | 8.539             | 0.023              | 8.337             | 0.020       | 8.253             | 0.024              | 87.2                 | 1.4                |               |
| 19 12 45    | +39 43 22    | LSPM1912+3943    | 14.71           | 13.47    | 11.99           | 111        | 10.609          | 0.021      | 10.102           | 0.019              | 9.856            | 0.019              | 9.661             | 0.024              | 9.466             | 0.020       | 9.263             | 0.025              | 63.3                 | 4.9                |               |
| 19 14 39    | +19 19 04    | LHS3445          | 11.59           | 10.49    | 9.05            | We196      | 7.579           | 0.024      | 7.027            | 0.017              | 6.813            | 0.018              | 6.671             | 0.036              | 6.502             | 0.021       | 6.450             | 0.015              | 53.7                 | 1.7                |               |
| 19 16 55    | +05 10 08    | GJ0752           | 9.10            | 8.07     | 6.78            | Bes90      | 5.583           | 0.030      | 4.929            | 0.027              | 4.673            | 0.020              | 4.446             | 0.076              | 3.930             | 0.054       | 4.375             | 0.014              | 171.2                | 0.5                |               |
| 19 17 32    | +28 33 14    | LSPM1917+2833    | 15.96           | 14.56    | 12.65           | 111        | 10.758          | 0.021      | 10.194           | 0.022              | 9.923            | 0.017              | 9.711             | 0.024              | 9.506             | 0.020       | 9.306             | 0.026              | 56.8                 | 2.0                |               |
| 19 19 41    | +41 27 49    | LP230-040        | 16.76           | 15.13    | 13.11           | 222        | 11.259          | 0.021      | 10.678           | 0.021              | 10.374           | 0.018              | 10.154            | 0.022              | 9.955             | 0.020       | 9.739             | 0.030              | 64.5                 | 3.8                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>(hms) | Decl.<br>(dms) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|---------------|----------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 19 20 15      | +28 48 42      | LSPM1920+2848    | 14.59           | 13.36    | 11.69           | 111        | 10.086          | 0.020      | 9.560            | 0.021              | 9.293            | 0.018              | 9.102             | 0.023              | 8.929             | 0.022              | 8.849             | 0.031              | 51.7                 | 1.3                |               |
| 19 20 48      | -45 33 39      | GJ0754           | 12.25           | 10.94    | 9.25            | Win15      | 7.661           | 0.019      | 7.130            | 0.024              | 6.845            | 0.026              | 6.650             | 0.034              | 6.434             | 0.019              | 6.364             | 0.016              | 169.2                | 1.5                |               |
| 19 20 54      | -82 33 16      | LHS0475          | 12.69           | 11.51    | 10.00           | Jao11      | 8.555           | 0.030      | 8.004            | 0.038              | 7.686            | 0.042              | 7.530             | 0.025              | 7.357             | 0.019              | 7.266             | 0.019              | 83.0                 | 0.9                |               |
| 19 21 39      | +20 52 03      | GJ1235           | 13.48           | 12.14    | 10.47           | Hen18      | 8.796           | 0.020      | 8.219            | 0.036              | 7.935            | 0.016              | 7.711             | 0.021              | 7.553             | 0.019              | 7.481             | 0.018              | 97.8                 | 1.9                |               |
| 19 21 51      | +28 39 58      | GJ0756           | 11.59           | 10.63    | 9.53            | 333        | 8.352           | 0.024      | 7.745            | 0.017              | 7.548            | 0.024              | 7.418             | 0.026              | 7.340             | 0.020              | 7.263             | 0.016              | 44.5                 | 2.6                |               |
| 19 22 02      | +07 02 31      | GJ1236           | 12.39           | 11.27    | 9.86            | Wei96      | 8.524           | 0.026      | 7.937            | 0.023              | 7.688            | 0.020              | 7.483             | 0.023              | 7.325             | 0.020              | 7.243             | 0.017              | 96.1                 | 1.2                |               |
| 19 22 41      | +29 26 02      | LHS3459          | 15.35           | 14.05    | 12.34           | Wei96      | 10.752          | 0.020      | 10.237           | 0.019              | 9.973            | 0.016              | 9.772             | 0.022              | 9.561             | 0.022              | 9.218             | 0.026              | 51.6                 | 2.2                |               |
| 19 24 16      | +75 33 12      | GJ1238           | 15.38           | 13.81    | 11.82           | Wei96      | 9.908           | 0.022      | 9.280            | 0.026              | 8.963            | 0.021              | 8.733             | 0.023              | 8.543             | 0.020              | 8.363             | 0.018              | 84.0                 | 3.3                |               |
| 19 25 31      | +09 38 23      | LSPM1925+0938    | 19.02           | 16.60    | 14.17           | 222        | 11.214          | 0.026      | 10.519           | 0.022              | 10.024           | 0.022              | 9.727             | 0.024              | 9.494             | 0.021              | 9.327             | 0.034              | 69.3                 | 2.8                |               |
| 19 26 02      | +24 26 17      | G185-023         | 14.30           | 12.97    | 11.27           | 222        | 9.625           | 0.020      | 9.028            | 0.021              | 8.729            | 0.018              | 8.553             | 0.024              | 8.398             | 0.020              | 8.170             | 0.019              | 54.4                 | 1.0                |               |
| 19 29 49      | +68 35 38      | LSPM1929+6835    | 15.50           | 14.10    | 12.40           | 111        | 10.761          | 0.023      | 10.192           | 0.021              | 9.905            | 0.019              | 9.687             | 0.023              | 9.500             | 0.020              | 9.341             | 0.023              | 41.9                 | 2.2                |               |
| 19 31 05      | -03 06 18      | SCR1931-0306     | 16.81           | 15.11    | 13.11           | Win11      | 11.147          | 0.024      | 10.558           | 0.026              | 10.228           | 0.023              | 10.004            | 0.024              | 9.811             | 0.021              | 9.643             | 0.038              | 57.2                 | 0.6                |               |
| 19 31 24      | -21 34 23      | 2MA1931-2134     | 12.60           | 11.47    | 10.08           | 111        | 8.694           | 0.020      | 8.089            | 0.051              | 7.832            | 0.029              | 7.701             | 0.022              | 7.588             | 0.019              | 7.521             | 0.017              | 38.5                 | 3.0                | KY            |
| 19 31 40      | +68 43 43      | LP072-467        | 14.48           | 13.15    | 11.58           | 222        | 10.015          | 0.023      | 9.435            | 0.021              | 9.138            | 0.019              | 8.940             | 0.023              | 8.780             | 0.020              | 8.634             | 0.018              | 43.3                 | 2.4                |               |
| 19 31 52      | +19 06 59      | LSPM1931+1906    | 15.27           | 13.79    | 11.85           | 222        | 9.997           | 0.021      | 9.360            | 0.023              | 9.036            | 0.018              | 8.747             | 0.023              | 8.564             | 0.020              | 8.562             | 0.043              | 54.4                 | 2.2                |               |
| 19 32 38      | +00 34 39      | GJ0761.2         | 10.43           | 9.55     | 8.68            | Bes90      | 7.635           | 0.024      | 7.045            | 0.040              | 6.808            | 0.024              | 6.724             | 0.037              | 6.730             | 0.020              | 6.681             | 0.017              | 44.7                 | 1.6                |               |
| 19 34 04      | -52 25 14      | L275-026         | 12.83           | 11.68    | 10.19           | Win15      | 8.768           | 0.029      | 8.157            | 0.027              | 7.920            | 0.029              | 7.720             | 0.024              | 7.610             | 0.020              | 7.493             | 0.016              | 52.2                 | 2.0                |               |
| 19 34 55      | +53 15 24      | LHS3472          | 12.19           | 11.12    | 9.81            | Wei96      | 8.554           | 0.021      | 7.974            | 0.018              | 7.684            | 0.024              | 7.539             | 0.024              | 7.416             | 0.020              | 7.347             | 0.015              | 72.1                 | 7.3                |               |
| 19 37 53      | +21 15 35      | LSPM1937+2115    | 15.81           | 14.42    | 12.62           | 222        | 10.844          | 0.021      | 10.208           | 0.019              | 9.926            | 0.020              | 9.681             | 0.023              | 9.534             | 0.020              | 9.624             | 0.052              | 52.9                 | 1.7                |               |
| 19 38 44      | +33 11 36      | G125-023         | 13.99           | 12.71    | 11.16           | 333        | 9.624           | 0.021      | 9.028            | 0.027              | 8.786            | 0.018              | 8.595             | 0.023              | 8.427             | 0.020              | 8.273             | 0.020              | 60.7                 | 1.5                |               |
| 19 39 33      | +71 52 19      | LTT18490         | 10.98           | 9.99     | 9.23            | Wei91b     | 8.023           | 0.050      | 7.379            | 0.044              | 7.188            | 0.023              | 7.013             | 0.034              | 6.972             | 0.020              | 6.527             | 0.016              | 43.1                 | 1.9                |               |
| 19 39 36      | -26 45 07      | LP869-042        | 10.48           | 9.56     | 8.58            | Koe10      | 7.498           | 0.019      | 6.826            | 0.031              | 6.649            | 0.020              | 6.567             | 0.039              | 6.558             | 0.022              | 6.527             | 0.016              | 43.1                 | 1.9                |               |
| 19 41 54      | +03 09 16      | GJ1242           | 12.88           | 11.84    | 10.61           | 222        | 9.304           | 0.021      | 8.763            | 0.021              | 8.518            | 0.021              | 8.322             | 0.024              | 8.181             | 0.021              | 8.050             | 0.020              | 43.0                 | 2.6                |               |
| 19 42 10      | +65 38 30      | G260-031         | 13.32           | 12.15    | 10.74           | 444        | 9.348           | 0.020      | 8.781            | 0.015              | 8.514            | 0.020              | 8.341             | 0.023              | 8.197             | 0.020              | 8.126             | 0.017              | 45.5                 | 1.6                |               |
| 19 42 13      | -20 45 48      | SCR1942-2045     | 14.33           | 12.98    | 11.25           | Rie14      | 9.598           | 0.024      | 9.026            | 0.022              | 8.756            | 0.023              | 8.544             | 0.022              | 8.357             | 0.018              | 8.232             | 0.022              | 62.8                 | 0.9                |               |
| 19 45 50      | +32 23 14      | LTT15769         | 10.86           | 9.89     | 8.76            | Wei87      | 7.572           | 0.020      | 7.030            | 0.024              | 6.774            | 0.021              | 6.599             | 0.038              | 6.537             | 0.020              | 6.494             | 0.016              | 82.2                 | 3.4                |               |
| 19 46 49      | +12 04 59      | LHS0479          | 14.24           | 13.29    | 12.30           | 111        | 11.182          | 0.022      | 10.658           | 0.021              | 10.448           | 0.018              | 10.310            | 0.023              | 10.146            | 0.021              | 9.901             | 0.042              | 21.7                 | 2.7                | KS            |
| 19 48 23      | -08 22 52      | WTT2180          | 16.51           | 14.93    | 13.01           | 111        | 11.120          | 0.026      | 10.541           | 0.021              | 10.191           | 0.021              | 9.978             | 0.023              | 9.772             | 0.020              | 9.546             | 0.037              | 53.8                 | 2.3                |               |
| 19 50 03      | +32 35 02      | LHS3489          | 12.42           | 11.34    | 9.99            | Wei96      | 8.647           | 0.021      | 8.054            | 0.023              | 7.841            | 0.017              | 7.561             | 0.023              | 7.422             | 0.019              | 7.400             | 0.017              | 58.8                 | 3.4                |               |
| 19 51 00      | +20 09 56      | LSPM1950+2009    | 14.27           | 13.11    | 11.58           | 222        | 10.043          | 0.026      | 9.432            | 0.031              | 9.195            | 0.020              | 9.000             | 0.024              | 8.874             | 0.020              | 8.818             | 0.029              | 52.6                 | 1.3                |               |
| 19 51 09      | +46 29 00      | GJ1243           | 12.83           | 11.63    | 10.09           | Wei84      | 8.586           | 0.023      | 8.045            | 0.020              | 7.773            | 0.016              | 7.597             | 0.024              | 7.415             | 0.020              | 7.299             | 0.016              | 78.9                 | 1.7                |               |
| 19 55 53      | +51 16 22      | LHS3499          | 11.86           | 10.90    | 9.79            | Wei96      | 8.658           | 0.029      | 8.068            | 0.029              | 7.848            | 0.029              | 7.696             | 0.025              | 7.619             | 0.020              | 7.544             | 0.016              | 40.4                 | 2.3                |               |
| 19 58 16      | +02 02 16      | LHS3505          | 11.97           | 10.92    | 9.65            | Wei96      | 8.371           | 0.020      | 7.816            | 0.027              | 7.561            | 0.027              | 7.426             | 0.026              | 7.268             | 0.020              | 7.206             | 0.017              | 63.4                 | 3.8                |               |
| 19 58 17      | +65 02 19      | G260-038         | 12.81           | 11.64    | 10.19           | 222        | 8.740           | 0.024      | 8.152            | 0.024              | 7.891            | 0.021              | 7.691             | 0.024              | 7.591             | 0.021              | 7.484             | 0.016              | 47.2                 | 1.9                | A05           |
| 20 03 23      | +67 16 49      | G262-003         | 13.32           | 12.16    | 10.79           | 111        | 9.448           | 0.020      | 8.827            | 0.023              | 8.621            | 0.020              | 8.431             | 0.023              | 8.308             | 0.020              | 8.220             | 0.017              | 48.4                 | 3.7                |               |
| 20 03 51      | +05 59 44      | GJ1248           | 12.11           | 11.07    | 9.84            | Wei96      | 8.632           | 0.023      | 8.076            | 0.038              | 7.868            | 0.021              | 7.700             | 0.024              | 7.522             | 0.020              | 7.452             | 0.018              | 74.9                 | 1.7                |               |
| 20 04 05      | -65 36 01      | GJ0774           | 11.35           | 10.34    | 9.06            | Bes90      | 7.796           | 0.024      | 7.284            | 0.042              | 7.057            | 0.026              | 6.881             | 0.034              | 6.732             | 0.021              | 6.675             | 0.014              | 76.1                 | 6.4                |               |
| 20 04 31      | -23 42 02      | LP870-065        | 13.02           | 11.75    | 10.09           | Win15      | 8.559           | 0.027      | 8.012            | 0.049              | 7.701            | 0.029              | 7.499             | 0.026              | 7.322             | 0.020              | 7.243             | 0.018              | 55.0                 | 1.6                |               |
| 20 04 57      | +03 21 08      | LSPM2004+0321    | 15.21           | 13.74    | 11.90           | 222        | 10.052          | 0.022      | 9.480            | 0.022              | 9.181            | 0.023              | 8.972             | 0.022              | 8.798             | 0.019              | 8.653             | 0.025              | 66.3                 | 2.5                |               |
| 20 05 44      | +52 58 18      | LTT15891         | 13.23           | 12.02    | 10.50           | 222        | 9.095           | 0.027      | 8.607            | 0.035              | 8.346            | 0.021              | 8.177             | 0.024              | 8.011             | 0.020              | 7.895             | 0.017              | 50.7                 | 1.9                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R      | I      | ref   | J<br>mag | err<br>(8) | H<br>mag | err<br>(10) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(14) | W2<br>mag | err<br>(16) | W3<br>mag | err<br>(18) | $\pi$<br>mas | err<br>(19) | Notes |
|-------------|--------------|---------------|----------|--------|--------|-------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)    | (6)    | (7)   | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)  |
| 20 06 16    | +16 09 22    | G143-028      | 14.53    | 13.28  | 11.68  | 222   | 10.110   | 0.022      | 9.600    | 0.028       | 9.355    | 0.021       | 9.157     | 0.025       | 8.969     | 0.019       | 8.770     | 0.023       | 42.2         | 1.0         |       |
| 20 06 31    | +15 59 17    | G143-029      | 13.31    | 12.27  | 11.02  | 222   | 9.742    | 0.023      | 9.192    | 0.030       | 8.952    | 0.021       | 8.806     | 0.023       | 8.654     | 0.021       | 8.591     | 0.023       | 41.6         | 2.4         |       |
| 20 07 15    | -54 21 49    | LTT07944      | 14.88    | 13.80  | 12.51  | Cos05 | 11.240   | 0.024      | 10.775   | 0.027       | 10.520   | 0.021       | 10.361    | 0.023       | 10.168    | 0.021       | 10.024    | 0.046       | 56.6         | 1.3         |       |
| 20 07 43    | +18 59 00    | G143-030      | 13.65    | 12.45  | 10.92  | 222   | 9.431    | 0.024      | 8.884    | 0.030       | 8.601    | 0.023       | 8.413     | 0.023       | 8.275     | 0.019       | 8.189     | 0.024       | 44.2         | 1.8         |       |
| 20 07 48    | +31 45 29    | GJ0781.1      | 12.22    | 11.12  | 9.73   | Bes90 | 8.367    | 0.029      | 7.833    | 0.034       | 7.591    | 0.024       | 7.426     | 0.027       | 7.263     | 0.020       | 7.206     | 0.016       | 64.2         | 4.6         |       |
| 20 08 18    | +33 18 13    | GJ1250        | 14.95    | 13.52  | 11.74  | 333   | 9.961    | 0.022      | 9.401    | 0.016       | 9.084    | 0.018       | 8.863     | 0.023       | 8.681     | 0.020       | 8.489     | 0.040       | 46.2         | 5.4         |       |
| 20 09 18    | -01 13 38    | 2MA2009-0113  | 14.47    | 12.98  | 11.16  | Rie14 | 9.403    | 0.026      | 8.832    | 0.025       | 8.512    | 0.023       | 8.290     | 0.024       | 8.094     | 0.021       | 7.937     | 0.019       | 96.0         | 1.5         |       |
| 20 10 40    | +40 40 09    | G209-018      | 15.48    | 14.12  | 12.51  | 222   | 10.795   | 0.025      | 10.216   | 0.018       | 9.941    | 0.013       | 9.737     | 0.022       | 9.576     | 0.018       | 9.789     | 0.056       | 44.2         | 1.5         |       |
| 20 13 00    | +01 12 59    | LSPM2012+0112 | 15.75    | 14.24  | 12.37  | 222   | 10.486   | 0.026      | 9.888    | 0.024       | 9.585    | 0.019       | 9.388     | 0.022       | 9.183     | 0.020       | 8.979     | 0.028       | 62.3         | 2.1         |       |
| 20 13 53    | -45 09 51    | GJ0784        | 7.95     | 7.04   | 6.13   | Bes90 | 5.122    | 0.023      | 4.525    | 0.228       | 4.281    | 0.024       | 4.150     | 0.096       | 3.552     | 0.058       | 4.049     | 0.015       | 161.4        | 1.0         |       |
| 20 13 59    | +06 41 16    | GJ0784.2      | 13.33    | 12.06  | 10.55  | Bes90 | 9.090    | 0.034      | 8.452    | 0.033       | 8.167    | 0.027       | 7.996     | 0.022       | 7.910     | 0.020       | 7.778     | 0.017       | 44.7         | 1.9         |       |
| 20 16 11    | -75 31 05    | SCR2016-7531  | 15.84    | 14.28  | 12.35  | Win11 | 10.465   | 0.026      | 9.864    | 0.023       | 9.509    | 0.019       | 9.284     | 0.022       | 9.112     | 0.019       | 8.933     | 0.024       | 66.6         | 1.4         |       |
| 20 19 50    | -58 16 43    | LEHPM2-0783   | 17.22    | 15.29  | 13.04  | 444   | 10.664   | 0.022      | 10.104   | 0.025       | 9.715    | 0.023       | 9.485     | 0.023       | 9.271     | 0.020       | 9.019     | 0.026       | 61.9         | 1.0         |       |
| 20 22 15    | +31 17 45    | G186-024      | 14.57    | 13.24  | 11.59  | 222   | 9.960    | 0.022      | 9.412    | 0.022       | 9.136    | 0.021       | 8.907     | 0.022       | 8.730     | 0.021       | 8.650     | 0.031       | 54.5         | 1.3         |       |
| 20 22 42    | -58 17 09    | GJ0788.1      | 10.57    | 9.67   | 8.81   | Bes90 | 7.820    | 0.026      | 7.183    | 0.029       | 6.969    | 0.026       | 6.851     | 0.037       | 6.794     | 0.021       | 6.747     | 0.015       | 51.5         | 1.9         |       |
| 20 24 51    | +74 12 25    | LHS3547       | 15.37    | 13.94  | 12.06  | We96  | 10.325   | 0.020      | 9.740    | 0.017       | 9.443    | 0.020       | 9.230     | 0.023       | 9.046     | 0.021       | 8.831     | 0.020       | 64.2         | 3.2         |       |
| 20 26 05    | +58 34 23    | GJ1253        | 14.04    | 12.64  | 10.84  | We96  | 9.029    | 0.039      | 8.483    | 0.073       | 8.095    | 0.021       | 7.874     | 0.023       | 7.712     | 0.020       | 7.538     | 0.015       | 109.3        | 2.6         |       |
| 20 27 29    | +35 59 25    | LHS0491       | 14.748   | 13.745 | 12.740 | We96  | 11.596   | 0.019      | 11.102   | 0.029       | 10.869   | 0.025       | 10.702    | 0.024       | 10.589    | 0.023       | 11.374    | .           | 20.4         | 4.2         | KS    |
| 20 27 42    | -27 44 52    | GJ1252        | 12.20    | 11.19  | 9.93   | Jao05 | 8.697    | 0.019      | 8.161    | 0.034       | 7.915    | 0.023       | 7.820     | 0.024       | 7.668     | 0.020       | 7.586     | 0.017       | 50.5         | 2.1         |       |
| 20 27 42    | -56 27 25    | GJ0791        | 11.47    | 10.40  | 9.04   | Bes90 | 7.706    | 0.020      | 7.083    | 0.029       | 6.864    | 0.027       | 6.719     | 0.039       | 6.577     | 0.022       | 6.525     | 0.016       | 68.3         | 2.9         |       |
| 20 28 04    | -76 40 16    | GJ1251        | 13.88    | 12.58  | 10.91  | Win15 | 9.359    | 0.022      | 8.875    | 0.025       | 8.600    | 0.025       | 8.381     | 0.023       | 8.188     | 0.019       | 8.047     | 0.018       | 79.0         | 2.3         |       |
| 20 28 44    | -11 28 311   | L755-019      | 12.47    | 11.31  | 9.81   | Rie14 | 8.394    | 0.027      | 7.759    | 0.029       | 7.496    | 0.031       | 7.421     | 0.029       | 7.250     | 0.020       | 7.186     | 0.017       | 53.2         | 1.7         | KY    |
| 20 30 32    | +65 26 58    | GJ0793        | 10.56    | 9.47   | 8.11   | We96  | 6.735    | 0.021      | 6.136    | 0.046       | 5.933    | 0.023       | 5.750     | 0.057       | 5.496     | 0.029       | 5.555     | 0.014       | 124.6        | 1.0         |       |
| 20 31 26    | +38 33 44    | GJ0792        | 13.48    | 12.24  | 10.65  | We96  | 9.193    | 0.021      | 8.627    | 0.021       | 8.358    | 0.016       | 8.159     | 0.022       | 7.975     | 0.020       | 7.492     | 0.023       | 68.7         | 1.1         |       |
| 20 33 16    | +28 23 45    | G210-026      | 14.57    | 13.29  | 11.66  | 111   | 9.963    | 0.022      | 9.397    | 0.028       | 9.097    | 0.021       | 8.906     | 0.022       | 8.786     | 0.019       | 8.660     | 0.020       | 45.7         | 1.4         |       |
| 20 33 38    | -25 56 52    | SCR2033-2556  | 14.87    | 13.44  | 11.57  | Rie14 | 9.712    | 0.024      | 9.146    | 0.022       | 8.877    | 0.021       | 8.656     | 0.022       | 8.448     | 0.021       | 8.346     | 0.024       | 20.7         | 1.4         | KY    |
| 20 33 40    | +61 45 14    | GJ1254        | 12.54    | 11.35  | 9.79   | We96  | 8.287    | 0.027      | 7.657    | 0.063       | 7.397    | 0.018       | 7.246     | 0.026       | 7.113     | 0.019       | 7.023     | 0.016       | 63.0         | 2.7         |       |
| 20 33 42    | +36 35 59    | G209-036      | 13.81    | 12.48  | 10.95  | 222   | 9.418    | 0.020      | 8.883    | 0.017       | 8.580    | 0.015       | 8.404     | 0.023       | 8.247     | 0.020       | 8.270     | 0.028       | 44.0         | 1.2         |       |
| 20 34 33    | +07 57 35    | LP575-026     | 15.10    | 13.81  | 12.15  | 222   | 10.545   | 0.026      | 9.958    | 0.025       | 9.668    | 0.025       | 9.473     | 0.023       | 9.298     | 0.021       | 9.255     | 0.034       | 47.3         | 2.8         |       |
| 20 34 43    | +03 20 51    | LHS3564       | 11.92    | 10.89  | 9.62   | We96  | 8.446    | 0.018      | 7.906    | 0.040       | 7.629    | 0.023       | 7.469     | 0.029       | 7.370     | 0.019       | 7.296     | 0.014       | 47.0         | 2.1         |       |
| 20 34 55    | +59 17 27    | G230-043      | 13.43    | 12.27  | 10.77  | We88  | 9.318    | 0.020      | 8.707    | 0.021       | 8.466    | 0.021       | 8.288     | 0.023       | 8.167     | 0.020       | 8.070     | 0.021       | 46.4         | 1.7         |       |
| 20 36 08    | -36 07 12    | SCR2036-3607  | 11.66    | 10.59  | 9.27   | Rie14 | 8.026    | 0.023      | 7.418    | 0.033       | 7.172    | 0.020       | 7.025     | 0.032       | 6.886     | 0.021       | 6.816     | 0.015       | 62.1         | 1.4         |       |
| 20 38 16    | +63 49 37    | LP074-023     | 16.38    | 14.72  | 13.00  | 111   | 11.161   | 0.025      | 10.513   | 0.030       | 10.215   | 0.019       | 10.025    | 0.023       | 9.857     | 0.020       | 9.656     | 0.027       | 43.1         | 2.8         |       |
| 20 39 24    | -29 26 35    | LHS3566       | 17.62    | 15.67  | 13.64  | Cos05 | 11.357   | 0.025      | 10.743   | 0.023       | 10.367   | 0.022       | 10.141    | 0.025       | 9.955     | 0.021       | 9.775     | 0.044       | 57.3         | 2.7         |       |
| 20 40 27    | +65 00 27    | G262-023      | 15.28    | 13.84  | 12.08  | 111   | 10.479   | 0.028      | 9.861    | 0.030       | 9.586    | 0.018       | 9.357     | 0.021       | 9.182     | 0.018       | 9.000     | 0.017       | 45.3         | 1.6         |       |
| 20 40 34    | +15 29 59    | GJ1256        | 13.47    | 12.10  | 10.37  | Dav15 | 8.641    | 0.027      | 8.075    | 0.016       | 7.749    | 0.031       | 7.542     | 0.025       | 7.385     | 0.020       | 7.241     | 0.016       | 106.0        | 1.8         |       |
| 20 41 11    | +18 00 05    | LSPM2041+1800 | 17.02    | 15.33  | 13.29  | 222   | 11.331   | 0.022      | 10.742   | 0.022       | 10.422   | 0.019       | 10.172    | 0.022       | 9.970     | 0.020       | 9.761     | 0.039       | 51.5         | 4.1         |       |
| 20 41 47    | +49 38 48    | LSPM2041+4938 | 15.42    | 13.93  | 12.21  | 222   | 10.416   | 0.024      | 9.832    | 0.030       | 9.541    | 0.018       | 9.317     | 0.022       | 9.164     | 0.021       | 9.387     | 0.062       | 48.5         | 2.1         |       |
| 20 42 57    | -18 55 06    | GJ0800        | 10.80    | 9.86   | 8.76   | Bes90 | 7.557    | 0.024      | 6.949    | 0.034       | 6.739    | 0.021       | 6.625     | 0.041       | 6.581     | 0.019       | 6.542     | 0.015       | 56.6         | 2.3         |       |
| 20 43 24    | +04 45 55    | LHS3558       | 15.42    | 13.88  | 12.01  | 222   | 10.083   | 0.025      | 9.482    | 0.023       | 9.136    | 0.021       | 8.907     | 0.023       | 8.729     | 0.021       | 8.544     | 0.023       | 79.9         | 2.7         |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 20 43 41           | +64 16 54           | G262-026         | 11.38           | 10.38    | 9.63            | Wei99      | 8.399           | 0.020      | 7.820            | 0.027              | 7.614            | 0.017              | 7.437             | 0.026              | 7.364             | 0.020              | 7.295             | 0.016              | 47.3                 | 1.7                |               |
| 20 44 22           | +13 39 01           | LSPM2044+1339    | 16.12           | 14.71    | 12.93           | 222        | 11.164          | 0.023      | 10.571           | 0.022              | 10.251           | 0.018              | 9.008             | 0.024              | 9.124             | 0.021              | 9.002             | 0.028              | 52.6                 | 2.5                |               |
| 20 44 38           | +15 17 35           | LSPM2044+1517    | 18.50           | 16.17    | 13.76           | 365        | 11.025          | 0.022      | 10.490           | 0.016              | 10.061           | 0.018              | 9.774             | 0.023              | 9.509             | 0.021              | 9.201             | 0.029              | 109.8                | 3.3                |               |
| 20 45 02           | -63 32 07           | SIP2045-6332     | 21.05           | 18.44    | 16.02           | 233        | 12.619          | 0.027      | 11.807           | 0.023              | 11.207           | 0.023              | 10.738            | 0.023              | 10.358            | 0.021              | 9.860             | 0.036              | 41.5                 | 1.4                |               |
| 20 45 04           | +44 29 57           | GJ0806           | 10.77           | 9.76     | 8.57            | Wei96      | 7.329           | 0.018      | 6.769            | 0.023              | 6.533            | 0.016              | 6.415             | 0.036              | 6.232             | 0.022              | 6.232             | 0.016              | 81.8                 | 1.4                |               |
| 20 45 10           | -31 20 27           | GJ0803           | 8.65            | 7.68     | 6.61            | Win15      | 5.436           | 0.017      | 4.831            | 0.016              | 4.529            | 0.020              | 4.499             | 0.086              | 3.999             | 0.048              | 4.312             | 0.014              | 101.3                | 0.8                | 3, KY         |
| 20 45 22           | +35 08 15           | LSPM2045+3508    | 15.50           | 14.02    | 12.34           | 222        | 10.497          | 0.020      | 9.957            | 0.023              | 9.623            | 0.016              | 9.424             | 0.023              | 9.248             | 0.020              | 8.984             | 0.026              | 54.2                 | 1.6                |               |
| 20 46 37           | -81 43 14           | LHS3583          | 11.50           | 10.39    | 9.02            | Rie10      | 7.694           | 0.018      | 7.124            | 0.031              | 6.826            | 0.034              | 6.689             | 0.040              | 6.557             | 0.020              | 6.460             | 0.015              | 94.7                 | 2.4                |               |
| 20 46 44           | -11 48 13           | LP756-003        | 13.80           | 12.52    | 10.88           | Win15      | 9.349           | 0.027      | 8.728            | 0.034              | 8.435            | 0.021              | 8.253             | 0.024              | 8.092             | 0.020              | 7.969             | 0.020              | 52.4                 | 1.4                |               |
| 20 48 51           | +11 27 20           | LP516-007        | 13.52           | 12.40    | 11.01           | Wei84      | 9.689           | 0.021      | 9.128            | 0.025              | 8.874            | 0.025              | 8.655             | 0.022              | 8.498             | 0.021              | 8.407             | 0.022              | 58.5                 | 1.5                |               |
| 20 49 27           | +33 36 51           | LSPM2049+3336    | 18.06           | 16.14    | 13.88           | 222        | 11.501          | 0.023      | 10.867           | 0.021              | 10.541           | 0.016              | 10.302            | 0.022              | 10.126            | 0.020              | 10.039            | 0.049              | 67.5                 | 1.7                |               |
| 20 50 16           | -34 24 43           | LEP2050-3424     | 13.75           | 12.31    | 10.55           | Hen18      | 8.821           | 0.027      | 8.272            | 0.046              | 7.997            | 0.020              | 7.814             | 0.023              | 7.614             | 0.020              | 7.486             | 0.016              | 105.6                | 1.0                |               |
| 20 51 42           | -79 18 49           | GJ0808           | 11.81           | 10.82    | 9.64            | Jao11      | 8.459           | 0.030      | 7.908            | 0.049              | 7.664            | 0.024              | 7.532             | 0.025              | 7.390             | 0.020              | 7.314             | 0.016              | 57.1                 | 2.1                |               |
| 20 52 33           | -16 58 29           | LP816-060        | 11.50           | 10.25    | 8.64            | Win15      | 7.090           | 0.023      | 6.517            | 0.044              | 6.199            | 0.021              | 6.015             | 0.051              | 5.763             | 0.027              | 5.765             | 0.016              | 175.0                | 3.4                |               |
| 20 52 58           | +43 10 24           | LSPM2052+4310    | 13.19           | 11.97    | 10.58           | 111        | 9.144           | 0.023      | 8.578            | 0.033              | 8.345            | 0.031              | 8.163             | 0.023              | 7.999             | 0.020              | 7.806             | 0.023              | 64.1                 | 1.2                |               |
| 20 53 09           | -01 33 04           | 2MA2053-0133     | 15.79           | 14.33    | 12.46           | 222        | 10.659          | 0.022      | 10.108           | 0.023              | 9.793            | 0.021              | 9.573             | 0.023              | 9.380             | 0.021              | 9.141             | 0.047              | 55.0                 | 2.0                |               |
| 20 53 20           | +62 09 16           | GJ0809           | 8.56            | 7.62     | 6.59            | Wei96      | 5.429           | 0.029      | 4.919            | 0.059              | 4.618            | 0.024              | 4.501             | 0.088              | 4.304             | 0.051              | 4.402             | 0.014              | 141.6                | 0.6                |               |
| 20 53 33           | +10 37 02           | LHS3593          | 13.97           | 12.67    | 10.99           | Wei96      | 9.348           | 0.022      | 8.753            | 0.028              | 8.481            | 0.021              | 8.286             | 0.023              | 8.104             | 0.020              | 7.988             | 0.019              | 74.7                 | 2.2                |               |
| 20 55 19           | +20 56 06           | LSPM2055+2056    | 14.31           | 13.15    | 11.69           | 222        | 10.264          | 0.026      | 9.646            | 0.029              | 9.423            | 0.020              | 9.243             | 0.022              | 9.098             | 0.019              | 9.024             | 0.029              | 41.0                 | 2.0                |               |
| 20 56 47           | -10 26 55           | GJ0811.1         | 11.50           | 10.44    | 9.11            | Bes90      | 7.766           | 0.024      | 7.142            | 0.038              | 6.884            | 0.016              | 6.750             | 0.036              | 6.670             | 0.021              | 6.623             | 0.018              | 63.0                 | 3.0                |               |
| 20 56 49           | -04 50 49           | GJ0812           | 11.94           | 10.80    | 9.27            | Bes90      | 7.816           | 0.021      | 7.312            | 0.027              | 7.064            | 0.015              | 6.895             | 0.037              | 6.724             | 0.018              | 6.640             | 0.017              | 59.5                 | 3.1                |               |
| 20 57 25           | +22 21 46           | GJ0813           | 12.00           | 10.96    | 9.68            | Wei96      | 8.410           | 0.030      | 7.868            | 0.053              | 7.640            | 0.024              | 7.482             | 0.025              | 7.340             | 0.020              | 7.273             | 0.016              | 71.3                 | 1.9                |               |
| 20 57 54           | -02 52 30           | DEN2057-0252     | 21.68           | 18.86    | 16.57           | 244        | 13.121          | 0.024      | 12.268           | 0.024              | 11.724           | 0.025              | 11.261            | 0.022              | 10.981            | 0.020              | 10.431            | 0.079              | 70.1                 | 3.7                |               |
| 20 58 42           | +34 16 27           | LTT16135         | 11.06           | 10.14    | 9.18            | Wei99      | 8.073           | 0.018      | 7.426            | 0.026              | 7.251            | 0.021              | 7.115             | 0.033              | 7.103             | 0.020              | 7.047             | 0.016              | 41.5                 | 2.2                |               |
| 21 01 33           | +39 57 04           | LSPM2101+3957    | 16.18           | 14.66    | 12.91           | 222        | 10.990          | 0.021      | 10.403           | 0.017              | 10.116           | 0.015              | 9.898             | 0.023              | 9.710             | 0.020              | 9.667             | 0.042              | 45.2                 | 2.3                |               |
| 21 01 59           | -06 19 08           | GJ0816           | 11.27           | 10.19    | 8.86            | 111        | 7.563           | 0.017      | 6.952            | 0.026              | 6.692            | 0.018              | 6.558             | 0.040              | 6.454             | 0.020              | 6.401             | 0.015              | 69.6                 | 2.6                |               |
| 21 02 47           | +22 37 12           | LP396-018        | 15.61           | 14.35    | 12.74           | 111        | 11.136          | 0.023      | 10.586           | 0.032              | 10.323           | 0.023              | 10.113            | 0.024              | 9.930             | 0.021              | 9.745             | 0.038              | 41.3                 | 2.9                |               |
| 21 03 14           | -56 57 48           | GJ2151           | 12.81           | 11.64    | 10.15           | 323        | 8.730           | 0.024      | 8.175            | 0.029              | 7.902            | 0.024              | 7.704             | 0.024              | 7.559             | 0.020              | 7.449             | 0.017              | 75.0                 | 5.6                |               |
| 21 04 15           | -10 37 37           | 2MA2104-1037     | 22.37           | 19.46    | 17.25           | 133        | 13.841          | 0.029      | 12.975           | 0.025              | 12.369           | 0.024              | 11.901            | 0.025              | 11.662            | 0.032              | 10.444            | 0.232              | 53.0                 | 1.7                |               |
| 21 04 53           | -16 57 32           | GJ0817           | 11.45           | 10.50    | 9.42            | Bes90      | 8.285           | 0.032      | 7.744            | 0.047              | 7.545            | 0.029              | 7.366             | 0.027              | 7.244             | 0.020              | 7.222             | 0.017              | 55.8                 | 2.5                |               |
| 21 05 14           | -55 03 56           | SCR2105-5503     | 13.97           | 12.69    | 11.05           | Win11      | 9.594           | 0.026      | 8.923            | 0.022              | 8.643            | 0.023              | 8.447             | 0.022              | 8.276             | 0.019              | 8.134             | 0.018              | 67.8                 | 1.5                |               |
| 21 09 17           | -13 18 09           | GJ0821           | 10.87           | 9.91     | 8.83            | Bes90      | 7.688           | 0.029      | 7.121            | 0.036              | 6.909            | 0.029              | 6.763             | 0.037              | 6.614             | 0.021              | 6.596             | 0.018              | 82.0                 | 1.9                |               |
| 21 10 04           | +66 15 02           | LSPM2110+6615    | 15.73           | 14.31    | 12.62           | 222        | 10.939          | 0.026      | 10.283           | 0.031              | 10.033           | 0.021              | 9.823             | 0.023              | 9.656             | 0.019              | 9.620             | 0.038              | 41.0                 | 2.2                |               |
| 21 11 27           | +65 53 27           | LSPM2111+6553    | 13.17           | 12.06    | 10.81           | 222        | 9.476           | 0.019      | 8.880            | 0.028              | 8.676            | 0.024              | 8.493             | 0.023              | 8.352             | 0.019              | 8.226             | 0.017              | 49.8                 | 1.4                |               |
| 21 11 50           | -43 36 49           | LHS3639          | 12.00           | 10.96    | 9.73            | K107       | 8.478           | 0.024      | 7.919            | 0.042              | 7.667            | 0.021              | 7.519             | 0.028              | 7.374             | 0.019              | 7.300             | 0.016              | 63.3                 | 3.4                |               |
| 21 14 48           | +16 04 59           | G145-029         | 13.42           | 12.23    | 10.71           | 222        | 9.219           | 0.025      | 8.617            | 0.027              | 8.328            | 0.018              | 8.152             | 0.022              | 8.038             | 0.021              | 7.917             | 0.017              | 41.2                 | 1.1                |               |
| 21 17 15           | -38 52 03           | GJ0825           | 6.67            | 5.77     | 4.91            | Bes90      | 4.046           | 0.266      | 3.256            | 0.216              | 3.100            | 0.230              | 3.429             | 0.051              | 2.578             | 0.052              | 2.797             | 0.008              | 253.4                | 0.8                |               |
| 21 20 10           | -67 39 06           | L117-123         | 10.90           | 9.93     | 8.86            | Koe10      | 7.724           | 0.021      | 7.069            | 0.044              | 6.834            | 0.018              | 6.686             | 0.039              | 6.706             | 0.020              | 6.606             | 0.015              | 48.1                 | 2.1                |               |
| 21 21 58           | +15 49 39           | G145-036         | 15.11           | 13.85    | 12.24           | 222        | 10.679          | 0.020      | 10.113           | 0.021              | 9.836            | 0.014              | 9.646             | 0.024              | 9.480             | 0.021              | 9.312             | 0.031              | 44.8                 | 2.5                |               |
| 21 22 17           | -43 14 05           | SCR2122-4314     | 13.39           | 12.17    | 10.61           | Win11      | 9.133           | 0.023      | 8.529            | 0.029              | 8.212            | 0.020              | 8.064             | 0.023              | 7.928             | 0.020              | 7.842             | 0.017              | 48.8                 | 1.7                |               |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 21 23 07           | +29 01 35           | LP341-025        | 15.08           | 13.77    | 12.16           | 111        | 10.624          | 0.022      | 10.084           | 0.020              | 9.795            | 0.019              | 9.605             | 0.023              | 9.432             | 0.021              | 9.270             | 0.029              | 43.0                 | 1.4                |               |
| 21 23 26           | +67 34 15           | G262-041         | 14.49           | 13.19    | 11.63           | 111        | 10.176          | 0.021      | 9.591            | 0.028              | 9.316            | 0.024              | 9.110             | 0.023              | 8.950             | 0.020              | 8.760             | 0.018              | 41.8                 | 2.0                |               |
| 21 24 18           | -46 41 35           | GJ0826.2         | 12.47           | 11.43    | 10.21           | Bes90      | 8.970           | 0.021      | 8.411            | 0.042              | 8.135            | 0.023              | 7.994             | 0.024              | 7.882             | 0.022              | 7.792             | 0.018              | 40.8                 | 4.4                |               |
| 21 24 32           | +40 03 60           | LEP2124+4003     | 15.96           | 14.35    | 12.38           | 111        | 10.339          | 0.022      | 9.740            | 0.028              | 9.431            | 0.025              | 9.171             | 0.022              | 8.986             | 0.020              | 8.858             | 0.023              | 66.7                 | 1.3                |               |
| 21 27 05           | -38 44 51           | APM2127-3844     | 14.60           | 13.31    | 11.66           | Rie10      | 10.034          | 0.021      | 9.558            | 0.025              | 9.278            | 0.023              | 9.058             | 0.020              | 8.869             | 0.020              | 8.758             | 0.026              | 49.3                 | 1.4                |               |
| 21 27 17           | -06 50 39           | GJ0828.2         | 11.10           | 10.15    | 9.15            | Bes90      | 8.046           | 0.018      | 7.458            | 0.053              | 7.166            | 0.023              | 7.034             | 0.032              | 6.938             | 0.021              | 6.900             | 0.016              | 60.9                 | 2.4                |               |
| 21 27 25           | +55 53 15           | LSPM2127+5553    | 19.47           | 17.34    | 14.76           | 222        | 12.007          | 0.022      | 11.327           | 0.018              | 10.913           | 0.017              | 10.676            | 0.023              | 10.481            | 0.021              | 10.392            | 0.074              | 60.9                 | 2.0                |               |
| 21 27 26           | -42 15 18           | 2MA2127-4215     | 20.64           | 18.60    | 16.22           | Win19      | 13.321          | 0.023      | 12.665           | 0.025              | 12.186           | 0.023              | 11.905            | 0.024              | 11.671            | 0.021              | 11.361            | 0.155              | 42.3                 | 3.6                |               |
| 21 27 46           | +07 17 56           | LHS3677          | 11.61           | 10.62    | 9.53            | 222        | 8.373           | 0.020      | 7.799            | 0.036              | 7.545            | 0.021              | 7.425             | 0.028              | 7.322             | 0.020              | 7.257             | 0.016              | 40.7                 | 5.9                |               |
| 21 28 18           | -22 18 32           | LTT08526         | 12.17           | 11.11    | 9.81            | Win15      | 8.501           | 0.024      | 7.921            | 0.038              | 7.633            | 0.018              | 7.496             | 0.025              | 7.392             | 0.020              | 7.297             | 0.018              | 51.8                 | 1.5                |               |
| 21 30 07           | -77 10 38           | SCR2130-7710     | 17.00           | 15.34    | 13.31           | 222        | 11.292          | 0.026      | 10.666           | 0.022              | 10.365           | 0.023              | 10.157            | 0.024              | 9.978             | 0.021              | 9.826             | 0.038              | 47.6                 | 1.3                |               |
| 21 30 48           | -40 42 39           | LHS0510          | 13.12           | 11.92    | 10.35           | Win15      | 8.870           | 0.021      | 8.419            | 0.042              | 8.134            | 0.016              | 7.945             | 0.023              | 7.731             | 0.020              | 7.635             | 0.017              | 83.6                 | 2.5                |               |
| 21 33 34           | -49 00 33           | GJ0832           | 8.66            | 7.66     | 6.48            | Bes90      | 5.349           | 0.032      | 4.766            | 0.256              | 4.501            | 0.018              | 4.290             | 0.084              | 3.749             | 0.054              | 4.157             | 0.014              | 202.0                | 1.0                |               |
| 21 34 50           | +51 32 14           | LHS3693          | 11.78           | 10.72    | 9.37            | We196      | 8.038           | 0.019      | 7.472            | 0.034              | 7.271            | 0.026              | 7.143             | 0.027              | 7.017             | 0.020              | 6.928             | 0.018              | 55.9                 | 2.4                |               |
| 21 36 25           | -44 01 00           | WTT0795          | 14.15           | 12.80    | 11.08           | Rie10      | 9.456           | 0.024      | 8.834            | 0.027              | 8.530            | 0.023              | 8.292             | 0.024              | 8.139             | 0.020              | 8.000             | 0.019              | 69.5                 | 0.7                |               |
| 21 37 14           | +16 50 27           | LP458-013        | 14.29           | 13.12    | 11.61           | 222        | 10.137          | 0.023      | 9.500            | 0.026              | 9.269            | 0.021              | 9.129             | 0.024              | 8.996             | 0.020              | 8.852             | 0.025              | 57.4                 | 3.9                |               |
| 21 37 56           | -63 42 43           | HIP106803        | 10.62           | 9.67     | 8.62            | Koe10      | 7.509           | 0.024      | 6.823            | 0.029              | 6.642            | 0.021              | 6.451             | 0.037              | 6.508             | 0.029              | 6.422             | 0.021              | 47.1                 | 2.6                |               |
| 21 38 44           | -33 39 55           | LHS0512          | 12.55           | 11.37    | 9.88            | Win15      | 8.437           | 0.019      | 7.843            | 0.042              | 7.574            | 0.026              | 7.409             | 0.026              | 7.250             | 0.020              | 7.158             | 0.016              | 82.0                 | 2.1                |               |
| 21 41 58           | +27 41 15           | LP342-014        | 13.97           | 12.77    | 11.23           | We191a     | 9.825           | 0.018      | 9.267            | 0.016              | 9.006            | 0.013              | 8.798             | 0.023              | 8.612             | 0.021              | 8.492             | 0.022              | 46.0                 | 1.4                |               |
| 21 44 09           | +17 03 35           | G126-030         | 13.65           | 12.41    | 10.82           | We191a     | 9.313           | 0.021      | 8.727            | 0.020              | 8.435            | 0.015              | 8.237             | 0.021              | 8.098             | 0.021              | 7.940             | 0.017              | 67.6                 | 2.0                |               |
| 21 44 13           | +06 38 29           | LTT18537         | 12.12           | 11.04    | 9.68            | Koe10      | 8.271           | 0.020      | 7.690            | 0.036              | 7.443            | 0.027              | 7.278             | 0.031              | 7.170             | 0.021              | 7.077             | 0.017              | 48.0                 | 3.2                |               |
| 21 44 30           | -60 58 39           | HIP107345        | 11.66           | 10.77    | 9.84            | 222        | 8.751           | 0.026      | 8.087            | 0.023              | 7.874            | 0.026              | 7.781             | 0.024              | 7.755             | 0.020              | 7.672             | 0.018              | 22.9                 | 2.6                | KY            |
| 21 45 09           | +61 47 45           | LTT16365         | 13.39           | 12.20    | 10.83           | 222        | 9.522           | 0.028      | 8.931            | 0.030              | 8.692            | 0.020              | 8.530             | 0.023              | 8.386             | 0.019              | 8.322             | 0.023              | 45.2                 | 1.6                |               |
| 21 45 44           | +20 46 48           | G232-032         | 14.40           | 13.16    | 11.55           | We187      | 10.014          | 0.023      | 9.475            | 0.028              | 9.192            | 0.022              | 8.998             | 0.021              | 8.827             | 0.020              | 8.687             | 0.024              | 48.7                 | 2.1                |               |
| 21 46 22           | +38 13 05           | LSPM2146+3813    | 12.17           | 11.00    | 9.39            | 222        | 7.949           | 0.019      | 7.465            | 0.033              | 7.198            | 0.018              | 7.033             | 0.032              | 6.791             | 0.021              | 6.694             | 0.015              | 149.6                | 2.0                |               |
| 21 46 40           | +66 48 11           | G264-012         | 13.16           | 11.90    | 10.36           | 333        | 8.837           | 0.021      | 8.258            | 0.026              | 7.986            | 0.020              | 7.782             | 0.023              | 7.642             | 0.020              | 7.484             | 0.015              | 73.2                 | 3.1                |               |
| 21 46 40           | -00 10 24           | GJ1263           | 12.66           | 11.45    | 9.88            | 222        | 8.364           | 0.024      | 7.825            | 0.031              | 7.489            | 0.026              | 7.337             | 0.027              | 7.161             | 0.021              | 7.080             | 0.017              | 83.5                 | 3.9                |               |
| 21 46 43           | -85 43 05           | L002-077         | 13.39           | 12.13    | 10.44           | Win15      | 8.844           | 0.023      | 8.280            | 0.033              | 7.991            | 0.024              | 7.822             | 0.024              | 7.640             | 0.021              | 7.517             | 0.016              | 63.4                 | 1.9                | KY            |
| 21 46 56           | +46 38 06           | LTT16369         | 13.36           | 12.18    | 10.62           | We188      | 9.089           | 0.050      | 8.481            | 0.030              | 8.214            | 0.016              | 8.022             | 0.022              | 7.888             | 0.018              | 7.792             | 0.017              | 61.1                 | 0.8                |               |
| 21 47 40           | +45 07 33           | G212-058         | 13.57           | 12.42    | 11.07           | 222        | 9.771           | 0.022      | 9.216            | 0.026              | 9.022            | 0.020              | 8.873             | 0.024              | 8.676             | 0.020              | 8.662             | 0.024              | 40.2                 | 1.1                |               |
| 21 47 52           | +50 14 48           | LHS3711          | 13.33           | 12.18    | 10.68           | We196      | 9.311           | 0.023      | 8.705            | 0.075              | 8.555            | 0.023              | 8.330             | 0.024              | 8.178             | 0.020              | 8.075             | 0.021              | 47.4                 | 1.6                |               |
| 21 48 15           | +27 55 42           | LHS3713          | 11.99           | 10.97    | 9.73            | We196      | 8.508           | 0.018      | 7.929            | 0.029              | 7.686            | 0.016              | 7.546             | 0.023              | 7.396             | 0.020              | 7.319             | 0.016              | 54.8                 | 4.4                |               |
| 21 49 26           | -63 06 52           | LHS3719          | 12.56           | 11.45    | 10.08           | Rie10      | 8.739           | 0.021      | 8.117            | 0.020              | 7.886            | 0.027              | 7.734             | 0.022              | 7.583             | 0.020              | 7.492             | 0.018              | 60.3                 | 1.4                |               |
| 21 51 48           | +13 36 15           | LP518-058        | 13.93           | 12.64    | 10.97           | We186      | 9.311           | 0.021      | 8.734            | 0.016              | 8.423            | 0.018              | 8.252             | 0.023              | 8.101             | 0.019              | 7.955             | 0.019              | 62.6                 | 1.8                |               |
| 21 51 53           | +46 35 16           | LTT16387         | 14.23           | 12.99    | 11.54           | 222        | 10.126          | 0.024      | 9.540            | 0.031              | 9.282            | 0.019              | 9.126             | 0.024              | 8.969             | 0.020              | 8.869             | 0.023              | 40.4                 | 2.8                |               |
| 21 52 10           | +05 37 36           | HIP107948        | 12.18           | 11.05    | 9.63            | 222        | 8.248           | 0.026      | 7.646            | 0.044              | 7.385            | 0.026              | 7.209             | 0.030              | 7.068             | 0.022              | 7.008             | 0.017              | 32.8                 | 5.7                | KY            |
| 21 52 12           | +27 25 00           | LHS3725          | 14.06           | 12.90    | 11.39           | We196      | 9.984           | 0.024      | 9.473            | 0.028              | 9.266            | 0.023              | 9.054             | 0.022              | 8.850             | 0.021              | 8.602             | 0.023              | 42.5                 | 1.6                |               |
| 21 53 59           | +42 35 33           | LSPM2153+4235    | 17.77           | 15.93    | 13.82           | 111        | 11.636          | 0.024      | 11.059           | 0.028              | 10.763           | 0.023              | 10.467            | 0.023              | 10.276            | 0.021              | 10.152            | 0.049              | 42.7                 | 2.4                |               |
| 21 53 59           | +41 46 45           | GJ0839           | 10.35           | 9.50     | 8.64            | We196      | 7.572           | 0.024      | 6.907            | 0.027              | 6.765            | 0.027              | 6.675             | 0.038              | 6.746             | 0.020              | 6.679             | 0.015              | 43.3                 | 1.5                |               |
| 21 54 45           | -46 59 34           | GJ0838.6         | 11.95           | 10.91    | 9.66            | Koe10      | 8.393           | 0.026      | 7.816            | 0.033              | 7.576            | 0.023              | 7.393             | 0.025              | 7.258             | 0.022              | 7.191             | 0.016              | 69.3                 | 3.8                |               |



# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>mag<br>(11) | K<br>mag<br>(12) | err<br>mag<br>(13) | W1<br>mag<br>(14) | err<br>mag<br>(15) | W2<br>mag<br>(16) | err<br>mag<br>(17) | W3<br>mag<br>(18) | err<br>mag<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|--------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|----------------------|--------------------|---------------|
| 21 55 14           | +42 51 48           | G215-023         | 14.37           | 13.21    | 11.70           | 222        | 10.291          | 0.023      | 9.682            | 0.033              | 9.437            | 0.020              | 9.267             | 0.024              | 9.110             | 0.020              | 8.973             | 0.024              | 41.3                 | 1.9                |               |
| 21 56 55           | -01 54 09           | LHS0516          | 14.70           | 13.32    | 11.53           | 222        | 9.880           | 0.024      | 9.315            | 0.024              | 9.026            | 0.023              | 8.819             | 0.025              | 8.612             | 0.021              | 8.450             | 0.023              | 74.8                 | 3.2                |               |
| 21 57 26           | +08 08 14           | LTT16412         | 11.03           | 10.06    | 8.91            | Koe10      | 7.723           | 0.026      | 7.117            | 0.038              | 6.845            | 0.018              | 6.750             | 0.038              | 6.718             | 0.021              | 6.658             | 0.015              | 47.2                 | 1.7                |               |
| 21 58 25           | +75 35 21           | GJ0842.2         | 10.57           | 9.66     | 8.69            | Wei93      | 7.601           | 0.034      | 6.926            | 0.038              | 6.730            | 0.016              | 6.633             | 0.032              | 6.634             | 0.020              | 6.554             | 0.014              | 48.5                 | 1.1                | KY            |
| 21 58 35           | +61 17 06           | LEP2158+6117     | 17.23           | 15.57    | 13.35           | 111        | 11.292          | 0.027      | 10.785           | 0.031              | 10.447           | 0.019              | 10.220            | 0.024              | 10.010            | 0.021              | 9.743             | 0.036              | 59.1                 | 1.6                | PSF           |
| 21 58 50           | -32 28 18           | LHS3739          | 14.72           | 13.45    | 11.88           | Rie10      | 10.390          | 0.023      | 9.826            | 0.022              | 9.558            | 0.019              | 9.337             | 0.022              | 9.173             | 0.019              | 9.021             | 0.028              | 51.6                 | 0.7                |               |
| 21 59 35           | -59 45 10           | GJ0842           | 9.74            | 8.78     | 7.75            | Bes90      | 6.613           | 0.021      | 5.990            | 0.023              | 5.757            | 0.021              | 5.617             | 0.058              | 5.493             | 0.027              | 5.544             | 0.014              | 83.3                 | 1.7                |               |
| 22 01 13           | +28 18 25           | G188-038         | 12.05           | 10.79    | 9.18            | 333        | 7.635           | 0.026      | 7.035            | 0.031              | 6.777            | 0.021              | 6.601             | 0.038              | 6.428             | 0.020              | 6.322             | 0.014              | 113.4                | 1.7                | KY            |
| 22 01 49           | +16 28 03           | GJ0844           | 10.65           | 9.61     | 8.33            | Koe10      | 7.009           | 0.026      | 6.416            | 0.026              | 6.180            | 0.021              | 6.102             | 0.047              | 5.892             | 0.023              | 5.916             | 0.015              | 62.0                 | 2.2                |               |
| 22 02 10           | +01 24 01           | GJ0846           | 9.17            | 8.24     | 7.27            | Bes90      | 6.196           | 0.023      | 5.562            | 0.051              | 5.322            | 0.023              | 5.216             | 0.074              | 4.969             | 0.035              | 5.150             | 0.014              | 97.9                 | 1.5                |               |
| 22 02 29           | -37 04 51           | LHS3746          | 11.76           | 10.56    | 9.04            | Hen06      | 7.602           | 0.021      | 7.015            | 0.036              | 6.718            | 0.020              | 6.528             | 0.041              | 6.363             | 0.019              | 6.295             | 0.016              | 134.3                | 1.3                |               |
| 22 03 21           | +67 30 00           | LHS3749          | 13.41           | 12.28    | 10.82           | Wei96      | 9.410           | 0.027      | 8.885            | 0.030              | 8.691            | 0.022              | 8.485             | 0.023              | 8.306             | 0.020              | 8.274             | 0.021              | 56.7                 | 1.8                |               |
| 22 03 27           | -50 38 38           | LHS3748          | 12.10           | 11.08    | 9.86            | Koe10      | 8.627           | 0.021      | 8.037            | 0.029              | 7.812            | 0.033              | 7.652             | 0.022              | 7.544             | 0.020              | 7.492             | 0.017              | 48.4                 | 4.5                |               |
| 22 04 22           | +15 05 52           | LSPM2204+1505    | 16.37           | 14.78    | 12.83           | 212        | 10.867          | 0.020      | 10.315           | 0.021              | 9.981            | 0.019              | 9.766             | 0.024              | 9.538             | 0.019              | 9.268             | 0.029              | 51.5                 | 2.9                |               |
| 22 05 51           | -11 54 51           | LTT08848         | 10.09           | 9.20     | 8.28            | 111        | 7.221           | 0.024      | 6.599            | 0.042              | 6.398            | 0.040              | 6.253             | 0.047              | 6.205             | 0.020              | 6.201             | 0.016              | 45.0                 | 2.7                |               |
| 22 06 23           | +07 22 21           | LTT16466         | 13.14           | 11.94    | 10.43           | 222        | 8.936           | 0.018      | 8.375            | 0.024              | 8.076            | 0.023              | 7.909             | 0.024              | 7.771             | 0.020              | 7.660             | 0.018              | 58.3                 | 1.9                |               |
| 22 06 30           | +02 22 32           | LP639-019        | 14.72           | 13.44    | 11.82           | 222        | 10.271          | 0.024      | 9.718            | 0.022              | 9.443            | 0.021              | 9.217             | 0.023              | 9.042             | 0.021              | 8.945             | 0.028              | 58.2                 | 3.0                |               |
| 22 06 41           | -44 58 07           | WT0870           | 14.43           | 13.10    | 11.40           | Rie10      | 9.763           | 0.021      | 9.175            | 0.025              | 8.893            | 0.018              | 8.648             | 0.022              | 8.477             | 0.020              | 8.324             | 0.021              | 56.5                 | 1.1                |               |
| 22 07 48           | +05 39 19           | LP579-024        | 16.21           | 14.75    | 12.91           | 222        | 11.155          | 0.026      | 10.526           | 0.022              | 10.242           | 0.019              | 10.060            | 0.023              | 9.863             | 0.021              | 9.701             | 0.040              | 45.7                 | 2.5                |               |
| 22 08 13           | +10 36 42           | LP519-036        | 15.16           | 13.87    | 12.21           | 222        | 10.603          | 0.021      | 9.981            | 0.022              | 9.716            | 0.022              | 9.572             | 0.023              | 9.415             | 0.020              | 9.268             | 0.032              | 40.0                 | 1.7                |               |
| 22 09 40           | -04 38 27           | GJ0849           | 10.38           | 9.27     | 7.87            | Lur14      | 6.510           | 0.024      | 5.899            | 0.044              | 5.594            | 0.017              | 5.545             | 0.056              | 5.162             | 0.033              | 5.307             | 0.015              | 113.5                | 1.3                |               |
| 22 09 43           | +41 02 06           | G214-012         | 12.66           | 11.52    | 10.09           | 444        | 8.755           | 0.037      | 8.124            | 0.020              | 7.867            | 0.020              | 7.756             | 0.024              | 7.636             | 0.021              | 7.540             | 0.017              | 44.1                 | 3.1                |               |
| 22 10 22           | +42 50 58           | LSPM2210+4250    | 15.03           | 13.68    | 12.08           | 333        | 10.445          | 0.021      | 9.943            | 0.028              | 9.715            | 0.019              | 9.543             | 0.023              | 9.322             | 0.021              | 9.281             | 0.032              | 52.9                 | 1.5                |               |
| 22 11 17           | +41 00 55           | G214-014         | 11.14           | 10.20    | 9.29            | 222        | 8.228           | 0.020      | 7.636            | 0.031              | 7.435            | 0.018              | 7.287             | 0.026              | 7.226             | 0.019              | 7.153             | 0.016              | 43.3                 | 2.2                |               |
| 22 11 30           | +18 25 34           | GJ0851           | 10.23           | 9.21     | 7.97            | Wei93      | 6.725           | 0.037      | 6.035            | 0.036              | 5.823            | 0.016              | 5.656             | 0.054              | 5.504             | 0.029              | 5.584             | 0.015              | 85.7                 | 1.2                |               |
| 22 12 36           | +08 33 11           | LHS3773          | 11.97           | 10.90    | 9.56            | Wei96      | 8.277           | 0.021      | 7.681            | 0.024              | 7.472            | 0.027              | 7.265             | 0.028              | 7.139             | 0.019              | 7.072             | 0.016              | 62.6                 | 3.9                |               |
| 22 13 36           | +25 58 11           | L1436-028        | 13.62           | 12.43    | 10.90           | Wei87      | 9.511           | 0.022      | 8.899            | 0.020              | 8.660            | 0.017              | 8.478             | 0.023              | 8.312             | 0.021              | 8.206             | 0.019              | 54.1                 | 1.7                |               |
| 22 13 43           | -17 41 09           | GJ1265           | 13.63           | 12.31    | 10.60           | 333        | 8.955           | 0.029      | 8.422            | 0.046              | 8.115            | 0.018              | 7.938             | 0.024              | 7.734             | 0.021              | 7.620             | 0.019              | 96.0                 | 3.9                |               |
| 22 14 31           | +27 51 19           | GJ0851.5         | 10.36           | 9.49     | 8.62            | Wei96      | 7.536           | 0.023      | 6.905            | 0.020              | 6.726            | 0.017              | 6.602             | 0.041              | 6.606             | 0.021              | 6.529             | 0.014              | 49.0                 | 1.7                |               |
| 22 16 20           | +70 56 49           | GJ1266           | 12.12           | 11.13    | 9.96            | Wei96      | 8.746           | 0.023      | 8.273            | 0.046              | 8.017            | 0.018              | 7.858             | 0.023              | 7.726             | 0.020              | 7.666             | 0.017              | 45.2                 | 2.3                |               |
| 22 17 19           | -08 48 13           | GJ0852           | 13.57           | 12.27    | 10.62           | 222        | 9.024           | 0.023      | 8.487            | 0.061              | 8.167            | 0.031              | 7.925             | 0.012              | 6.995             | 0.012              | 7.169             | 0.016              | 99.6                 | 3.3                |               |
| 22 21 43           | -65 31 33           | L119-033         | 12.03           | 10.99    | 9.72            | Koe10      | 8.450           | 0.026      | 7.877            | 0.026              | 7.644            | 0.026              | 7.478             | 0.026              | 7.377             | 0.021              | 7.283             | 0.016              | 53.7                 | 3.2                |               |
| 22 23 07           | -17 36 26           | LHS3799          | 13.30           | 11.87    | 10.04           | Rie14      | 8.242           | 0.027      | 7.638            | 0.047              | 7.319            | 0.018              | 7.087             | 0.030              | 6.894             | 0.021              | 6.792             | 0.016              | 137.7                | 1.8                |               |
| 22 23 33           | -57 13 14           | GJ0855           | 10.72           | 9.77     | 8.72            | Bes90      | 7.600           | 0.019      | 6.958            | 0.026              | 6.730            | 0.026              | 6.587             | 0.040              | 6.568             | 0.018              | 6.519             | 0.014              | 52.5                 | 2.1                |               |
| 22 24 56           | +52 00 19           | GJ1268           | 15.04           | 13.57    | 11.87           | 333        | 10.155          | 0.023      | 9.597            | 0.028              | 9.298            | 0.020              | 9.089             | 0.024              | 8.910             | 0.021              | 8.763             | 0.023              | 68.6                 | 2.1                |               |
| 22 25 17           | +59 24 59           | G232-070         | 12.91           | 11.74    | 10.23           | Wei88      | 8.745           | 0.027      | 8.160            | 0.044              | 7.887            | 0.021              | 7.735             | 0.023              | 7.607             | 0.020              | 7.492             | 0.019              | 54.7                 | 2.1                |               |
| 22 25 51           | +31 48 50           | G189-018         | 14.47           | 13.20    | 11.70           | 222        | 10.164          | 0.023      | 9.677            | 0.022              | 9.417            | 0.012              | 9.245             | 0.023              | 9.062             | 0.021              | 8.925             | 0.025              | 41.1                 | 1.5                |               |
| 22 26 16           | +03 00 19           | LP640-073        | 13.79           | 12.60    | 11.06           | Wei96      | 9.623           | 0.022      | 8.975            | 0.051              | 8.714            | 0.023              | 8.514             | 0.023              | 8.387             | 0.020              | 8.269             | 0.022              | 48.8                 | 1.2                |               |
| 22 27 03           | +06 49 33           | LTT16577         | 13.27           | 12.04    | 10.48           | 222        | 9.020           | 0.027      | 8.489            | 0.034              | 8.164            | 0.026              | 7.961             | 0.022              | 7.811             | 0.019              | 7.710             | 0.017              | 72.5                 | 1.8                |               |
| 22 27 09           | +77 51 58           | LP027-095        | 15.28           | 13.87    | 12.03           | 222        | 10.214          | 0.024      | 9.593            | 0.026              | 9.293            | 0.020              | 9.082             | 0.022              | 8.920             | 0.020              | 8.769             | 0.024              | 64.2                 | 2.3                | A05           |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(10) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(14) | W2<br>mag | err<br>(16) | W3<br>mag | err<br>(18) | $\pi$<br>mas | err<br>(20) | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (21)         | (22)        |       |
| 22 28 46    | +18 55 54    | LTT16590      | 10.74    | 9.84     | 8.91     | Wei93      | 7.819    | 0.027      | 7.172    | 0.021       | 6.978    | 0.017       | 6.874     | 0.033       | 6.849     | 0.020       | 6.780     | 0.015       | 45.4         | 1.7         |       |
| 22 28 54    | -13 25 18    | LHS0523       | 17.26    | 15.25    | 12.94    | 111        | 10.768   | 0.023      | 10.217   | 0.025       | 9.843    | 0.021       | 9.648     | 0.024       | 9.436     | 0.021       | 9.240     | 0.034       | 88.8         | 4.9         |       |
| 22 29 06    | +01 39 48    | LP640-074     | 10.49    | 9.58     | 8.65     | Koe10      | 7.616    | 0.020      | 6.964    | 0.049       | 6.748    | 0.024       | 6.632     | 0.041       | 6.652     | 0.021       | 6.610     | 0.015       | 46.9         | 2.0         |       |
| 22 29 11    | +54 56 51    | LSPM2229+5456 | 15.70    | 14.33    | 12.71    | 222        | 11.085   | 0.022      | 10.463   | 0.026       | 10.187   | 0.020       | 9.999     | 0.022       | 9.840     | 0.021       | 9.593     | 0.043       | 40.1         | 1.6         |       |
| 22 29 49    | +41 28 49    | GJ1270        | 13.24    | 12.01    | 10.40    | Wei96      | 8.849    | 0.020      | 8.326    | 0.018       | 8.039    | 0.019       | 7.841     | 0.022       | 7.672     | 0.020       | 7.577     | 0.019       | 72.5         | 2.9         |       |
| 22 31 05    | +23 50 57    | LSPM2231+2350 | 14.34    | 13.17    | 11.68    | 111        | 10.181   | 0.020      | 9.566    | 0.022       | 9.342    | 0.018       | 9.160     | 0.022       | 9.012     | 0.020       | 8.858     | 0.024       | 46.2         | 2.0         |       |
| 22 33 02    | +09 22 41    | GJ0863        | 10.38    | 9.42     | 8.34     | Wei96      | 7.208    | 0.024      | 6.604    | 0.040       | 6.356    | 0.023       | 6.193     | 0.046       | 6.094     | 0.021       | 6.083     | 0.015       | 75.1         | 2.2         |       |
| 22 34 00    | -25 14 33    | LP876-034     | 11.29    | 10.23    | 8.98     | Win15      | 7.730    | 0.018      | 7.142    | 0.046       | 6.881    | 0.021       | 6.694     | 0.041       | 6.634     | 0.020       | 6.581     | 0.016       | 62.2         | 3.1         |       |
| 22 34 32    | +19 58 13    | LP460-042     | 15.02    | 13.72    | 12.08    | 222        | 10.504   | 0.020      | 9.969    | 0.024       | 9.653    | 0.018       | 9.436     | 0.024       | 9.265     | 0.021       | 9.040     | 0.026       | 42.8         | 1.5         |       |
| 22 34 47    | +27 57 54    | LSPM2234+2757 | 16.35    | 14.83    | 12.97    | 111        | 11.192   | 0.022      | 10.662   | 0.021       | 10.367   | 0.019       | 10.156    | 0.022       | 9.945     | 0.020       | 9.820     | 0.041       | 49.7         | 3.1         |       |
| 22 34 54    | -01 04 58    | LHS0526       | 14.83    | 13.56    | 11.91    | Wei96      | 10.388   | 0.026      | 9.775    | 0.022       | 9.518    | 0.023       | 9.289     | 0.022       | 9.130     | 0.019       | 8.986     | 0.030       | 42.5         | 3.7         |       |
| 22 35 49    | +18 40 30    | LP460-044     | 19.18    | 17.16    | 14.88    | 333        | 12.393   | 0.020      | 11.773   | 0.022       | 11.365   | 0.020       | 11.157    | 0.024       | 10.951    | 0.022       | 10.608    | 0.074       | 43.5         | 3.6         |       |
| 22 40 01    | +05 32 16    | LSPM2240+0532 | 17.89    | 16.03    | 13.90    | 222        | 11.715   | 0.026      | 11.087   | 0.022       | 10.749   | 0.021       | 10.482    | 0.022       | 10.263    | 0.022       | 9.962     | 0.110       | 42.3         | 4.8         |       |
| 22 42 39    | +17 40 09    | GJ1271        | 11.76    | 10.71    | 9.39     | Wei96      | 8.062    | 0.018      | 7.378    | 0.044       | 7.182    | 0.018       | 7.073     | 0.032       | 7.000     | 0.020       | 6.908     | 0.015       | 53.3         | 1.8         |       |
| 22 43 23    | +22 08 18    | G127-050      | 15.00    | 13.65    | 11.85    | Wei87      | 10.143   | 0.020      | 9.538    | 0.016       | 9.258    | 0.019       | 9.042     | 0.022       | 8.861     | 0.021       | 8.735     | 0.024       | 52.4         | 2.9         |       |
| 22 44 58    | -33 15 02    | GJ0871.1      | 12.11    | 10.91    | 9.32     | Win15      | 7.786    | 0.019      | 7.154    | 0.031       | 6.932    | 0.029       | 6.789     | 0.037       | 6.595     | 0.020       | 6.514     | 0.015       | 44.5         | 1.8         | KY    |
| 22 46 26    | -06 39 26    | LHS3850       | 15.99    | 14.53    | 12.66    | 222        | 10.790   | 0.023      | 10.191   | 0.025       | 9.850    | 0.021       | 9.635     | 0.023       | 9.448     | 0.021       | 9.331     | 0.042       | 53.3         | 4.6         |       |
| 22 46 50    | +44 20 03    | GJ0873        | 10.22    | 9.05     | 7.55     | Wei96      | 6.106    | 0.030      | 5.554    | 0.031       | 5.299    | 0.024       | 5.241     | 0.063       | 4.643     | 0.042       | 4.891     | 0.015       | 198.2        | 0.8         |       |
| 22 48 23    | +12 32 11    | LP521-018     | 17.00    | 15.32    | 13.28    | 222        | 11.193   | 0.022      | 10.601   | 0.020       | 10.232   | 0.017       | 10.054    | 0.023       | 9.857     | 0.021       | 9.643     | 0.040       | 55.3         | 3.7         |       |
| 22 50 19    | -07 05 24    | GJ0875        | 9.86     | 8.94     | 8.02     | Bes90      | 6.932    | 0.023      | 6.324    | 0.029       | 6.104    | 0.020       | 5.982     | 0.055       | 5.909     | 0.024       | 5.927     | 0.015       | 70.8         | 1.8         |       |
| 22 50 21    | +51 36 26    | LSPM2250+5136 | 15.02    | 13.56    | 11.83    | 111        | 10.216   | 0.018      | 9.653    | 0.017       | 9.372    | 0.020       | 9.148     | 0.023       | 8.944     | 0.020       | 8.776     | 0.021       | 60.1         | 2.3         |       |
| 22 50 36    | +61 46 19    | G241-025      | 15.40    | 13.96    | 12.28    | 222        | 10.531   | 0.021      | 9.911    | 0.026       | 9.645    | 0.022       | 9.426     | 0.023       | 9.302     | 0.019       | 9.496     | 0.061       | 41.4         | 1.9         |       |
| 22 50 38    | +34 51 22    | GJ1274        | 11.72    | 10.71    | 9.52     | Wei96      | 8.280    | 0.023      | 7.720    | 0.016       | 7.510    | 0.018       | 7.355     | 0.026       | 7.248     | 0.020       | 7.173     | 0.016       | 55.5         | 2.3         |       |
| 22 51 54    | +31 45 15    | GJ0875.1      | 11.62    | 10.51    | 9.11     | Wei96      | 7.697    | 0.020      | 7.129    | 0.018       | 6.874    | 0.021       | 6.749     | 0.034       | 6.637     | 0.020       | 6.552     | 0.015       | 67.6         | 2.0         |       |
| 22 52 40    | +75 04 19    | LP048-305     | 13.79    | 12.49    | 10.76    | 111        | 9.089    | 0.022      | 8.490    | 0.038       | 8.175    | 0.021       | 7.972     | 0.023       | 7.830     | 0.020       | 7.675     | 0.016       | 78.0         | 3.3         |       |
| 22 52 48    | -28 47 43    | LHS3394       | 11.87    | 10.85    | 9.65     | Koe10      | 8.412    | 0.026      | 7.819    | 0.061       | 7.578    | 0.024       | 7.431     | 0.026       | 7.345     | 0.021       | 7.273     | 0.015       | 51.0         | 2.8         |       |
| 22 53 17    | -14 15 49    | GJ0876        | 10.18    | 8.97     | 7.40     | Lur14      | 5.934    | 0.019      | 5.349    | 0.049       | 5.010    | 0.021       | 4.844     | 0.077       | 4.374     | 0.046       | 4.635     | 0.014       | 214.5        | 0.6         |       |
| 22 54 11    | +25 27 57    | LP401-010     | 17.36    | 15.84    | 13.72    | 111        | 11.633   | 0.021      | 11.061   | 0.022       | 10.685   | 0.017       | 10.458    | 0.024       | 10.261    | 0.021       | 10.141    | 0.052       | 50.5         | 2.1         |       |
| 22 54 22    | +60 59 44    | GJ0878        | 12.78    | 11.66    | 10.23    | Wei96      | 8.836    | 0.024      | 8.195    | 0.026       | 7.971    | 0.021       | 7.827     | 0.023       | 7.673     | 0.020       | 7.516     | 0.020       | 57.8         | 3.1         |       |
| 22 54 46    | -05 28 26    | LHS3872       | 13.89    | 12.67    | 11.12    | Win15      | 9.650    | 0.023      | 9.086    | 0.022       | 8.810    | 0.021       | 8.599     | 0.025       | 8.454     | 0.021       | 8.357     | 0.029       | 42.4         | 4.5         |       |
| 22 55 27    | -52 18 19    | HIP113201     | 11.51    | 10.53    | 9.44     | Koe10      | 8.315    | 0.026      | 7.663    | 0.051       | 7.418    | 0.024       | 7.278     | 0.026       | 7.224     | 0.019       | 7.148     | 0.016       | 40.3         | 2.8         |       |
| 22 55 46    | -75 27 31    | GJ0877        | 10.39    | 9.30     | 7.95     | 333        | 6.616    | 0.018      | 6.084    | 0.027       | 5.811    | 0.021       | 5.692     | 0.054       | 5.365     | 0.029       | 5.497     | 0.015       | 116.1        | 1.2         |       |
| 22 55 57    | +05 45 18    | L1150-065     | 11.21    | 10.27    | 9.22     | Koe10      | 8.130    | 0.024      | 7.458    | 0.038       | 7.240    | 0.029       | 7.138     | 0.032       | 7.117     | 0.020       | 7.046     | 0.017       | 40.9         | 2.1         |       |
| 22 56 13    | +68 15 29    | LHS3877       | 14.68    | 13.53    | 12.08    | Wei96      | 10.784   | 0.024      | 10.293   | 0.030       | 10.054   | 0.023       | 9.811     | 0.022       | 9.609     | 0.020       | 9.378     | 0.022       | 40.8         | 2.3         |       |
| 22 56 25    | -60 03 49    | GJ1277        | 14.00    | 12.59    | 10.79    | Jao11      | 8.984    | 0.026      | 8.360    | 0.031       | 8.108    | 0.023       | 7.884     | 0.023       | 7.719     | 0.020       | 7.560     | 0.017       | 97.5         | 1.2         |       |
| 22 56 35    | +16 33 12    | GJ0880        | 8.65     | 7.67     | 6.55     | Bes90      | 5.360    | 0.020      | 4.800    | 0.036       | 4.523    | 0.016       | 4.432     | 0.080       | 3.969     | 0.031       | 4.329     | 0.014       | 146.4        | 1.0         |       |
| 22 58 15    | +61 44 27    | LP109-057     | 14.16    | 12.97    | 11.63    | 222        | 10.285   | 0.020      | 9.715    | 0.022       | 9.460    | 0.017       | 9.302     | 0.024       | 9.141     | 0.019       | 8.905     | 0.036       | 54.5         | 1.5         |       |
| 22 58 32    | +10 14 59    | LP521-055     | 15.68    | 14.17    | 12.25    | 222        | 10.391   | 0.024      | 9.804    | 0.021       | 9.499    | 0.023       | 9.280     | 0.024       | 9.077     | 0.020       | 8.883     | 0.027       | 43.2         | 2.6         |       |
| 23 00 33    | -23 57 10    | L718-071      | 11.55    | 10.55    | 9.43     | Win15      | 8.252    | 0.027      | 7.671    | 0.040       | 7.407    | 0.020       | 7.306     | 0.026       | 7.197     | 0.020       | 7.134     | 0.016       | 49.1         | 2.4         |       |
| 23 01 57    | +76 11 42    | LP027-277     | 14.60    | 13.33    | 11.63    | 222        | 10.020   | 0.023      | 9.498    | 0.028       | 9.213    | 0.022       | 8.997     | 0.024       | 8.813     | 0.021       | 8.728     | 0.026       | 54.1         | 1.7         |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(21) | Notes |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------|
| 23 02 52    | +43 38 16    | LSPM2302+4338 | 13.97    | 12.61    | 10.94    | 222        | 9.316    | 0.021      | 8.783    | 0.016       | 8.453    | 0.016       | 8.284     | 0.022       | 8.095     | 0.020       | 7.944     | 0.017       | 79.5         | 1.8         |       |
| 23 03 21    | -49 43 34    | HIP113850     | 10.67    | 9.74     | 8.75     | Koe10      | 7.659    | 0.029      | 7.028    | 0.049       | 6.809    | 0.017       | 6.715     | 0.037       | 6.656     | 0.021       | 6.598     | 0.015       | 49.2         | 2.0         |       |
| 23 06 29    | +63 55 34    | HIP114066     | 10.82    | 9.93     | 9.00     | Wei93      | 7.815    | 0.023      | 7.167    | 0.040       | 6.977    | 0.023       | 6.926     | 0.033       | 6.908     | 0.020       | 6.848     | 0.016       | 40.8         | 1.6         | KY    |
| 23 06 05    | -05 02 29    | 2MA2306-0502  | 18.79    | 16.52    | 14.10    | 444        | 11.354   | 0.022      | 10.718   | 0.021       | 10.296   | 0.023       | 10.042    | 0.023       | 9.799     | 0.020       | 9.528     | 0.041       | 78.5         | 1.2         |       |
| 23 06 59    | -50 08 59    | SSS2307-5009  | 21.15    | 18.94    | 16.52    | 333        | 13.386   | 0.023      | 12.700   | 0.029       | 12.240   | 0.028       | 11.881    | 0.023       | 11.606    | 0.022       | 11.090    | 0.123       | 46.6         | 1.6         |       |
| 23 07 20    | -84 52 04    | SCR2307-8452  | 15.15    | 13.76    | 12.00    | Win17      | 10.361   | 0.024      | 9.812    | 0.025       | 9.474    | 0.021       | 9.154     | 0.021       | 9.006     | 0.019       | 8.852     | 0.022       | 65.8         | 2.0         |       |
| 23 07 30    | +68 40 05    | LHS0535       | 12.45    | 11.36    | 9.97     | Wei96      | 8.624    | 0.030      | 8.095    | 0.033       | 7.919    | 0.029       | 7.740     | 0.023       | 7.559     | 0.020       | 7.483     | 0.017       | 72.5         | 2.2         |       |
| 23 08 07    | +03 19 44    | GJ0889.1      | 10.91    | 9.97     | 8.98     | Bes90      | 7.865    | 0.020      | 7.305    | 0.029       | 7.067    | 0.026       | 6.917     | 0.032       | 6.833     | 0.020       | 6.782     | 0.015       | 63.2         | 2.1         |       |
| 23 08 20    | -15 24 36    | GJ0890        | 10.84    | 9.95     | 9.01     | Bes90      | 7.979    | 0.021      | 7.301    | 0.029       | 7.114    | 0.031       | 6.983     | 0.030       | 6.969     | 0.019       | 6.886     | 0.019       | 42.8         | 1.7         | KY    |
| 23 08 26    | +31 40 24    | LHS0536       | 14.67    | 13.74    | 12.82    | Wei96      | 11.714   | 0.028      | 11.182   | 0.034       | 10.982   | 0.022       | 10.866    | 0.024       | 10.706    | 0.022       | 10.655    | 0.072       | 22.4         | 3.0         | KS    |
| 23 09 58    | +55 06 47    | G2333-042     | 15.97    | 14.36    | 12.49    | 222        | 10.541   | 0.020      | 9.937    | 0.017       | 9.601    | 0.015       | 9.375     | 0.022       | 9.205     | 0.020       | 9.006     | 0.026       | 67.4         | 2.1         |       |
| 23 10 16    | -25 55 53    | GJ0891        | 11.27    | 10.26    | 9.06     | Koe10      | 7.838    | 0.027      | 7.252    | 0.023       | 6.995    | 0.021       | 6.876     | 0.030       | 6.700     | 0.020       | 6.687     | 0.016       | 62.9         | 3.1         |       |
| 23 10 24    | +61 34 22    | LP109-077     | 16.19    | 14.71    | 12.93    | 222        | 11.229   | 0.027      | 10.654   | 0.027       | 10.386   | 0.021       | 10.126    | 0.022       | 9.956     | 0.020       | 9.689     | 0.104       | 50.5         | 1.8         |       |
| 23 10 42    | -19 13 35    | GJ1281        | 12.45    | 11.44    | 10.20    | Win19      | 8.976    | 0.024      | 8.461    | 0.036       | 8.232    | 0.023       | 8.088     | 0.024       | 7.919     | 0.020       | 7.843     | 0.020       | 41.1         | 2.3         |       |
| 23 11 54    | +50 32 15    | LSPM2311+5032 | 15.74    | 14.27    | 12.55    | 222        | 10.786   | 0.020      | 10.193   | 0.024       | 9.868    | 0.016       | 9.666     | 0.024       | 9.497     | 0.020       | 9.479     | 0.041       | 52.4         | 1.9         |       |
| 23 12 11    | -14 06 12    | LHS3909       | 12.97    | 11.82    | 10.40    | Rie10      | 9.064    | 0.018      | 8.482    | 0.034       | 8.218    | 0.017       | 7.996     | 0.024       | 7.860     | 0.021       | 7.769     | 0.023       | 54.9         | 2.0         |       |
| 23 13 47    | +21 17 29    | LP462-011     | 16.91    | 15.31    | 13.37    | 333        | 11.421   | 0.020      | 10.761   | 0.022       | 10.443   | 0.017       | 10.227    | 0.023       | 10.057    | 0.020       | 9.796     | 0.040       | 24.4         | 1.6         | KY    |
| 23 14 17    | -19 38 39    | GJ2154        | 10.48    | 9.54     | 8.56     | Win15      | 7.471    | 0.019      | 6.803    | 0.038       | 6.618    | 0.023       | 6.506     | 0.051       | 6.541     | 0.020       | 6.501     | 0.014       | 50.4         | 2.1         |       |
| 23 15 52    | -37 33 31    | LHS0539       | 14.97    | 13.66    | 11.98    | Win15      | 10.403   | 0.024      | 9.872    | 0.022       | 9.592    | 0.021       | 9.407     | 0.023       | 9.199     | 0.020       | 9.028     | 0.026       | 52.9         | 2.0         |       |
| 23 16 08    | +06 44 36    | LTT16837      | 13.21    | 12.07    | 10.62    | 222        | 9.205    | 0.022      | 8.630    | 0.046       | 8.407    | 0.024       | 8.187     | 0.024       | 8.059     | 0.020       | 7.951     | 0.020       | 55.9         | 3.0         |       |
| 23 17 00    | -23 23 47    | L719-021      | 10.85    | 9.96     | 9.09     | Koe10      | 8.103    | 0.030      | 7.448    | 0.034       | 7.253    | 0.029       | 7.122     | 0.029       | 7.094     | 0.020       | 7.050     | 0.016       | 46.9         | 1.7         |       |
| 23 17 14    | +62 56 12    | G241-048      | 14.60    | 13.35    | 11.84    | 444        | 10.397   | 0.023      | 9.860    | 0.028       | 9.608    | 0.021       | 9.432     | 0.023       | 9.241     | 0.021       | 9.229     | 0.044       | 43.0         | 1.2         |       |
| 23 17 24    | +38 12 41    | LHS3923       | 11.46    | 10.39    | 9.07     | Wei96      | 7.761    | 0.026      | 7.193    | 0.017       | 6.959    | 0.016       | 6.790     | 0.034       | 6.673     | 0.020       | 6.601     | 0.015       | 57.1         | 3.2         |       |
| 23 17 50    | -48 18 47    | LHS3925       | 13.61    | 12.44    | 10.92    | Rie10      | 9.526    | 0.023      | 8.969    | 0.051       | 8.705    | 0.019       | 8.514     | 0.022       | 8.365     | 0.022       | 8.240     | 0.020       | 46.9         | 1.2         |       |
| 23 18 18    | +46 17 22    | GJ0894.1      | 10.90    | 9.94     | 8.95     | 333        | 7.890    | 0.021      | 7.230    | 0.018       | 7.021    | 0.018       | 6.914     | 0.034       | 6.924     | 0.020       | 6.859     | 0.015       | 40.5         | 2.0         |       |
| 23 21 13    | +30 23 19    | LP346-008     | 15.31    | 13.90    | 12.27    | 333        | 10.630   | 0.022      | 10.095   | 0.018       | 9.802    | 0.016       | 9.608     | 0.023       | 9.422     | 0.020       | 9.300     | 0.033       | 44.1         | 1.8         |       |
| 23 21 37    | +17 17 25    | LHS0543       | 11.65    | 10.46    | 8.89     | Wei96      | 7.391    | 0.029      | 6.771    | 0.024       | 6.507    | 0.016       | 6.392     | 0.045       | 6.221     | 0.020       | 6.163     | 0.015       | 91.8         | 2.3         |       |
| 23 24 00    | +28 34 04    | LHS3940       | 15.91    | 14.44    | 12.62    | 111        | 10.920   | 0.020      | 10.350   | 0.027       | 10.058   | 0.019       | 9.826     | 0.021       | 9.628     | 0.019       | 9.413     | 0.032       | 56.0         | 2.7         |       |
| 23 24 26    | +73 57 44    | LP048-485     | 14.48    | 13.17    | 11.57    | 222        | 10.034   | 0.022      | 9.454    | 0.028       | 9.169    | 0.020       | 9.001     | 0.023       | 8.847     | 0.020       | 8.725     | 0.023       | 50.9         | 2.1         |       |
| 23 24 31    | +57 51 16    | GJ0895        | 10.00    | 9.04     | 7.96     | 233        | 6.795    | 0.032      | 6.097    | 0.034       | 5.871    | 0.021       | 5.813     | 0.056       | 5.649     | 0.027       | 5.690     | 0.015       | 76.5         | 1.2         |       |
| 23 25 40    | +53 08 06    | LHS0543a      | 14.66    | 13.28    | 11.60    | 222        | 9.878    | 0.022      | 9.284    | 0.023       | 8.980    | 0.020       | 8.772     | 0.023       | 8.629     | 0.021       | 8.448     | 0.020       | 44.0         | 1.4         |       |
| 23 26 12    | +08 53 38    | GJ2155        | 10.59    | 9.71     | 8.82     | Wei96      | 7.763    | 0.023      | 7.070    | 0.034       | 6.923    | 0.018       | 6.842     | 0.025       | 6.819     | 0.021       | 6.741     | 0.018       | 44.7         | 1.8         |       |
| 23 29 23    | -41 28 07    | G190-028      | 11.89    | 10.76    | 9.31     | Wei91a     | 7.925    | 0.024      | 7.328    | 0.020       | 7.066    | 0.020       | 6.866     | 0.034       | 6.768     | 0.020       | 6.658     | 0.015       | 67.6         | 1.6         |       |
| 23 30 16    | -47 36 45    | APM2330-4737  | 18.20    | 16.01    | 13.66    | 222        | 11.229   | 0.024      | 10.641   | 0.025       | 10.279   | 0.021       | 10.054    | 0.023       | 9.841     | 0.020       | 9.566     | 0.035       | 72.7         | 3.3         |       |
| 23 31 22    | -27 49 59    | DEN2331-2749  | 19.13    | 16.80    | 14.31    | 222        | 11.646   | 0.023      | 11.055   | 0.026       | 10.651   | 0.026       | 10.398    | 0.022       | 10.158    | 0.020       | 9.847     | 0.047       | 69.1         | 2.1         |       |
| 23 31 52    | +19 56 14    | GJ0896        | 10.29    | 9.13     | 7.62     | 333        | 6.162    | 0.024      | 5.575    | 0.021       | 5.326    | 0.018       | 4.760     | 0.077       | 4.261     | 0.042       | 4.637     | 0.015       | 159.9        | 1.5         | KY    |
| 23 31 55    | +69 17 17    | LHS3967       | 15.88    | 14.43    | 12.66    | 222        | 10.943   | 0.021      | 10.322   | 0.029       | 10.036   | 0.025       | 9.822     | 0.022       | 9.657     | 0.020       | 9.471     | 0.031       | 48.7         | 2.5         |       |
| 23 34 03    | +00 10 46    | GJ0899        | 11.18    | 10.15    | 8.89     | Bes90      | 7.664    | 0.024      | 7.070    | 0.034       | 6.828    | 0.020       | 6.713     | 0.035       | 6.590     | 0.021       | 6.539     | 0.015       | 72.2         | 2.7         |       |
| 23 35 10    | -02 23 21    | GJ1286        | 14.73    | 13.10    | 11.10    | Win15      | 9.148    | 0.021      | 8.505    | 0.033       | 8.183    | 0.020       | 7.960     | 0.022       | 7.782     | 0.021       | 7.601     | 0.018       | 138.3        | 3.5         |       |
| 23 35 41    | +06 11 20    | LHS3978       | 16.17    | 14.73    | 12.90    | 222        | 11.088   | 0.023      | 10.476   | 0.030       | 10.169   | 0.020       | 9.942     | 0.022       | 9.768     | 0.020       | 9.526     | 0.042       | 42.9         | 2.4         |       |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms        | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(20) | Notes              |
|--------------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|--------------------|
| (1)                | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)               |
| 23 36 26           | +55 29 44    | LTT16952      | 11.70    | 10.73    | 9.62     | Wei88      | 8.448    | 0.019      | 7.810    | 0.018       | 7.582    | 0.018       | 7.474     | 0.028       | 7.456     | 0.020       | 7.397     | 0.020       | 40.2         | 2.4         |                    |
| 23 36 52           | -36 28 52    | LHS0547       | 13.76    | 12.46    | 10.78    | 333        | 9.191    | 0.037      | 8.666    | 0.040       | 8.422    | 0.026       | 8.191     | 0.021       | 7.982     | 0.020       | 7.852     | 0.018       | 86.2         | 2.0         |                    |
| 23 37 36           | +14 79 03    | LP463-023     | 16.07    | 14.43    | 12.45    | 222        | 10.479   | 0.027      | 9.892    | 0.033       | 9.616    | 0.022       | 9.361     | 0.023       | 9.176     | 0.022       | 8.981     | 0.029       | 75.3         | 5.4         |                    |
| 23 38 17           | -41 31 04    | LTT09635      | 11.93    | 10.89    | 9.62     | Koe10      | 8.361    | 0.030      | 7.733    | 0.042       | 7.494    | 0.023       | 7.323     | 0.027       | 7.246     | 0.020       | 7.160     | 0.015       | 53.5         | 3.5         |                    |
| 23 38 42           | +39 09 26    | LHS3991       | 13.58    | 12.42    | 10.95    | Wei96      | 9.580    | 0.019      | 9.006    | 0.028       | 8.745    | 0.020       | 8.548     | 0.023       | 8.413     | 0.021       | 8.261     | 0.020       | 57.3         | 1.6         |                    |
| 23 40 22           | +34 33 14    | LHS3997       | 15.87    | 14.36    | 12.52    | 222        | 10.572   | 0.026      | 9.974    | 0.030       | 9.681    | 0.020       | 9.451     | 0.023       | 9.261     | 0.019       | 9.081     | 0.032       | 54.6         | 2.4         |                    |
| 23 41 55           | +44 10 39    | GJ0905        | 12.29    | 10.77    | 8.82     | Wei96      | 6.884    | 0.026      | 6.247    | 0.027       | 5.929    | 0.020       | 5.694     | 0.056       | 5.410     | 0.029       | 5.393     | 0.015       | 316.0        | 0.6         |                    |
| 23 43 06           | +36 32 13    | GJ1289        | 12.57    | 11.30    | 9.66     | Wei96      | 8.110    | 0.029      | 7.446    | 0.036       | 7.226    | 0.020       | 7.029     | 0.032       | 6.851     | 0.020       | 6.731     | 0.015       | 123.5        | 2.5         |                    |
| 23 43 53           | +61 02 16    | LHS4005a      | 13.36    | 12.22    | 10.76    | Wei96      | 9.392    | 0.019      | 8.855    | 0.023       | 8.620    | 0.022       | 8.423     | 0.023       | 8.251     | 0.020       | 8.136     | 0.021       | 54.9         | 1.7         |                    |
| 23 44 21           | +21 36 05    | GJ1290        | 13.29    | 12.09    | 10.56    | Wei87      | 9.070    | 0.026      | 8.445    | 0.016       | 8.225    | 0.026       | 8.067     | 0.022       | 7.920     | 0.019       | 7.794     | 0.018       | 45.4         | 4.0         |                    |
| 23 45 41           | +49 42 39    | LSPM2345+4942 | 14.15    | 12.76    | 11.33    | 111        | 9.821    | 0.022      | 9.189    | 0.027       | 8.940    | 0.021       | 8.758     | 0.021       | 8.616     | 0.017       | 8.498     | 0.018       | 51.7         | 1.4         |                    |
| 23 46 28           | +74 34 10    | LP049-185     | 14.65    | 13.44    | 11.83    | 222        | 10.301   | 0.024      | 9.847    | 0.031       | 9.553    | 0.020       | 9.371     | 0.023       | 9.163     | 0.020       | 9.022     | 0.024       | 57.4         | 1.5         |                    |
| 23 47 21           | +42 38 08    | LP239-052     | 16.20    | 14.65    | 12.80    | 333        | 10.947   | 0.023      | 10.350   | 0.023       | 10.121   | 0.020       | 9.887     | 0.024       | 9.678     | 0.020       | 9.540     | 0.034       | 55.0         | 2.6         |                    |
| 23 48 03           | +49 00 57    | GJ0907        | 12.08    | 11.08    | 9.92     | Wei96      | 8.765    | 0.027      | 8.142    | 0.040       | 7.933    | 0.026       | 7.774     | 0.024       | 7.642     | 0.020       | 7.563     | 0.017       | 64.3         | 1.9         |                    |
| 23 49 13           | +02 24 04    | GJ0908        | 8.98     | 8.03     | 6.95     | Bes90      | 5.827    | 0.023      | 5.282    | 0.031       | 5.043    | 0.020       | 5.018     | 0.066       | 4.363     | 0.048       | 4.759     | 0.015       | 168.0        | 1.2         |                    |
| 23 50 54           | +27 21 41    | LP403-016     | 14.09    | 12.88    | 11.36    | Wei87      | 9.890    | 0.020      | 9.330    | 0.023       | 9.062    | 0.014       | 8.914     | 0.023       | 8.736     | 0.021       | 8.614     | 0.024       | 41.3         | 1.7         |                    |
| 23 50 32           | -09 33 33    | LHS4021       | 13.44    | 12.19    | 10.59    | Rie10      | 8.943    | 0.039      | 8.386    | 0.059       | 8.043    | 0.024       | 7.876     | 0.023       | 7.727     | 0.019       | 7.666     | 0.018       | 62.4         | 1.7         |                    |
| 23 50 54           | +38 29 33    | LP291-024     | 14.18    | 12.95    | 11.36    | Wei87      | 9.800    | 0.025      | 9.227    | 0.036       | 8.924    | 0.018       | 8.747     | 0.022       | 8.617     | 0.019       | 8.471     | 0.021       | 47.9         | 2.5         |                    |
| 23 51 22           | +23 44 21    | G068-046      | 14.14    | 12.89    | 11.26    | 222        | 9.683    | 0.023      | 9.080    | 0.022       | 8.825    | 0.023       | 8.662     | 0.023       | 8.498     | 0.019       | 8.366     | 0.020       | 47.7         | 3.0         | KY                 |
| 23 52 22           | +52 13 44    | LSPM2353+5213 | 14.15    | 12.92    | 11.40    | 222        | 9.893    | 0.023      | 9.348    | 0.042       | 9.021    | 0.025       | 8.864     | 0.023       | 8.723     | 0.020       | 8.475     | 0.019       | 43.2         | 1.7         |                    |
| 23 53 25           | -70 56 41    | L085-031      | 13.01    | 11.78    | 10.18    | Win15      | 8.683    | 0.024      | 8.100    | 0.038       | 7.779    | 0.027       | 7.642     | 0.025       | 7.455     | 0.021       | 7.333     | 0.016       | 80.5         | 2.3         | KY                 |
| 23 53 50           | -75 37 57    | L026-027      | 10.02    | 8.97     | 7.71     | 333        | 6.450    | 0.019      | 5.783    | 0.017       | 5.549    | 0.027       | 5.451     | 0.063       | 5.204     | 0.032       | 5.310     | 0.015       | 100.1        | 1.1         |                    |
| 23 53 59           | +28 28 15    | G130-021      | 15.33    | 13.93    | 12.25    | 111        | 10.568   | 0.022      | 10.014   | 0.031       | 9.731    | 0.019       | 9.531     | 0.021       | 9.363     | 0.020       | 9.236     | 0.047       | 49.0         | 1.7         |                    |
| 23 54 01           | -33 16 24    | LHS4039       | 13.46    | 12.32    | 10.85    | 333        | 9.477    | 0.024      | 8.912    | 0.023       | 8.612    | 0.021       | 8.408     | 0.022       | 8.275     | 0.020       | 8.187     | 0.022       | 43.9         | 1.2         |                    |
| 23 54 11           | +51 41 10    | G217-023      | 13.52    | 12.39    | 10.92    | Wei88      | 9.574    | 0.021      | 9.000    | 0.026       | 8.745    | 0.024       | 8.594     | 0.022       | 8.431     | 0.020       | 8.320     | 0.019       | 57.9         | 2.3         |                    |
| 23 54 46           | -21 46 28    | GJ0911        | 10.79    | 9.90     | 8.99     | 333        | 7.985    | 0.023      | 7.328    | 0.034       | 7.117    | 0.034       | 7.006     | 0.033       | 6.969     | 0.021       | 6.926     | 0.017       | 41.1         | 2.5         |                    |
| 23 54 51           | +38 31 36    | LSPM2354+3831 | 13.26    | 11.99    | 10.47    | 222        | 8.937    | 0.034      | 8.345    | 0.017       | 8.087    | 0.020       | 7.931     | 0.022       | 7.775     | 0.020       | 7.659     | 0.017       | 63.0         | 2.6         |                    |
| 23 55 40           | -06 08 33    | GJ0912        | 11.16    | 10.13    | 8.87     | Bes90      | 7.600    | 0.018      | 6.964    | 0.044       | 6.715    | 0.024       | 6.575     | 0.041       | 6.481     | 0.021       | 6.438     | 0.015       | 54.6         | 2.8         |                    |
| 23 56 11           | -34 26 05    | SSS2356-3426  | 20.77    | 18.36    | 15.95    | Win19      | 12.947   | 0.024      | 12.376   | 0.022       | 11.965   | 0.023       | 11.613    | 0.023       | 11.294    | 0.021       | 11.000    | 0.107       | 52.4         | 1.7         |                    |
| 23 57 44           | +23 18 17    | GJ1292        | 11.72    | 10.60    | 9.16     | Wei96      | 7.800    | 0.034      | 7.321    | 0.080       | 7.060    | 0.024       | 6.895     | 0.035       | 6.690     | 0.020       | 6.633     | 0.016       | 72.8         | 2.7         |                    |
| 23 57 45           | +19 46 11    | LHS411        | 13.01    | 11.86    | 10.39    | Wei86      | 9.035    | 0.024      | 8.434    | 0.026       | 8.161    | 0.027       | 8.029     | 0.025       | 7.879     | 0.020       | 7.770     | 0.017       | 54.0         | 2.7         |                    |
| 23 58 02           | +78 36 30    | LHS4053       | 13.48    | 12.40    | 11.10    | Wei96      | 9.868    | 0.022      | 9.299    | 0.028       | 9.051    | 0.022       | 8.896     | 0.023       | 8.743     | 0.021       | 8.638     | 0.023       | 44.8         | 1.1         |                    |
| 23 58 14           | -17 24 34    | LP764-040     | 11.88    | 11.00    | 10.09    | Win15      | 8.311    | 0.023      | 7.699    | 0.027       | 7.435    | 0.021       | 7.266     | 0.028       | 7.207     | 0.019       | 7.152     | 0.015       | 25.6         | 5.0         | KY                 |
| 23 58 33           | +07 39 31    | LTT17066      | 11.71    | 10.61    | 9.21     | Wei84      | 7.907    | 0.023      | 7.290    | 0.029       | 7.063    | 0.029       | 6.882     | 0.034       | 6.753     | 0.021       | 6.692     | 0.016       | 58.3         | 1.9         |                    |
| 23 58 43           | -62 45 42    | APM2359-6246  | 16.95    | 15.26    | 13.30    | Cos06      | 11.387   | 0.026      | 10.827   | 0.023       | 10.515   | 0.023       | 10.289    | 0.023       | 10.077    | 0.020       | 9.689     | 0.033       | 48.0         | 2.2         |                    |
| 23 59 50           | +47 45 45    | LHS4057       | 16.12    | 14.63    | 12.76    | 222        | 10.866   | 0.020      | 10.263   | 0.019       | 9.930    | 0.016       | 9.699     | 0.022       | 9.524     | 0.018       | 9.327     | 0.027       | 52.7         | 0.9         |                    |
| 23 59 51           | -34 06 43    | LHS4058       | 12.84    | 11.64    | 10.08    | Rie10      | 8.590    | 0.018      | 7.979    | 0.027       | 7.748    | 0.023       | 7.565     | 0.025       | 7.424     | 0.021       | 7.311     | 0.017       | 63.1         | 2.0         |                    |
| PROBLEM STARS (61) |              |               |          |          |          |            |          |            |          |             |          |             |           |             |           |             |           |             |              |             |                    |
| 00 45 28           | -51 37 34    | HIP003556     | 11.97    | 10.95    | 9.74     | 111        | 8.481    | 0.020      | 7.867    | 0.024       | 7.623    | 0.027       | 7.509     | 0.026       | 7.428     | 0.021       | 7.329     | 0.016       | 24.8         | 2.7         | UR <sub>2</sub> KY |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms | Decl.<br>dms | Star Name     | V<br>mag | R<br>(5) | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(21) | Notes                       |
|-------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-----------------------------|
| (1)         | (2)          | (3)           | (4)      | (5)      | (6)      | (7)        | (8)      | (9)        | (10)     | (11)        | (12)     | (13)        | (14)      | (15)        | (16)      | (17)        | (18)      | (19)        | (20)         | (21)        | (22)                        |
| 00 49 09    | +62 05 13    | L079-102      | 16.55    | 15.06    | 13.26    | 222:       | 11.474   | 0.021      | 10.897   | 0.026       | 10.620   | 0.020       | 10.402    | 0.023       | 10.215    | 0.021       | 9.691     | 0.044       | 53.5         | 2.4         | <i>VRIx?</i> , W09          |
| 01 01 19    | +38 32 30    | L242-020      | 14.50    | 13.34    | 11.82    | 222:       | 10.312   | 0.025      | 9.729    | 0.030       | 9.475    | 0.018       | 9.310     | 0.023       | 9.172     | 0.020       | 9.065     | 0.023       | 42.6         | 3.3         | <i>VRIx?</i> , A05, W09     |
| 01 34 01    | +65 30 54    | G244-027      | 15.68    | 14.25    | 12.71    | 222:       | 11.100   | 0.023      | 10.452   | 0.026       | 10.205   | 0.023       | 9.988     | 0.023       | 9.844     | 0.020       | 9.558     | 0.037       | 48.5         | 2.0         | <i>VRIx?</i> , W09          |
| 02 33 47    | +71 09 33    | L030-184      | 15.46    | 14.10    | 12.38    | 111:       | 10.649   | 0.028      | 10.090   | 0.030       | 9.781    | 0.024       | 9.559     | 0.022       | 9.369     | 0.021       | 9.099     | 0.026       | 56.3         | 2.2         | PSF, <i>VRIx?</i> , W09     |
| 02 48 35    | +16 16 29    | L411-008      | 18.63    | 16.73    | 14.51    | 111:       | 12.227   | 0.024      | 11.605   | 0.020       | 11.258   | 0.020       | 11.012    | 0.022       | 10.825    | 0.021       | 10.546    | 0.090       | 42.9         | 6.8         | <i>VRIx?</i> , W09          |
| 02 53 01    | +16 52 53    | TEE0253+1652  | 15.14    | 13.03    | 10.65    | Hen06      | 8.394    | 0.027      | 7.883    | 0.040       | 7.585    | 0.046       | 14.556    | 0.035       | 14.255    | 0.061       | 11.969    | 0.305       | 261.0        | 1.8         | redS, Mx                    |
| 03 46 59    | +24 01 43    | 2MA0346+2401  | 17.88    | 16.37    | 14.64    | 111:       | 13.005   | 0.022      | 12.400   | 0.029       | 12.110   | 0.026       | 11.890    | 0.022       | 11.726    | 0.026       | 12.019    | 0.470       | 48.5         | 18.5        | <i>VRIx?</i> , BP, KY       |
| 03 48 35    | +24 12 03    | 2MA0348+2412  | 19.20    | 17.75    | 15.91    | 222        | 14.102   | 0.023      | 13.491   | 0.030       | 13.212   | 0.023       | 13.000    | 0.026       | 12.771    | 0.032       | 12.139    | .           | 21.0         | 15.0        | Mxy, KY                     |
| 04 33 17    | +68 46 54    | LHS1679       | 16.03    | 14.51    | 12.59    | 111:       | 10.917   | 0.051      | 10.375   | 0.029       | 10.038   | 0.039       | .         | .           | .         | .           | .         | .           | 55.1         | 5.9         | <i>VRIx?</i> , <i>WISEx</i> |
| 04 53 13    | +69 11 43    | LHS1711       | .        | .        | .        | .          | 12.320   | 0.027      | 11.792   | 0.035       | 11.588   | 0.019       | .         | .           | .         | .           | .         | .           | 44.4         | 8.2         | <i>WISEx</i>                |
| 04 57 03    | +33 31 58    | LSPM0457+3331 | 17.33    | 15.76    | 14.21    | 111:       | 11.396   | 0.018      | 10.761   | 0.016       | 10.408   | 0.017       | 10.157    | 0.023       | 10.003    | 0.019       | 9.973     | 0.070       | 52.2         | 2.2         | PSF, <i>VRIx?</i> , W09     |
| 05 09 35    | +70 20 30    | LHS1741       | 14.19    | 13.031   | 11.565   | We96       | 10.221   | 0.022      | 9.672    | 0.028       | 9.422    | 0.024       | .         | .           | .         | .           | .         | .           | 41.7         | 3.2         | <i>WISEx</i>                |
| 05 16 53    | +56 40 19    | L119-026      | 17.67    | 15.57    | 13.44    | 222:       | 11.166   | 0.025      | 10.567   | 0.023       | 10.194   | 0.018       | 9.956     | 0.023       | 9.758     | 0.020       | 9.510     | 0.032       | 97.5         | 6.7         | <i>VRIx?</i> , W09          |
| 06 10 35    | -21 51 53    | GJ0229        | 8.10     | 7.15     | 6.09     | 333        | 5.104    | 0.037      | 4.393    | 0.254       | 4.166    | 0.232       | 4.060     | 0.128       | 3.619     | 0.092       | 3.970     | 0.018       | 173.8        | 1.0         | BP                          |
| 06 23 51    | +45 40 05    | L160-022      | 15.58    | 14.08    | 12.32    | 111:       | 10.348   | 0.018      | 9.753    | 0.015       | 9.437    | 0.019       | 9.202     | 0.022       | 9.011     | 0.020       | 8.848     | 0.025       | 53.9         | 3.2         | <i>VRIx?</i> , W09          |
| 08 11 58    | +08 46 23    | GJ0299        | 12.86    | 11.57    | 9.91     | Dav15      | 8.424    | 0.023      | 7.927    | 0.042       | 7.660    | 0.026       | 16.001    | 0.074       | 15.207    | 0.114       | 12.739    | .           | 146.8        | 2.8         | Mx                          |
| 08 29 49    | +26 46 34    | GJ1111        | 14.96    | 12.89    | 10.59    | Dav15      | 8.235    | 0.021      | 7.617    | 0.018       | 7.260    | 0.024       | 7.030     | 0.031       | 6.819     | 0.020       | 6.630     | 0.015       | 275.6        | 2.4         | Mx                          |
| 08 35 49    | +68 04 09    | LHS0250       | 11.64    | 10.57    | 9.20     | Bes90      | 7.861    | 0.023      | 7.287    | 0.023       | 7.053    | 0.026       | .         | .           | .         | .           | .         | .           | 76.9         | 2.0         | <i>WISEx</i>                |
| 08 48 36    | -13 53 08    | LP726-011     | 12.12    | 11.05    | 9.69     | Re02       | 8.748    | 0.018      | 8.123    | 0.047       | 7.922    | 0.024       | 7.754     | 0.025       | 7.638     | 0.020       | 7.543     | 0.017       | 42.7         | 1.8         | UB?, KY                     |
| 09 06 45    | -08 48 25    | GJ0334        | 9.50     | 8.59     | 7.68     | Bes90      | 6.641    | 0.018      | 5.982    | 0.040       | 5.757    | 0.017       | 5.723     | 0.068       | 5.573     | 0.028       | 5.694     | 0.012       | 69.1         | 1.2         | <i>VRIx?</i>                |
| 10 11 22    | +49 27 15    | GJ0380        | 6.59     | 5.71     | 4.95     | 111        | 3.894    | 0.290      | 3.298    | 0.260       | 2.962    | 0.288       | 3.076     | 0.149       | 2.052     | 0.034       | 3.069     | 0.009       | 205.5        | 0.5         | Mx                          |
| 11 03 20    | +35 58 11    | GJ0411        | 7.53     | 6.49     | 5.33     | 111:       | 4.203    | 0.242      | 3.640    | 0.202       | 3.254    | 0.306       | 3.346     | 0.098       | 2.584     | 0.054       | 3.137     | 0.011       | 393.3        | 0.6         | <i>VRIx</i> , A05           |
| 11 47 51    | +74 26 43    | LHS197        | 16.37    | 14.85    | 13.09    | 111:       | 11.259   | 0.023      | 10.676   | 0.027       | 10.364   | 0.021       | 10.167    | 0.023       | 9.984     | 0.021       | 9.823     | 0.035       | 58.1         | 3.4         | <i>VRIx?</i> , W09          |
| 13 28 21    | -02 21 37    | GJ0512        | 11.35    | 10.27    | 8.89     | Win15      | 7.515    | 0.021      | 6.913    | 0.051       | 6.613    | 0.023       | 6.783     | 0.013       | 5.486     | 0.006       | 5.391     | 0.007       | 72.8         | 2.7         | Mx                          |
| 13 32 48    | +42 40 28    | LSPM1332+4240 | 16.98    | 15.53    | 13.47    | 111:       | 11.523   | 0.021      | 10.949   | 0.019       | 10.646   | 0.018       | 10.435    | 0.023       | 10.214    | 0.020       | 10.078    | 0.041       | 57.3         | 1.4         | <i>VRIx?</i> , W09          |
| 13 39 55    | +53 48 53    | LP132-366     | 15.72    | 14.39    | 12.67    | 111:       | 11.004   | 0.023      | 10.451   | 0.027       | 10.184   | 0.023       | 9.954     | 0.024       | 9.756     | 0.020       | 9.616     | 0.031       | 43.9         | 4.4         | <i>VRIx?</i> , W09          |
| 14 03 22    | +30 07 55    | LSPM1403+3007 | 20.45    | 18.35    | 15.48    | 111:       | 12.684   | 0.023      | 12.000   | 0.023       | 11.602   | 0.021       | 11.297    | 0.023       | 11.065    | 0.020       | 10.850    | 0.069       | 41.3         | 3.7         | <i>VRIx?</i>                |
| 14 29 19    | -46 27 50    | GJ0550.3      | 10.35    | 9.49     | 8.61     | Bes90      | 7.639    | 0.023      | 7.006    | 0.061       | 6.790    | 0.027       | 6.690     | 0.038       | 6.729     | 0.019       | 6.668     | 0.015       | 42.5         | 2.1         | <i>VRIx?</i>                |
| 14 54 53    | +09 56 37    | LHS2999       | 11.29    | 10.38    | 9.35     | We96       | 8.217    | 0.020      | 7.618    | 0.055       | 7.388    | 0.023       | 7.323     | 0.030       | 7.251     | 0.020       | 7.189     | 0.015       | 40.8         | 2.5         | <i>VRIx?</i>                |
| 15 10 17    | -02 41 08    | TVL868-110639 | 20.51    | 18.04    | 15.79    | Hen04      | 12.614   | 0.023      | 11.842   | 0.022       | 11.347   | 0.021       | 10.941    | 0.022       | 10.674    | 0.019       | 10.165    | 0.053       | 61.2         | 4.7         | MIA                         |
| 15 30 52    | -08 01 18    | NLT740317     | 13.52    | 12.28    | 10.63    | Win15      | 9.075    | 0.030      | 8.497    | 0.034       | 8.225    | 0.026       | 12.315    | 0.024       | 12.046    | 0.024       | 12.150    | .           | 58.3         | 1.6         | Mx                          |
| 15 34 04    | +51 22 03    | LP135-414     | 14.01    | 12.66    | 11.06    | 222:       | 9.370    | 0.021      | 8.778    | 0.017       | 8.487    | 0.020       | 8.258     | 0.022       | 8.120     | 0.019       | 7.972     | 0.015       | 67.1         | 1.9         | <i>VRIx?</i> , A05, W09     |
| 15 40 04    | +43 29 39    | GJ1194        | 12.47    | 11.30    | 9.96     | 222:       | 8.312    | 0.029      | 7.777    | 0.031       | 7.563    | 0.026       | 7.450     | 0.036       | 7.251     | 0.024       | 7.222     | 0.020       | 77.4         | 3.8         | <i>VRIx?</i> , R?           |
| 16 04 52    | +48 27 42    | LP177-278     | 14.00    | 12.81    | 11.24    | 111:       | 9.686    | 0.021      | 9.049    | 0.018       | 8.788    | 0.015       | 8.612     | 0.023       | 8.499     | 0.020       | 8.341     | 0.017       | 41.9         | 2.7         | <i>VRIx?</i> , W09          |
| 16 06 34    | +40 54 22    | LHS154        | 17.27    | 15.63    | 13.33    | 111:       | 11.050   | 0.018      | 10.423   | 0.015       | 10.072   | 0.019       | 9.841     | 0.023       | 9.657     | 0.021       | 9.458     | 0.024       | 73.5         | 4.0         | <i>VRIx?</i>                |
| 16 34 25    | +47 50 28    | G202-060      | 15.55    | 14.25    | 12.23    | 222:       | 10.743   | 0.026      | 10.148   | 0.019       | 9.862    | 0.014       | 9.676     | 0.022       | 9.502     | 0.019       | 9.324     | 0.022       | 57.9         | 2.8         | <i>VRIx?</i> , W09          |
| 16 37 01    | +35 35 45    | LHS3227       | 16.81    | 15.21    | 13.15    | 222:       | 11.135   | 0.022      | 10.545   | 0.022       | 10.240   | 0.019       | 10.015    | 0.023       | 9.807     | 0.021       | 9.596     | 0.032       | 78.6         | 6.2         | <i>VRIx?</i> , W09          |
| 17 14 09    | +60 47 30    | LHS0436       | 17.34    | 15.75    | 13.66    | 111:       | 11.658   | 0.020      | 11.186   | 0.023       | 10.862   | 0.018       | 10.661    | 0.023       | 10.416    | 0.020       | 10.266    | 0.029       | 69.0         | 4.4         | <i>VRIx?</i> , W09          |
| 17 25 05    | +69 35 41    | LP043-519     | 16.09    | 14.70    | 12.91    | 111:       | 11.115   | 0.021      | 10.501   | 0.017       | 10.182   | 0.016       | 9.979     | 0.023       | 9.809     | 0.019       | 9.657     | 0.020       | 44.1         | 2.8         | <i>VRIx?</i> , W09          |
| 17 30 28    | +52 43 00    | LP139-006     | 16.37    | 14.94    | 13.07    | 111:       | 11.177   | 0.024      | 10.635   | 0.017       | 10.333   | 0.014       | 10.138    | 0.023       | 9.951     | 0.020       | 9.739     | 0.028       | 47.2         | 2.8         | <i>VRIx?</i> , W09          |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms                    | Decl.<br>dms | Star Name     | V<br>mag | R<br>mag | I<br>mag | ref<br>(7) | J<br>mag | err<br>(9) | H<br>mag | err<br>(11) | K<br>mag | err<br>(13) | W1<br>mag | err<br>(15) | W2<br>mag | err<br>(17) | W3<br>mag | err<br>(19) | $\pi$<br>mas | err<br>(20) | Notes                   |
|--------------------------------|--------------|---------------|----------|----------|----------|------------|----------|------------|----------|-------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|-------------|-------------------------|
| (1)                            | (2)          | (3)           | (4)      | (5)      | (6)      |            | (8)      |            | (10)     |             | (12)     |             | (14)      |             | (16)      |             | (18)      |             | (21)         | (22)        |                         |
| 17 33 53                       | +16 55 13    | LSPM1733+1655 | 14.34    | 12.81    | 10.87    | 222:       | 8.895    | 0.027      | 8.299    | 0.033       | 7.995    | 0.023       | 7.779     | 0.024       | 7.567     | 0.020       | 7.398     | 0.016       | 85.4         | 3.3         | <i>VRIx?</i>            |
| 17 35 14                       | -48 40 51    | GJ0680        | 10.17    | 9.13     | 7.89     | Bes90      | 6.667    | 0.023      | 6.080    | 0.029       | 5.829    | 0.021       | 5.500     | 0.056       | 5.308     | 0.030       | 5.450     | 0.014       | 102.2        | 2.7         | BP                      |
| 17 51 36                       | +37 49 35    | LP278-042     | 16.19    | 14.60    | 12.53    | 222:       | 10.442   | 0.020      | 9.839    | 0.020       | 9.496    | 0.018       | 9.265     | 0.023       | 9.095     | 0.020       | 8.874     | 0.023       | 76.3         | 2.8         | <i>VRIx?</i> , W09, A05 |
| 17 57 00                       | +78 59 48    | LP024-133     | 18.15    | 16.50    | 14.36    | 111:       | 12.312   | 0.019      | 11.706   | 0.017       | 11.368   | 0.026       | 11.149    | 0.023       | 10.948    | 0.021       | 10.800    | 0.049       | 50.9         | 8.2         | <i>VRIx?</i> , W09      |
| 17 57 36                       | +50 25 28    | LHS3342       | 16.54    | 15.05    | 13.11    | 111:       | 11.266   | 0.030      | 10.770   | 0.032       | 10.417   | 0.022       | 10.191    | 0.023       | 9.967     | 0.020       | 9.818     | 0.029       | 51.5         | 8.9         | <i>VRIx?</i> , W09      |
| 18 11 52                       | +32 25 21    | G206-016      | 15.58    | 14.24    | 12.50    | 222:       | 10.885   | 0.021      | 10.301   | 0.016       | 10.024   | 0.017       | 9.813     | 0.022       | 9.631     | 0.018       | 9.360     | 0.028       | 48.1         | 1.2         | <i>VRIx?</i>            |
| 18 42 37                       | +31 11 06    | G206-041      | 15.88    | 14.45    | 12.77    | 111:       | 11.152   | 0.021      | 10.584   | 0.020       | 10.273   | 0.017       | 10.084    | 0.023       | 9.893     | 0.021       | 9.766     | 0.033       | 41.5         | 2.6         | <i>VRIx?</i> , W09      |
| 18 42 47                       | +59 37 49    | GJ0725        | 8.90     | 7.83     | 6.47     | Wei96      | 5.189    | 0.017      | 4.741    | 0.036       | 4.432    | 0.020       | 4.498     | 0.226       | 3.520     | 0.157       | 4.070     | 0.014       | 283.8        | 1.5         | Mx                      |
| 18 43 22                       | +40 40 21    | LHS3406       | 18.39    | 16.27    | 13.85    | 111:       | 11.313   | 0.022      | 10.688   | 0.021       | 10.308   | 0.018       | 10.072    | 0.022       | 9.874     | 0.018       | 9.618     | 0.029       | 71.1         | 0.8         | <i>VRIx?</i> , W09      |
| 19 36 02                       | -55 02 32    | 2MA1936-5502  | .        | .        | .        | .          | 14.486   | 0.039      | 13.628   | 0.035       | 13.046   | 0.032       | 12.278    | 0.024       | 11.998    | 0.023       | 11.646    | 0.448       | 43.3         | 4.5         | BP                      |
| 19 48 41                       | +35 55 17    | G125-034      | 13.16    | 11.88    | 10.38    | 111:       | 8.909    | 0.027      | 8.332    | 0.021       | 8.097    | 0.020       | 7.923     | 0.023       | 7.755     | 0.020       | 7.630     | 0.017       | 69.3         | 2.6         | <i>VRIx?</i> , W09      |
| 20 36 22                       | +51 00 05    | LSPM2036+5100 | 19.53    | 18.63    | 17.87    | 111        | 13.611   | 0.029      | 13.160   | 0.040       | 12.940   | 0.030       | 12.704    | 0.024       | 12.475    | 0.026       | 11.862    | 0.212       | 21.6         | 1.3         | Mxs, KS                 |
| 21 10 40                       | +82 42 49    | LHS5366       | 15.97    | 14.57    | 12.74    | 222:       | 10.934   | 0.026      | 10.303   | 0.031       | 10.036   | 0.023       | 9.816     | 0.023       | 9.626     | 0.020       | 9.422     | 0.026       | 70.9         | 4.8         | <i>VRIx?</i> , W09      |
| 21 16 06                       | +22 38 47    | LP397-010     | 17.98    | 16.21    | 14.01    | 222:       | 11.783   | 0.021      | 11.297   | 0.021       | 10.827   | 0.016       | 10.617    | 0.024       | 10.424    | 0.022       | 10.212    | 0.046       | 49.5         | 1.0         | <i>VRIx?</i> , W09      |
| 22 00 47                       | +79 49 25    | LP027-027     | 14.19    | 13.07    | 11.64    | 111:       | 10.221   | 0.023      | 9.663    | 0.030       | 9.391    | 0.022       | 9.226     | 0.022       | 9.071     | 0.020       | 8.964     | 0.022       | 47.5         | 2.3         | <i>VRIx?</i> , W09      |
| 22 12 43                       | +64 21 12    | LHS3774       | 16.10    | 14.61    | 12.95    | 222:       | 11.231   | 0.027      | 10.671   | 0.032       | 10.368   | 0.020       | 10.181    | 0.022       | 9.999     | 0.020       | 9.756     | 0.035       | 40.2         | 2.0         | <i>VRIx?</i> , W09      |
| 22 14 18                       | +25 34 06    | 2MA2214+2534  | 14.56    | 13.27    | 11.66    | 111        | 10.177   | 0.020      | 9.624    | 0.020       | 9.339    | 0.018       | 9.197     | 0.024       | 9.007     | 0.021       | 8.893     | 0.026       | 39.8         | 1.0         | UB?, KY                 |
| 22 48 48                       | +45 20 18    | G216-021      | 14.59    | 13.32    | 11.82    | 111:       | 10.343   | 0.022      | 9.788    | 0.019       | 9.523    | 0.014       | 9.351     | 0.024       | 8.016     | 0.018       | 7.949     | 0.018       | 43.1         | 1.6         | <i>VRIx?</i> , UB?      |
| 23 29 25                       | +46 26 37    | LSPM2329+4626 | 17.99    | 16.41    | 14.28    | 222:       | 12.189   | 0.024      | 11.557   | 0.027       | 11.234   | 0.021       | 11.006    | 0.022       | 10.787    | 0.021       | 10.726    | 0.077       | 48.9         | 3.1         | <i>VRIx?</i> , W09      |
| 23 42 53                       | +30 49 22    | GJ1288        | 14.43    | 13.08    | 11.29    | 222:       | 9.637    | 0.023      | 9.081    | 0.031       | 8.814    | 0.020       | 8.597     | 0.023       | 8.405     | 0.021       | 8.249     | 0.020       | 80.4         | 1.5         | <i>VRIx?</i>            |
| Incomplete <i>VRI</i> Set (52) |              |               |          |          |          |            |          |            |          |             |          |             |           |             |           |             |           |             |              |             |                         |
| 00 45 57                       | +33 47 11    | LSP0045+3347  | .        | .        | .        | .          | 10.183   | 0.021      | 9.629    | 0.021       | 9.314    | 0.019       | 9.081     | 0.023       | 8.903     | 0.020       | 8.723     | 0.024       | 55.4         | 3.2         |                         |
| 01 49 09                       | +29 56 12    | 2MA0149+2956  | .        | .        | .        | .          | 13.449   | 0.023      | 12.584   | 0.026       | 11.975   | 0.022       | 11.561    | 0.024       | 11.312    | 0.021       | 10.784    | 0.069       | 44.4         | 0.7         |                         |
| 02 23 27                       | +22 44 07    | LP353-051     | 11.576   | .        | .        | .          | 8.182    | 0.018      | 7.561    | 0.021       | 7.346    | 0.018       | 7.264     | 0.027       | 7.239     | 0.021       | 7.181     | 0.016       | 34.9         | 2.8         | UB?, KY                 |
| 03 39 53                       | +24 57 27    | LSPM0339+2457 | .        | .        | .        | .          | 12.841   | 0.024      | 12.132   | 0.030       | 11.742   | 0.022       | 11.512    | 0.024       | 11.287    | 0.023       | 11.287    | 0.179       | 51.9         | 5.2         |                         |
| 03 55 37                       | +21 18 48    | L357-206      | .        | .        | .        | .          | 12.063   | 0.024      | 11.414   | 0.025       | 11.096   | 0.020       | 10.885    | 0.024       | 10.674    | 0.023       | 10.630    | 0.095       | 62.6         | 2.9         |                         |
| 04 28 50                       | +07 28 36    | LHS5097       | .        | .        | .        | .          | 12.025   | 0.023      | 11.513   | 0.027       | 11.201   | 0.021       | 10.936    | 0.024       | 10.651    | 0.021       | 10.096    | 0.054       | 55.5         | 3.8         |                         |
| 04 42 27                       | +20 12 31    | G008-053      | .        | .        | .        | .          | 10.907   | 0.022      | 10.379   | 0.021       | 10.136   | 0.019       | 9.936     | 0.023       | 9.719     | 0.021       | 9.516     | 0.045       | 46.7         | 3.4         |                         |
| 05 08 36                       | +20 25 26    | LHS1738       | .        | .        | .        | .          | 10.985   | 0.022      | 10.494   | 0.023       | 10.229   | 0.017       | 10.043    | 0.026       | 9.810     | 0.021       | 9.865     | 0.056       | 40.9         | 2.9         |                         |
| 05 10 48                       | +24 10 12    | LSPM0510+2410 | .        | .        | .        | .          | 10.187   | 0.022      | 9.588    | 0.022       | 9.333    | 0.020       | 9.149     | 0.023       | 8.972     | 0.018       | 8.875     | 0.030       | 54.5         | 3.0         |                         |
| 05 30 18                       | +29 56 25    | LSPM0530+2956 | .        | .        | .        | .          | 11.633   | .          | 10.938   | 0.018       | 10.552   | 0.027       | 10.306    | 0.023       | 10.099    | 0.022       | 9.865     | 0.061       | 44.8         | 6.8         | 2MASSx?                 |
| 07 11 11                       | +43 29 58    | LHS1901       | .        | .        | .        | .          | 9.979    | 0.018      | 9.467    | 0.016       | 9.126    | 0.018       | 8.930     | 0.023       | 8.684     | 0.019       | 8.469     | 0.021       | 74.9         | 0.9         |                         |
| 07 16 52                       | +25 28 29    | LSPM0716+2528 | .        | .        | .        | .          | 10.190   | 0.018      | 9.635    | 0.017       | 9.362    | 0.015       | 9.188     | 0.023       | 9.041     | 0.020       | 8.911     | 0.027       | 46.0         | 2.2         |                         |
| 07 33 53                       | +22 23 33    | LHS0231       | 16.27    | .        | 13.18    | Mon92      | 11.606   | 0.019      | 11.119   | 0.021       | 10.880   | 0.020       | 10.635    | 0.023       | 10.382    | 0.021       | 10.239    | 0.063       | 40.1         | 1.0         |                         |
| 08 33 03                       | +37 06 08    | LSPM0833+3706 | .        | .        | .        | .          | 12.281   | 0.026      | 11.632   | 0.031       | 11.227   | 0.018       | 10.972    | 0.024       | 10.787    | 0.021       | 10.511    | 0.075       | 42.7         | 4.4         |                         |
| 08 50 42                       | +34 38 44    | LHS2057       | .        | .        | .        | .          | 11.248   | 0.027      | 10.722   | 0.030       | 10.500   | 0.024       | 10.353    | 0.023       | 10.144    | 0.020       | 10.032    | 0.054       | 42.6         | 2.6         |                         |
| 08 51 18                       | +46 06 02    | L164-063      | .        | .        | .        | .          | 11.363   | 0.031      | 10.796   | 0.029       | 10.496   | 0.018       | 10.298    | 0.024       | 10.091    | 0.021       | 9.930     | 0.046       | 56.6         | 3.3         |                         |
| 09 00 52                       | +48 25 25    | LHS0259       | .        | .        | .        | .          | 10.080   | 0.023      | 9.551    | 0.027       | 9.320    | 0.020       | 9.136     | 0.023       | 8.947     | 0.020       | 8.825     | 0.023       | 52.8         | 1.8         |                         |
| 09 09 26                       | +49 39 29    | LHS2112       | .        | .        | .        | .          | 11.721   | 0.022      | 11.164   | 0.024       | 10.804   | 0.018       | 10.566    | 0.022       | 10.361    | 0.021       | 10.179    | 0.059       | 47.0         | 2.6         |                         |

# Photometry and Parallaxes of the Full Sample

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | V<br>mag<br>(4) | R<br>(5) | I<br>mag<br>(6) | ref<br>(7) | J<br>mag<br>(8) | err<br>(9) | H<br>mag<br>(10) | err<br>(11) | K<br>mag<br>(12) | err<br>(13) | W1<br>mag<br>(14) | err<br>(15) | W2<br>mag<br>(16) | err<br>(17) | W3<br>mag<br>(18) | err<br>(19) | $\pi$<br>mas<br>(20) | err<br>mas<br>(21) | Notes<br>(22) |
|--------------------|---------------------|------------------|-----------------|----------|-----------------|------------|-----------------|------------|------------------|-------------|------------------|-------------|-------------------|-------------|-------------------|-------------|-------------------|-------------|----------------------|--------------------|---------------|
| 09 14 23           | +52 41 12           | GJ0338           | .               | .        | 5.78            | 001:       | 4.889           | 0.037      | 3.987            | 0.188       | 3.988            | 0.036       | 3.796             | 0.078       | 3.028             | 0.069       | 3.071             | 0.010       | 163.7                | 2.5                |               |
| 09 17 27           | +56 01 18           | G195-021         | .               | .        | .               | .          | 10.866          | 0.023      | 10.271           | 0.020       | 10.034           | 0.020       | 9.836             | 0.023       | 9.642             | 0.020       | 9.497             | 0.029       | 50.3                 | 7.7                |               |
| 10 03 46           | +51 54 48           | LSPM1003+5154    | .               | .        | .               | .          | 11.722          | 0.021      | 11.118           | 0.023       | 10.824           | 0.018       | 10.623            | 0.024       | 10.421            | 0.022       | 10.212            | 0.054       | 47.9                 | 5.1                |               |
| 10 04 38           | +26 56 45           | LSPM1004+2656    | .               | .        | .               | .          | 9.696           | 0.021      | 9.108            | 0.016       | 8.847            | 0.018       | 8.674             | 0.023       | 8.526             | 0.020       | 8.418             | 0.023       | 46.2                 | 1.2                |               |
| 10 14 53           | +21 23 46           | G054-019         | .               | .        | .               | .          | 9.725           | 0.020      | 9.166            | 0.022       | 8.881            | 0.017       | 8.661             | 0.025       | 8.465             | 0.022       | 8.304             | 0.022       | 53.9                 | 2.1                |               |
| 10 16 35           | +27 51 49           | LHS2243          | 18.95           | .        | .               | Cos06      | 11.987          | 0.019      | 11.331           | 0.022       | 10.955           | 0.018       | 10.714            | 0.022       | 10.510            | 0.019       | 10.314            | 0.066       | 58.0                 | 2.9                |               |
| 10 36 09           | +19 23 31           | L430-046         | .               | .        | .               | .          | 11.304          | 0.021      | 10.710           | 0.022       | 10.344           | 0.017       | 10.117            | 0.022       | 9.933             | 0.021       | 9.706             | 0.043       | 65.1                 | 4.1                |               |
| 10 37 29           | +30 11 11           | LHS0286          | .               | .        | .               | .          | 11.790          | 0.021      | 11.286           | 0.022       | 10.966           | 0.020       | 10.728            | 0.024       | 10.479            | 0.022       | 10.457            | 0.066       | 49.8                 | 3.2                |               |
| 11 05 33           | +32 13 53           | L263-071         | .               | .        | .               | .          | 11.408          | 0.019      | 10.808           | 0.017       | 10.498           | 0.018       | 10.281            | 0.023       | 10.086            | 0.022       | 9.932             | 0.042       | 58.1                 | 2.4                |               |
| 11 22 43           | +37 55 48           | L264-045         | .               | .        | .               | .          | 11.284          | 0.022      | 10.643           | 0.020       | 10.323           | 0.021       | 10.110            | 0.023       | 9.902             | 0.021       | 9.709             | 0.042       | 66.4                 | 2.5                |               |
| 11 40 20           | +67 15 32           | LHS0042          | .               | .        | .               | .          | 9.409           | 0.023      | 8.901            | 0.024       | 8.667            | 0.018       | 8.527             | 0.023       | 8.394             | 0.020       | 8.328             | 0.019       | 33.3                 | 3.4                | KS            |
| 11 59 59           | +21 05 03           | L375-069         | .               | .        | .               | .          | 11.417          | 0.022      | 10.921           | 0.021       | 10.641           | 0.016       | 10.446            | 0.023       | 10.211            | 0.020       | 10.098            | 0.053       | 58.4                 | 2.1                |               |
| 12 04 42           | +76 03 42           | LHS2508          | .               | .        | .               | .          | 11.806          | 0.021      | 11.244           | 0.028       | 10.869           | 0.025       | 10.598            | 0.023       | 10.410            | 0.020       | 10.309            | 0.043       | 42.3                 | 2.3                | PSF!          |
| 12 19 48           | +52 46 45           | HIP060121        | .               | .        | .               | .          | 8.281           | 0.024      | 7.627            | 0.034       | 7.464            | 0.020       | 7.359             | 0.028       | 7.343             | 0.021       | 7.270             | 0.015       | 35.8                 | 2.2                | KY            |
| 12 25 01           | +23 23 17           | LP376-062        | .               | .        | .               | .          | 11.456          | 0.020      | 10.917           | 0.022       | 10.619           | 0.017       | 10.413            | 0.024       | 10.209            | 0.021       | 9.987             | 0.046       | 49.8                 | 2.1                |               |
| 14 28 43           | +33 10 39           | LHS2924          | 19.74           | .        | 15.30           | Bes91      | 11.990          | 0.021      | 11.225           | 0.029       | 10.744           | 0.024       | 10.431            | 0.023       | 10.168            | 0.020       | 9.677             | 0.030       | 92.3                 | 1.3                | B91           |
| 14 30 38           | +59 43 25           | LHS2930          | 17.90           | .        | 13.30           | Bes91      | 10.790          | 0.018      | 10.140           | 0.020       | 9.788            | 0.020       | 9.549             | 0.022       | 9.343             | 0.020       | 9.122             | 0.023       | 104.2                | 1.2                | B91           |
| 14 44 17           | +30 02 14           | LP326-021        | .               | .        | .               | .          | 11.671          | 0.020      | 11.017           | 0.021       | 10.616           | 0.018       | 10.388            | 0.023       | 10.178            | 0.020       | 9.899             | 0.033       | 75.4                 | 3.8                |               |
| 14 51 18           | +33 37 46           | LP272-008        | .               | .        | .               | .          | 11.601          | 0.021      | 10.999           | 0.019       | 10.682           | 0.020       | 10.478            | 0.022       | 10.296            | 0.020       | 10.132            | 0.037       | 55.6                 | 3.9                |               |
| 15 24 25           | +29 25 32           | LSPM1524+2925    | .               | .        | .               | .          | 11.206          | 0.022      | 10.535           | 0.021       | 10.155           | 0.015       | 9.934             | 0.024       | 9.728             | 0.021       | 9.480             | 0.026       | 78.3                 | 4.4                |               |
| 15 35 36           | +29 12 58           | LSPM1535+2912    | .               | .        | .               | .          | 11.126          | 0.023      | 10.504           | 0.028       | 10.249           | 0.020       | 10.031            | 0.022       | 9.840             | 0.019       | 9.696             | 0.029       | 42.9                 | 2.5                |               |
| 16 36 56           | +27 24 22           | LP330-040        | .               | .        | .               | .          | 11.631          | 0.022      | 11.025           | 0.030       | 10.730           | 0.020       | 10.505            | 0.022       | 10.301            | 0.020       | 10.089            | 0.048       | 45.7                 | 3.7                |               |
| 16 58 04           | +70 27 02           | LEP1658+7027     | .               | 18.78    | 16.53           | 011        | 13.288          | 0.024      | 12.470           | 0.032       | 11.915           | 0.023       | 11.604            | 0.023       | 11.384            | 0.022       | 10.829            | 0.047       | 53.9                 | 0.7                |               |
| 17 37 49           | +22 57 20           | GJ0686.1         | 9.96            | .        | .               | Har85      | 7.011           | 0.026      | 6.390            | 0.021       | 6.288            | 0.023       | 6.257             | 0.109       | 6.374             | 0.057       | 6.390             | 0.038       | 43.6                 | 1.9                | PSF!          |
| 17 46 12           | +60 24 23           | LP102-241        | .               | .        | .               | .          | 10.011          | 0.027      | 9.372            | 0.024       | 9.039            | 0.018       | 8.825             | 0.023       | 8.634             | 0.020       | 8.476             | 0.017       | 48.9                 | 1.7                |               |
| 17 47 26           | +28 40 44           | G182-025         | .               | .        | .               | .          | 10.603          | 0.019      | 10.054           | 0.027       | 9.745            | 0.021       | 9.558             | 0.022       | 9.393             | 0.021       | 9.262             | 0.028       | 73.6                 | 8.1                |               |
| 17 53 45           | -65 59 56           | SIP1753-6559     | .               | 20.48    | 18.05           | 011        | 14.095          | 0.028      | 13.108           | 0.027       | 12.424           | 0.029       | 11.837            | 0.025       | 11.519            | 0.022       | 11.127            | 0.093       | 58.0                 | 4.9                | faintV        |
| 18 12 42           | +25 36 01           | LSPM1812+2536    | .               | .        | .               | .          | 11.542          | 0.027      | 11.016           | 0.030       | 10.753           | 0.022       | 10.475            | 0.023       | 10.241            | 0.020       | 10.101            | 0.044       | 50.4                 | 2.9                |               |
| 18 45 19           | +38 53 25           | LP280-016        | .               | .        | .               | .          | 12.214          | 0.022      | 11.461           | 0.026       | 11.047           | 0.020       | 10.801            | 0.023       | 10.633            | 0.020       | 10.417            | 0.054       | 72.5                 | 5.7                |               |
| 19 54 44           | +18 01 58           | LSPM1954+1801    | .               | 17.23    | 14.94           | 011        | 12.210          | 0.025      | 11.517           | 0.024       | 11.113           | 0.026       | 10.864            | 0.023       | 10.694            | 0.021       | 10.418            | 0.070       | 59.5                 | 4.2                |               |
| 20 05 24           | +38 13 47           | LSPM2005+3813    | .               | .        | .               | .          | 11.550          | 0.019      | 10.966           | 0.018       | 10.690           | 0.022       | 10.263            | 0.024       | 10.332            | 0.022       | 10.234            | 0.066       | 48.6                 | 2.5                | PSF!          |
| 20 42 30           | +23 10 16           | HD347243         | .               | .        | .               | .          | 9.153           | 0.021      | 8.730            | 0.022       | 8.621            | 0.019       | 8.554             | 0.024       | 8.634             | 0.020       | 8.586             | 0.023       | 46.5                 | 4.3                |               |
| 21 18 32           | -45 05 52           | 2MA2118-4505     | .               | 18.90    | 16.36           | 022        | 13.425          | 0.025      | 12.768           | 0.027       | 12.368           | 0.030       | 12.041            | 0.024       | 11.774            | 0.024       | 11.272            | 0.135       | 45.5                 | 1.9                | faintV        |
| 23 22 47           | -31 33 23           | 2MA2322-3133     | .               | 19.15    | 16.85           | 022        | 13.577          | 0.027      | 12.789           | 0.023       | 12.324           | 0.024       | 11.974            | 0.023       | 11.707            | 0.023       | 11.253            | 0.128       | 58.6                 | 5.6                | faintV        |

## APPENDIX B

### IDL PROCEDURE TO COMBINE MOSAIC IMAGES

Input files must contain the bias-subtracted and flat-fielded image names in a file called “mef.list” of the format below. New files will be made with the the final “.o.fits” extension, without overwriting the original “.bf.fits” files.

*20190930.36.071.bf.fits*

*20190930.36.072.bf.fits*

*20190930.36.073.bf.fits*

Here is the *convert\_mef\_here* IDL procedure used to merge the mosaic images into a single image.

```

pro convert_mef_here
;MLS: 20170328,20170329
;MLS: 2019.0414 ——— RUN FROM CURRENT DIRECTORY

;STITCH TOGETHER QUAD AMPLIFIER DATA FROM THE WYNN-0.9M HDI

;MODIFIED FROM ORIGINAL CODE:
;http://astroimagej.1065399.n5.nabble.com/
;Photometry-on-images-in-Multi-Extension-
;FITS-MEF-files-td369.html

meflist='mef.list'
cutoff=7

naxis1 = 2048
naxis2 = 2056

```



```

readcol , meflist , imagename , format = 'a'

filename = imagename

nim = n_elements(filename)

;loop through the list of image files
for n=0,nim-1 do begin

;combine each extension into one image
rdfits_struct , filename[n] , quadi , /silent

im1 = quadi.im1
im2 = quadi.im2
im3 = quadi.im3
im4 = quadi.im4

image1 = im1[0:naxis1-1,0:naxis2-1]
image2 = im2[0:naxis1-1,0:naxis2-1]
image3 = im3[0:naxis1-1,0:naxis2-1]
image4 = im4[0:naxis1-1,0:naxis2-1]

image = dblarr(naxis1*2,naxis2*2)

image[0:naxis1-1,0:naxis2-1] = image1
image[0:naxis1-1,naxis2:naxis2*2-1] = REVERSE(image3,2)
image[naxis1:naxis1*2-1,0:naxis2-1] = REVERSE(image2)
image4_1 = REVERSE(image4)
image[naxis1:naxis1*2-1,naxis2:naxis2*2-1] = REVERSE(image4_1,2)

header = headfits(filename[n])

;save processed image
fimagename = strmid(imagename[n] , 0 , STRLEN(imagename[n])-cutoff)+'o.fits'

;print ,fimagename

```

```
writefits , fimagename , image , header  
print , fimagename + '_created.'  
  
endfor  
return  
end
```

## APPENDIX C

### ERROR ANALYSIS — FLUX, LUMINOSITY, RADIUS, AND ANGULAR DIAMETER

#### C1 Flux

Observed fluxes ( $F$ ) are calculated using the flux zero points ( $F_{ZP}$ ) listed in Table 4.1 and observed magnitudes ( $m$ ) via the equation

$$F = 10^{-\frac{m}{2.5}} F_{ZP}$$

Observed flux errors are determined via error propagation as described by (Bevington & Robinson 1992, p. 46-47):

$$\begin{aligned} \text{For} \quad x &= a^{\pm bu}, & \sigma_x &= \pm [b \ln a] \sigma_u x \\ \text{i.e. for} \quad F &= F_{ZP} 10^{\frac{-m}{2.5}}, & \sigma_F &= -F_{ZP} \frac{\ln(10)}{2.5} \sigma_m F \end{aligned}$$

The error in the final model fluxes can be taken to just be their offset from the observed fluxes in quadrature with the observed flux errors.

We assume that the offset between model and observed flux in each filter is representative of the offset without a filter, and add the model flux errors in quadrature to get a total flux error over the wavelength range spanned by the filters. The final error for the bolometric flux is this value scaled by the bolometric flux correction.

Say bandpasses *VRJHKW1W2W3* are represented by the numbers  $b$  equaling 1 through 9. Error from our observed fluxes can be represented as the ratio of flux error divided by total flux.

$$F_{obs, err}^2 = \sum_{b=1}^9 \left( \frac{F_{b, obs, err}}{F_{b, obs}} \right)^2$$

Error from the fit can be measured as the difference in observed and final model flux divided by the final model flux:

$$F_{mod, err}^2 = \sum_{b=1}^9 \left( \frac{F_{b, obs} - F_{b, mod}}{F_{b, mod}} \right)^2$$

The final flux error across the range of our bandpasses is calculated to be

$$F_{range, err} = \sqrt{F_{obs, err}^2 + F_{mod, err}^2}$$

Bolometric flux error is calculated by multiplying this value and the bolometric correction.

$$F_{bol, err} = BC \times F_{range, err}$$

#### C2 Luminosity

$L = \frac{4(\pi)F}{\pi^2}$ , where  $\pi$  is the parallax

$$L_{bol, err} = L_{bol} \times \sqrt{\left( \frac{F_{bol, err}}{F_{bol}} \right)^2 + \left( \frac{\pi_{err}}{\pi} \right)^2}$$

$$(\log_{10} L_{bol})_{err} = \frac{L_{bol, err}}{L_{bol} \times \log_e 10}$$

### C3 Radius and Angular Diameter

For radius, which is determined via the Stefan-Boltzmann Law, things are slightly more complex. We use the usual equation for error propagation

$$x_{err}^2 = u_{err}^2 \frac{dx}{du} + v_{err}^2 \frac{dx}{dv} \quad (\text{Bevington \& Robinson 1992})$$

applied as

$$R_{err}^2 = T_{eff,err}^2 \frac{dR}{dT_{eff}} + L_{bol,err}^2 \frac{dR}{dL_{bol}}$$

$$\text{The result is that } R_{err} = \sqrt{\frac{1}{\pi \sigma_{SB}}} \sqrt{T_{eff,err}^2 \times \frac{L_{bol}}{T_{eff}^6} + L_{bol,err}^2 \times \frac{1}{16 L_{bol} T_{eff}^4}}.$$

and, similarly, the angular diameter error is

$$\theta_{err} = 2 \times \text{constant} \times \sqrt{(R_{err} \pi)^2 + (\pi_{err} R)^2}$$

..

## APPENDIX D

### FUNDAMENTAL PARAMETER RESULTS

Below are the fundamental parameters calculated for the 1592 stars with fully vetted photometry, with the exception of a subset of problem stars reported in the data table, Table A.2.

Columns 1 and 2 contain the 2000.0 right ascension and declination of the star. Column 3 contains the name of the star. Column 4 contains the  $V - K$  color of the star, which must be within the range of 3.5 to 10.5 to be part of our sample. Column 5 and 6 are the effective temperature and its error, taken to be the standard deviation of the effective temperature results for each color, as described in §4.3.3. Column 7 contains the ratio of the standard deviation of non-bolometric flux results produced during our Monte Carlo (MC) procedure to the non-bolometric flux. This value illustrates the sensitivity (or lack thereof) of our spectrum-adjusting procedure results to changes in the photometry within 0.03 mag (§4.3.4). Column 8 reports the number of iterations of the flux adjustment procedure was required before the final spectrum produce magnitudes within 0.03 mag of observations (see §4.3.4). The maximum number of iterations is set to 500. Column 9 contains the bolometric correction (BC) value used to scale our non-bolometric flux to its bolometric value in units of  $\text{erg s}^{-1}$ , of which the base-10 logarithm is listed in Column 10, with units in brackets corresponding to the flux taken out of log space. The error on this logarithmic value is listed in Column 11. Units in Columns 12 and 13 contain the base-10 logarithm bolometric luminosity and corresponding error (calculated by combining bolometric flux and parallax). For these four values, units are listed in brackets to denote they correspond to the antilog of the value listed, though it is important to note that proper error propagation is required to derive errors for the non-logarithmic flux and luminosity. Columns 14–17 contain radius, radius error, angular diameter, and angular diameter error. Column 19 is the age category we have assigned to the star, where YG = known young star, SD = known cool subdwarf, RD = main sequence star, YC = young star candidate, SC = cool subdwarf candidate.

Table D.1: Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 00 01 16           | +06 59 36           | L524-048         | 6.16                    | 2917                  | 7                              | 0.012                  | 43            | 1.007     | -9.9107                                                    | 0.0069                                                              | -2.9290                                        | 0.0210                                                  | 0.1344                   | 0.0033                            | 0.0714                 | 0.0037                          | RD               |
| 00 02 06           | +01 15 36           | L584-004         | 8.20                    | 2530                  | 26                             | 0.015                  | 133           | 1.002     | -10.2894                                                   | 0.0075                                                              | -3.3435                                        | 0.0351                                                  | 0.1109                   | 0.0050                            | 0.0613                 | 0.0056                          | RD               |
| 00 04 36           | -40 44 03           | GJ1001           | 5.09                    | 3221                  | 18                             | 0.015                  | 72            | 1.014     | -8.7927                                                    | 0.0069                                                              | -2.0808                                        | 0.0133                                                  | 0.2926                   | 0.0055                            | 0.2120                 | 0.0068                          | RD               |
| 00 05 24           | -37 21 27           | GJ0001           | 4.02                    | 3636                  | 118                            | 1.174                  | 328           | 1.030     | -7.4030                                                    | 0.0105                                                              | -1.6327                                        | 0.0106                                                  | 0.3847                   | 0.0254                            | 0.8240                 | 0.0546                          | RD               |
| 00 06 19           | -65 50 26           | LHS1019          | 4.54                    | 3409                  | 14                             | 0.013                  | 3             | 1.020     | -8.7117                                                    | 0.0065                                                              | -1.7709                                        | 0.0202                                                  | 0.3732                   | 0.0092                            | 0.2077                 | 0.0105                          | RD               |
| 00 06 43           | -07 32 17           | GJ1002           | 6.40                    | 2915                  | 16                             | 0.010                  | 3             | 1.007     | -8.7224                                                    | 0.0064                                                              | -2.8842                                        | 0.0098                                                  | 0.1417                   | 0.0023                            | 0.2807                 | 0.0065                          | RD               |
| 00 07 27           | +29 14 33           | GJ1003           | 4.70                    | 3368                  | 15                             | 0.012                  | 86            | 1.019     | -9.4335                                                    | 0.0063                                                              | -2.3953                                        | 0.0212                                                  | 0.1863                   | 0.0049                            | 0.0927                 | 0.0050                          | SC               |
| 00 07 59           | +08 00 19           | LHS1022          | 4.44                    | 3470                  | 20                             | 0.014                  | 127           | 1.023     | -9.0934                                                    | 0.0067                                                              | -1.8853                                        | 0.0625                                                  | 0.3158                   | 0.0230                            | 0.1292                 | 0.0208                          | RD               |
| 00 08 17           | -57 05 53           | LTT00057         | 4.74                    | 3351                  | 18                             | 0.012                  | 15            | 1.018     | -8.6228                                                    | 0.0062                                                              | -1.8800                                        | 0.0137                                                  | 0.3406                   | 0.0065                            | 0.2381                 | 0.0081                          | RD               |
| 00 08 27           | +17 25 27           | HIP00687         | 3.82                    | 3795                  | 18                             | 0.012                  | 23            | 1.039     | -8.3994                                                    | 0.0065                                                              | -1.2296                                        | 0.0194                                                  | 0.5616                   | 0.0136                            | 0.2402                 | 0.0116                          | RD               |
| 00 09 04           | -27 07 20           | GJ0007           | 3.83                    | 3796                  | 23                             | 0.012                  | 212           | 1.039     | -8.7458                                                    | 0.0064                                                              | -1.5300                                        | 0.0263                                                  | 0.3973                   | 0.0130                            | 0.1611                 | 0.0108                          | RD               |
| 00 09 45           | -42 01 40           | LEHPM1-0255      | 5.40                    | 3112                  | 11                             | 0.011                  | 3             | 1.011     | -8.9926                                                    | 0.0059                                                              | -1.9504                                        | 0.0137                                                  | 0.3643                   | 0.0063                            | 0.1804                 | 0.0060                          | YC               |
| 00 11 32           | +59 08 40           | LEP0011+5908     | 6.56                    | 2874                  | 11                             | 0.011                  | 3             | 1.006     | -9.3802                                                    | 0.0054                                                              | -2.9555                                        | 0.0058                                                  | 0.1343                   | 0.0014                            | 0.1354                 | 0.0015                          | RD               |
| 00 11 53           | +22 59 04           | L348-040         | 5.06                    | 3239                  | 22                             | 0.014                  | 123           | 1.015     | -8.8978                                                    | 0.0070                                                              | -1.9620                                        | 0.0148                                                  | 0.3317                   | 0.0072                            | 0.1857                 | 0.0069                          | RD               |
| 00 13 38           | +80 39 57           | LTT17095         | 4.22                    | 3603                  | 18                             | 0.014                  | 27            | 1.029     | -8.4082                                                    | 0.0089                                                              | -1.3293                                        | 0.0173                                                  | 0.5556                   | 0.0125                            | 0.2638                 | 0.0108                          | RD               |
| 00 15 49           | +13 33 22           | GJ0012           | 4.81                    | 3321                  | 7                              | 0.011                  | 101           | 1.017     | -8.7966                                                    | 0.0065                                                              | -2.2019                                        | 0.0109                                                  | 0.2394                   | 0.0032                            | 0.1985                 | 0.0048                          | RD               |
| 00 16 37           | -05 16 09           | L218-009         | 4.18                    | 3578                  | 17                             | 0.013                  | 16            | 1.028     | -8.8884                                                    | 0.0066                                                              | -1.7006                                        | 0.0331                                                  | 0.3672                   | 0.0144                            | 0.1538                 | 0.0130                          | RD               |
| 00 16 56           | +05 07 27           | GJ1007           | 5.20                    | 3181                  | 12                             | 0.014                  | 3             | 1.013     | -9.1258                                                    | 0.0080                                                              | -2.1411                                        | 0.0293                                                  | 0.2799                   | 0.0097                            | 0.1481                 | 0.0109                          | RD               |
| 00 17 20           | +29 10 59           | LHS1054          | 4.28                    | 3575                  | 29                             | 0.012                  | 21            | 1.027     | -8.5583                                                    | 0.0073                                                              | -1.3467                                        | 0.0235                                                  | 0.5531                   | 0.0174                            | 0.2254                 | 0.0136                          | RD               |
| 00 17 24           | -66 45 12           | SCR0017-6645     | 4.75                    | 3362                  | 23                             | 0.013                  | 18            | 1.019     | -8.7684                                                    | 0.0074                                                              | -1.0903                                        | 0.0302                                                  | 0.8398                   | 0.0315                            | 0.2000                 | 0.0155                          | YG               |
| 00 17 40           | -10 46 17           | LHS1019          | 3.51                    | 3899                  | 34                             | 0.012                  | 114           | 1.045     | -9.6956                                                    | 0.0066                                                              | -2.1073                                        | 0.0539                                                  | 0.1937                   | 0.0125                            | 0.0512                 | 0.0071                          | SD               |
| 00 18 17           | +10 12 10           | GJ0016           | 4.17                    | 3604                  | 15                             | 0.015                  | 6             | 1.029     | -8.3260                                                    | 0.0090                                                              | -1.3937                                        | 0.0175                                                  | 0.5155                   | 0.0112                            | 0.2898                 | 0.0118                          | RD               |
| 00 18 23           | +44 01 23           | GJ0015           | 4.07                    | 3668                  | 210                            | 20.625                 | 345           | 1.032     | -7.2794                                                    | 0.0289                                                              | -1.6787                                        | 0.0289                                                  | 0.3585                   | 0.0428                            | 0.9337                 | 0.1116                          | RD               |
| 00 18 54           | +27 48 50           | L292-066         | 5.21                    | 3190                  | 13                             | 0.011                  | 3             | 1.013     | -9.1703                                                    | 0.0058                                                              | -2.3555                                        | 0.0331                                                  | 0.2174                   | 0.0085                            | 0.1399                 | 0.0118                          | RD               |
| 00 20 08           | -17 03 41           | GJ2003           | 3.99                    | 3717                  | 17                             | 0.011                  | 3             | 1.035     | -8.6949                                                    | 0.0066                                                              | -1.4691                                        | 0.0383                                                  | 0.4443                   | 0.0200                            | 0.1781                 | 0.0175                          | RD               |
| 00 20 29           | +33 05 06           | LHS0112          | 6.76                    | 2844                  | 30                             | 0.010                  | 68            | 1.006     | -9.5114                                                    | 0.0067                                                              | -2.8750                                        | 0.0137                                                  | 0.1504                   | 0.0040                            | 0.1189                 | 0.0045                          | RD               |
| 00 21 17           | +18 43 56           | LHS1060          | 6.56                    | 2879                  | 22                             | 0.009                  | 3             | 1.006     | -9.9204                                                    | 0.0057                                                              | -2.6317                                        | 0.0351                                                  | 0.1942                   | 0.0084                            | 0.0724                 | 0.0066                          | RD               |
| 00 21 20           | -45 44 47           | GJ0017.1         | 3.86                    | 3798                  | 17                             | 0.010                  | 106           | 1.039     | -8.2363                                                    | 0.0070                                                              | -1.2647                                        | 0.0161                                                  | 0.5384                   | 0.0111                            | 0.2892                 | 0.0113                          | RD               |
| 00 21 37           | -46 05 33           | LHS5004a         | 4.79                    | 3348                  | 27                             | 0.010                  | 54            | 1.018     | -8.6720                                                    | 0.0067                                                              | -1.6058                                        | 0.0375                                                  | 0.4679                   | 0.0216                            | 0.2254                 | 0.0218                          | YC               |
| 00 21 56           | -31 24 22           | GJ1009           | 4.35                    | 3509                  | 22                             | 0.010                  | 3             | 1.024     | -8.3762                                                    | 0.0073                                                              | -1.3718                                        | 0.0195                                                  | 0.5578                   | 0.0144                            | 0.2886                 | 0.0142                          | RD               |
| 00 23 18           | -50 53 38           | LHS1064          | 4.52                    | 3461                  | 19                             | 0.012                  | 20            | 1.022     | -8.6246                                                    | 0.0077                                                              | -1.5267                                        | 0.0248                                                  | 0.4795                   | 0.0147                            | 0.2228                 | 0.0139                          | RD               |
| 00 23 28           | +77 11 22           | GJ1010           | 4.12                    | 3616                  | 44                             | 0.012                  | 18            | 1.029     | -8.5006                                                    | 0.0071                                                              | -1.4990                                        | 0.0214                                                  | 0.4535                   | 0.0157                            | 0.2354                 | 0.0136                          | RD               |
| 00 24 04           | +26 26 30           | LSPM0024+2626    | 5.49                    | 3110                  | 11                             | 0.010                  | 13            | 1.011     | -9.4487                                                    | 0.0066                                                              | -2.2660                                        | 0.0276                                                  | 0.2536                   | 0.0083                            | 0.1069                 | 0.0075                          | RD               |
| 00 24 25           | -01 58 20           | NLTTO1261        | 9.34                    | 2155                  | 61                             | 0.015                  | 52            | 1.001     | -10.1380                                                   | 0.0074                                                              | -3.4753                                        | 0.0138                                                  | 0.1312                   | 0.0077                            | 0.1006                 | 0.0065                          | RD               |
| 00 24 35           | +30 02 30           | LHS1068          | 5.67                    | 3019                  | 25                             | 0.011                  | 52            | 1.009     | -9.2940                                                    | 0.0065                                                              | -2.1503                                        | 0.0198                                                  | 0.3074                   | 0.0087                            | 0.1354                 | 0.0070                          | YC               |
| 00 25 15           | -61 30 48           | CTTUC            | 3.61                    | 3914                  | 25                             | 0.011                  | 3             | 1.046     | -8.6880                                                    | 0.0066                                                              | -0.8711                                        | 0.0486                                                  | 0.7979                   | 0.0458                            | 0.1620                 | 0.0202                          | YC               |

[h]

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 00 25 16           | +54 22 55           | LSPM0025+5422    | 7.69                    | 2607                  | 48                             | 0.013                  | 40            | 1.003     | -10.1237                                                               | 0.0065                                                                          | -3.2887                                          | 0.0144                                                    | 0.1112                      | 0.0045                               | 0.0699                 | 0.0035                        | RD                       |
| 00 25 21           | +22 53 11           | LHS1073          | 5.32                    | 3104                  | 20                             | 0.010                  | 3             | 1.011     | -9.2583                                                                | 0.0065                                                                          | -2.4585                                          | 0.0208                                                    | 0.2039                      | 0.0055                               | 0.1335                 | 0.0071                        | RD                       |
| 00 26 13           | +46 26 53           | L150-006         | 4.91                    | 3292                  | 8                              | 0.011                  | 133           | 1.016     | -9.4641                                                                | 0.0062                                                                          | -2.3280                                          | 0.0192                                                    | 0.2108                      | 0.0048                               | 0.0937                 | 0.0045                        | RD                       |
| 00 26 32           | +14 59 23           | G032-018         | 5.17                    | 3190                  | 5                              | 0.011                  | 18            | 1.013     | -9.4380                                                                | 0.0063                                                                          | -2.2514                                          | 0.0184                                                    | 0.2450                      | 0.0053                               | 0.1028                 | 0.0047                        | RD                       |
| 00 26 53           | +70 08 33           | GJ0021           | 3.96                    | 3684                  | 15                             | 0.013                  | 12            | 1.033     | -8.2477                                                                | 0.0075                                                                          | -1.3170                                          | 0.0122                                                    | 0.5390                      | 0.0088                               | 0.3035                 | 0.0083                        | RD                       |
| 00 27 07           | +49 41 53           | G217-051         | 5.43                    | 3093                  | 14                             | 0.010                  | 78            | 1.011     | -9.2646                                                                | 0.0064                                                                          | -2.1250                                          | 0.0166                                                    | 0.3016                      | 0.0064                               | 0.1335                 | 0.0055                        | RD                       |
| 00 27 50           | -32 33 06           | GJ2006           | 4.94                    | 3255                  | 37                             | 0.013                  | 6             | 1.015     | -8.8862                                                                | 0.0074                                                                          | -1.3731                                          | 0.0258                                                    | 0.6473                      | 0.0242                               | 0.1865                 | 0.0127                        | YG                       |
| 00 28 39           | -06 39 48           | GJ1012           | 5.02                    | 3261                  | 19                             | 0.012                  | 95            | 1.015     | -8.5724                                                                | 0.0087                                                                          | -1.8323                                          | 0.0306                                                    | 0.3801                      | 0.0141                               | 0.2666                 | 0.0206                        | RD                       |
| 00 30 48           | +77 42 34           | L012-382         | 7.28                    | 2687                  | 33                             | 0.013                  | 3             | 1.004     | -9.6067                                                                | 0.0071                                                                          | -2.8779                                          | 0.0238                                                    | 0.1679                      | 0.0062                               | 0.1193                 | 0.0077                        | RD                       |
| 00 31 35           | -05 52 13           | GJ1013           | 4.78                    | 3326                  | 17                             | 0.013                  | 51            | 1.017     | -8.8487                                                                | 0.0068                                                                          | -1.9427                                          | 0.0301                                                    | 0.3217                      | 0.0116                               | 0.1864                 | 0.0143                        | RD                       |
| 00 32 16           | +54 29 02           | LHS5009          | 5.34                    | 3101                  | 18                             | 0.009                  | 12            | 1.011     | -9.1363                                                                | 0.0066                                                                          | -2.0305                                          | 0.0139                                                    | 0.3345                      | 0.0066                               | 0.1540                 | 0.0053                        | YC                       |
| 00 34 38           | +40 50 02           | L193-248         | 6.79                    | 2816                  | 9                              | 0.009                  | 3             | 1.005     | -10.1082                                                               | 0.0055                                                                          | -3.2337                                          | 0.0215                                                    | 0.1015                      | 0.0026                               | 0.0610                 | 0.0033                        | RD                       |
| 00 34 38           | +71 11 42           | LHS1101          | 4.86                    | 3293                  | 9                              | 0.011                  | 11            | 1.016     | -9.1344                                                                | 0.0062                                                                          | -2.0292                                          | 0.0165                                                    | 0.2972                      | 0.0059                               | 0.1369                 | 0.0055                        | RD                       |
| 00 35 53           | +52 41 12           | LHS1104          | 4.45                    | 3474                  | 15                             | 0.012                  | 19            | 1.023     | -8.8937                                                                | 0.0066                                                                          | -1.7584                                          | 0.0134                                                    | 0.3645                      | 0.0065                               | 0.1622                 | 0.0052                        | RD                       |
| 00 35 56           | +10 28 36           | GJ1014           | 5.95                    | 3049                  | 15                             | 0.012                  | 3             | 1.010     | -9.4765                                                                | 0.0059                                                                          | -2.6743                                          | 0.0209                                                    | 0.1649                      | 0.0043                               | 0.1077                 | 0.0057                        | RD                       |
| 00 36 08           | +45 30 57           | G172-013         | 4.35                    | 3511                  | 10                             | 0.013                  | 3             | 1.025     | -8.5827                                                                | 0.0062                                                                          | -1.3726                                          | 0.0971                                                    | 0.5564                      | 0.0623                               | 0.2272                 | 0.0567                        | RD                       |
| 00 36 16           | +18 21 10           | 2MA0036+1821     | 10.15                   | 1960                  | 165                            | 0.019                  | 94            | 1.001     | -10.3294                                                               | 0.0089                                                                          | -3.9498                                          | 0.0094                                                    | 0.0919                      | 0.0155                               | 0.0976                 | 0.0164                        | RD                       |
| 00 38 15           | +52 19 56           | G218-005         | 3.56                    | 3935                  | 10                             | 0.010                  | 3             | 1.048     | -8.3412                                                                | 0.0065                                                                          | -1.0969                                          | 0.0208                                                    | 0.6084                      | 0.0149                               | 0.2388                 | 0.0123                        | RD                       |
| 00 38 59           | +30 36 59           | GJ0026           | 4.47                    | 3470                  | 9                              | 0.013                  | 62            | 1.023     | -8.3079                                                                | 0.0069                                                                          | -1.6202                                          | 0.0222                                                    | 0.4285                      | 0.0112                               | 0.3192                 | 0.0176                        | RD                       |
| 00 39 18           | +55 08 13           | LHS6009          | 4.98                    | 3268                  | 7                              | 0.011                  | 87            | 1.015     | -9.3698                                                                | 0.0061                                                                          | -2.7594                                          | 0.0145                                                    | 0.1301                      | 0.0022                               | 0.1060                 | 0.0037                        | SC                       |
| 00 39 58           | -44 15 12           | GJ0027.1         | 4.00                    | 3668                  | 21                             | 0.012                  | 12            | 1.032     | -8.5784                                                                | 0.0072                                                                          | -1.3088                                          | 0.0295                                                    | 0.5488                      | 0.0197                               | 0.2092                 | 0.0157                        | RD                       |
| 00 40 56           | +31 22 57           | G069-011         | 5.31                    | 3207                  | 45                             | 0.010                  | 153           | 1.014     | -9.1574                                                                | 0.0071                                                                          | -2.1666                                          | 0.0176                                                    | 0.2674                      | 0.0093                               | 0.1405                 | 0.0072                        | RD                       |
| 00 41 21           | +55 50 04           | GJ1015           | 5.06                    | 3232                  | 10                             | 0.010                  | 90            | 1.014     | -9.2980                                                                | 0.0060                                                                          | -2.0780                                          | 0.0209                                                    | 0.2915                      | 0.0072                               | 0.1177                 | 0.0062                        | RD                       |
| 00 41 30           | -33 37 32           | GJ1016           | 3.65                    | 3869                  | 13                             | 0.012                  | 10            | 1.043     | -8.3427                                                                | 0.0080                                                                          | -1.2665                                          | 0.0205                                                    | 0.5180                      | 0.0127                               | 0.2467                 | 0.0123                        | RD                       |
| 00 43 26           | -41 17 34           | LHS1134          | 5.29                    | 3162                  | 19                             | 0.010                  | 3             | 1.012     | -8.7929                                                                | 0.0071                                                                          | -2.2556                                          | 0.0095                                                    | 0.2483                      | 0.0040                               | 0.2200                 | 0.0048                        | RD                       |
| 00 43 36           | +28 26 41           | GJ1019           | 4.84                    | 3292                  | 11                             | 0.011                  | 10            | 1.016     | -9.5168                                                                | 0.0053                                                                          | -2.5234                                          | 0.0183                                                    | 0.1683                      | 0.0037                               | 0.0882                 | 0.0040                        | SC                       |
| 00 44 38           | +67 57 30           | G243-039         | 5.18                    | 3191                  | 7                              | 0.011                  | 15            | 1.013     | -9.4240                                                                | 0.0070                                                                          | -2.3390                                          | 0.0139                                                    | 0.2214                      | 0.0037                               | 0.1044                 | 0.0034                        | RD                       |
| 00 44 59           | -15 16 18           | LHS1140          | 5.36                    | 3123                  | 15                             | 0.013                  | 40            | 1.011     | -9.2198                                                                | 0.0066                                                                          | -2.5330                                          | 0.0164                                                    | 0.1849                      | 0.0039                               | 0.1379                 | 0.0056                        | RD                       |
| 00 46 36           | +36 36 40           | G132-028         | 4.67                    | 3393                  | 15                             | 0.011                  | 36            | 1.020     | -9.5171                                                                | 0.0067                                                                          | -2.3051                                          | 0.0247                                                    | 0.2037                      | 0.0061                               | 0.0830                 | 0.0052                        | SC                       |
| 00 48 13           | -05 08 08           | LT00453          | 4.10                    | 3614                  | 12                             | 0.012                  | 3             | 1.029     | -8.8046                                                                | 0.0081                                                                          | -1.5576                                          | 0.0397                                                    | 0.4244                      | 0.0196                               | 0.1661                 | 0.0167                        | RD                       |
| 00 48 51           | +35 51 22           | LHS1153          | 5.23                    | 3173                  | 7                              | 0.010                  | 3             | 1.013     | -9.6071                                                                | 0.0058                                                                          | -2.6641                                          | 0.0219                                                    | 0.1540                      | 0.0039                               | 0.0855                 | 0.0047                        | RD                       |
| 00 49 02           | -50 08 42           | LT00464          | 3.78                    | 3797                  | 21                             | 0.011                  | 12            | 1.039     | -8.3866                                                                | 0.0067                                                                          | -1.2232                                          | 0.0206                                                    | 0.5650                      | 0.0149                               | 0.2434                 | 0.0127                        | RD                       |
| 00 49 29           | -61 02 33           | GJ1022           | 4.33                    | 3532                  | 13                             | 0.012                  | 93            | 1.026     | -8.7703                                                                | 0.0074                                                                          | -1.6490                                          | 0.0145                                                    | 0.4000                      | 0.0073                               | 0.1809                 | 0.0061                        | RD                       |
| 00 51 30           | +58 18 08           | GJ0038           | 3.62                    | 3891                  | 14                             | 0.009                  | 14            | 1.045     | -8.3998                                                                | 0.0073                                                                          | -1.3740                                          | 0.0181                                                    | 0.4524                      | 0.0100                               | 0.2284                 | 0.0101                        | RD                       |
| 00 52 55           | -27 06 00           | RG0050-2722      | 9.00                    | 2329                  | 95                             | 0.016                  | 35            | 1.001     | -10.8705                                                               | 0.0087                                                                          | -3.6012                                          | 0.0433                                                    | 0.0972                      | 0.0093                               | 0.0371                 | 0.0051                        | RD                       |
| 00 56 38           | +17 27 35           | GJ1024           | 5.34                    | 3153                  | 24                             | 0.011                  | 8             | 1.012     | -9.0731                                                                | 0.0064                                                                          | -1.9996                                          | 0.0238                                                    | 0.3353                      | 0.0105                               | 0.1602                 | 0.0098                        | RD                       |
| 00 56 50           | -11 35 20           | LT00534          | 3.76                    | 3848                  | 23                             | 0.014                  | 3             | 1.042     | -8.5470                                                                | 0.0081                                                                          | -1.2642                                          | 0.0313                                                    | 0.5250                      | 0.0199                               | 0.1971                 | 0.0156                        | RD                       |
| 00 57 12           | -64 15 24           | L087-002         | 4.80                    | 3309                  | 12                             | 0.009                  | 3             | 1.017     | -8.7049                                                                | 0.0056                                                                          | -1.7103                                          | 0.0120                                                    | 0.4247                      | 0.0067                               | 0.2222                 | 0.0065                        | RD                       |
| 00 58 28           | -27 51 25           | GJ0046           | 4.88                    | 3297                  | 17                             | 0.036                  | 108           | 1.016     | -8.4446                                                                | 0.0084                                                                          | -1.7639                                          | 0.0188                                                    | 0.4022                      | 0.0096                               | 0.3021                 | 0.0137                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 00 59 08           | +37 52 40           | LSPM0059+3752    | 5.52                    | 3099                  | 5                              | 0.012                  | 20            | 1.011     | -9.6491                                                    | 0.0063                                                              | -2.3669                                        | 0.0224                                                  | 0.2274                   | 0.0059                            | 0.0855                 | 0.0048                          | RD               |
| 01 00 14           | +34 04 06           | L242-019         | 5.93                    | 2996                  | 5                              | 0.013                  | 143           | 1.008     | -9.9863                                                    | 0.0071                                                              | -2.8226                                        | 0.0254                                                  | 0.1440                   | 0.0042                            | 0.0620                 | 0.0039                          | RD               |
| 01 00 56           | -04 26 57           | GJ1025           | 5.14                    | 3208                  | 6                              | 0.015                  | 27            | 1.014     | -8.9786                                                    | 0.0085                                                              | -2.3697                                        | 0.0145                                                  | 0.2115                   | 0.0036                            | 0.1725                 | 0.0055                          | RD               |
| 01 01 20           | +61 21 57           | GJ0047           | 4.37                    | 3500                  | 13                             | 0.010                  | 3             | 1.024     | -8.2324                                                    | 0.0071                                                              | -1.6545                                        | 0.0222                                                  | 0.4049                   | 0.0107                            | 0.3423                 | 0.0189                          | RD               |
| 01 01 59           | +54 10 58           | G218-020         | 6.22                    | 2906                  | 7                              | 0.011                  | 3             | 1.007     | -9.2973                                                    | 0.0061                                                              | -2.7281                                        | 0.0146                                                  | 0.1706                   | 0.0030                            | 0.1457                 | 0.0051                          | RD               |
| 01 02 32           | +71 40 48           | GJ0048           | 4.53                    | 3436                  | 34                             | 0.017                  | 111           | 1.021     | -7.8397                                                    | 0.0092                                                              | -1.5108                                        | 0.0102                                                  | 0.4955                   | 0.0114                            | 0.5580                 | 0.0140                          | RD               |
| 01 02 38           | +62 20 42           | GJ0049           | 4.19                    | 3583                  | 41                             | 0.010                  | 48            | 1.028     | -7.7887                                                    | 0.0074                                                              | -1.2989                                        | 0.0097                                                  | 0.5817                   | 0.0148                            | 0.5443                 | 0.0159                          | RD               |
| 01 02 51           | -37 37 44           | LHS0132          | 8.46                    | 2462                  | 25                             | 0.011                  | 3             | 1.002     | -9.8705                                                    | 0.0062                                                              | -3.2027                                        | 0.0157                                                  | 0.1377                   | 0.0037                            | 0.1049                 | 0.0045                          | RD               |
| 01 02 58           | +53 04 08           | LSPM0102+5304    | 6.13                    | 3046                  | 50                             | 0.013                  | 240           | 1.009     | -9.9178                                                    | 0.0067                                                              | -2.9906                                        | 0.0231                                                  | 0.1148                   | 0.0048                            | 0.0649                 | 0.0043                          | RD               |
| 01 04 07           | -65 22 27           | L087-010         | 5.45                    | 3115                  | 8                              | 0.013                  | 60            | 1.011     | -9.1241                                                    | 0.0067                                                              | -2.4932                                        | 0.0101                                                  | 0.1946                   | 0.0024                            | 0.1548                 | 0.0033                          | RD               |
| 01 04 54           | -18 07 29           | GJ1028           | 6.10                    | 3012                  | 25                             | 0.012                  | 3             | 1.009     | -9.1275                                                    | 0.0074                                                              | -2.6308                                        | 0.0230                                                  | 0.1776                   | 0.0055                            | 0.1649                 | 0.0097                          | RD               |
| 01 05 38           | +28 29 34           | GJ1029           | 6.24                    | 2896                  | 13                             | 0.012                  | 3             | 1.007     | -9.1767                                                    | 0.0063                                                              | -2.5272                                        | 0.0130                                                  | 0.2165                   | 0.0038                            | 0.1686                 | 0.0053                          | RD               |
| 01 06 42           | +15 16 22           | GJ1030           | 4.24                    | 3574                  | 15                             | 0.015                  | 10            | 1.027     | -8.5052                                                    | 0.0071                                                              | -1.3334                                        | 0.0224                                                  | 0.5618                   | 0.0153                            | 0.2397                 | 0.0134                          | RD               |
| 01 06 55           | +80 27 35           | L012-502         | 5.49                    | 3082                  | 24                             | 0.011                  | 3             | 1.010     | -9.1160                                                    | 0.0055                                                              | -2.2509                                        | 0.0291                                                  | 0.2628                   | 0.0097                            | 0.1596                 | 0.0121                          | RD               |
| 01 07 48           | +34 12 31           | GJ0052.2         | 4.29                    | 3530                  | 15                             | 0.009                  | 5             | 1.025     | -9.2562                                                    | 0.0059                                                              | -2.0696                                        | 0.0314                                                  | 0.2467                   | 0.0092                            | 0.1035                 | 0.0083                          | SC               |
| 01 08 12           | +00 27 57           | G001-047         | 5.71                    | 3019                  | 23                             | 0.012                  | 7             | 1.009     | -9.4172                                                    | 0.0068                                                              | -2.2829                                        | 0.0387                                                  | 0.2639                   | 0.0124                            | 0.1176                 | 0.0117                          | RD               |
| 01 09 02           | -51 00 50           | SSS0109-5100     | 8.93                    | 2409                  | 66                             | 0.018                  | 114           | 1.002     | -10.3074                                                   | 0.0078                                                              | -3.3363                                        | 0.0274                                                  | 0.1232                   | 0.0078                            | 0.0662                 | 0.0058                          | RD               |
| 01 09 13           | -24 41 21           | GJ1032           | 4.64                    | 3392                  | 14                             | 0.010                  | 17            | 1.020     | -8.7122                                                    | 0.0062                                                              | -1.5098                                        | 0.0303                                                  | 0.5092                   | 0.0182                            | 0.2098                 | 0.0162                          | RD               |
| 01 09 51           | -03 43 26           | LP647-013        | 8.92                    | 2255                  | 138                            | 0.016                  | 35            | 1.001     | -10.0740                                                   | 0.0084                                                              | -3.5263                                        | 0.0092                                                  | 0.1130                   | 0.0139                            | 0.0990                 | 0.0122                          | RD               |
| 01 10 18           | -11 51 18           | LP707-016        | 5.04                    | 3261                  | 33                             | 0.018                  | 3             | 1.015     | -8.7763                                                    | 0.0074                                                              | -1.7452                                        | 0.0140                                                  | 0.4201                   | 0.0108                            | 0.2107                 | 0.0079                          | RD               |
| 01 11 23           | +16 48 31           | G034-008         | 5.52                    | 3090                  | 8                              | 0.012                  | 20            | 1.011     | -9.7269                                                    | 0.0073                                                              | -2.6590                                        | 0.0238                                                  | 0.1634                   | 0.0046                            | 0.0786                 | 0.0047                          | RD               |
| 01 11 36           | +41 27 53           | L194-035         | 7.33                    | 2694                  | 32                             | 0.009                  | 57            | 1.004     | -10.2950                                                   | 0.0068                                                              | -3.1910                                        | 0.0271                                                  | 0.1165                   | 0.0046                            | 0.0537                 | 0.0039                          | RD               |
| 01 11 48           | -49 08 09           | SCH0111-4908     | 7.13                    | 2740                  | 27                             | 0.016                  | 122           | 1.004     | -10.0291                                                   | 0.0071                                                              | -3.0031                                        | 0.0132                                                  | 0.1398                   | 0.0035                            | 0.0706                 | 0.0025                          | RD               |
| 01 11 56           | +04 55 05           | LHS1212          | 4.93                    | 3279                  | 19                             | 0.011                  | 20            | 1.016     | -8.8730                                                    | 0.0068                                                              | -2.0051                                        | 0.0128                                                  | 0.3081                   | 0.0057                            | 0.1865                 | 0.0058                          | RD               |
| 01 12 31           | -16 59 56           | GJ0054.1         | 5.74                    | 3006                  | 23                             | 0.013                  | 134           | 1.009     | -8.2896                                                    | 0.0077                                                              | -2.6545                                        | 0.0091                                                  | 0.1735                   | 0.0032                            | 0.4343                 | 0.0094                          | RD               |
| 01 12 47           | +01 54 40           | G002-029         | 5.34                    | 3207                  | 13                             | 0.010                  | 3             | 1.014     | -9.2185                                                    | 0.0068                                                              | -2.3167                                        | 0.0148                                                  | 0.2249                   | 0.0042                            | 0.1309                 | 0.0047                          | RD               |
| 01 13 16           | -54 29 14           | DEN0113-5429     | 5.48                    | 3102                  | 13                             | 0.012                  | 3             | 1.011     | -9.1914                                                    | 0.0065                                                              | -2.2654                                        | 0.0105                                                  | 0.2550                   | 0.0037                            | 0.1444                 | 0.0035                          | RD               |
| 01 14 34           | -53 56 32           | L221-060         | 4.11                    | 3650                  | 19                             | 0.012                  | 106           | 1.031     | -8.4213                                                    | 0.0067                                                              | -1.4882                                        | 0.0146                                                  | 0.4508                   | 0.0090                            | 0.2532                 | 0.0091                          | RD               |
| 01 16 29           | +24 19 27           | GJ1034           | 5.09                    | 3202                  | 18                             | 0.010                  | 3             | 1.013     | -9.6377                                                    | 0.0054                                                              | -2.5071                                        | 0.0410                                                  | 0.1813                   | 0.0088                            | 0.0811                 | 0.0085                          | RD               |
| 01 17 15           | -35 42 57           | GJ1036           | 4.34                    | 3536                  | 20                             | 0.012                  | 3             | 1.026     | -8.4356                                                    | 0.0082                                                              | -1.5209                                        | 0.0255                                                  | 0.4626                   | 0.0146                            | 0.2654                 | 0.0170                          | RD               |
| 01 17 16           | -13 15 48           | L797-030         | 3.88                    | 3783                  | 24                             | 0.011                  | 77            | 1.038     | -8.3818                                                    | 0.0079                                                              | -1.1494                                        | 0.0271                                                  | 0.6200                   | 0.0208                            | 0.2467                 | 0.0169                          | RD               |
| 01 17 43           | +64 59 05           | LHS5030          | 4.86                    | 3299                  | 5                              | 0.011                  | 3             | 1.016     | -9.1665                                                    | 0.0067                                                              | -2.0660                                        | 0.0139                                                  | 0.2838                   | 0.0046                            | 0.1314                 | 0.0043                          | RD               |
| 01 18 16           | -12 53 59           | GJ0056.1         | 4.24                    | 3558                  | 13                             | 0.010                  | 15            | 1.027     | -8.6493                                                    | 0.0063                                                              | -1.4662                                        | 0.0320                                                  | 0.4865                   | 0.0183                            | 0.2049                 | 0.0167                          | RD               |
| 01 19 17           | +59 51 22           | G218-027         | 5.83                    | 3016                  | 7                              | 0.013                  | 201           | 1.009     | -9.5748                                                    | 0.0073                                                              | -2.5235                                        | 0.0195                                                  | 0.2005                   | 0.0046                            | 0.0983                 | 0.0047                          | RD               |
| 01 19 52           | +84 09 33           | GJ1035           | 5.73                    | 3005                  | 27                             | 0.014                  | 6             | 1.009     | -9.3345                                                    | 0.0077                                                              | -2.5992                                        | 0.0154                                                  | 0.1851                   | 0.0047                            | 0.1305                 | 0.0052                          | RD               |
| 01 21 35           | -41 39 23           | GJ0057           | 5.73                    | 3936                  | 21                             | 0.011                  | 3             | 1.048     | -8.1973                                                    | 0.0069                                                              | -1.2572                                        | 0.0130                                                  | 0.5059                   | 0.0093                            | 0.2818                 | 0.0089                          | RD               |
| 01 21 45           | -46 42 52           | HIP006365        | 4.11                    | 3617                  | 19                             | 0.011                  | 3             | 1.029     | -8.5554                                                    | 0.0065                                                              | -1.3613                                        | 0.0258                                                  | 0.5312                   | 0.0167                            | 0.2209                 | 0.0145                          | RD               |
| 01 22 31           | +88 54 31           | L001-046         | 5.24                    | 3172                  | 25                             | 0.012                  | 3             | 1.013     | -9.4929                                                    | 0.0053                                                              | -2.3366                                        | 0.0293                                                  | 0.2248                   | 0.0084                            | 0.0976                 | 0.0074                          | RD               |
| 01 24 23           | +08 19 31           | LSPM0124+6819    | 7.24                    | 2661                  | 58                             | 0.018                  | 3             | 1.003     | -9.9955                                                    | 0.0084                                                              | -3.0867                                        | 0.0421                                                  | 0.1346                   | 0.0088                            | 0.0778                 | 0.0090                          | RD               |
| 01 25 37           | +09 45 25           | LHS6028          | 5.05                    | 3237                  | 24                             | 0.012                  | 70            | 1.015     | -8.9290                                                    | 0.0075                                                              | -2.0457                                        | 0.0227                                                  | 0.3017                   | 0.0090                            | 0.1795                 | 0.0104                          | RD               |



## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 01 30 43           | +02 36 37           | L587-070         | 6.33                    | 2917                  | 16                             | 0.011                   | 20            | 1.007     | -10.0110                                                               | 0.0066                                                                          | -2.7970                                        | 0.0442                                                  | 0.1564                   | 0.0081                            | 0.0636                 | 0.0072                          | RD                       |
| 01 31 31           | +10 01 30           | LHS1257          | 4.70                    | 3355                  | 23                             | 0.012                   | 146           | 1.018     | -10.3180                                                               | 0.0061                                                                          | -2.4943                                        | 0.0702                                                  | 0.1676                   | 0.0138                            | 0.0338                 | 0.0061                          | SD                       |
| 01 32 26           | -21 54 19           | LHS0142          | 4.06                    | 3673                  | 30                             | 0.010                   | 5             | 1.032     | -8.4705                                                                | 0.0068                                                                          | -1.4591                                        | 0.0163                                                  | 0.4604                   | 0.0115                            | 0.2363                 | 0.0100                          | RD                       |
| 01 34 11           | +64 59 36           | LSPM0134+6459    | 6.01                    | 3031                  | 7                              | 0.012                   | 3             | 1.009     | -9.9099                                                                | 0.0063                                                                          | -2.7971                                        | 0.0281                                                  | 0.1448                   | 0.0047                            | 0.0661                 | 0.0047                          | RD                       |
| 01 36 00           | +41 38 12           | LHS1266          | 4.36                    | 3498                  | 21                             | 0.011                   | 120           | 1.024     | -9.3523                                                                | 0.0059                                                                          | -2.1323                                        | 0.0161                                                  | 0.2339                   | 0.0052                            | 0.0944                 | 0.0039                          | SD                       |
| 01 37 21           | -49 11 44           | LHS1268          | 3.77                    | 3812                  | 35                             | 0.012                   | 17            | 1.040     | -8.2621                                                                | 0.0078                                                                          | -1.0615                                        | 0.0165                                                  | 0.6756                   | 0.0179                            | 0.2789                 | 0.0119                          | RD                       |
| 01 38 30           | +00 39 06           | LHS1272          | 4.25                    | 3575                  | 21                             | 0.013                   | 50            | 1.027     | -8.5800                                                                | 0.0066                                                                          | -1.4733                                        | 0.0272                                                  | 0.4780                   | 0.0159                            | 0.2198                 | 0.0152                          | RD                       |
| 01 39 22           | -39 36 09           | LP991-084        | 6.21                    | 2907                  | 10                             | 0.012                   | 20            | 1.007     | -9.0683                                                                | 0.0074                                                                          | -2.7015                                        | 0.0089                                                  | 0.1758                   | 0.0022                            | 0.1895                 | 0.0032                          | RD                       |
| 01 40 17           | +31 47 31           | LHS5037a         | 5.34                    | 3101                  | 21                             | 0.009                   | 3             | 1.011     | -9.1412                                                                | 0.0060                                                                          | -2.1013                                        | 0.0181                                                  | 0.3084                   | 0.0076                            | 0.1532                 | 0.0071                          | RD                       |
| 01 41 16           | +30 16 11           | LHS1280          | 5.90                    | 2999                  | 6                              | 0.010                   | 21            | 1.008     | -9.8533                                                                | 0.0055                                                                          | -2.7227                                        | 0.0180                                                  | 0.1612                   | 0.0034                            | 0.0721                 | 0.0032                          | RD                       |
| 01 41 55           | +38 43 27           | LSPM0141+3843    | 5.07                    | 3243                  | 22                             | 0.011                   | 167           | 1.015     | -9.6609                                                                | 0.0062                                                                          | -2.5760                                        | 0.0158                                                  | 0.1632                   | 0.0037                            | 0.0769                 | 0.0031                          | RD                       |
| 01 42 18           | +61 47 04           | L080-077         | 4.86                    | 3302                  | 7                              | 0.010                   | 3             | 1.017     | -9.2554                                                                | 0.0066                                                                          | -2.1549                                        | 0.0146                                                  | 0.2556                   | 0.0045                            | 0.1184                 | 0.0041                          | RD                       |
| 01 42 56           | -42 12 13           | LHS1288          | 3.77                    | 3835                  | 9                              | 0.011                   | 3             | 1.041     | -8.5611                                                                | 0.0075                                                                          | -1.3241                                        | 0.0249                                                  | 0.4932                   | 0.0143                            | 0.1953                 | 0.0121                          | RD                       |
| 01 43 16           | +27 50 32           | LHS1289          | 3.80                    | 3829                  | 26                             | 0.014                   | 3             | 1.041     | -8.2533                                                                | 0.0064                                                                          | -1.0962                                        | 0.0186                                                  | 0.6432                   | 0.0164                            | 0.2792                 | 0.0133                          | RD                       |
| 01 43 20           | +04 19 18           | GJ0070           | 4.40                    | 3497                  | 21                             | 0.012                   | 87            | 1.024     | -8.2649                                                                | 0.0078                                                                          | -1.6524                                        | 0.0121                                                  | 0.4066                   | 0.0074                            | 0.3303                 | 0.0093                          | RD                       |
| 01 43 45           | -06 02 40           | SCR0143-0602     | 5.10                    | 3222                  | 9                              | 0.011                   | 3             | 1.014     | -8.8617                                                                | 0.0070                                                                          | -1.7736                                        | 0.0146                                                  | 0.4165                   | 0.0073                            | 0.1957                 | 0.0067                          | YC                       |
| 01 43 53           | +00 14 33           | LSPM0143+0014    | 7.10                    | 2733                  | 27                             | 0.012                   | 3             | 1.004     | -9.8843                                                                | 0.0074                                                                          | -3.1255                                        | 0.0407                                                  | 0.1221                   | 0.0062                            | 0.0838                 | 0.0088                          | RD                       |
| 01 44 58           | +16 20 39           | GJ0073           | 5.41                    | 3122                  | 9                              | 0.011                   | 101           | 1.011     | -9.2026                                                                | 0.0063                                                                          | -2.3849                                        | 0.0187                                                  | 0.2194                   | 0.0049                            | 0.1407                 | 0.0065                          | RD                       |
| 01 46 29           | -53 39 33           | WT0050           | 5.57                    | 3087                  | 13                             | 0.016                   | 3             | 1.010     | -9.1531                                                                | 0.0094                                                                          | -2.1647                                        | 0.0164                                                  | 0.2891                   | 0.0060                            | 0.1524                 | 0.0057                          | RD                       |
| 01 48 04           | +21 12 24           | L1303-013        | 4.52                    | 3451                  | 17                             | 0.016                   | 15            | 1.022     | -8.7239                                                                | 0.0079                                                                          | -1.6104                                        | 0.0308                                                  | 0.4382                   | 0.0161                            | 0.1999                 | 0.0155                          | RD                       |
| 01 51 04           | -06 07 05           | LHS1302          | 5.94                    | 3016                  | 19                             | 0.011                   | 19            | 1.009     | -9.1550                                                                | 0.0061                                                                          | -2.6339                                        | 0.0074                                                  | 0.1766                   | 0.0026                            | 0.1594                 | 0.0028                          | RD                       |
| 01 51 24           | +21 23 40           | G034-055         | 5.26                    | 3166                  | 17                             | 0.012                   | 10            | 1.012     | -9.1600                                                                | 0.0059                                                                          | -2.1661                                        | 0.0291                                                  | 0.2745                   | 0.0097                            | 0.1438                 | 0.0107                          | RD                       |
| 01 51 48           | -10 48 13           | GJ0078           | 4.17                    | 3583                  | 21                             | 0.012                   | 48            | 1.028     | -8.6702                                                                | 0.0065                                                                          | -1.7543                                        | 0.0208                                                  | 0.3444                   | 0.0092                            | 0.1973                 | 0.0104                          | RD                       |
| 01 52 31           | +60 21 08           | G219-026         | 5.26                    | 3186                  | 15                             | 0.012                   | 27            | 1.013     | -9.6084                                                                | 0.0059                                                                          | -2.3558                                        | 0.0246                                                  | 0.2179                   | 0.0065                            | 0.0847                 | 0.0053                          | RD                       |
| 01 52 49           | -22 26 06           | GJ0079           | 3.70                    | 3859                  | 50                             | 0.011                   | 82            | 1.043     | -7.6748                                                                | 0.0078                                                                          | -1.0957                                        | 0.0096                                                  | 0.6338                   | 0.0177                            | 0.5351                 | 0.0164                          | YG                       |
| 01 52 52           | -48 05 41           | LHS5045          | 5.55                    | 3092                  | 16                             | 0.015                   | 26            | 1.011     | -9.0365                                                                | 0.0096                                                                          | -2.2932                                        | 0.0146                                                  | 0.2487                   | 0.0049                            | 0.1738                 | 0.0056                          | RD                       |
| 01 53 37           | -66 53 34           | L088-043         | 4.69                    | 3391                  | 23                             | 0.010                   | 17            | 1.020     | -8.4883                                                                | 0.0067                                                                          | -1.7486                                        | 0.0213                                                  | 0.3870                   | 0.0108                            | 0.2716                 | 0.0147                          | RD                       |
| 01 53 31           | +01 47 56           | G159-009         | 6.16                    | 2914                  | 11                             | 0.013                   | 80            | 1.007     | -9.7047                                                                | 0.0069                                                                          | -2.5258                                        | 0.0369                                                  | 0.2142                   | 0.0093                            | 0.0907                 | 0.0085                          | RD                       |
| 01 53 50           | +44 27 29           | G133-048         | 5.99                    | 3043                  | 11                             | 0.010                   | 3             | 1.009     | -9.5539                                                                | 0.0058                                                                          | -2.4464                                        | 0.0261                                                  | 0.2152                   | 0.0066                            | 0.0989                 | 0.0066                          | RD                       |
| 01 55 02           | +37 58 02           | LSPM0155+3758    | 5.92                    | 2987                  | 13                             | 0.010                   | 30            | 1.008     | -9.5678                                                                | 0.0066                                                                          | -2.6757                                        | 0.0197                                                  | 0.1715                   | 0.0041                            | 0.1010                 | 0.0049                          | RD                       |
| 01 56 46           | +30 33 29           | L296-057         | 5.92                    | 3054                  | 20                             | 0.012                   | 3             | 1.010     | -9.6577                                                                | 0.0063                                                                          | -2.3376                                        | 0.0325                                                  | 0.2334                   | 0.0089                            | 0.1005                 | 0.0083                          | RD                       |
| 01 58 45           | +40 49 45           | L196-017         | 5.96                    | 3054                  | 20                             | 0.012                   | 3             | 1.010     | -9.6577                                                                | 0.0050                                                                          | -2.6715                                        | 0.0220                                                  | 0.1649                   | 0.0047                            | 0.0871                 | 0.0050                          | RD                       |
| 01 59 12           | +03 31 09           | GJ1041           | 4.16                    | 3644                  | 65                             | 0.021                   | 33            | 1.031     | -8.4834                                                                | 0.0116                                                                          | -1.2212                                        | 0.0179                                                  | 0.6151                   | 0.0253                            | 0.2365                 | 0.0122                          | RD                       |
| 01 59 24           | +58 31 16           | GJ0082           | 5.25                    | 3170                  | 7                              | 0.013                   | 8             | 1.013     | -8.4876                                                                | 0.0091                                                                          | -1.8170                                        | 0.0203                                                  | 0.4092                   | 0.0105                            | 0.3109                 | 0.0152                          | YG                       |
| 02 00 07           | +36 39 48           | G133-061         | 4.93                    | 3277                  | 17                             | 0.011                   | 8             | 1.016     | -9.2734                                                                | 0.0059                                                                          | -2.0907                                        | 0.0138                                                  | 0.2795                   | 0.0046                            | 0.1177                 | 0.0039                          | RD                       |
| 02 00 13           | +13 03 07           | GJ0083.1         | 5.70                    | 3016                  | 26                             | 0.011                   | 119           | 1.009     | -9.3863                                                                | 0.0072                                                                          | -2.5922                                        | 0.0089                                                  | 0.1852                   | 0.0037                            | 0.3859                 | 0.0091                          | RD                       |
| 02 00 38           | -55 58 05           | L173-019         | 5.13                    | 3211                  | 13                             | 0.013                   | 132           | 1.014     | -8.4088                                                                | 0.0074                                                                          | -2.0945                                        | 0.0104                                                  | 0.2898                   | 0.0042                            | 0.3318                 | 0.0074                          | RD                       |
| 02 02 16           | +10 20 14           | LHS1326          | 6.77                    | 2840                  | 24                             | 0.014                   | 3             | 1.006     | -9.3412                                                                | 0.0073                                                                          | -2.9569                                        | 0.0121                                                  | 0.1373                   | 0.0030                            | 0.1451                 | 0.0045                          | RD                       |
| 02 02 52           | +05 42 21           | LHS0012          | 3.52                    | 3955                  | 42                             | 0.011                   | 67            | 1.049     | -9.0351                                                                | 0.0066                                                                          | -1.5954                                        | 0.0545                                                  | 0.3393                   | 0.0225                            | 0.1064                 | 0.0150                          | SD                       |
| 02 03 28           | +21 34 17           | L352-079         | 6.69                    | 2880                  | 50                             | 0.011                   | 3             | 1.006     | -10.0538                                                               | 0.0051                                                                          | -2.8197                                        | 0.0460                                                  | 0.1563                   | 0.0099                            | 0.0621                 | 0.0076                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 02 05 24           | -28 04 11           | GJ0084.1         | 3.72                    | 3851                  | 14                             | 0.013                   | 3             | 1.042     | -8.4580                                                    | 0.0072                                                              | -1.2348                                        | 0.0219                                                  | 0.5421                   | 0.0142                            | 0.2180                 | 0.0119                          | RD               |
| 02 05 48           | -30 10 36           | LHS1339          | 4.62                    | 3393                  | 26                             | 0.013                   | 92            | 1.020     | -8.6843                                                    | 0.0072                                                              | -2.2547                                        | 0.0138                                                  | 0.2159                   | 0.0048                            | 0.2165                 | 0.0076                          | RD               |
| 02 06 57           | +45 11 04           | GJ0084.2         | 3.69                    | 3851                  | 22                             | 0.010                   | 16            | 1.042     | -8.2306                                                    | 0.0078                                                              | -1.1565                                        | 0.0298                                                  | 0.5932                   | 0.0215                            | 0.2832                 | 0.0214                          | RD               |
| 02 07 04           | +49 38 44           | LHS5050          | 4.73                    | 3368                  | 4                              | 0.012                   | 22            | 1.019     | -8.6882                                                    | 0.0065                                                              | -1.7141                                        | 0.0199                                                  | 0.4082                   | 0.0094                            | 0.2187                 | 0.0107                          | RD               |
| 02 07 10           | +64 17 12           | G244-049         | 5.32                    | 3163                  | 15                             | 0.011                   | 3             | 1.012     | -9.3132                                                    | 0.0069                                                              | -2.3254                                        | 0.0141                                                  | 0.2290                   | 0.0043                            | 0.1208                 | 0.0041                          | RD               |
| 02 07 23           | -66 34 12           | LHS0150          | 4.13                    | 3622                  | 21                             | 0.013                   | 104           | 1.030     | -8.5603                                                    | 0.0065                                                              | -1.9359                                        | 0.0113                                                  | 0.2734                   | 0.0047                            | 0.2191                 | 0.0060                          | SC               |
| 02 08 14           | +49 49 02           | LHS1345          | 6.78                    | 2838                  | 22                             | 0.012                   | 27            | 1.006     | -10.2203                                                   | 0.0068                                                              | -3.1422                                        | 0.0297                                                  | 0.1111                   | 0.0042                            | 0.0528                 | 0.0040                          | RD               |
| 02 09 36           | -14 21 33           | LHS1347          | 4.55                    | 3415                  | 19                             | 0.011                   | 11            | 1.021     | -8.5737                                                    | 0.0078                                                              | -1.4920                                        | 0.0225                                                  | 0.5128                   | 0.0144                            | 0.2427                 | 0.0136                          | RD               |
| 02 10 23           | +68 09 32           | G244-052         | 5.53                    | 3088                  | 7                              | 0.013                   | 12            | 1.010     | -9.8502                                                    | 0.0061                                                              | -2.5808                                        | 0.0355                                                  | 0.1790                   | 0.0074                            | 0.0683                 | 0.0062                          | RD               |
| 02 10 35           | +46 42 05           | LHS1349          | 5.61                    | 3124                  | 9                              | 0.011                   | 4             | 1.011     | -9.7443                                                    | 0.0062                                                              | -2.6729                                        | 0.0204                                                  | 0.1573                   | 0.0038                            | 0.0753                 | 0.0038                          | RD               |
| 02 11 18           | -63 13 41           | LHS1351          | 4.50                    | 3446                  | 15                             | 0.011                   | 16            | 1.022     | -8.7435                                                    | 0.0073                                                              | -1.9576                                        | 0.0123                                                  | 0.2946                   | 0.0049                            | 0.1960                 | 0.0055                          | RD               |
| 02 12 21           | +03 34 31           | GJ0087           | 3.96                    | 3666                  | 47                             | 0.012                   | 208           | 1.032     | -8.0326                                                    | 0.0069                                                              | -1.5014                                        | 0.0093                                                  | 0.4401                   | 0.0123                            | 0.3927                 | 0.0123                          | RD               |
| 02 12 32           | +50 06 33           | LHS6043          | 5.07                    | 3231                  | 9                              | 0.011                   | 74            | 1.014     | -9.2007                                                    | 0.0065                                                              | -1.9907                                        | 0.0190                                                  | 0.3226                   | 0.0073                            | 0.1317                 | 0.0062                          | RD               |
| 02 12 55           | +00 00 17           | LHS1358          | 5.41                    | 3125                  | 23                             | 0.017                   | 148           | 1.011     | -8.9875                                                    | 0.0069                                                              | -2.1893                                        | 0.0136                                                  | 0.2744                   | 0.0058                            | 0.1800                 | 0.0062                          | RD               |
| 02 13 54           | -32 02 29           | GJ0091           | 4.22                    | 3593                  | 14                             | 0.010                   | 46            | 1.028     | -8.0819                                                    | 0.0070                                                              | -1.3936                                        | 0.0115                                                  | 0.5186                   | 0.0079                            | 0.3861                 | 0.0100                          | RD               |
| 02 14 13           | -03 57 44           | LHS1363          | 6.96                    | 2893                  | 26                             | 0.011                   | 3             | 1.006     | -9.5850                                                    | 0.0063                                                              | -2.9191                                        | 0.0087                                                  | 0.1381                   | 0.0028                            | 0.1055                 | 0.0026                          | RD               |
| 02 15 00           | +17 25 08           | GJ1045           | 5.34                    | 3097                  | 22                             | 0.013                   | 16            | 1.011     | -9.3559                                                    | 0.0060                                                              | -2.2166                                        | 0.0233                                                  | 0.2707                   | 0.0082                            | 0.1199                 | 0.0072                          | RD               |
| 02 15 56           | +10 15 18           | LHS1374          | 6.06                    | 3024                  | 17                             | 0.011                   | 3             | 1.009     | -9.6078                                                    | 0.0055                                                              | -2.6546                                        | 0.0409                                                  | 0.1714                   | 0.0083                            | 0.0941                 | 0.0099                          | RD               |
| 02 16 30           | +13 35 13           | LHS1375          | 6.86                    | 2809                  | 29                             | 0.011                   | 38            | 1.005     | -9.3602                                                    | 0.0068                                                              | -2.9793                                        | 0.0137                                                  | 0.1367                   | 0.0036                            | 0.1450                 | 0.0055                          | RD               |
| 02 16 41           | -30 59 18           | LHS1377          | 4.90                    | 3289                  | 14                             | 0.013                   | 12            | 1.016     | -8.5319                                                    | 0.0068                                                              | -1.7248                                        | 0.0204                                                  | 0.4228                   | 0.0105                            | 0.2745                 | 0.0140                          | RD               |
| 02 17 10           | +35 26 33           | LHS1378          | 6.89                    | 2899                  | 29                             | 0.010                   | 3             | 1.007     | -9.3810                                                    | 0.0047                                                              | -2.8579                                        | 0.0067                                                  | 0.1476                   | 0.0032                            | 0.1329                 | 0.0032                          | RD               |
| 02 17 28           | -59 22 44           | WT0084           | 6.22                    | 2904                  | 4                              | 0.011                   | 3             | 1.007     | -9.5631                                                    | 0.0063                                                              | -2.8368                                        | 0.0183                                                  | 0.1508                   | 0.0032                            | 0.1074                 | 0.0048                          | RD               |
| 02 17 34           | -53 59 20           | GJ0093           | 3.75                    | 3824                  | 13                             | 0.014                   | 3             | 1.041     | -8.6517                                                    | 0.0058                                                              | -1.4521                                        | 0.0251                                                  | 0.4281                   | 0.0127                            | 0.1769                 | 0.0113                          | RD               |
| 02 19 02           | +23 52 55           | G035-040         | 5.21                    | 3172                  | 21                             | 0.010                   | 15            | 1.013     | -9.2860                                                    | 0.0065                                                              | -2.1643                                        | 0.0182                                                  | 0.2740                   | 0.0068                            | 0.1239                 | 0.0037                          | RD               |
| 02 19 03           | +35 21 19           | GJ0094           | 4.65                    | 3383                  | 9                              | 0.013                   | 3             | 1.019     | -8.8056                                                    | 0.0067                                                              | -1.8132                                        | 0.0627                                                  | 0.3609                   | 0.0261                            | 0.1893                 | 0.0305                          | RD               |
| 02 20 46           | +02 58 38           | G073-045         | 5.62                    | 3131                  | 17                             | 0.014                   | 136           | 1.012     | -9.3989                                                    | 0.0065                                                              | -2.3815                                        | 0.0136                                                  | 0.2191                   | 0.0042                            | 0.1117                 | 0.0037                          | RD               |
| 02 22 02           | +30 33 59           | LHS5052          | 7.15                    | 2727                  | 25                             | 0.011                   | 3             | 1.004     | -10.2869                                                   | 0.0061                                                              | -3.1003                                        | 0.0295                                                  | 0.1262                   | 0.0049                            | 0.0529                 | 0.0041                          | RD               |
| 02 22 06           | +36 51 47           | LSPM0222+3651    | 6.79                    | 2850                  | 18                             | 0.014                   | 130           | 1.006     | -9.9539                                                    | 0.0070                                                              | -2.7692                                        | 0.0495                                                  | 0.1691                   | 0.0099                            | 0.0711                 | 0.0090                          | RD               |
| 02 22 15           | +45 42 01           | G134-030         | 5.33                    | 3163                  | 14                             | 0.011                   | 15            | 1.012     | -9.3211                                                    | 0.0063                                                              | -2.4039                                        | 0.0262                                                  | 0.2092                   | 0.0066                            | 0.1196                 | 0.0080                          | RD               |
| 02 22 15           | +47 52 48           | GJ0096           | 3.85                    | 3774                  | 34                             | 0.013                   | 128           | 1.038     | -7.8306                                                    | 0.0079                                                              | -1.1852                                        | 0.0096                                                  | 0.5975                   | 0.0127                            | 0.4674                 | 0.0115                          | RD               |
| 02 25 38           | +37 32 34           | G074-025         | 5.21                    | 3192                  | 13                             | 0.010                   | 3             | 1.013     | -9.2422                                                    | 0.0054                                                              | -2.0765                                        | 0.0287                                                  | 0.2994                   | 0.0102                            | 0.1287                 | 0.0094                          | RD               |
| 02 27 30           | -30 54 36           | NLT08065         | 3.96                    | 3714                  | 27                             | 0.011                   | 6             | 1.034     | -8.3817                                                    | 0.0078                                                              | -1.2582                                        | 0.0192                                                  | 0.5672                   | 0.0149                            | 0.2559                 | 0.0123                          | RD               |
| 02 27 31           | +19 35 26           | LSPM0227+1935    | 6.03                    | 3037                  | 19                             | 0.011                   | 3             | 1.009     | -9.8623                                                    | 0.0052                                                              | -2.7636                                        | 0.0249                                                  | 0.1500                   | 0.0047                            | 0.0696                 | 0.0045                          | RD               |
| 02 28 10           | +03 10 58           | LHS1407          | 6.84                    | 2824                  | 19                             | 0.016                   | 110           | 1.005     | -10.0791                                                   | 0.0069                                                              | -2.9209                                        | 0.0332                                                  | 0.1447                   | 0.0059                            | 0.0627                 | 0.0053                          | RD               |
| 02 31 05           | +52 45 24           | LSPM0231+5245    | 5.88                    | 2937                  | 83                             | 0.009                   | 186           | 1.007     | -9.7455                                                    | 0.0070                                                              | -2.4929                                        | 0.0219                                                  | 0.2190                   | 0.0136                            | 0.0851                 | 0.0067                          | RD               |
| 02 31 28           | +57 22 43           | GJ0101           | 4.80                    | 3317                  | 3                              | 0.016                   | 3             | 1.017     | -9.0299                                                    | 0.0085                                                              | -1.9888                                        | 0.0143                                                  | 0.3067                   | 0.0051                            | 0.1521                 | 0.0047                          | RD               |
| 02 33 37           | +24 55 38           | GJ0102           | 5.42                    | 3115                  | 9                              | 0.010                   | 95            | 1.011     | -8.7626                                                    | 0.0063                                                              | -2.3195                                        | 0.0116                                                  | 0.2376                   | 0.0034                            | 0.2346                 | 0.0063                          | RD               |
| 02 33 47           | +15 00 17           | L470-030         | 4.96                    | 3277                  | 11                             | 0.012                   | 20            | 1.016     | -9.2288                                                    | 0.0060                                                              | -2.0148                                        | 0.0208                                                  | 0.3051                   | 0.0076                            | 0.1240                 | 0.0065                          | RD               |
| 02 34 00           | +41 46 49           | G074-029         | 4.82                    | 3318                  | 10                             | 0.009                   | 3             | 1.017     | -9.1936                                                    | 0.0057                                                              | -2.0914                                        | 0.0268                                                  | 0.2724                   | 0.0086                            | 0.1259                 | 0.0086                          | RD               |
| 02 34 12           | +17 45 51           | LHS0156          | 4.20                    | 3566                  | 29                             | 0.012                   | 144           | 1.027     | -9.8999                                                    | 0.0062                                                              | -2.2773                                        | 0.0655                                                  | 0.1904                   | 0.0147                            | 0.0483                 | 0.0082                          | SD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 02 35 15           | +02 47 54           | G076-008         | 5.52                    | 3094                  | 11                             | 0.011                   | 3             | 1.011     | -9.3783                                                                | 0.0057                                                                          | -2.3813                                        | 0.0247                                                  | 0.2243                   | 0.0066                            | 0.1170                 | 0.0073                          | RD                       |
| 02 35 53           | +20 13 12           | GJ0104           | 4.33                    | 3528                  | 17                             | 0.010                   | 3             | 1.025     | -8.1866                                                                | 0.0063                                                                          | -1.4208                                        | 0.0123                                                  | 0.5216                   | 0.0089                            | 0.3551                 | 0.0105                          | RD                       |
| 02 36 32           | -59 28 06           | AFM0237-5928     | 6.13                    | 3013                  | 23                             | 0.014                   | 3             | 1.009     | -9.0888                                                                | 0.0077                                                                          | -2.6256                                        | 0.0090                                                  | 0.1786                   | 0.0033                            | 0.1723                 | 0.0037                          | RD                       |
| 02 36 44           | +22 40 26           | G036-026         | 6.17                    | 3028                  | 15                             | 0.010                   | 60            | 1.009     | -9.4215                                                                | 0.0062                                                                          | -2.6291                                        | 0.0252                                                  | 0.1761                   | 0.0054                            | 0.1163                 | 0.0075                          | RD                       |
| 02 37 30           | +00 21 28           | LHS1426          | 5.48                    | 3104                  | 6                              | 0.012                   | 8             | 1.011     | -9.5878                                                                | 0.0070                                                                          | -2.3013                                        | 0.0470                                                  | 0.2444                   | 0.0132                            | 0.0914                 | 0.0110                          | RD                       |
| 02 37 53           | -58 45 11           | L174-028         | 4.92                    | 3305                  | 8                              | 0.015                   | 56            | 1.017     | -8.6912                                                                | 0.0082                                                                          | -1.8435                                        | 0.0234                                                  | 0.3651                   | 0.0100                            | 0.2263                 | 0.0130                          | RD                       |
| 02 39 17           | +07 28 17           | LTT17400         | 5.24                    | 3178                  | 13                             | 0.012                   | 11            | 1.013     | -9.3190                                                                | 0.0070                                                                          | -2.2289                                        | 0.0196                                                  | 0.2535                   | 0.0061                            | 0.1188                 | 0.0058                          | RD                       |
| 02 39 51           | -34 07 58           | GJ1050           | 4.46                    | 3448                  | 24                             | 0.012                   | 22            | 1.022     | -8.5576                                                                | 0.0071                                                                          | -1.9913                                        | 0.0154                                                  | 0.2831                   | 0.0064                            | 0.2426                 | 0.0094                          | RD                       |
| 02 41 15           | -04 32 18           | G075-035         | 5.54                    | 3093                  | 18                             | 0.018                   | 4             | 1.011     | -9.0342                                                                | 0.0093                                                                          | -2.3951                                        | 0.0117                                                  | 0.2210                   | 0.0039                            | 0.1742                 | 0.0042                          | RD                       |
| 02 42 03           | -44 30 59           | LHS0158          | 3.91                    | 3717                  | 34                             | 0.011                   | 105           | 1.035     | -9.4764                                                                | 0.0063                                                                          | -1.6185                                        | 0.0212                                                  | 0.3741                   | 0.0115                            | 0.0725                 | 0.0040                          | SD                       |
| 02 43 53           | -08 49 46           | GJ1051           | 3.99                    | 3688                  | 16                             | 0.015                   | 6             | 1.033     | -8.7725                                                                | 0.0078                                                                          | -1.4879                                        | 0.0428                                                  | 0.4417                   | 0.0221                            | 0.1655                 | 0.0180                          | RD                       |
| 02 44 16           | +25 31 24           | GJ0109           | 4.61                    | 3391                  | 18                             | 0.011                   | 45            | 1.020     | -8.0430                                                                | 0.0073                                                                          | -1.7871                                        | 0.0095                                                  | 0.3703                   | 0.0057                            | 0.4535                 | 0.0095                          | RD                       |
| 02 45 11           | -43 44 32           | LP993-115        | 5.11                    | 3221                  | 10                             | 0.011                   | 34            | 1.014     | -8.6086                                                                | 0.0075                                                                          | -2.0185                                        | 0.0112                                                  | 0.3143                   | 0.0045                            | 0.2620                 | 0.0063                          | RD                       |
| 02 45 40           | +44 56 56           | LTT17413         | 3.87                    | 3783                  | 21                             | 0.010                   | 14            | 1.038     | -8.4053                                                                | 0.0062                                                                          | -1.1838                                        | 0.0242                                                  | 0.5956                   | 0.0178                            | 0.2400                 | 0.0148                          | RD                       |
| 02 46 02           | -70 24 06           | SCR0246-7024     | 5.84                    | 3000                  | 11                             | 0.011                   | 8             | 1.008     | -9.3326                                                                | 0.0064                                                                          | -2.6458                                        | 0.0094                                                  | 0.1760                   | 0.0023                            | 0.1313                 | 0.0027                          | RD                       |
| 02 46 15           | -04 59 21           | LHS0017          | 6.18                    | 2909                  | 8                              | 0.013                   | 24            | 1.007     | -9.7844                                                                | 0.0067                                                                          | -2.8500                                        | 0.0594                                                  | 0.1479                   | 0.0102                            | 0.0830                 | 0.0126                          | RD                       |
| 02 46 35           | +16 25 10           | LHS1443          | 6.81                    | 2842                  | 12                             | 0.013                   | 123           | 1.006     | -9.8062                                                                | 0.0067                                                                          | -2.9843                                        | 0.0210                                                  | 0.1329                   | 0.0034                            | 0.0848                 | 0.0045                          | RD                       |
| 02 46 43           | -23 05 12           | LTT01349         | 3.50                    | 3991                  | 19                             | 0.011                   | 20            | 1.051     | -8.2670                                                                | 0.0077                                                                          | -1.0480                                        | 0.0188                                                  | 0.6259                   | 0.0148                            | 0.2530                 | 0.0117                          | RD                       |
| 02 48 41           | -16 51 22           | LP771-021        | 8.53                    | 2452                  | 29                             | 0.012                   | 27            | 1.002     | -10.4369                                                               | 0.0072                                                                          | -3.5211                                        | 0.0387                                                  | 0.0962                   | 0.0048                            | 0.0551                 | 0.0056                          | RD                       |
| 02 48 43           | +41 43 32           | LHS1448a         | 4.76                    | 3338                  | 17                             | 0.012                   | 13            | 1.018     | -9.3955                                                                | 0.0068                                                                          | -2.2089                                        | 0.0151                                                  | 0.2351                   | 0.0047                            | 0.0986                 | 0.0036                          | RD                       |
| 02 50 10           | -53 08 20           | GJ0114.1         | 4.23                    | 3585                  | 14                             | 0.012                   | 55            | 1.028     | -8.2416                                                                | 0.0073                                                                          | -1.5121                                        | 0.0118                                                  | 0.4547                   | 0.0071                            | 0.3228                 | 0.0085                          | RD                       |
| 02 51 15           | -03 52 48           | MA0251-0352      | 10.06                   | 2039                  | 42                             | 0.023                   | 302           | 1.001     | -10.5657                                                               | 0.0082                                                                          | -3.9852                                        | 0.0166                                                  | 0.0815                   | 0.0037                            | 0.0687                 | 0.0039                          | RD                       |
| 02 51 50           | +29 29 13           | L298-042         | 5.27                    | 3163                  | 15                             | 0.010                   | 3             | 1.012     | -9.1733                                                                | 0.0059                                                                          | -1.9672                                        | 0.0350                                                  | 0.3459                   | 0.0143                            | 0.1419                 | 0.0127                          | RD                       |
| 02 52 22           | -63 40 48           | GJ0118           | 4.56                    | 3428                  | 15                             | 0.012                   | 90            | 1.021     | -8.3968                                                                | 0.0069                                                                          | -1.7087                                        | 0.0121                                                  | 0.3699                   | 0.0061                            | 0.2952                 | 0.0084                          | RD                       |
| 02 52 33           | +25 04 50           | G036-039         | 5.25                    | 3181                  | 5                              | 0.012                   | 15            | 1.013     | -9.5875                                                                | 0.0068                                                                          | -2.3164                                        | 0.0281                                                  | 0.2288                   | 0.0074                            | 0.0871                 | 0.0062                          | RD                       |
| 02 52 46           | +01 55 51           | LHS0161          | 3.67                    | 3858                  | 46                             | 0.012                   | 119           | 1.043     | -9.9631                                                                | 0.0064                                                                          | -2.2744                                        | 0.0861                                                  | 0.1632                   | 0.0166                            | 0.0384                 | 0.0085                          | SD                       |
| 02 53 26           | +17 24 32           | L411-018         | 4.87                    | 3306                  | 10                             | 0.014                   | 79            | 1.017     | -8.8329                                                                | 0.0075                                                                          | -1.8436                                        | 0.0192                                                  | 0.3650                   | 0.0084                            | 0.1921                 | 0.0090                          | RD                       |
| 02 56 34           | +55 26 14           | GJ0119           | 3.89                    | 3751                  | 34                             | 0.009                   | 15            | 1.036     | -8.2470                                                                | 0.0069                                                                          | -1.1169                                        | 0.0266                                                  | 0.6545                   | 0.0234                            | 0.2930                 | 0.0203                          | RD                       |
| 02 57 18           | +76 33 11           | LHS1478          | 4.62                    | 3401                  | 15                             | 0.012                   | 3             | 1.020     | -9.1681                                                                | 0.0062                                                                          | -2.2178                                        | 0.0114                                                  | 0.2242                   | 0.0035                            | 0.1235                 | 0.0033                          | RD                       |
| 02 57 31           | +10 47 25           | GJ0120           | 4.63                    | 3376                  | 14                             | 0.016                   | 36            | 1.019     | -9.0174                                                                | 0.0073                                                                          | -1.9200                                        | 0.0509                                                  | 0.3204                   | 0.0190                            | 0.1490                 | 0.0194                          | RD                       |
| 03 00 03           | +62 51 58           | LSPM0300-6251    | 6.01                    | 3002                  | 34                             | 0.013                   | 198           | 1.009     | -9.8215                                                                | 0.0070                                                                          | -2.7800                                        | 0.0208                                                  | 0.1506                   | 0.0050                            | 0.0746                 | 0.0042                          | RD                       |
| 03 01 51           | -16 35 36           | LTT01445         | 4.72                    | 3181                  | 230                            | 0.012                   | 3             | 1.013     | -8.1818                                                                | 0.0110                                                                          | -2.0025                                        | 0.0133                                                  | 0.3283                   | 0.0478                            | 0.4391                 | 0.0644                          | RD                       |
| 03 02 06           | -39 50 52           | LHS1490          | 5.99                    | 3048                  | 15                             | 0.012                   | 3             | 1.010     | -9.6706                                                                | 0.0053                                                                          | -2.8753                                        | 0.0113                                                  | 0.1309                   | 0.0021                            | 0.0862                 | 0.0024                          | SD                       |
| 03 02 38           | -18 09 59           | GJ0121.1         | 4.46                    | 3470                  | 21                             | 0.013                   | 15            | 1.023     | -8.5967                                                                | 0.0075                                                                          | -1.5309                                        | 0.0333                                                  | 0.4748                   | 0.0191                            | 0.2289                 | 0.0194                          | RD                       |
| 03 04 05           | -20 22 43           | LHS1491          | 5.09                    | 3223                  | 20                             | 0.013                   | 7             | 1.014     | -8.8024                                                                | 0.0075                                                                          | -1.9633                                        | 0.0110                                                  | 0.3346                   | 0.0059                            | 0.2094                 | 0.0054                          | RD                       |
| 03 05 36           | +19 34 07           | LSPM0305+1934    | 5.18                    | 3199                  | 10                             | 0.011                   | 9             | 1.013     | -9.6536                                                                | 0.0054                                                                          | -2.7106                                        | 0.0317                                                  | 0.1437                   | 0.0053                            | 0.0798                 | 0.0065                          | RD                       |
| 03 06 12           | -36 47 53           | DEN0306-3647     | 8.75                    | 2451                  | 25                             | 0.014                   | 29            | 1.002     | -10.1028                                                               | 0.0073                                                                          | -3.3747                                        | 0.0109                                                  | 0.1139                   | 0.0027                            | 0.0810                 | 0.0024                          | RD                       |
| 03 06 26           | +17 13 29           | L411-054         | 5.38                    | 3095                  | 18                             | 0.011                   | 35            | 1.011     | -9.7455                                                                | 0.0067                                                                          | -2.4887                                        | 0.0300                                                  | 0.1981                   | 0.0072                            | 0.0767                 | 0.0059                          | RD                       |
| 03 07 47           | +24 57 55           | L355-027         | 5.68                    | 3112                  | 9                              | 0.011                   | 3             | 1.011     | -9.4308                                                                | 0.0068                                                                          | -2.2745                                        | 0.0251                                                  | 0.2509                   | 0.0074                            | 0.1090                 | 0.0069                          | RD                       |
| 03 09 00           | +10 01 26           | GJ1055           | 5.78                    | 3010                  | 4                              | 0.011                   | 3             | 1.009     | -9.3464                                                                | 0.0059                                                                          | -2.7230                                        | 0.0178                                                  | 0.1600                   | 0.0033                            | 0.1283                 | 0.0056                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 03 09 04           | +76 02 28           | GJ0122           | 3.52                    | 3981                  | 19                             | 0.011                   | 7             | 1.051     | -8.1024                                                                | 0.0079                                                                          | -0.9528                                        | 0.0138                                                  | 0.7019                   | 0.0131                            | 0.3072                 | 0.0099                          | RD                       |
| 03 10 03           | +02 34 27           | L592-010         | 5.97                    | 3043                  | 14                             | 0.012                   | 3             | 1.009     | -9.9136                                                                | 0.0062                                                                          | -2.9151                                        | 0.0286                                                  | 0.1255                   | 0.0043                            | 0.0654                 | 0.0048                          | RD                       |
| 03 10 15           | +05 54 32           | LHS1512          | 4.36                    | 3505                  | 18                             | 0.013                   | 3             | 1.024     | -8.6553                                                                | 0.0066                                                                          | -1.7038                                        | 0.0350                                                  | 0.3814                   | 0.0159                            | 0.2097                 | 0.0188                          | RD                       |
| 03 10 38           | +25 40 53           | LP355-032        | 5.05                    | 3242                  | 18                             | 0.011                   | 44            | 1.015     | -9.3680                                                                | 0.0064                                                                          | -2.9180                                        | 0.0169                                                  | 0.1102                   | 0.0025                            | 0.1079                 | 0.0046                          | SC                       |
| 03 10 58           | +73 46 20           | GJ1053           | 5.53                    | 3087                  | 14                             | 0.013                   | 69            | 1.010     | -9.3281                                                                | 0.0080                                                                          | -2.6327                                        | 0.0174                                                  | 0.1688                   | 0.0037                            | 0.1246                 | 0.0052                          | RD                       |
| 03 11 30           | +43 11 27           | L198-260         | 5.52                    | 3214                  | 63                             | 0.012                   | 209           | 1.014     | -9.5693                                                                | 0.0062                                                                          | -2.2807                                        | 0.0205                                                  | 0.2335                   | 0.0107                            | 0.0871                 | 0.0056                          | RD                       |
| 03 12 30           | -38 05 20           | GJ0130           | 4.25                    | 3568                  | 11                             | 0.011                   | 14            | 1.027     | -8.5105                                                                | 0.0067                                                                          | -1.8174                                        | 0.0534                                                  | 0.3230                   | 0.0199                            | 0.2391                 | 0.0327                          | RD                       |
| 03 13 23           | +04 46 29           | GJ1057           | 6.11                    | 3021                  | 22                             | 0.014                   | 85            | 1.009     | -8.8906                                                                | 0.0075                                                                          | -2.5055                                        | 0.0133                                                  | 0.2040                   | 0.0043                            | 0.2153                 | 0.0071                          | RD                       |
| 03 14 12           | +28 40 40           | LHS1516          | 6.83                    | 2832                  | 17                             | 0.010                   | 7             | 1.006     | -9.8025                                                                | 0.0064                                                                          | -3.1017                                        | 0.0113                                                  | 0.1168                   | 0.0021                            | 0.0857                 | 0.0024                          | RD                       |
| 03 14 45           | +48 31 11           | LTT11051         | 4.04                    | 3681                  | 25                             | 0.011                   | 173           | 1.033     | -8.5780                                                                | 0.0060                                                                          | -1.4845                                        | 0.0815                                                  | 0.4450                   | 0.0422                            | 0.2078                 | 0.0436                          | RD                       |
| 03 16 48           | -21 25 26           | LP831-068        | 4.35                    | 3519                  | 28                             | 0.011                   | 3             | 1.025     | -8.3394                                                                | 0.0062                                                                          | -1.3005                                        | 0.0201                                                  | 0.6020                   | 0.0169                            | 0.2994                 | 0.0156                          | RD                       |
| 03 17 45           | +25 15 06           | LHS1525          | 4.11                    | 3654                  | 15                             | 0.013                   | 67            | 1.031     | -8.6941                                                                | 0.0066                                                                          | -1.5301                                        | 0.0287                                                  | 0.4285                   | 0.0146                            | 0.1845                 | 0.0134                          | RD                       |
| 03 18 04           | -30 24 12           | LP887-070        | 3.89                    | 3773                  | 24                             | 0.012                   | 11            | 1.038     | -8.4621                                                                | 0.0073                                                                          | -1.2440                                        | 0.0265                                                  | 0.5588                   | 0.0184                            | 0.2260                 | 0.0152                          | RD                       |
| 03 18 07           | +38 15 08           | GJ0134           | 4.12                    | 3611                  | 32                             | 0.011                   | 8             | 1.029     | -8.1005                                                                | 0.0067                                                                          | -1.1805                                        | 0.0147                                                  | 0.6563                   | 0.0160                            | 0.3742                 | 0.0145                          | RD                       |
| 03 18 07           | +42 40 09           | G078-030         | 5.11                    | 3227                  | 19                             | 0.012                   | 124           | 1.014     | -9.0612                                                                | 0.0068                                                                          | -1.8918                                        | 0.0149                                                  | 0.3623                   | 0.0075                            | 0.1550                 | 0.0057                          | RD                       |
| 03 18 58           | -36 23 35           | LTT01577         | 4.49                    | 3458                  | 8                              | 0.013                   | 18            | 1.022     | -8.6122                                                                | 0.0085                                                                          | -1.5080                                        | 0.0289                                                  | 0.4908                   | 0.0164                            | 0.2264                 | 0.0163                          | RD                       |
| 03 20 56           | +18 05 31           | L412-030         | 5.29                    | 3160                  | 19                             | 0.009                   | 3             | 1.012     | -9.7836                                                                | 0.0052                                                                          | -2.6548                                        | 0.0346                                                  | 0.1570                   | 0.0065                            | 0.0704                 | 0.0063                          | RD                       |
| 03 21 00           | +18 54 23           | LP412-031        | 8.91                    | 2221                  | 98                             | 0.012                   | 37            | 1.001     | -10.1406                                                               | 0.0081                                                                          | -3.3215                                        | 0.0089                                                  | 0.1475                   | 0.0131                            | 0.0945                 | 0.0084                          | RD                       |
| 03 21 22           | +79 58 02           | GJ0133           | 4.32                    | 3566                  | 42                             | 0.016                   | 247           | 1.027     | -8.4118                                                                | 0.0077                                                                          | -1.4264                                        | 0.0119                                                  | 0.4027                   | 0.0110                            | 0.2681                 | 0.0092                          | RD                       |
| 03 21 47           | -06 40 24           | G077-046         | 4.34                    | 3537                  | 17                             | 0.016                   | 74            | 1.026     | -8.4491                                                                | 0.0081                                                                          | -1.4326                                        | 0.0212                                                  | 0.5117                   | 0.0135                            | 0.2611                 | 0.0136                          | YG                       |
| 03 22 04           | +02 56 35           | GJ1058           | 5.31                    | 3213                  | 10                             | 0.011                   | 51            | 1.014     | -9.4915                                                                | 0.0065                                                                          | -2.6622                                        | 0.0157                                                  | 0.1506                   | 0.0029                            | 0.0953                 | 0.0036                          | RD                       |
| 03 23 02           | +42 00 27           | GJ1059           | 5.71                    | 3013                  | 17                             | 0.011                   | 3             | 1.009     | -9.5463                                                                | 0.0061                                                                          | -2.7278                                        | 0.0177                                                  | 0.1588                   | 0.0037                            | 0.1018                 | 0.0046                          | RD                       |
| 03 23 22           | +11 41 14           | LTT11117         | 4.63                    | 3402                  | 5                              | 0.010                   | 3             | 1.020     | -8.6857                                                                | 0.0063                                                                          | -1.6667                                        | 0.0201                                                  | 0.4226                   | 0.0098                            | 0.2150                 | 0.0107                          | RD                       |
| 03 25 40           | -42 59 12           | LPT01628         | 3.77                    | 3817                  | 27                             | 0.010                   | 7             | 1.040     | -8.5883                                                                | 0.0072                                                                          | -1.3587                                        | 0.0225                                                  | 0.4784                   | 0.0141                            | 0.1910                 | 0.0109                          | RD                       |
| 03 26 45           | +19 14 40           | G006-007         | 5.69                    | 3014                  | 22                             | 0.010                   | 3             | 1.009     | -9.4308                                                                | 0.0060                                                                          | -2.3695                                        | 0.0347                                                  | 0.2397                   | 0.0102                            | 0.1162                 | 0.0104                          | RD                       |
| 03 26 45           | +71 08 29           | L031-120         | 5.27                    | 3181                  | 8                              | 0.011                   | 21            | 1.013     | -9.7162                                                                | 0.0062                                                                          | -2.6279                                        | 0.0333                                                  | 0.1598                   | 0.0062                            | 0.0751                 | 0.0063                          | RD                       |
| 03 27 21           | +29 00 45           | L300-005         | 4.96                    | 3269                  | 5                              | 0.012                   | 7             | 1.016     | -9.3966                                                                | 0.0062                                                                          | -2.1187                                        | 0.0182                                                  | 0.2720                   | 0.0058                            | 0.1027                 | 0.0046                          | RD                       |
| 03 28 50           | +26 29 12           | L356-106         | 4.94                    | 3277                  | 11                             | 0.013                   | 3             | 1.016     | -9.0595                                                                | 0.0065                                                                          | -2.2128                                        | 0.0194                                                  | 0.2428                   | 0.0057                            | 0.1506                 | 0.0072                          | RD                       |
| 03 29 20           | -11 40 42           | GJ0143.1         | 3.50                    | 3990                  | 22                             | 0.011                   | 3             | 1.051     | -8.1551                                                                | 0.0065                                                                          | -0.9739                                        | 0.0199                                                  | 0.6820                   | 0.0173                            | 0.2879                 | 0.0144                          | RD                       |
| 03 30 45           | +34 01 07           | LHS0174          | 3.62                    | 3879                  | 40                             | 0.012                   | 160           | 1.044     | -9.2194                                                                | 0.0062                                                                          | -1.4327                                        | 0.01423                                                 | 0.4256                   | 0.0703                            | 0.0895                 | 0.0328                          | SD                       |
| 03 30 48           | +54 13 55           | LEP0330+5413     | 6.66                    | 2833                  | 8                              | 0.009                   | 3             | 1.006     | -9.4704                                                                | 0.0050                                                                          | -2.9854                                        | 0.0072                                                  | 0.1335                   | 0.0013                            | 0.1256                 | 0.0019                          | RD                       |
| 03 31 30           | -30 42 39           | LP888-018        | 8.55                    | 2456                  | 25                             | 0.011                   | 4             | 1.002     | -9.9568                                                                | 0.0062                                                                          | -3.2715                                        | 0.0085                                                  | 0.1278                   | 0.0029                            | 0.0954                 | 0.0025                          | RD                       |
| 03 31 47           | +14 19 18           | GJ0143.3         | 4.36                    | 3504                  | 14                             | 0.010                   | 3             | 1.024     | -8.8002                                                                | 0.0074                                                                          | -1.7052                                        | 0.0253                                                  | 0.3810                   | 0.0115                            | 0.1776                 | 0.0112                          | RD                       |
| 03 32 56           | -44 42 07           | GJ0145           | 4.56                    | 3426                  | 17                             | 0.015                   | 150           | 1.021     | -8.4245                                                                | 0.0070                                                                          | -1.8659                                        | 0.0114                                                  | 0.3313                   | 0.0055                            | 0.2864                 | 0.0076                          | RD                       |
| 03 34 12           | -49 53 32           | LEHPM1-3396      | 8.99                    | 2360                  | 86                             | 0.022                   | 190           | 1.003     | -9.9837                                                                | 0.0076                                                                          | -3.6515                                        | 0.0150                                                  | 0.0894                   | 0.0067                            | 0.1002                 | 0.0081                          | RD                       |
| 03 35 02           | +23 42 35           | 2MA0335+2342     | 7.76                    | 2603                  | 29                             | 0.013                   | 110           | 1.003     | -10.3192                                                               | 0.0071                                                                          | -2.5701                                        | 0.0249                                                  | 0.2551                   | 0.0092                            | 0.0560                 | 0.0037                          | YG                       |
| 03 35 38           | -08 29 23           | LHS0176          | 6.46                    | 2901                  | 14                             | 0.012                   | 3             | 1.007     | -9.5430                                                                | 0.0059                                                                          | -2.8445                                        | 0.0080                                                  | 0.1497                   | 0.0020                            | 0.1102                 | 0.0020                          | RD                       |
| 03 35 51           | +71 40 27           | L031-167         | 5.73                    | 3019                  | 21                             | 0.008                   | 22            | 1.009     | -9.5161                                                                | 0.0058                                                                          | -2.5961                                        | 0.0303                                                  | 0.1840                   | 0.0069                            | 0.1049                 | 0.0082                          | RD                       |
| 03 35 53           | +10 17 09           | L473-007         | 5.34                    | 3097                  | 15                             | 0.011                   | 3             | 1.011     | -9.5987                                                                | 0.0067                                                                          | -2.3867                                        | 0.0344                                                  | 0.2226                   | 0.0091                            | 0.0907                 | 0.0079                          | RD                       |
| 03 36 00           | -44 30 45           | GJ1061           | 6.48                    | 2896                  | 18                             | 0.015                   | 121           | 1.007     | -8.4013                                                                | 0.0087                                                                          | -2.7708                                        | 0.0089                                                  | 0.1636                   | 0.0027                            | 0.4117                 | 0.0069                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 03 36 08           | +31 18 40           | LEP0336+3118     | 5.66                    | 3022                  | 20                             | 0.012                  | 6             | 1.009     | -9.0561                                                    | 0.0060                                                              | -2.3468                                        | 0.0144                                                  | 0.2447                   | 0.0052                            | 0.1778                 | 0.0066                          | RD               |
| 03 36 22           | +13 50 46           | LHS1568          | 4.89                    | 3278                  | 21                             | 0.013                  | 131           | 1.016     | -9.6560                                                    | 0.0060                                                              | -2.4761                                        | 0.0224                                                  | 0.1792                   | 0.0051                            | 0.0758                 | 0.0043                          | RD               |
| 03 38 16           | -11 29 14           | GJ1062           | 4.16                    | 3613                  | 28                             | 0.013                  | 119           | 1.029     | -9.1515                                                    | 0.0063                                                              | -2.2469                                        | 0.0238                                                  | 0.1921                   | 0.0061                            | 0.1115                 | 0.0069                          | SD               |
| 03 39 30           | +24 58 03           | NLT11488         | 4.82                    | 3320                  | 10                             | 0.013                  | 3             | 1.017     | -8.8634                                                    | 0.0073                                                              | -1.8004                                        | 0.0358                                                  | 0.3804                   | 0.0158                            | 0.1840                 | 0.0167                          | RD               |
| 03 39 35           | -35 25 44           | LP944-020        | 9.15                    | 2172                  | 97                             | 0.014                  | 36            | 1.001     | -9.6958                                                    | 0.0077                                                              | -3.6007                                        | 0.0081                                                  | 0.1119                   | 0.0100                            | 0.1649                 | 0.0148                          | RD               |
| 03 41 37           | +55 13 07           | HIP017248        | 3.78                    | 3835                  | 27                             | 0.012                  | 11            | 1.041     | -8.6102                                                    | 0.0067                                                              | -1.0219                                        | 0.0340                                                  | 0.6986                   | 0.0291                            | 0.1845                 | 0.0161                          | YG               |
| 03 42 29           | +12 31 34           | LHS0178          | 3.99                    | 3680                  | 34                             | 0.010                  | 151           | 1.033     | -9.1488                                                    | 0.0061                                                              | -1.9510                                        | 0.0202                                                  | 0.2603                   | 0.0077                            | 0.1078                 | 0.0057                          | SD               |
| 03 42 57           | -64 07 57           | SCR0342-6407     | 5.43                    | 3110                  | 12                             | 0.019                  | 158           | 1.011     | -9.9085                                                    | 0.0064                                                              | -2.6509                                        | 0.0220                                                  | 0.1629                   | 0.0043                            | 0.0629                 | 0.0035                          | RD               |
| 03 43 53           | +16 40 19           | GJ0150.1         | 3.63                    | 3868                  | 14                             | 0.010                  | 13            | 1.043     | -9.0838                                                    | 0.0069                                                              | -1.1117                                        | 0.0131                                                  | 0.6192                   | 0.0104                            | 0.3325                 | 0.0102                          | RD               |
| 03 44 21           | +07 41 55           | LSPM0344+0741    | 5.55                    | 3084                  | 6                              | 0.013                  | 11            | 1.010     | -9.4594                                                    | 0.0069                                                              | -2.5576                                        | 0.0286                                                  | 0.1843                   | 0.0061                            | 0.1073                 | 0.0077                          | RD               |
| 03 46 20           | +26 12 56           | GJ0154           | 3.74                    | 3844                  | 21                             | 0.010                  | 3             | 1.042     | -7.9368                                                    | 0.0071                                                              | -1.1078                                        | 0.0140                                                  | 0.6297                   | 0.0123                            | 0.3987                 | 0.0135                          | RD               |
| 03 47 00           | +15 24 17           | L473-026         | 5.69                    | 3022                  | 31                             | 0.010                  | 66            | 1.009     | -9.6805                                                    | 0.0063                                                              | -2.5624                                        | 0.0344                                                  | 0.1909                   | 0.0085                            | 0.0866                 | 0.0078                          | RD               |
| 03 47 21           | +08 41 47           | LHS1593          | 5.46                    | 3101                  | 7                              | 0.011                  | 3             | 1.011     | -9.3091                                                    | 0.0057                                                              | -1.5427                                        | 0.0155                                                  | 0.1695                   | 0.0030                            | 0.1262                 | 0.0046                          | RD               |
| 03 47 23           | -01 58 20           | G080-021         | 4.60                    | 3421                  | 13                             | 0.013                  | 3             | 1.021     | -8.4449                                                    | 0.0082                                                              | -1.5032                                        | 0.0192                                                  | 0.4184                   | 0.0107                            | 0.2284                 | 0.0108                          | RD               |
| 03 47 58           | +02 47 16           | GJ0155.1         | 3.91                    | 3756                  | 24                             | 0.013                  | 107           | 1.037     | -8.4611                                                    | 0.0083                                                              | -1.5032                                        | 0.0192                                                  | 0.4184                   | 0.0107                            | 0.2284                 | 0.0108                          | RD               |
| 03 48 38           | +73 32 35           | LHS1596          | 4.15                    | 3584                  | 9                              | 0.013                  | 11            | 1.028     | -8.4995                                                    | 0.0068                                                              | -1.5709                                        | 0.0158                                                  | 0.4251                   | 0.0080                            | 0.2400                 | 0.0091                          | RD               |
| 03 50 44           | -06 05 42           | GJ1065           | 5.07                    | 3220                  | 8                              | 0.015                  | 3             | 1.014     | -8.7827                                                    | 0.0088                                                              | -2.3335                                        | 0.0158                                                  | 0.2189                   | 0.0041                            | 0.2146                 | 0.0077                          | RD               |
| 03 51 00           | -00 52 45           | LHS1604          | 7.85                    | 2478                  | 90                             | 0.011                  | 15            | 1.002     | -9.9414                                                    | 0.0066                                                              | -3.1128                                        | 0.0133                                                  | 0.1507                   | 0.0112                            | 0.0955                 | 0.0075                          | RD               |
| 03 51 15           | +07 49 39           | L533-059         | 4.99                    | 3260                  | 16                             | 0.012                  | 3             | 1.015     | -9.4111                                                    | 0.0065                                                              | -2.4249                                        | 0.0152                                                  | 0.1922                   | 0.0038                            | 0.1016                 | 0.0038                          | RD               |
| 03 54 01           | +33 33 31           | LSPM0354+3333    | 7.00                    | 2890                  | 31                             | 0.010                  | 3             | 1.006     | -10.1365                                                   | 0.0058                                                              | -3.2471                                        | 0.0387                                                  | 0.0949                   | 0.0047                            | 0.0560                 | 0.0057                          | RD               |
| 03 54 46           | +24 16 25           | L357-056         | 7.15                    | 2726                  | 37                             | 0.010                  | 14            | 1.004     | -9.6356                                                    | 0.0070                                                              | -2.8614                                        | 0.0244                                                  | 0.1664                   | 0.0065                            | 0.1122                 | 0.0074                          | RD               |
| 03 57 20           | +41 07 43           | LSPM0357+4107    | 7.21                    | 2711                  | 27                             | 0.010                  | 3             | 1.004     | -9.7686                                                    | 0.0058                                                              | -3.0063                                        | 0.0175                                                  | 0.1423                   | 0.0040                            | 0.0973                 | 0.0046                          | RD               |
| 03 57 41           | +81 55 25           | L003-243         | 5.37                    | 3092                  | 17                             | 0.011                  | 3             | 1.011     | -9.5945                                                    | 0.0066                                                              | -2.5332                                        | 0.0203                                                  | 0.1886                   | 0.0049                            | 0.0914                 | 0.0047                          | RD               |
| 03 59 54           | +26 05 24           | GJ0157.1         | 4.80                    | 3347                  | 28                             | 0.012                  | 8             | 1.018     | -8.8194                                                    | 0.0060                                                              | -1.6075                                        | 0.0509                                                  | 0.4673                   | 0.0285                            | 0.1904                 | 0.0250                          | YC               |
| 04 01 08           | +51 23 19           | LHS1618          | 4.81                    | 3313                  | 10                             | 0.012                  | 3             | 1.017     | -9.2041                                                    | 0.0057                                                              | -2.0101                                        | 0.0165                                                  | 0.3001                   | 0.0060                            | 0.1248                 | 0.0051                          | RD               |
| 04 05 57           | +71 16 41           | LP031-301        | 4.23                    | 3564                  | 25                             | 0.015                  | 134           | 1.027     | -9.0263                                                    | 0.0072                                                              | -1.9189                                        | 0.0241                                                  | 0.2879                   | 0.0090                            | 0.1323                 | 0.0081                          | SC               |
| 04 06 37           | +79 16 02           | LHS1629          | 6.04                    | 3025                  | 12                             | 0.014                  | 3             | 1.009     | -9.4052                                                    | 0.0063                                                              | -2.7000                                        | 0.0204                                                  | 0.1626                   | 0.0040                            | 0.1187                 | 0.0061                          | RD               |
| 04 08 24           | +69 10 59           | L031-433         | 5.62                    | 3077                  | 8                              | 0.012                  | 12            | 1.010     | -9.4806                                                    | 0.0067                                                              | -2.2765                                        | 0.0379                                                  | 0.2559                   | 0.0113                            | 0.1052                 | 0.0102                          | RD               |
| 04 08 37           | +33 38 13           | GJ0162           | 4.02                    | 3691                  | 7                              | 0.011                  | 19            | 1.033     | -8.0996                                                    | 0.0084                                                              | -1.3478                                        | 0.0175                                                  | 0.5183                   | 0.0106                            | 0.3586                 | 0.0146                          | RD               |
| 04 08 56           | -31 28 54           | LP889-037        | 5.74                    | 3006                  | 39                             | 0.012                  | 18            | 1.009     | -9.2818                                                    | 0.0074                                                              | -2.4040                                        | 0.0139                                                  | 0.2315                   | 0.0070                            | 0.1386                 | 0.0057                          | RD               |
| 04 09 16           | -53 22 25           | GJ0163           | 4.71                    | 3372                  | 17                             | 0.014                  | 105           | 1.019     | -8.5267                                                    | 0.0075                                                              | -1.6786                                        | 0.0139                                                  | 0.4242                   | 0.0080                            | 0.2627                 | 0.0086                          | RD               |
| 04 10 28           | -53 36 08           | GJ1068           | 5.70                    | 3018                  | 21                             | 0.015                  | 77            | 1.009     | -8.8847                                                    | 0.0077                                                              | -2.7030                                        | 0.0096                                                  | 0.1628                   | 0.0029                            | 0.2172                 | 0.0048                          | RD               |
| 04 11 13           | +49 31 52           | LHS5091          | 4.79                    | 3327                  | 17                             | 0.012                  | 3             | 1.016     | -9.1357                                                    | 0.0068                                                              | -1.9277                                        | 0.0145                                                  | 0.3271                   | 0.0065                            | 0.1339                 | 0.0048                          | RD               |
| 04 11 27           | -44 18 10           | WT0135           | 4.27                    | 3534                  | 33                             | 0.015                  | 211           | 1.026     | -9.5461                                                    | 0.0062                                                              | -2.2342                                        | 0.0276                                                  | 0.2037                   | 0.0075                            | 0.0740                 | 0.0053                          | SD               |
| 04 12 17           | +64 43 56           | LHS1638          | 5.44                    | 3109                  | 11                             | 0.011                  | 3             | 1.011     | -9.0306                                                    | 0.0071                                                              | -2.4025                                        | 0.0128                                                  | 0.2168                   | 0.0035                            | 0.1730                 | 0.0051                          | RD               |
| 04 12 35           | +35 29 59           | LSPM0412+3529    | 6.07                    | 3036                  | 24                             | 0.011                  | 81            | 1.009     | -9.6515                                                    | 0.0070                                                              | -2.3607                                        | 0.0259                                                  | 0.2385                   | 0.0081                            | 0.0887                 | 0.0059                          | RD               |
| 04 14 02           | +82 15 36           | LHS1643          | 5.91                    | 2998                  | 5                              | 0.012                  | 3             | 1.008     | -9.4747                                                    | 0.0066                                                              | -2.6649                                        | 0.0193                                                  | 0.1724                   | 0.0039                            | 0.1116                 | 0.0053                          | RD               |
| 04 14 17           | -09 06 54           | SCR0414-0906     | 5.10                    | 3223                  | 18                             | 0.013                  | 37            | 1.014     | -9.2031                                                    | 0.0065                                                              | -1.9546                                        | 0.0267                                                  | 0.3379                   | 0.0110                            | 0.1320                 | 0.0090                          | YG               |
| 04 15 35           | +19 36 00           | L414-139         | 5.63                    | 3121                  | 10                             | 0.010                  | 3             | 1.011     | -9.6882                                                    | 0.0059                                                              | -2.4938                                        | 0.0140                                                  | 0.1937                   | 0.0034                            | 0.0805                 | 0.0027                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 04 16 43           | +13 10 58           | L474-219         | 7.24                    | 2712                  | 23                             | 0.010                   | 73            | 1.004     | -10.1340                                                               | 0.0067                                                                          | -3.0282                                        | 0.0618                                                  | 0.1387                   | 0.0101                            | 0.0638                 | 0.0102                          | RD                       |
| 04 17 18           | +08 49 22           | LFT11392         | 5.66                    | 3029                  | 28                             | 0.014                   | 95            | 1.009     | -9.0031                                                                | 0.0072                                                                          | -2.2329                                        | 0.0102                                                  | 0.2776                   | 0.0060                            | 0.1881                 | 0.0052                          | YG                       |
| 04 19 25           | +38 15 03           | LSPM0419+3815    | 4.85                    | 3324                  | 11                             | 0.013                   | 106           | 1.017     | -9.4252                                                                | 0.0067                                                                          | -2.4109                                        | 0.0239                                                  | 0.1879                   | 0.0053                            | 0.0961                 | 0.0057                          | RD                       |
| 04 19 52           | +42 33 31           | LSPM0419+4233    | 8.85                    | 2367                  | 97                             | 0.013                   | 33            | 1.001     | -9.8467                                                                | 0.0079                                                                          | -3.3118                                        | 0.0219                                                  | 0.1314                   | 0.0113                            | 0.1167                 | 0.0114                          | RD                       |
| 04 20 00           | +36 29 11           | LTT11399         | 4.13                    | 3636                  | 18                             | 0.013                   | 14            | 1.030     | -8.5907                                                                | 0.0070                                                                          | -1.3607                                        | 0.0409                                                  | 0.5262                   | 0.0253                            | 0.2099                 | 0.0219                          | RD                       |
| 04 20 13           | +84 54 06           | L004-080         | 6.05                    | 3030                  | 13                             | 0.011                   | 3             | 1.009     | -9.5255                                                                | 0.0060                                                                          | -2.3840                                        | 0.0281                                                  | 0.2333                   | 0.0078                            | 0.1031                 | 0.0074                          | RD                       |
| 04 20 13           | -70 05 59           | SCR0420-7005     | 6.84                    | 2832                  | 21                             | 0.012                   | 39            | 1.006     | -9.8779                                                                | 0.0069                                                                          | -2.9622                                        | 0.0088                                                  | 0.1372                   | 0.0024                            | 0.0786                 | 0.0017                          | RD                       |
| 04 22 33           | +39 00 44           | GJ1070           | 5.63                    | 3025                  | 18                             | 0.013                   | 3             | 1.009     | -9.5808                                                                | 0.0066                                                                          | -2.7030                                        | 0.0159                                                  | 0.1621                   | 0.0035                            | 0.0970                 | 0.0039                          | RD                       |
| 04 23 06           | +23 46 03           | L358-167         | 5.69                    | 3122                  | 20                             | 0.011                   | 20            | 1.011     | -9.8236                                                                | 0.0061                                                                          | -2.6523                                        | 0.0365                                                  | 0.1613                   | 0.0071                            | 0.0689                 | 0.0065                          | RD                       |
| 04 23 14           | +71 44 03           | LSPM0423+7144    | 5.27                    | 3186                  | 11                             | 0.011                   | 120           | 1.013     | -9.7027                                                                | 0.0067                                                                          | -2.5064                                        | 0.0206                                                  | 0.1833                   | 0.0045                            | 0.0760                 | 0.0039                          | RD                       |
| 04 24 09           | +15 05 15           | L415-371         | 5.64                    | 3029                  | 28                             | 0.011                   | 47            | 1.009     | -9.5141                                                                | 0.0064                                                                          | -2.3799                                        | 0.0647                                                  | 0.2344                   | 0.0180                            | 0.1044                 | 0.0174                          | RD                       |
| 04 25 19           | +37 05 08           | LSPM0425+3705    | 6.22                    | 2949                  | 6                              | 0.011                   | 3             | 1.007     | -9.7744                                                                | 0.0065                                                                          | -2.5464                                        | 0.0203                                                  | 0.2042                   | 0.0048                            | 0.0817                 | 0.0041                          | RD                       |
| 04 26 20           | +03 36 36           | LHS0191          | 7.82                    | 2662                  | 29                             | 0.023                   | 302           | 1.003     | -10.0648                                                               | 0.0069                                                                          | -3.1027                                        | 0.0144                                                  | 0.1321                   | 0.0036                            | 0.0718                 | 0.0029                          | RD                       |
| 04 26 33           | -30 48 02           | LHS5094          | 5.76                    | 3015                  | 18                             | 0.012                   | 72            | 1.009     | -9.1036                                                                | 0.0069                                                                          | -2.3633                                        | 0.0181                                                  | 0.2413                   | 0.0058                            | 0.1692                 | 0.0077                          | RD                       |
| 04 27 41           | +59 35 17           | G175-032         | 5.30                    | 3160                  | 11                             | 0.012                   | 5             | 1.012     | -9.3611                                                                | 0.0064                                                                          | -2.1629                                        | 0.0233                                                  | 0.2766                   | 0.0077                            | 0.1145                 | 0.0067                          | RD                       |
| 04 28 06           | -62 09 25           | L130-037         | 5.05                    | 3251                  | 29                             | 0.012                   | 3             | 1.015     | -8.9157                                                                | 0.0087                                                                          | -1.9686                                        | 0.0121                                                  | 0.3267                   | 0.0074                            | 0.1806                 | 0.0054                          | RD                       |
| 04 28 17           | +06 00 13           | G082-020         | 5.68                    | 3181                  | 68                             | 0.014                   | 27            | 1.013     | -9.3490                                                                | 0.0071                                                                          | -2.2264                                        | 0.0108                                                  | 0.2537                   | 0.0140                            | 0.1146                 | 0.0100                          | RD                       |
| 04 30 25           | +39 50 59           | GJ0170           | 5.68                    | 3013                  | 32                             | 0.012                   | 3             | 1.009     | -9.0273                                                                | 0.0054                                                                          | -2.4646                                        | 0.0108                                                  | 0.2150                   | 0.0041                            | 0.1850                 | 0.0053                          | RD                       |
| 04 31 11           | +58 58 38           | GJ0169.1         | 5.32                    | 3096                  | 32                             | 0.011                   | 90            | 1.011     | -8.0141                                                                | 0.0079                                                                          | -2.0322                                        | 0.0081                                                  | 0.3350                   | 0.0076                            | 0.5625                 | 0.0130                          | YC                       |
| 04 32 43           | -39 47 12           | LHS1678          | 4.22                    | 3574                  | 18                             | 0.014                   | 115           | 1.027     | -8.9307                                                                | 0.0080                                                                          | -1.8606                                        | 0.0125                                                  | 0.3063                   | 0.0054                            | 0.1469                 | 0.0042                          | RD                       |
| 04 32 56           | +00 06 16           | L595-023         | 4.03                    | 3701                  | 23                             | 0.012                   | 19            | 1.034     | -8.6469                                                                | 0.0070                                                                          | -1.3591                                        | 0.0257                                                  | 0.5088                   | 0.0163                            | 0.1899                 | 0.0124                          | RD                       |
| 04 33 34           | +20 44 46           | LHS1681          | 5.49                    | 3094                  | 9                              | 0.010                   | 10            | 1.011     | -9.2883                                                                | 0.0058                                                                          | -2.5247                                        | 0.0148                                                  | 0.1902                   | 0.0034                            | 0.1299                 | 0.0047                          | RD                       |
| 04 34 38           | +19 06 05           | L415-217         | 6.23                    | 2905                  | 7                              | 0.013                   | 67            | 1.007     | -9.6354                                                                | 0.0066                                                                          | -2.6430                                        | 0.0277                                                  | 0.1883                   | 0.0061                            | 0.0988                 | 0.0069                          | RD                       |
| 04 35 36           | -25 27 35           | LP834-032        | 5.03                    | 3187                  | 18                             | 0.013                   | 3             | 1.013     | -8.6561                                                                | 0.0064                                                                          | -1.6826                                        | 0.0148                                                  | 0.4728                   | 0.0096                            | 0.2535                 | 0.0094                          | YG                       |
| 04 36 39           | +11 13 17           | LHS1686          | 4.99                    | 3187                  | 16                             | 0.012                   | 3             | 1.013     | -9.4018                                                                | 0.0066                                                                          | -2.1175                                        | 0.0586                                                  | 0.2864                   | 0.0195                            | 0.1074                 | 0.0161                          | RD                       |
| 04 36 41           | -27 21 18           | LFT02043         | 4.52                    | 3449                  | 20                             | 0.014                   | 9             | 1.022     | -8.7602                                                                | 0.0066                                                                          | -1.5122                                        | 0.0265                                                  | 0.4911                   | 0.0160                            | 0.1919                 | 0.0129                          | RD                       |
| 04 37 41           | +52 53 37           | GJ0172           | 6.00                    | 3036                  | 11                             | 0.012                   | 3             | 1.009     | -9.8943                                                                | 0.0061                                                                          | -2.7690                                        | 0.0285                                                  | 0.1492                   | 0.0050                            | 0.0671                 | 0.0049                          | RD                       |
| 04 37 42           | -11 02 20           | GJ0173           | 3.58                    | 3903                  | 62                             | 0.018                   | 164           | 1.046     | -7.6003                                                                | 0.0083                                                                          | -1.0951                                        | 0.0094                                                  | 0.6198                   | 0.0209                            | 0.5697                 | 0.0200                          | RD                       |
| 04 38 37           | -11 30 15           | LP715-039        | 4.25                    | 3563                  | 16                             | 0.010                   | 72            | 1.027     | -8.0842                                                                | 0.0071                                                                          | -1.4997                                        | 0.0109                                                  | 0.4670                   | 0.0072                            | 0.3917                 | 0.0096                          | RD                       |
| 04 39 32           | +16 15 43           | LHS1690          | 6.38                    | 2909                  | 16                             | 0.012                   | 64            | 1.017     | -8.8148                                                                | 0.0078                                                                          | -1.7341                                        | 0.0198                                                  | 0.4133                   | 0.0099                            | 0.1959                 | 0.0095                          | RD                       |
| 04 39 34           | +41 32 49           | LSPM0439+4132    | 5.58                    | 3101                  | 6                              | 0.010                   | 130           | 1.011     | -9.8231                                                                | 0.0064                                                                          | -2.5788                                        | 0.0167                                                  | 0.1779                   | 0.0035                            | 0.0698                 | 0.0028                          | RD                       |
| 04 40 23           | -05 30 08           | LP655-048        | 8.26                    | 2504                  | 27                             | 0.014                   | 94            | 1.002     | -9.6791                                                                | 0.0074                                                                          | -3.2077                                        | 0.0079                                                  | 0.1323                   | 0.0031                            | 0.1264                 | 0.0031                          | RD                       |
| 04 42 56           | +18 57 29           | GJ0176           | 4.37                    | 3498                  | 24                             | 0.013                   | 3             | 1.024     | -7.8938                                                                | 0.0078                                                                          | -1.4817                                        | 0.0111                                                  | 0.4945                   | 0.0093                            | 0.5059                 | 0.0132                          | RD                       |
| 04 43 43           | +64 48 31           | L055-026         | 6.01                    | 3051                  | 16                             | 0.010                   | 27            | 1.010     | -9.6928                                                                | 0.0065                                                                          | -2.5531                                        | 0.0633                                                  | 0.1893                   | 0.0139                            | 0.0838                 | 0.0136                          | RD                       |
| 04 45 06           | +43 24 34           | L201-108         | 5.66                    | 3074                  | 9                              | 0.010                   | 18            | 1.010     | -9.7096                                                                | 0.0068                                                                          | -2.5717                                        | 0.0121                                                  | 0.1825                   | 0.0028                            | 0.0810                 | 0.0022                          | RD                       |
| 04 46 18           | +48 44 52           | LHS0197          | 6.50                    | 2892                  | 18                             | 0.011                   | 3             | 1.006     | -10.0331                                                               | 0.0063                                                                          | -2.9958                                        | 0.0091                                                  | 0.1266                   | 0.0021                            | 0.0631                 | 0.0014                          | RD                       |
| 04 48 58           | +36 48 23           | LSPM0448+3648    | 6.52                    | 2895                  | 16                             | 0.009                   | 3             | 1.007     | -9.7444                                                                | 0.0059                                                                          | -2.6298                                        | 0.0281                                                  | 0.1926                   | 0.0066                            | 0.0878                 | 0.0063                          | RD                       |
| 04 49 05           | +51 38 41           | LSPM0449+5138    | 8.00                    | 2557                  | 33                             | 0.012                   | 3             | 1.003     | -10.1437                                                               | 0.0070                                                                          | -3.2251                                        | 0.0291                                                  | 0.1244                   | 0.0053                            | 0.0710                 | 0.0055                          | RD                       |
| 04 49 33           | -14 47 23           | NLT14019         | 3.67                    | 3886                  | 25                             | 0.011                   | 20            | 1.044     | -8.4752                                                                | 0.0076                                                                          | -1.1915                                        | 0.0263                                                  | 0.5596                   | 0.0185                            | 0.2099                 | 0.0140                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 04 49 56           | +71 09 47           | L032-204         | 5.01                    | 3261                  | 16                             | 0.013                   | 19            | 1.015     | -9.2051                                                                | 0.0063                                                                          | -1.9399                                          | 0.0220                                                    | 0.3357                      | 0.0091                               | 0.1286                 | 0.0072                        | RD                       |
| 04 50 51           | +22 07 22           | GJ1072           | 6.22                    | 2900                  | 13                             | 0.010                   | 3             | 1.007     | -9.3487                                                                | 0.0065                                                                          | -2.6395                                          | 0.0193                                                    | 0.1897                      | 0.0045                               | 0.1379                 | 0.0066                        | RD                       |
| 04 51 01           | -34 02 15           | 2MA0451-3402     | 9.82                    | 2088                  | 40                             | 0.015                   | 44            | 1.001     | -10.8163                                                               | 0.0081                                                                          | -3.6740                                          | 0.0160                                                    | 0.1113                      | 0.0048                               | 0.0491                 | 0.0026                        | RD                       |
| 04 51 37           | -58 18 52           | APM0452-5819     | 7.81                    | 2558                  | 33                             | 0.012                   | 3             | 1.003     | -10.0926                                                               | 0.0056                                                                          | -1.3252                                          | 0.0104                                                    | 0.1394                      | 0.0040                               | 0.0753                 | 0.0026                        | RD                       |
| 04 52 06           | +06 28 36           | GJ0179           | 5.04                    | 3239                  | 23                             | 0.012                   | 3             | 1.015     | -8.4792                                                                | 0.0085                                                                          | -1.7993                                          | 0.0220                                                    | 0.4001                      | 0.0116                               | 0.3008                 | 0.0166                        | RD                       |
| 04 52 24           | -16 49 22           | LP76-025         | 4.74                    | 3361                  | 16                             | 0.012                   | 7             | 1.019     | -8.4356                                                                | 0.0074                                                                          | -1.6234                                          | 0.0129                                                    | 0.4550                      | 0.0081                               | 0.2937                 | 0.0089                        | YG                       |
| 04 52 29           | +09 30 29           | L476-186         | 5.66                    | 3115                  | 13                             | 0.011                   | 3             | 1.011     | -9.8898                                                                | 0.0055                                                                          | -2.9321                                          | 0.0587                                                    | 0.1174                      | 0.0080                               | 0.0641                 | 0.0097                        | RD                       |
| 04 52 35           | +40 42 24           | GJ1073           | 5.13                    | 3197                  | 9                              | 0.010                   | 3             | 1.013     | -8.9997                                                                | 0.0054                                                                          | -2.2959                                          | 0.0098                                                    | 0.2318                      | 0.0029                               | 0.1695                 | 0.0039                        | RD                       |
| 04 53 31           | -55 51 37           | GJ2036           | 4.73                    | 3263                  | 129                            | 0.024                   | 78            | 1.015     | -8.1868                                                                | 0.0088                                                                          | -1.6006                                          | 0.0130                                                    | 0.4957                      | 0.0399                               | 0.4151                 | 0.0346                        | YG                       |
| 04 53 50           | +15 49 15           | LSPM0453+1549    | 4.59                    | 3417                  | 11                             | 0.011                   | 99            | 1.021     | -9.1075                                                                | 0.0062                                                                          | -1.9034                                          | 0.0142                                                    | 0.3190                      | 0.0056                               | 0.1311                 | 0.0045                        | RD                       |
| 04 53 50           | -17 46 24           | GJ0180           | 4.31                    | 3532                  | 11                             | 0.011                   | 90            | 1.025     | -8.2847                                                                | 0.0074                                                                          | -1.6237                                          | 0.0143                                                    | 0.4120                      | 0.0072                               | 0.3165                 | 0.0105                        | RD                       |
| 04 56 04           | +43 13 56           | L202-002         | 5.18                    | 3188                  | 11                             | 0.013                   | 22            | 1.013     | -9.0912                                                                | 0.0074                                                                          | -2.2963                                          | 0.0165                                                    | 0.2331                      | 0.0047                               | 0.1535                 | 0.0061                        | RD                       |
| 04 58 46           | +50 56 38           | GJ1074           | 3.94                    | 3736                  | 18                             | 0.010                   | 3             | 1.036     | -8.4345                                                                | 0.0066                                                                          | -1.3689                                          | 0.0203                                                    | 0.4936                      | 0.0125                               | 0.2380                 | 0.0122                        | RD                       |
| 04 59 35           | +01 47 01           | GJ0182           | 3.74                    | 3839                  | 15                             | 0.010                   | 3             | 1.042     | -8.1100                                                                | 0.0075                                                                          | -1.1018                                          | 0.0120                                                    | 0.6242                      | 0.0110                               | 0.3533                 | 0.0098                        | RD                       |
| 05 00 47           | -57 15 25           | HIP023309        | 3.79                    | 3810                  | 14                             | 0.011                   | 3             | 1.040     | -8.1074                                                                | 0.0069                                                                          | -0.7569                                          | 0.0148                                                    | 0.9604                      | 0.0179                               | 0.3335                 | 0.0119                        | YG                       |
| 05 01 18           | +22 37 01           | LSPM0501+2237    | 6.30                    | 2925                  | 17                             | 0.012                   | 145           | 1.007     | -9.4517                                                                | 0.0064                                                                          | -2.6917                                          | 0.0199                                                    | 0.1756                      | 0.0045                               | 0.1204                 | 0.0061                        | RD                       |
| 05 01 57           | -06 56 47           | LHS1723          | 5.46                    | 3109                  | 11                             | 0.016                   | 111           | 1.011     | -8.4087                                                                | 0.0089                                                                          | -2.4617                                          | 0.0093                                                    | 0.2025                      | 0.0026                               | 0.3540                 | 0.0051                        | RD                       |
| 05 03 20           | +17 22 25           | LHS1731          | 4.80                    | 3337                  | 24                             | 0.011                   | 79            | 1.018     | -8.4606                                                                | 0.0073                                                                          | -2.0378                                          | 0.0099                                                    | 0.2865                      | 0.0052                               | 0.2895                 | 0.0069                        | RD                       |
| 05 03 24           | +53 07 42           | GJ0184           | 3.81                    | 3801                  | 16                             | 0.011                   | 105           | 1.039     | -8.0783                                                                | 0.0073                                                                          | -1.3052                                          | 0.0129                                                    | 0.5131                      | 0.0088                               | 0.3465                 | 0.0104                        | RD                       |
| 05 04 15           | +11 03 24           | G097-015         | 5.45                    | 3109                  | 7                              | 0.012                   | 76            | 1.011     | -9.0303                                                                | 0.0067                                                                          | -2.5658                                          | 0.0079                                                    | 0.1796                      | 0.0018                               | 0.1730                 | 0.0024                        | RD                       |
| 05 05 35           | +46 48 02           | LSPM0505+4648    | 8.40                    | 2497                  | 25                             | 0.012                   | 16            | 1.002     | -9.9275                                                                | 0.0080                                                                          | -3.1165                                          | 0.0304                                                    | 0.1477                      | 0.0060                               | 0.0955                 | 0.0075                        | RD                       |
| 05 05 41           | +56 28 40           | LHS1733          | 4.97                    | 3195                  | 13                             | 0.012                   | 89            | 1.013     | -9.6882                                                                | 0.0062                                                                          | -2.4561                                          | 0.0155                                                    | 0.1931                      | 0.0038                               | 0.0769                 | 0.0029                        | RD                       |
| 05 06 25           | +52 47 19           | L119-015         | 5.97                    | 3053                  | 16                             | 0.010                   | 8             | 1.010     | -9.8144                                                                | 0.0064                                                                          | -2.7986                                          | 0.0269                                                    | 0.1426                      | 0.0047                               | 0.0728                 | 0.0050                        | RD                       |
| 05 06 50           | -21 35 09           | BD-21-01074      | 4.29                    | 3411                  | 205                            | 0.019                   | 73            | 1.021     | -8.0662                                                                | 0.0089                                                                          | -1.0029                                          | 0.0141                                                    | 0.9024                      | 0.1096                               | 0.4363                 | 0.0541                        | YG                       |
| 05 09 44           | -43 25 17           | SCR0509-4325     | 5.37                    | 3095                  | 21                             | 0.013                   | 10            | 1.011     | -9.2106                                                                | 0.0061                                                                          | -2.0511                                          | 0.0181                                                    | 0.3280                      | 0.0081                               | 0.1420                 | 0.0066                        | YC                       |
| 05 10 20           | +27 14 02           | LEP0510+2714     | 8.21                    | 2500                  | 35                             | 0.012                   | 3             | 1.002     | -9.6914                                                                | 0.0076                                                                          | -3.2053                                          | 0.0100                                                    | 0.1331                      | 0.0041                               | 0.1251                 | 0.0043                        | RD                       |
| 05 10 57           | +18 37 35           | LHS1743          | 5.12                    | 3209                  | 15                             | 0.010                   | 3             | 1.014     | -9.3236                                                                | 0.0059                                                                          | -2.3480                                          | 0.0096                                                    | 0.2167                      | 0.0031                               | 0.1159                 | 0.0026                        | RD                       |
| 05 11 41           | -45 01 06           | GJ0191           | 3.80                    | 3765                  | 105                            | 0.027                   | 317           | 1.037     | -7.5933                                                                | 0.0077                                                                          | -1.9137                                          | 0.0078                                                    | 0.2596                      | 0.0146                               | 0.6173                 | 0.0349                        | SD                       |
| 05 12 42           | +19 39 57           | GJ0192           | 4.28                    | 3519                  | 10                             | 0.012                   | 3             | 1.025     | -8.2296                                                                | 0.0076                                                                          | -1.5086                                          | 0.0195                                                    | 0.4737                      | 0.0109                               | 0.3396                 | 0.0161                        | RD                       |
| 05 15 08           | -07 20 49           | LHS1747          | 4.02                    | 3699                  | 21                             | 0.016                   | 159           | 1.034     | -8.6352                                                                | 0.0075                                                                          | -1.4377                                          | 0.0403                                                    | 0.4651                      | 0.0222                               | 0.1927                 | 0.0198                        | RD                       |
| 05 15 31           | +59 11 18           | LEP0515+5911     | 7.79                    | 2488                  | 85                             | 0.013                   | 12            | 1.002     | -9.9538                                                                | 0.0060                                                                          | -3.0997                                          | 0.0102                                                    | 0.1518                      | 0.0105                               | 0.0933                 | 0.0067                        | RD                       |
| 05 15 47           | -31 17 45           | LHS1748          | 4.35                    | 3507                  | 15                             | 0.011                   | 4             | 1.024     | -8.7488                                                                | 0.0079                                                                          | -1.5245                                          | 0.0161                                                    | 0.4683                      | 0.0096                               | 0.1881                 | 0.0072                        | RD                       |
| 05 17 00           | -78 17 20           | GJ1077           | 4.70                    | 3383                  | 14                             | 0.010                   | 10            | 1.019     | -8.5596                                                                | 0.0062                                                                          | -1.7000                                          | 0.0139                                                    | 0.4113                      | 0.0074                               | 0.2514                 | 0.0085                        | RD                       |
| 05 17 21           | -42 52 47           | SCR0517-4252     | 4.47                    | 3488                  | 20                             | 0.012                   | 37            | 1.024     | -8.6535                                                                | 0.0087                                                                          | -1.5138                                          | 0.0167                                                    | 0.4794                      | 0.0108                               | 0.2122                 | 0.0084                        | RD                       |
| 05 17 38           | -39 49 03           | 2MA0517-3349     | 8.92                    | 2359                  | 95                             | 0.016                   | 81            | 1.001     | -10.2081                                                               | 0.0077                                                                          | -3.2919                                          | 0.0133                                                    | 0.1353                      | 0.0111                               | 0.0775                 | 0.0067                        | RD                       |
| 05 20 41           | +58 47 33           | LHS1758          | 5.02                    | 3205                  | 65                             | 0.012                   | 7             | 1.014     | -9.0575                                                                | 0.0071                                                                          | -1.8066                                          | 0.0097                                                    | 0.4053                      | 0.0171                               | 0.1579                 | 0.0071                        | RD                       |
| 05 23 38           | -14 03 02           | 2MA0523-1403     | 9.35                    | 2111                  | 86                             | 0.012                   | 54            | 1.001     | -10.5745                                                               | 0.0071                                                                          | -3.8960                                          | 0.0118                                                    | 0.0843                      | 0.0070                               | 0.0635                 | 0.0054                        | RD                       |
| 05 23 49           | +22 32 39           | GJ1078           | 5.68                    | 3022                  | 14                             | 0.011                   | 103           | 1.009     | -9.6656                                                                | 0.0064                                                                          | -2.4211                                          | 0.0247                                                    | 0.2247                      | 0.0068                               | 0.0882                 | 0.0055                        | RD                       |
| 05 28 00           | +09 38 38           | GJ0203           | 4.92                    | 3282                  | 9                              | 0.011                   | 137           | 1.016     | -8.6885                                                                | 0.0068                                                                          | -2.2339                                          | 0.0093                                                    | 0.2363                      | 0.0028                               | 0.2302                 | 0.0043                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 05 28 15           | +02 58 14           | GJ1080           | 4.63                    | 3379                  | 25                             | 0.012                   | 75            | 1.019     | -8.9376                                                                | 0.0066                                                                          | -1.8607                                        | 0.0132                                                  | 0.3426                   | 0.0073                            | 0.1631                 | 0.0055                          | RD                       |
| 05 29 27           | +15 34 38           | GJ2043           | 3.85                    | 3760                  | 19                             | 0.037                   | 82            | 1.037     | -8.3169                                                                | 0.0098                                                                          | -1.3453                                        | 0.0169                                                  | 0.5007                   | 0.0109                            | 0.2690                 | 0.0104                          | RD                       |
| 05 29 45           | -32 39 14           | SCR0529-3239     | 5.47                    | 3102                  | 13                             | 0.014                   | 3             | 1.011     | -9.0479                                                                | 0.0077                                                                          | -1.7168                                        | 0.0199                                                  | 0.4796                   | 0.0117                            | 0.1703                 | 0.0083                          | YG                       |
| 05 29 52           | -03 26 30           | GJ0204.2         | 4.59                    | 3418                  | 8                              | 0.011                   | 3             | 1.021     | -8.6393                                                                | 0.0070                                                                          | -1.6531                                        | 0.0502                                                  | 0.4253                   | 0.0247                            | 0.2247                 | 0.0288                          | RD                       |
| 05 29 53           | +32 04 51           | LHS1765          | 4.40                    | 3495                  | 6                              | 0.010                   | 18            | 1.024     | -8.7840                                                                | 0.0059                                                                          | -1.6340                                        | 0.0201                                                  | 0.4158                   | 0.0097                            | 0.1819                 | 0.0091                          | RD                       |
| 05 31 04           | -30 11 45           | LHS1767          | 4.92                    | 3293                  | 10                             | 0.013                   | 32            | 1.016     | -8.9659                                                                | 0.0084                                                                          | -2.1003                                        | 0.0131                                                  | 0.2737                   | 0.0045                            | 0.1661                 | 0.0047                          | RD                       |
| 05 31 27           | -03 40 38           | GJ0205           | 3.91                    | 3678                  | 160                            | 6.933                   | 39            | 1.033     | -7.2107                                                                | 0.0361                                                                          | -1.2068                                        | 0.0362                                                  | 0.6140                   | 0.0593                            | 1.0050                 | 0.0972                          | RD                       |
| 05 32 52           | +33 49 47           | LHS1108          | 4.93                    | 3285                  | 11                             | 0.010                   | 22            | 1.016     | -9.1061                                                                | 0.0065                                                                          | -2.3682                                        | 0.0099                                                  | 0.2021                   | 0.0027                            | 0.1421                 | 0.0031                          | RD                       |
| 05 33 45           | +01 56 43           | GJ0207.1         | 4.68                    | 3394                  | 19                             | 0.013                   | 20            | 1.020     | -8.4332                                                                | 0.0090                                                                          | -1.5341                                        | 0.0176                                                  | 0.4945                   | 0.0115                            | 0.2889                 | 0.0121                          | RD                       |
| 05 34 52           | +13 52 47           | LT11684          | 4.87                    | 3295                  | 13                             | 0.009                   | 3             | 1.016     | -8.4559                                                                | 0.0062                                                                          | -1.7736                                        | 0.0532                                                  | 0.3981                   | 0.0246                            | 0.2985                 | 0.0407                          | RD                       |
| 05 36 00           | -07 38 59           | LHS1109          | 5.29                    | 3166                  | 21                             | 0.013                   | 15            | 1.012     | -8.7459                                                                | 0.0071                                                                          | -1.9161                                        | 0.0120                                                  | 0.3660                   | 0.0070                            | 0.2315                 | 0.0068                          | RD                       |
| 05 36 31           | +11 19 40           | GJ0208           | 3.60                    | 3909                  | 42                             | 0.011                   | 3             | 1.046     | -7.6993                                                                | 0.0077                                                                          | -1.0991                                        | 0.0091                                                  | 0.6152                   | 0.0147                            | 0.5068                 | 0.0134                          | RD                       |
| 05 37 40           | -61 54 44           | WT0178           | 5.58                    | 3084                  | 12                             | 0.011                   | 3             | 1.010     | -9.4233                                                                | 0.0061                                                                          | -2.5134                                        | 0.0087                                                  | 0.1939                   | 0.0025                            | 0.1119                 | 0.0021                          | RD                       |
| 05 38 12           | +79 31 19           | LHS0207          | 6.95                    | 2875                  | 13                             | 0.012                   | 13            | 1.006     | -10.2756                                                               | 0.0062                                                                          | -3.0890                                        | 0.0148                                                  | 0.1151                   | 0.0022                            | 0.0483                 | 0.0018                          | RD                       |
| 05 39 25           | +40 38 43           | LSPM0539+4038    | 8.53                    | 2489                  | 47                             | 0.012                   | 51            | 1.002     | -9.8457                                                                | 0.0072                                                                          | -3.3198                                        | 0.0185                                                  | 0.1177                   | 0.0051                            | 0.1056                 | 0.0062                          | RD                       |
| 05 40 54           | +08 54 18           | LSPM0540+0854    | 6.17                    | 3017                  | 17                             | 0.011                   | 3             | 1.009     | -9.5719                                                                | 0.0067                                                                          | -2.7266                                        | 0.0188                                                  | 0.1585                   | 0.0039                            | 0.0985                 | 0.0047                          | RD                       |
| 05 41 58           | +15 20 14           | HIP026844        | 3.73                    | 3846                  | 18                             | 0.010                   | 12            | 1.042     | -8.3495                                                                | 0.0067                                                                          | -1.1953                                        | 0.0219                                                  | 0.5689                   | 0.0153                            | 0.2477                 | 0.0136                          | RD                       |
| 05 42 09           | +12 29 22           | GJ0213           | 5.16                    | 3187                  | 15                             | 0.012                   | 36            | 1.013     | -8.2313                                                                | 0.0068                                                                          | -2.2016                                        | 0.0072                                                  | 0.2601                   | 0.0033                            | 0.4133                 | 0.0058                          | RD                       |
| 05 42 13           | -05 27 56           | GJ02045          | 5.97                    | 3011                  | 18                             | 0.013                   | 3             | 1.009     | -9.4766                                                                | 0.0069                                                                          | -2.7833                                        | 0.0093                                                  | 0.1492                   | 0.0024                            | 0.1104                 | 0.0024                          | RD                       |
| 05 42 30           | +07 31 09           | G099-025         | 4.99                    | 3270                  | 7                              | 0.012                   | 13            | 1.016     | -9.5417                                                                | 0.0068                                                                          | -2.5840                                        | 0.0163                                                  | 0.1591                   | 0.0031                            | 0.0869                 | 0.0034                          | SC                       |
| 05 43 47           | -41 08 08           | APM0544-4108     | 5.25                    | 3179                  | 11                             | 0.012                   | 3             | 1.013     | -9.2528                                                                | 0.0061                                                                          | -2.1277                                        | 0.0093                                                  | 0.2846                   | 0.0036                            | 0.1282                 | 0.0026                          | RD                       |
| 05 45 48           | +02 14 13           | GJ0215           | 3.54                    | 3956                  | 35                             | 0.013                   | 3             | 1.049     | -7.7816                                                                | 0.0072                                                                          | -1.0119                                        | 0.0092                                                  | 0.6642                   | 0.0136                            | 0.4502                 | 0.0109                          | RD                       |
| 05 46 38           | +44 07 20           | LHS1784          | 5.21                    | 3182                  | 17                             | 0.010                   | 7             | 1.013     | -8.7383                                                                | 0.0066                                                                          | -1.5942                                        | 0.0159                                                  | 0.5250                   | 0.0111                            | 0.2312                 | 0.0091                          | YC                       |
| 05 47 09           | -05 12 11           | LHS1785          | 5.44                    | 3119                  | 8                              | 0.014                   | 159           | 1.011     | -9.3837                                                                | 0.0064                                                                          | -2.4275                                        | 0.0154                                                  | 0.2094                   | 0.0039                            | 0.1145                 | 0.0043                          | RD                       |
| 05 47 41           | -36 19 43           | GJ0218           | 4.13                    | 3616                  | 7                              | 0.013                   | 3             | 1.029     | -8.2686                                                                | 0.0070                                                                          | -1.4263                                        | 0.0116                                                  | 0.4933                   | 0.0069                            | 0.3076                 | 0.0078                          | RD                       |
| 05 48 32           | +21 19 18           | G100-038         | 5.04                    | 3240                  | 18                             | 0.012                   | 15            | 1.015     | -9.2760                                                                | 0.0061                                                                          | -2.1720                                        | 0.0169                                                  | 0.2604                   | 0.0059                            | 0.1201                 | 0.0051                          | RD                       |
| 05 53 14           | +24 15 32           | GJ0220           | 4.21                    | 3597                  | 18                             | 0.010                   | 3             | 1.028     | -8.2949                                                                | 0.0058                                                                          | -1.2235                                        | 0.0392                                                  | 0.6297                   | 0.0291                            | 0.3016                 | 0.0303                          | RD                       |
| 05 53 23           | +22 12 50           | L361-006         | 5.23                    | 3183                  | 8                              | 0.010                   | 62            | 1.013     | -9.3376                                                                | 0.0063                                                                          | -2.1276                                        | 0.0189                                                  | 0.2839                   | 0.0064                            | 0.1159                 | 0.0054                          | RD                       |
| 05 54 48           | +80 05 41           | LSPM0554+8005    | 5.73                    | 3005                  | 34                             | 0.011                   | 31            | 1.009     | -9.5124                                                                | 0.0070                                                                          | -2.5322                                        | 0.0210                                                  | 0.1999                   | 0.0066                            | 0.1064                 | 0.0060                          | RD                       |
| 05 55 43           | -26 51 23           | LPS37-053        | 4.53                    | 3443                  | 21                             | 0.013                   | 3             | 1.022     | -8.1840                                                                | 0.0068                                                                          | -1.3614                                        | 0.0153                                                  | 0.5862                   | 0.0125                            | 0.3739                 | 0.0143                          | YC                       |
| 05 56 57           | +11 44 33           | LSPM0556+1144    | 6.37                    | 2911                  | 6                              | 0.016                   | 151           | 1.007     | -9.5464                                                                | 0.0071                                                                          | -2.8131                                        | 0.0120                                                  | 0.1542                   | 0.0022                            | 0.1090                 | 0.0029                          | RD                       |
| 05 57 18           | +17 08 30           | G100-049         | 4.79                    | 3320                  | 17                             | 0.013                   | 21            | 1.017     | -9.3507                                                                | 0.0066                                                                          | -2.1207                                        | 0.0311                                                  | 0.2630                   | 0.0098                            | 0.1049                 | 0.0083                          | RD                       |
| 05 59 38           | +58 35 35           | G192-011         | 4.03                    | 3692                  | 13                             | 0.011                   | 3             | 1.033     | -8.1145                                                                | 0.0074                                                                          | -1.3567                                        | 0.0121                                                  | 0.5127                   | 0.0080                            | 0.3523                 | 0.0095                          | RD                       |
| 06 00 04           | +02 42 24           | LT17897          | 5.27                    | 3173                  | 20                             | 0.012                   | 40            | 1.013     | -8.1240                                                                | 0.0073                                                                          | -2.1877                                        | 0.0083                                                  | 0.2666                   | 0.0042                            | 0.4717                 | 0.0087                          | RD                       |
| 06 00 49           | +68 09 23           | LHS0214          | 4.87                    | 3303                  | 12                             | 0.011                   | 16            | 1.017     | -8.9130                                                                | 0.0067                                                                          | -1.8124                                        | 0.0119                                                  | 0.3790                   | 0.0058                            | 0.1755                 | 0.0048                          | RD                       |
| 06 01 11           | +59 35 51           | LHS1805          | 5.07                    | 3233                  | 18                             | 0.013                   | 196           | 1.014     | -8.3462                                                                | 0.0070                                                                          | -2.0832                                        | 0.0090                                                  | 0.2897                   | 0.0045                            | 0.3519                 | 0.0071                          | RD                       |
| 06 02 23           | -20 19 44           | LHS1807          | 4.89                    | 3293                  | 13                             | 0.012                   | 10            | 1.016     | -9.0325                                                                | 0.0082                                                                          | -2.2401                                        | 0.0126                                                  | 0.2330                   | 0.0039                            | 0.1539                 | 0.0043                          | RD                       |
| 06 02 26           | +66 20 40           | LHS1808          | 5.59                    | 3135                  | 26                             | 0.010                   | 3             | 1.012     | -9.3029                                                                | 0.0053                                                                          | -2.3363                                        | 0.0173                                                  | 0.2301                   | 0.0060                            | 0.1244                 | 0.0057                          | RD                       |
| 06 02 29           | +49 51 56           | LHS1809          | 6.10                    | 3017                  | 20                             | 0.010                   | 3             | 1.009     | -9.1170                                                                | 0.0055                                                                          | -2.6968                                        | 0.0095                                                  | 0.1640                   | 0.0028                            | 0.1663                 | 0.0041                          | RD                       |
| 06 03 30           | +47 48 15           | LHS1813          | 5.01                    | 3237                  | 13                             | 0.011                   | 3             | 1.015     | -9.2425                                                                | 0.0063                                                                          | -2.0186                                        | 0.0127                                                  | 0.3112                   | 0.0052                            | 0.1251                 | 0.0038                          | RD                       |



## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 06 03 49           | +30 19 21           | LSPM0603+3019    | 5.13                    | 3220                  | 12                             | 0.012                  | 9             | 1.014     | -9.2431                                                                | 0.0068                                                                          | -1.9946                                        | 0.0124                                                  | 0.3233                   | 0.0052                            | 0.1263                 | 0.0036                          | RD                       |
| 06 04 52           | -34 33 36           | APCOL            | 6.11                    | 2907                  | 29                             | 0.012                  | 3             | 1.007     | -8.4942                                                                | 0.0074                                                                          | -2.1519                                        | 0.0082                                                  | 0.3309                   | 0.0072                            | 0.3669                 | 0.0086                          | YG                       |
| 06 05 29           | +60 49 22           | LHS1817          | 5.51                    | 3072                  | 40                             | 0.010                  | 10            | 1.010     | -9.0123                                                                | 0.0057                                                                          | -2.2235                                        | 0.0146                                                  | 0.2730                   | 0.0084                            | 0.1810                 | 0.0079                          | RD                       |
| 06 07 32           | +47 12 26           | LSPM0607+4712    | 5.48                    | 3102                  | 9                              | 0.011                  | 47            | 1.011     | -9.2653                                                                | 0.0064                                                                          | -2.0806                                        | 0.0258                                                  | 0.3155                   | 0.0095                            | 0.1326                 | 0.0086                          | RD                       |
| 06 07 44           | -25 44 42           | LP838-016        | 4.72                    | 3373                  | 16                             | 0.016                  | 152           | 1.019     | -8.5470                                                                | 0.0091                                                                          | -1.9424                                        | 0.0153                                                  | 0.3129                   | 0.0063                            | 0.2565                 | 0.0089                          | RD                       |
| 06 09 52           | +23 19 13           | LSR0609+2319     | 5.24                    | 3174                  | 9                              | 1.828                  | 3             | 1.013     | -10.6364                                                               | 0.0449                                                                          | -2.8481                                        | 0.0524                                                  | 0.1245                   | 0.0076                            | 0.0261                 | 0.0023                          | SD                       |
| 06 10 20           | +82 06 25           | GJ0226           | 4.43                    | 3474                  | 16                             | 0.011                  | 93            | 1.023     | -8.0772                                                                | 0.0069                                                                          | -1.6380                                        | 0.0085                                                  | 0.4188                   | 0.0057                            | 0.4153                 | 0.0073                          | RD                       |
| 06 10 53           | -43 24 18           | GJ1088           | 4.97                    | 3269                  | 16                             | 0.012                  | 3             | 1.016     | -8.6152                                                                | 0.0093                                                                          | -1.9996                                        | 0.0112                                                  | 0.3119                   | 0.0051                            | 0.2525                 | 0.0055                          | RD                       |
| 06 11 56           | +33 25 51           | LHS6100          | 5.58                    | 3083                  | 6                              | 0.010                  | 24            | 1.010     | -9.4542                                                                | 0.0062                                                                          | -2.4045                                        | 0.0183                                                  | 0.2200                   | 0.0047                            | 0.1080                 | 0.0049                          | RD                       |
| 06 13 11           | +53 17 55           | L120-046         | 6.51                    | 2898                  | 18                             | 0.012                  | 15            | 1.007     | -9.8606                                                                | 0.0068                                                                          | -2.7653                                        | 0.0227                                                  | 0.1644                   | 0.0048                            | 0.0766                 | 0.0044                          | RD                       |
| 06 14 02           | +51 40 08           | G192-022         | 4.74                    | 3331                  | 14                             | 0.014                  | 78            | 1.018     | -8.9004                                                                | 0.0064                                                                          | -2.0604                                        | 0.0136                                                  | 0.2802                   | 0.0050                            | 0.1751                 | 0.0058                          | RD                       |
| 06 17 05           | +83 53 35           | LSPM0617+8353    | 5.09                    | 3224                  | 8                              | 0.010                  | 3             | 1.014     | -8.9386                                                                | 0.0064                                                                          | -2.1583                                        | 0.0279                                                  | 0.2672                   | 0.0087                            | 0.1789                 | 0.0126                          | RD                       |
| 06 18 04           | +43 57 07           | G101-032         | 5.04                    | 3224                  | 7                              | 0.010                  | 3             | 1.014     | -9.3500                                                                | 0.0060                                                                          | -2.1654                                        | 0.0113                                                  | 0.2650                   | 0.0036                            | 0.1114                 | 0.0029                          | RD                       |
| 06 19 21           | -06 39 22           | GJ0231.3         | 4.82                    | 3329                  | 24                             | 0.011                  | 75            | 1.018     | -8.9841                                                                | 0.0076                                                                          | -2.1568                                        | 0.0572                                                  | 0.2509                   | 0.0169                            | 0.1592                 | 0.0234                          | RD                       |
| 06 19 57           | +20 22 20           | L419-001         | 5.55                    | 3095                  | 6                              | 0.011                  | 23            | 1.011     | -9.6718                                                                | 0.0073                                                                          | -2.4192                                        | 0.0191                                                  | 0.2147                   | 0.0048                            | 0.0835                 | 0.0039                          | RD                       |
| 06 21 37           | +16 18 36           | L420-005         | 4.02                    | 3693                  | 9                              | 0.020                  | 17            | 1.033     | -8.6813                                                                | 0.0095                                                                          | -1.4606                                        | 0.0173                                                  | 0.4546                   | 0.0094                            | 0.1833                 | 0.0072                          | RD                       |
| 06 24 41           | +23 25 59           | GJ0232           | 5.25                    | 3171                  | 8                              | 0.011                  | 10            | 1.013     | -8.8425                                                                | 0.0086                                                                          | -2.4930                                        | 0.0111                                                  | 0.1879                   | 0.0026                            | 0.2066                 | 0.0044                          | RD                       |
| 06 25 53           | +56 10 25           | LHS1848          | 5.26                    | 3180                  | 13                             | 0.011                  | 3             | 1.013     | -9.4569                                                                | 0.0058                                                                          | -2.4152                                        | 0.0265                                                  | 0.2042                   | 0.0065                            | 0.1012                 | 0.0068                          | RD                       |
| 06 27 13           | +41 38 14           | LSPM0627+4138    | 5.10                    | 3203                  | 16                             | 0.013                  | 3             | 1.014     | -9.2990                                                                | 0.0074                                                                          | -2.2327                                        | 0.0146                                                  | 0.2484                   | 0.0048                            | 0.1197                 | 0.0042                          | RD                       |
| 06 30 57           | +67 21 18           | L057-173         | 5.76                    | 3011                  | 24                             | 0.014                  | 68            | 1.009     | -9.8026                                                                | 0.0076                                                                          | -2.5886                                        | 0.0317                                                  | 0.1866                   | 0.0074                            | 0.0758                 | 0.0062                          | RD                       |
| 06 31 31           | -88 11 37           | SCR0631-8811     | 6.58                    | 2874                  | 16                             | 0.012                  | 25            | 1.006     | -9.4077                                                                | 0.0067                                                                          | -2.5157                                        | 0.0157                                                  | 0.2228                   | 0.0047                            | 0.1312                 | 0.0051                          | RD                       |
| 06 32 31           | +64 06 20           | LHS1853          | 5.12                    | 3213                  | 15                             | 0.010                  | 14            | 1.014     | -9.2818                                                                | 0.0065                                                                          | -2.1273                                        | 0.0188                                                  | 0.2788                   | 0.0066                            | 0.1214                 | 0.0057                          | RD                       |
| 06 33 43           | -75 37 48           | L032-009         | 4.58                    | 3413                  | 28                             | 0.012                  | 102           | 1.021     | -8.0123                                                                | 0.0076                                                                          | -1.6086                                        | 0.0114                                                  | 0.4490                   | 0.0094                            | 0.4638                 | 0.0134                          | RD                       |
| 06 33 50           | -58 31 43           | GJ0238           | 4.63                    | 3401                  | 19                             | 0.010                  | 54            | 1.020     | -8.4920                                                                | 0.0073                                                                          | -1.5669                                        | 0.0155                                                  | 0.4741                   | 0.0101                            | 0.2687                 | 0.0102                          | RD                       |
| 06 36 06           | +11 37 03           | LHS1857          | 5.25                    | 2888                  | 293                            | 0.310                  | 500           | 1.006     | -8.2094                                                                | 0.0020                                                                          | -1.1904                                        | 0.0192                                                  | 1.0148                   | 0.2070                            | 0.5163                 | 0.1077                          | YC                       |
| 06 36 18           | -40 00 24           | LP381-004        | 3.80                    | 3821                  | 21                             | 0.020                  | 167           | 1.040     | -8.3216                                                                | 0.0074                                                                          | -1.2443                                        | 0.0161                                                  | 0.5448                   | 0.0117                            | 0.2592                 | 0.0102                          | RD                       |
| 06 36 37           | +06 19 10           | LSPM0636+0619    | 6.65                    | 2867                  | 34                             | 0.010                  | 18            | 1.006     | -9.8957                                                                | 0.0064                                                                          | -2.8444                                        | 0.0271                                                  | 0.1533                   | 0.0060                            | 0.0751                 | 0.0054                          | RD                       |
| 06 37 11           | +17 33 53           | GJ0239           | 3.78                    | 3793                  | 39                             | 0.010                  | 3             | 1.039     | -7.9395                                                                | 0.0070                                                                          | -1.4657                                        | 0.0095                                                  | 0.4283                   | 0.0101                            | 0.4082                 | 0.0114                          | RD                       |
| 06 37 55           | +08 58 59           | LSPM0637+0858    | 5.59                    | 3078                  | 18                             | 0.011                  | 17            | 1.010     | -9.8366                                                                | 0.0061                                                                          | -2.9362                                        | 0.0284                                                  | 0.1197                   | 0.0041                            | 0.0698                 | 0.0051                          | RD                       |
| 06 39 37           | -21 01 33           | LP780-032        | 5.12                    | 3028                  | 229                            | 0.016                  | 387           | 1.009     | -8.6604                                                                | 0.0150                                                                          | -1.7701                                        | 0.0156                                                  | 0.4735                   | 0.0722                            | 0.2793                 | 0.0427                          | YC                       |
| 06 39 38           | -55 36 35           | NLT16863         | 3.78                    | 3815                  | 29                             | 0.012                  | 97            | 1.040     | -8.0119                                                                | 0.0072                                                                          | -1.2693                                        | 0.0096                                                  | 0.5309                   | 0.0099                            | 0.3713                 | 0.0088                          | RD                       |
| 06 40 14           | -05 52 23           | SCR0640-0552     | 4.26                    | 3529                  | 31                             | 0.012                  | 3             | 1.025     | -8.0321                                                                | 0.0075                                                                          | -1.4037                                        | 0.0168                                                  | 0.5314                   | 0.0139                            | 0.4238                 | 0.0184                          | RD                       |
| 06 41 18           | -43 22 33           | SP0641-4322      | 9.75                    | 2099                  | 45                             | 0.014                  | 55            | 1.001     | -10.8787                                                               | 0.0081                                                                          | -3.8755                                        | 0.0452                                                  | 0.0873                   | 0.0059                            | 0.0452                 | 0.0055                          | RD                       |
| 06 41 41           | +26 40 14           | LSPM0641+2640    | 5.63                    | 3121                  | 13                             | 0.011                  | 3             | 1.011     | -9.8461                                                                | 0.0061                                                                          | -2.6710                                        | 0.0479                                                  | 0.1580                   | 0.0088                            | 0.0671                 | 0.0082                          | RD                       |
| 06 42 11           | +03 34 53           | G108-021         | 4.73                    | 3363                  | 16                             | 0.014                  | 57            | 1.019     | -8.6104                                                                | 0.0071                                                                          | -1.9177                                        | 0.0162                                                  | 0.3238                   | 0.0068                            | 0.2399                 | 0.0095                          | RD                       |
| 06 42 27           | -67 07 20           | SCR0642-6707     | 6.20                    | 2910                  | 12                             | 0.013                  | 89            | 1.007     | -9.6452                                                                | 0.0064                                                                          | -2.8772                                        | 0.0089                                                  | 0.1433                   | 0.0019                            | 0.0973                 | 0.0019                          | RD                       |
| 06 43 35           | +16 41 35           | G110-014         | 5.57                    | 3084                  | 13                             | 0.011                  | 105           | 1.010     | -9.2876                                                                | 0.0065                                                                          | -2.1048                                        | 0.0248                                                  | 0.3105                   | 0.0093                            | 0.1308                 | 0.0082                          | RD                       |
| 06 43 41           | -26 24 41           | LTT02631         | 4.79                    | 3324                  | 20                             | 0.020                  | 159           | 1.017     | -8.9132                                                                | 0.0086                                                                          | -1.9058                                        | 0.0116                                                  | 0.3360                   | 0.0060                            | 0.1732                 | 0.0044                          | RD                       |
| 06 44 18           | +41 28 17           | LSPM0644+4128    | 6.13                    | 3046                  | 51                             | 0.011                  | 223           | 1.009     | -9.8812                                                                | 0.0067                                                                          | -2.6161                                        | 0.0282                                                  | 0.1766                   | 0.0083                            | 0.0677                 | 0.0053                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 06 44 46           | +71 53 16           | GJ2050           | 3.95                    | 3725                  | 19                             | 0.014                  | 3             | 1.035     | -8.4219                                                                | 0.0084                                                                          | -1.2393                                          | 0.0220                                                    | 0.5764                      | 0.0158                               | 0.2429                 | 0.0132                        | RD                       |
| 06 46 34           | +79 11 51           | G251-015         | 5.57                    | 3062                  | 31                             | 0.011                  | 3             | 1.010     | -9.6114                                                                | 0.0052                                                                          | -2.3994                                          | 0.0234                                                    | 0.2243                      | 0.0076                               | 0.0914                 | 0.0057                        | RD                       |
| 06 47 18           | +23 46 46           | LT11918          | 3.94                    | 3732                  | 20                             | 0.010                  | 3             | 1.035     | -9.0928                                                                | 0.0063                                                                          | -1.9290                                          | 0.0031                                                    | 0.2596                      | 0.0280                               | 0.1118                 | 0.0268                        | SC                       |
| 06 47 28           | +05 24 28           | G108-027         | 5.20                    | 3198                  | 17                             | 0.010                  | 9             | 1.013     | -9.1319                                                                | 0.0061                                                                          | -1.9356                                          | 0.0115                                                    | 0.3508                      | 0.0060                               | 0.1455                 | 0.0041                        | RD                       |
| 06 48 16           | +03 26 24           | LSPM0648+0326    | 7.17                    | 2727                  | 34                             | 0.010                  | 4             | 1.004     | -10.0273                                                               | 0.0070                                                                          | -2.7408                                          | 0.0353                                                    | 0.1909                      | 0.0091                               | 0.0714                 | 0.0066                        | YC                       |
| 06 49 05           | +37 06 51           | GJ1092           | 5.01                    | 3189                  | 12                             | 0.010                  | 33            | 1.013     | -9.1883                                                                | 0.0059                                                                          | -2.4228                                          | 0.0107                                                    | 0.2013                      | 0.0029                               | 0.1371                 | 0.0035                        | RD                       |
| 06 50 34           | +50 59 52           | L121-051         | 5.43                    | 3091                  | 17                             | 0.013                  | 31            | 1.011     | -9.6593                                                                | 0.0075                                                                          | -2.6530                                          | 0.0437                                                    | 0.1645                      | 0.0085                               | 0.0849                 | 0.0095                        | RD                       |
| 06 51 59           | +03 12 55           | G108-036         | 4.68                    | 3385                  | 7                              | 0.011                  | 20            | 1.020     | -8.9956                                                                | 0.0084                                                                          | -1.8071                                          | 0.0151                                                    | 0.3631                      | 0.0065                               | 0.1520                 | 0.0052                        | RD                       |
| 06 52 17           | +02 46 59           | G250-025         | 5.02                    | 3272                  | 13                             | 0.011                  | 18            | 1.016     | -9.1166                                                                | 0.0065                                                                          | -1.8557                                          | 0.0151                                                    | 0.3674                      | 0.0071                               | 0.1415                 | 0.0052                        | RD                       |
| 06 52 20           | -25 34 51           | Den0652-2534     | 9.18                    | 2174                  | 99                             | 0.016                  | 45            | 1.001     | -10.4933                                                               | 0.0080                                                                          | -3.6074                                          | 0.0103                                                    | 0.1108                      | 0.0102                               | 0.0657                 | 0.0061                        | RD                       |
| 06 54 48           | +33 16 05           | GJ0251           | 4.75                    | 3331                  | 65                             | 0.013                  | 216           | 1.018     | -7.7718                                                                | 0.0076                                                                          | -1.7782                                          | 0.0083                                                    | 0.3876                      | 0.0156                               | 0.6420                 | 0.0263                        | RD                       |
| 06 56 23           | +54 58 28           | LHS1882          | 4.21                    | 3561                  | 25                             | 0.012                  | 71            | 1.027     | -8.9242                                                                | 0.0069                                                                          | -1.9561                                          | 0.0521                                                    | 0.2763                      | 0.0170                               | 0.1490                 | 0.0200                        | SC                       |
| 06 56 31           | +44 01 56           | LHS1883          | 5.32                    | 3109                  | 22                             | 0.011                  | 51            | 1.011     | -9.3456                                                                | 0.0066                                                                          | -2.1911                                          | 0.0331                                                    | 0.2766                      | 0.0112                               | 0.1204                 | 0.0102                        | RD                       |
| 06 57 05           | +30 45 23           | GJ0254           | 3.53                    | 3962                  | 4                              | 0.011                  | 7             | 1.049     | -8.0889                                                                | 0.0073                                                                          | -1.0695                                          | 0.0164                                                    | 0.6197                      | 0.0118                               | 0.3151                 | 0.0122                        | RD                       |
| 06 59 28           | +19 20 56           | GJ1093           | 6.71                    | 2890                  | 52                             | 0.011                  | 3             | 1.006     | -9.0601                                                                | 0.0059                                                                          | -2.7850                                          | 0.0132                                                    | 0.1616                      | 0.0063                               | 0.1936                 | 0.0092                        | RD                       |
| 07 00 38           | +33 34 58           | LSPM0700+3334    | 5.28                    | 3179                  | 10                             | 0.012                  | 35            | 1.013     | -9.2179                                                                | 0.0062                                                                          | -1.9838                                          | 0.0119                                                    | 0.3359                      | 0.0051                               | 0.1334                 | 0.0037                        | RD                       |
| 07 01 06           | +59 50 00           | HIP033805        | 3.62                    | 3851                  | 16                             | 0.011                  | 20            | 1.042     | -8.5236                                                                | 0.0068                                                                          | -1.2933                                          | 0.0231                                                    | 0.5069                      | 0.0141                               | 0.2022                 | 0.0117                        | RD                       |
| 07 02 31           | +21 54 30           | LSPM0702+2154    | 6.18                    | 2913                  | 7                              | 0.010                  | 68            | 1.007     | -9.8519                                                                | 0.0066                                                                          | -2.8136                                          | 0.0146                                                    | 0.1538                      | 0.0027                               | 0.0766                 | 0.0027                        | RD                       |
| 07 02 37           | -40 06 28           | WT0207           | 5.19                    | 3185                  | 13                             | 0.011                  | 76            | 1.013     | -9.6708                                                                | 0.0064                                                                          | -2.3894                                          | 0.0156                                                    | 0.2098                      | 0.0042                               | 0.0789                 | 0.0030                        | RD                       |
| 07 02 50           | -61 02 48           | SCR0702-6102     | 7.10                    | 2855                  | 49                             | 0.013                  | 12            | 1.006     | -9.5609                                                                | 0.0064                                                                          | -2.6143                                          | 0.0081                                                    | 0.2015                      | 0.0072                               | 0.1114                 | 0.0042                        | RD                       |
| 07 03 23           | +34 41 51           | L255-011         | 5.26                    | 3173                  | 12                             | 0.010                  | 7             | 1.013     | -8.8727                                                                | 0.0054                                                                          | -2.1068                                          | 0.0120                                                    | 0.2927                      | 0.0046                               | 0.1993                 | 0.0058                        | RD                       |
| 07 04 26           | +08 17 20           | GJ0258           | 4.69                    | 3419                  | 41                             | 0.018                  | 291           | 1.021     | -8.5980                                                                | 0.0072                                                                          | -1.7548                                          | 0.0178                                                    | 0.3779                      | 0.0119                               | 0.2354                 | 0.0115                        | RD                       |
| 07 04 34           | +16 57 27           | LSPM0704+1657    | 5.82                    | 3010                  | 8                              | 0.013                  | 140           | 1.009     | -9.5897                                                                | 0.0066                                                                          | -2.5466                                          | 0.0161                                                    | 0.1959                      | 0.0038                               | 0.0970                 | 0.0038                        | RD                       |
| 07 07 23           | -21 27 27           | GJ2055           | 4.28                    | 3544                  | 20                             | 0.011                  | 3             | 1.026     | -8.3611                                                                | 0.0070                                                                          | -1.3902                                          | 0.0191                                                    | 0.5354                      | 0.0132                               | 0.2879                 | 0.0137                        | RD                       |
| 07 07 38           | +48 41 14           | G107-048         | 5.14                    | 3206                  | 9                              | 0.009                  | 3             | 1.014     | -8.9947                                                                | 0.0055                                                                          | -2.4311                                          | 0.0174                                                    | 0.1974                      | 0.0041                               | 0.1696                 | 0.0073                        | RD                       |
| 07 07 50           | +67 12 05           | LT11972          | 4.15                    | 3619                  | 16                             | 0.012                  | 9             | 1.030     | -8.4484                                                                | 0.0078                                                                          | -1.4522                                          | 0.0177                                                    | 0.4726                      | 0.0104                               | 0.2497                 | 0.0106                        | RD                       |
| 07 07 53           | -49 00 50           | ESO207-061       | 9.05                    | 2344                  | 81                             | 0.013                  | 37            | 1.001     | -10.7129                                                               | 0.0079                                                                          | -3.7876                                          | 0.0229                                                    | 0.0774                      | 0.0057                               | 0.0439                 | 0.0039                        | SC                       |
| 07 09 38           | -57 03 42           | APM0710-5704     | 5.34                    | 3221                  | 32                             | 0.012                  | 3             | 1.014     | -9.0421                                                                | 0.0091                                                                          | -2.0903                                          | 0.0120                                                    | 0.2894                      | 0.0070                               | 0.1591                 | 0.0048                        | RD                       |
| 07 10 14           | +37 40 11           | LT117942         | 5.20                    | 3194                  | 6                              | 0.012                  | 54            | 1.013     | -9.4865                                                                | 0.0073                                                                          | -2.2315                                          | 0.0156                                                    | 0.2502                      | 0.0046                               | 0.0970                 | 0.0036                        | RD                       |
| 07 13 11           | -05 11 49           | SCR0713-0511     | 4.31                    | 3513                  | 11                             | 0.011                  | 79            | 1.025     | -8.3702                                                                | 0.0069                                                                          | -1.7920                                          | 0.0104                                                    | 0.3429                      | 0.0046                               | 0.2898                 | 0.0065                        | RD                       |
| 07 13 22           | +23 03 58           | G109-051         | 5.37                    | 3226                  | 25                             | 0.011                  | 6             | 1.014     | -9.2226                                                                | 0.0066                                                                          | -2.0475                                          | 0.0171                                                    | 0.3030                      | 0.0077                               | 0.1288                 | 0.0058                        | RD                       |
| 07 14 04           | +37 02 46           | LSPM0714+3702    | 9.12                    | 2417                  | 35                             | 0.011                  | 5             | 1.002     | -10.2052                                                               | 0.0078                                                                          | -3.5175                                          | 0.0272                                                    | 0.0994                      | 0.0042                               | 0.0740                 | 0.0054                        | RD                       |
| 07 16 18           | +33 09 10           | GJ1096           | 5.71                    | 3111                  | 13                             | 0.012                  | 3             | 1.011     | -9.2757                                                                | 0.0064                                                                          | -2.4316                                          | 0.0274                                                    | 0.2094                      | 0.0068                               | 0.1303                 | 0.0090                        | RD                       |
| 07 17 17           | -05 01 04           | SCR0717-0501     | 5.26                    | 3175                  | 8                              | 0.015                  | 10            | 1.013     | -8.9165                                                                | 0.0093                                                                          | -2.3555                                          | 0.0122                                                    | 0.2195                      | 0.0033                               | 0.1892                 | 0.0045                        | RD                       |
| 07 17 30           | +19 34 17           | LT117957         | 4.67                    | 3393                  | 11                             | 0.013                  | 21            | 1.020     | -8.9400                                                                | 0.0065                                                                          | -1.8884                                          | 0.0207                                                    | 0.3291                      | 0.0081                               | 0.1613                 | 0.0083                        | RD                       |
| 07 18 08           | +39 16 29           | LT12003          | 4.01                    | 3680                  | 17                             | 0.012                  | 21            | 1.033     | -8.1734                                                                | 0.0073                                                                          | -1.3563                                          | 0.0149                                                    | 0.5163                      | 0.0100                               | 0.3314                 | 0.0118                        | RD                       |
| 07 19 31           | +32 49 48           | GJ0270           | 3.70                    | 3859                  | 9                              | 0.012                  | 16            | 1.043     | -8.1421                                                                | 0.0075                                                                          | -1.0827                                          | 0.0183                                                    | 0.6432                      | 0.0139                               | 0.3123                 | 0.0138                        | RD                       |
| 07 20 52           | -02 10 12           | LT02816          | 4.84                    | 3323                  | 22                             | 0.045                  | 121           | 1.017     | -8.6881                                                                | 0.0090                                                                          | -2.0900                                          | 0.0155                                                    | 0.2719                      | 0.0060                               | 0.2246                 | 0.0082                        | RD                       |
| 07 22 17           | +08 51 57           | LSPM0722+0851    | 5.74                    | 3011                  | 22                             | 0.011                  | 95            | 1.009     | -9.6324                                                                | 0.0068                                                                          | -2.3673                                          | 0.0375                                                    | 0.2408                      | 0.0110                               | 0.0923                 | 0.0089                        | RD                       |
| 07 22 32           | +73 05 05           | LSPM0722+7305    | 5.96                    | 2982                  | 13                             | 0.011                  | 15            | 1.008     | -9.5256                                                                | 0.0058                                                                          | -2.3505                                          | 0.0244                                                    | 0.2502                      | 0.0074                               | 0.1064                 | 0.0066                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 07 22 42           | +30 40 12           | LHS1914          | 4.69                    | 3374                  | 5                              | 0.012                   | 3             | 1.019     | -9.1368                                                    | 0.0061                                                              | -1.8782                                        | 0.0268                                                  | 0.3367                   | 0.0104                            | 0.1300                 | 0.0088                          | RD               |
| 07 23 15           | +46 05 15           | GJ0272           | 4.13                    | 3628                  | 32                             | 0.011                   | 13            | 1.030     | -8.2255                                                    | 0.0072                                                              | -1.3031                                        | 0.0140                                                  | 0.5647                   | 0.0136                            | 0.3211                 | 0.0117                          | RD               |
| 07 27 25           | +05 13 33           | GJ0273           | 5.02                    | 3170                  | 54                             | 1.385                   | 320           | 1.013     | -7.6167                                                    | 0.0102                                                              | -1.9723                                        | 0.0103                                                  | 0.3424                   | 0.0124                            | 0.8478                 | 0.0308                          | RD               |
| 07 27 28           | +22 02 38           | LFT12020         | 4.30                    | 3528                  | 29                             | 0.010                   | 3             | 1.025     | -8.4369                                                    | 0.0065                                                              | -1.3688                                        | 0.0171                                                  | 0.5535                   | 0.0142                            | 0.2661                 | 0.0119                          | RD               |
| 07 28 45           | -03 17 53           | GJ1097           | 4.72                    | 3368                  | 11                             | 0.011                   | 33            | 1.019     | -8.3600                                                    | 0.0074                                                              | -1.7348                                        | 0.0118                                                  | 0.3986                   | 0.0060                            | 0.3191                 | 0.0083                          | RD               |
| 07 29 18           | +75 54 03           | L017-044         | 6.88                    | 2803                  | 33                             | 0.012                   | 14            | 1.005     | -10.2198                                                   | 0.0064                                                              | -3.1701                                        | 0.0351                                                  | 0.1102                   | 0.0052                            | 0.0541                 | 0.0050                          | RD               |
| 07 30 29           | +62 47 27           | LSPM0730+6247    | 6.32                    | 2943                  | 19                             | 0.013                   | 205           | 1.007     | -9.8999                                                    | 0.0068                                                              | -2.7675                                        | 0.0193                                                  | 0.1590                   | 0.0041                            | 0.0710                 | 0.0035                          | RD               |
| 07 31 29           | +02 49 08           | LSPM0731+0249    | 6.85                    | 2829                  | 23                             | 0.025                   | 228           | 1.005     | -9.8692                                                    | 0.0068                                                              | -3.0985                                        | 0.0180                                                  | 0.1176                   | 0.0031                            | 0.0796                 | 0.0037                          | RD               |
| 07 31 38           | +16 44 02           | LHS6126          | 5.56                    | 3088                  | 14                             | 0.012                   | 16            | 1.010     | -9.4187                                                    | 0.0055                                                              | -2.2107                                        | 0.0214                                                  | 0.2742                   | 0.0072                            | 0.1122                 | 0.0061                          | RD               |
| 07 32 02           | +57 55 44           | LHS1923          | 6.62                    | 2923                  | 14                             | 0.012                   | 3             | 1.007     | -10.1790                                                   | 0.0069                                                              | -3.0121                                        | 0.0168                                                  | 0.1216                   | 0.0026                            | 0.0522                 | 0.0021                          | RD               |
| 07 32 02           | +68 37 16           | GJ0275.1         | 4.03                    | 3692                  | 41                             | 0.011                   | 25            | 1.033     | -8.3801                                                    | 0.0067                                                              | -1.0903                                        | 0.0253                                                  | 0.6964                   | 0.0256                            | 0.2594                 | 0.0174                          | YC               |
| 07 33 28           | +41 30 03           | G111-015         | 4.83                    | 3310                  | 11                             | 0.012                   | 98            | 1.017     | -9.4189                                                    | 0.0062                                                              | -2.2532                                        | 0.0128                                                  | 0.2272                   | 0.0037                            | 0.0976                 | 0.0030                          | RD               |
| 07 34 18           | +00 59 09           | GJ1099           | 4.48                    | 3464                  | 5                              | 0.011                   | 10            | 1.023     | -8.6263                                                    | 0.0066                                                              | -1.5872                                        | 0.0178                                                  | 0.3474                   | 0.0072                            | 0.2220                 | 0.0096                          | RD               |
| 07 34 27           | +62 56 30           | GJ0277.1         | 3.93                    | 3719                  | 22                             | 0.011                   | 69            | 1.035     | -8.2302                                                    | 0.0066                                                              | -1.5872                                        | 0.0178                                                  | 0.3874                   | 0.0072                            | 0.2711                 | 0.0109                          | RD               |
| 07 35 22           | +54 50 59           | HIP036915        | 4.34                    | 3523                  | 14                             | 0.012                   | 31            | 1.025     | -8.4236                                                    | 0.0072                                                              | -1.7144                                        | 0.0166                                                  | 0.3730                   | 0.0077                            | 0.2711                 | 0.0109                          | RD               |
| 07 36 12           | -51 55 21           | LHS1932          | 4.73                    | 3369                  | 10                             | 0.013                   | 97            | 1.019     | -8.7687                                                    | 0.0077                                                              | -1.8574                                        | 0.0103                                                  | 0.3459                   | 0.0046                            | 0.1992                 | 0.0041                          | RD               |
| 07 36 57           | -30 24 16           | SCR0736-3024     | 5.18                    | 3200                  | 10                             | 0.012                   | 13            | 1.013     | -9.1006                                                    | 0.0069                                                              | -2.3574                                        | 0.0090                                                  | 0.2156                   | 0.0056                            | 0.1507                 | 0.0027                          | RD               |
| 07 38 10           | -31 12 19           | L528-016         | 4.59                    | 3410                  | 14                             | 0.013                   | 3             | 1.020     | -8.5935                                                    | 0.0066                                                              | -1.7508                                        | 0.0109                                                  | 0.3817                   | 0.0056                            | 0.2379                 | 0.0059                          | RD               |
| 07 38 29           | +24 00 09           | 2MA0738+2400     | 4.86                    | 3302                  | 8                              | 0.011                   | 9             | 1.017     | -8.9225                                                    | 0.0058                                                              | -1.9249                                        | 0.0155                                                  | 0.3332                   | 0.0061                            | 0.1737                 | 0.0066                          | RD               |
| 07 38 41           | -21 13 28           | LHS1935          | 4.65                    | 3384                  | 12                             | 0.011                   | 87            | 1.019     | -8.4880                                                    | 0.0072                                                              | -1.9421                                        | 0.0168                                                  | 0.3110                   | 0.0064                            | 0.2728                 | 0.0111                          | RD               |
| 07 38 51           | +18 29 20           | LSPM0738+1829    | 6.67                    | 2929                  | 27                             | 0.011                   | 9             | 1.007     | -9.7066                                                    | 0.0067                                                              | -2.8006                                        | 0.0213                                                  | 0.1545                   | 0.0047                            | 0.0895                 | 0.0050                          | RD               |
| 07 39 23           | +02 11 01           | GJ0281           | 3.71                    | 3875                  | 25                             | 0.012                   | 10            | 1.044     | -7.9584                                                    | 0.0082                                                              | -1.1386                                        | 0.0120                                                  | 0.5982                   | 0.0113                            | 0.3828                 | 0.0105                          | YG               |
| 07 40 12           | -42 57 40           | SCR0740-4257     | 6.04                    | 3032                  | 18                             | 0.012                   | 3             | 1.009     | -8.8540                                                    | 0.0063                                                              | -2.5715                                        | 0.0068                                                  | 0.1877                   | 0.0026                            | 0.2229                 | 0.0034                          | RD               |
| 07 41 07           | +17 38 45           | LHS1937          | 8.08                    | 2555                  | 25                             | 0.012                   | 19            | 1.002     | -10.2219                                                   | 0.0075                                                              | -3.3366                                        | 0.0362                                                  | 0.1095                   | 0.0050                            | 0.0650                 | 0.0061                          | RD               |
| 07 41 20           | +67 18 44           | L058-260         | 5.92                    | 2987                  | 13                             | 0.013                   | 3             | 1.008     | -9.6526                                                    | 0.0060                                                              | -2.5345                                        | 0.0196                                                  | 0.2018                   | 0.0049                            | 0.0916                 | 0.0045                          | RD               |
| 07 44 40           | +03 33 09           | GJ0285           | 5.49                    | 3086                  | 29                             | 0.018                   | 134           | 1.010     | -7.9960                                                    | 0.0085                                                              | -1.9474                                        | 0.0101                                                  | 0.3718                   | 0.0082                            | 0.5781                 | 0.0146                          | YC               |
| 07 46 42           | +57 26 53           | G193-065         | 5.65                    | 3118                  | 9                              | 0.011                   | 3             | 1.011     | -9.2488                                                    | 0.0057                                                              | -2.1307                                        | 0.0179                                                  | 0.2947                   | 0.0063                            | 0.1338                 | 0.0059                          | RD               |
| 07 47 06           | +76 03 19           | L017-075         | 5.03                    | 3268                  | 17                             | 0.011                   | 18            | 1.015     | -9.3396                                                    | 0.0065                                                              | -2.2632                                        | 0.0222                                                  | 0.2305                   | 0.0063                            | 0.1097                 | 0.0062                          | RD               |
| 07 48 16           | +20 22 05           | GJ0289           | 4.05                    | 3653                  | 27                             | 0.011                   | 131           | 1.031     | -8.5642                                                    | 0.0065                                                              | -1.7237                                        | 0.0130                                                  | 0.3431                   | 0.0072                            | 0.2144                 | 0.0071                          | RD               |
| 07 49 13           | -76 42 07           | L034-026         | 4.73                    | 3370                  | 9                              | 0.010                   | 121           | 1.019     | -8.3068                                                    | 0.0072                                                              | -1.7615                                        | 0.0121                                                  | 0.3860                   | 0.0058                            | 0.3388                 | 0.0091                          | RD               |
| 07 51 51           | +05 32 57           | LHS1950          | 5.63                    | 3118                  | 16                             | 0.011                   | 3             | 1.011     | -9.3540                                                    | 0.0055                                                              | -2.5369                                        | 0.0140                                                  | 0.1847                   | 0.0035                            | 0.1186                 | 0.0042                          | RD               |
| 07 51 55           | -00 00 13           | GJ1103           | 5.60                    | 3127                  | 10                             | 0.011                   | 13            | 1.011     | -8.7761                                                    | 0.0084                                                              | -2.3950                                        | 0.0151                                                  | 0.2162                   | 0.0040                            | 0.2292                 | 0.0079                          | RD               |
| 07 52 24           | +16 12 15           | LP423-031        | 7.19                    | 2683                  | 61                             | 0.010                   | 9             | 1.004     | -9.7627                                                    | 0.0073                                                              | -2.7393                                        | 0.0104                                                  | 0.1976                   | 0.0093                            | 0.1000                 | 0.0050                          | YC               |
| 07 54 11           | -25 18 12           | LFT02976         | 3.60                    | 3929                  | 14                             | 0.011                   | 3             | 1.047     | -8.0606                                                    | 0.0080                                                              | -1.0472                                        | 0.0102                                                  | 0.6465                   | 0.0088                            | 0.3310                 | 0.0066                          | RD               |
| 07 54 55           | -38 09 38           | SCR0754-3809     | 6.38                    | 2901                  | 22                             | 0.014                   | 113           | 1.007     | -9.3977                                                    | 0.0069                                                              | -2.7140                                        | 0.0086                                                  | 0.1740                   | 0.0032                            | 0.1302                 | 0.0028                          | RD               |
| 07 55 12           | +52 57 54           | LSPM0755+5257    | 5.28                    | 3176                  | 21                             | 0.010                   | 13            | 1.013     | -9.3484                                                    | 0.0062                                                              | -2.1020                                        | 0.0235                                                  | 0.2937                   | 0.0088                            | 0.1150                 | 0.0069                          | RD               |
| 07 55 54           | +83 23 05           | GJ1101           | 5.22                    | 3178                  | 9                              | 0.013                   | 6             | 1.013     | -8.8606                                                    | 0.0056                                                              | -2.1751                                        | 0.0172                                                  | 0.2696                   | 0.0056                            | 0.2014                 | 0.0086                          | RD               |
| 07 57 27           | +12 01 27           | 2MA0757+1201     | 4.50                    | 3459                  | 10                             | 0.015                   | 13            | 1.022     | -8.9412                                                    | 0.0065                                                              | -1.7272                                        | 0.0209                                                  | 0.3811                   | 0.0094                            | 0.1549                 | 0.0081                          | RD               |
| 07 57 33           | -71 14 54           | SCR0757-7114     | 5.03                    | 3252                  | 27                             | 0.013                   | 11            | 1.015     | -8.6739                                                    | 0.0075                                                              | -1.4902                                        | 0.0203                                                  | 0.5666                   | 0.0163                            | 0.2385                 | 0.0124                          | YC               |
| 07 58 09           | +07 17 02           | G050-012         | 5.39                    | 3087                  | 21                             | 0.014                   | 3             | 1.010     | -9.0691                                                    | 0.0072                                                              | -2.4123                                        | 0.0136                                                  | 0.2175                   | 0.0045                            | 0.1679                 | 0.0057                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 07 58 13           | +41 18 13           | GJ1105           | 5.10                    | 3214                  | 10                             | 0.013                   | 3             | 1.014     | -8.4480                                                    | 0.0075                                                              | -2.1169                                        | 0.0101                                                  | 0.2819                   | 0.0037                            | 0.3166                 | 0.0065                          | RD               |
| 07 58 18           | +87 57 40           | LHS1962          | 5.05                    | 3235                  | 15                             | 0.010                   | 3             | 1.014     | -9.2989                                                    | 0.0057                                                              | -2.2343                                        | 0.0389                                                  | 0.2431                   | 0.0111                            | 0.1173                 | 0.0117                          | RD               |
| 07 58 23           | +49 39 53           | LHS1964          | 5.31                    | 3156                  | 24                             | 0.011                   | 94            | 1.012     | -8.8560                                                    | 0.0069                                                              | -2.0805                                        | 0.0160                                                  | 0.3050                   | 0.0072                            | 0.2054                 | 0.0084                          | RD               |
| 08 01 21           | +56 24 04           | L089-187         | 6.90                    | 2893                  | 24                             | 0.009                   | 4             | 1.006     | -10.1011                                                   | 0.0052                                                              | -3.1315                                        | 0.0246                                                  | 0.1082                   | 0.0035                            | 0.0583                 | 0.0037                          | RD               |
| 08 03 45           | +08 27 00           | L544-017         | 6.53                    | 2881                  | 17                             | 0.011                   | 3             | 1.006     | -10.1369                                                   | 0.0057                                                              | -2.9843                                        | 0.0212                                                  | 0.1293                   | 0.0035                            | 0.0564                 | 0.0031                          | RD               |
| 08 05 46           | -59 12 50           | SCR0805-5912     | 5.48                    | 3102                  | 9                              | 0.012                   | 60            | 1.011     | -9.3989                                                    | 0.0064                                                              | -2.4672                                        | 0.0092                                                  | 0.2022                   | 0.0025                            | 0.1137                 | 0.0022                          | RD               |
| 08 05 57           | +04 17 04           | LSPM0805+0417    | 7.18                    | 2736                  | 26                             | 0.013                   | 3             | 1.004     | -10.1470                                                   | 0.0062                                                              | -2.9925                                        | 0.0717                                                  | 0.1419                   | 0.0120                            | 0.0618                 | 0.0114                          | RD               |
| 08 06 55           | +42 17 33           | G111-056         | 5.36                    | 3100                  | 18                             | 0.010                   | 10            | 1.011     | -9.2608                                                    | 0.0064                                                              | -2.2012                                        | 0.0118                                                  | 0.2751                   | 0.0049                            | 0.1335                 | 0.0039                          | RD               |
| 08 07 26           | +32 13 10           | L310-034         | 8.41                    | 2468                  | 38                             | 0.011                   | 3             | 1.002     | -10.2682                                                   | 0.0063                                                              | -3.5552                                        | 0.0297                                                  | 0.0912                   | 0.0042                            | 0.0660                 | 0.0054                          | RD               |
| 08 09 31           | +21 54 17           | L1321-040        | 4.27                    | 3560                  | 12                             | 0.011                   | 22            | 1.027     | -8.6453                                                    | 0.0062                                                              | -1.4541                                        | 0.0331                                                  | 0.4928                   | 0.0191                            | 0.2056                 | 0.0173                          | RD               |
| 08 09 58           | -52 58 05           | GJ0298           | 4.68                    | 3393                  | 13                             | 0.015                   | 138           | 1.020     | -8.5292                                                    | 0.0079                                                              | -1.5907                                        | 0.0193                                                  | 0.4637                   | 0.0109                            | 0.2588                 | 0.0121                          | RD               |
| 08 10 54           | +03 58 34           | G050-021         | 5.22                    | 3191                  | 23                             | 0.012                   | 10            | 1.013     | -9.0406                                                    | 0.0058                                                              | -1.9100                                        | 0.0115                                                  | 0.3628                   | 0.0071                            | 0.1623                 | 0.0049                          | RD               |
| 08 11 15           | +36 07 28           | NFT19066         | 5.32                    | 3178                  | 17                             | 0.011                   | 24            | 1.013     | -9.3208                                                    | 0.0058                                                              | -2.0472                                        | 0.0131                                                  | 0.3125                   | 0.0058                            | 0.1186                 | 0.0039                          | RD               |
| 08 12 41           | -21 33 07           | GJ0300           | 5.44                    | 3114                  | 11                             | 0.012                   | 7             | 1.011     | -8.4035                                                    | 0.0074                                                              | -2.1078                                        | 0.0081                                                  | 0.3035                   | 0.0036                            | 0.3551                 | 0.0050                          | RD               |
| 08 13 43           | -76 07 49           | LHS1992          | 4.57                    | 3407                  | 17                             | 0.016                   | 90            | 1.020     | -8.5902                                                    | 0.0083                                                              | -1.6781                                        | 0.0152                                                  | 0.4157                   | 0.0084                            | 0.2392                 | 0.0085                          | RD               |
| 08 13 45           | +79 18 12           | LHS1993          | 5.67                    | 3021                  | 24                             | 0.014                   | 85            | 1.009     | -9.3834                                                    | 0.0072                                                              | -2.5995                                        | 0.0270                                                  | 0.1830                   | 0.0064                            | 0.1221                 | 0.0085                          | RD               |
| 08 16 08           | +01 18 09           | GJ2066           | 4.34                    | 3481                  | 41                             | 0.014                   | 105           | 1.023     | -7.9592                                                    | 0.0079                                                              | -1.5457                                        | 0.0098                                                  | 0.4638                   | 0.0122                            | 0.4737                 | 0.0140                          | RD               |
| 08 18 08           | -68 18 47           | L098-059         | 4.61                    | 3407                  | 9                              | 0.014                   | 13            | 1.020     | -8.5031                                                    | 0.0083                                                              | -2.0237                                        | 0.0131                                                  | 0.2792                   | 0.0044                            | 0.2644                 | 0.0075                          | RD               |
| 08 18 53           | +21 27 04           | LSPM0818+2127    | 5.53                    | 3093                  | 6                              | 0.010                   | 25            | 1.011     | -9.6512                                                    | 0.0060                                                              | -2.4665                                        | 0.0561                                                  | 0.2036                   | 0.0132                            | 0.0856                 | 0.0123                          | RD               |
| 08 20 13           | +09 20 15           | LHS6145          | 5.63                    | 3082                  | 17                             | 0.011                   | 20            | 1.010     | -9.5602                                                    | 0.0061                                                              | -2.3138                                        | 0.0235                                                  | 0.2444                   | 0.0071                            | 0.0957                 | 0.0057                          | RD               |
| 08 21 28           | +52 20 59           | L124-025         | 6.53                    | 2885                  | 35                             | 0.012                   | 19            | 1.006     | -10.0933                                                   | 0.0060                                                              | -2.9144                                        | 0.0209                                                  | 0.1397                   | 0.0048                            | 0.0591                 | 0.0034                          | RD               |
| 08 21 57           | +17 48 56           | LHS2002          | 5.67                    | 3014                  | 19                             | 0.010                   | 3             | 1.009     | -9.7356                                                    | 0.0048                                                              | -2.8269                                        | 0.0215                                                  | 0.1415                   | 0.0039                            | 0.0817                 | 0.0046                          | RD               |
| 08 23 37           | +64 13 38           | L059-527         | 5.71                    | 3020                  | 20                             | 0.012                   | 48            | 1.009     | -9.7135                                                    | 0.0073                                                              | -2.5327                                        | 0.0196                                                  | 0.1979                   | 0.0052                            | 0.0836                 | 0.0041                          | RD               |
| 08 24 27           | +25 55 37           | L367-217         | 5.64                    | 3127                  | 17                             | 0.009                   | 3             | 1.011     | -9.6120                                                    | 0.0058                                                              | -2.5624                                        | 0.0254                                                  | 0.1783                   | 0.0056                            | 0.0876                 | 0.0057                          | RD               |
| 08 24 31           | +39 00 54           | L209-002         | 6.57                    | 2948                  | 27                             | 0.012                   | 3             | 1.007     | -9.8274                                                    | 0.0071                                                              | -2.7321                                        | 0.0312                                                  | 0.1650                   | 0.0067                            | 0.0769                 | 0.0062                          | RD               |
| 08 25 53           | +69 02 01           | LHS0246          | 6.60                    | 2866                  | 14                             | 0.011                   | 3             | 1.006     | -9.4254                                                    | 0.0071                                                              | -2.7792                                        | 0.0312                                                  | 0.1654                   | 0.0030                            | 0.1292                 | 0.0043                          | RD               |
| 08 28 13           | +20 08 22           | GJ1110           | 4.44                    | 3461                  | 18                             | 0.009                   | 10            | 1.022     | -9.0991                                                    | 0.0064                                                              | -1.8893                                        | 0.0168                                                  | 0.3159                   | 0.0070                            | 0.1290                 | 0.0054                          | RD               |
| 08 28 34           | -13 09 20           | SSS0829-1309     | 10.10                   | 2084                  | 65                             | 0.014                   | 37            | 1.001     | -10.4622                                                   | 0.0077                                                              | -3.8559                                        | 0.0086                                                  | 0.0906                   | 0.0057                            | 0.0741                 | 0.0047                          | RD               |
| 08 29 56           | +61 43 33           | GJ0308.1         | 3.55                    | 3953                  | 8                              | 0.012                   | 3             | 1.049     | -8.2937                                                    | 0.0072                                                              | -1.1975                                        | 0.0173                                                  | 0.5371                   | 0.0109                            | 0.2500                 | 0.0104                          | RD               |
| 08 30 33           | +09 47 16           | LHS2021          | 8.41                    | 2452                  | 38                             | 0.011                   | 3             | 1.002     | -10.1610                                                   | 0.0056                                                              | -3.2662                                        | 0.0094                                                  | 0.1290                   | 0.0042                            | 0.0757                 | 0.0028                          | RD               |
| 08 31 30           | +73 03 46           | LHS2025          | 4.92                    | 3282                  | 3                              | 0.013                   | 3             | 1.016     | -8.8694                                                    | 0.0068                                                              | -2.0456                                        | 0.0227                                                  | 0.2936                   | 0.0077                            | 0.1870                 | 0.0105                          | RD               |
| 08 32 30           | -01 34 39           | LHS2026          | 7.80                    | 2684                  | 100                            | 0.012                   | 3             | 1.004     | -10.2348                                                   | 0.0051                                                              | -3.1516                                        | 0.0066                                                  | 0.1228                   | 0.0092                            | 0.0580                 | 0.0044                          | RD               |
| 08 33 25           | +18 31 45           | LHS2027          | 5.22                    | 3176                  | 16                             | 0.012                   | 3             | 1.013     | -9.4863                                                    | 0.0070                                                              | -2.4031                                        | 0.0201                                                  | 0.2077                   | 0.0052                            | 0.0981                 | 0.0049                          | RD               |
| 08 34 26           | -01 08 40           | GJ2070           | 4.71                    | 3364                  | 21                             | 0.013                   | 126           | 1.019     | -8.8687                                                    | 0.0070                                                              | -2.1052                                        | 0.0572                                                  | 0.2609                   | 0.0175                            | 0.1781                 | 0.0262                          | RD               |
| 08 34 42           | +45 29 07           | LSPM0834+4529    | 5.38                    | 3129                  | 16                             | 0.010                   | 3             | 1.011     | -9.5307                                                    | 0.0070                                                              | -2.3800                                        | 0.0295                                                  | 0.2197                   | 0.0078                            | 0.0960                 | 0.0072                          | RD               |
| 08 35 20           | +14 08 33           | LSPM0835+1408    | 5.71                    | 3023                  | 26                             | 0.015                   | 74            | 1.009     | -9.0548                                                    | 0.0074                                                              | -1.8064                                        | 0.0162                                                  | 0.4557                   | 0.0116                            | 0.1780                 | 0.0075                          | YC               |
| 08 37 08           | +15 07 46           | LHS2029          | 4.47                    | 3468                  | 14                             | 0.013                   | 44            | 1.023     | -8.5827                                                    | 0.0082                                                              | -1.5320                                        | 0.0315                                                  | 0.4746                   | 0.0176                            | 0.2328                 | 0.0184                          | RD               |
| 08 37 30           | +03 33 46           | LSPM0837+0333    | 5.44                    | 3115                  | 10                             | 0.011                   | 18            | 1.011     | -9.3078                                                    | 0.0065                                                              | -2.2999                                        | 0.0162                                                  | 0.2431                   | 0.0048                            | 0.1252                 | 0.0050                          | RD               |
| 08 39 25           | +29 53 18           | L321-016         | 5.33                    | 3212                  | 13                             | 0.010                   | 41            | 1.014     | -9.4915                                                    | 0.0064                                                              | -2.5309                                        | 0.0162                                                  | 0.1752                   | 0.0035                            | 0.0953                 | 0.0038                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 08 40 16           | +31 27 07           | LSPM0840+3127    | 5.00                    | 3258                  | 13                             | 0.011                  | 3             | 1.015     | -8.6074                                                    | 0.0077                                                              | -2.0729                                        | 0.0116                                                  | 0.3056                   | 0.0047                            | 0.2564                 | 0.0065                          | RD               |
| 08 40 30           | +18 24 09           | GJ0316.1         | 7.62                    | 2633                  | 22                             | 0.011                  | 3             | 1.003     | -9.8330                                                    | 0.0057                                                              | -3.0563                                        | 0.0080                                                  | 0.1424                   | 0.0027                            | 0.0958                 | 0.0022                          | RD               |
| 08 40 59           | -23 27 23           | GJ0317           | 4.98                    | 3279                  | 22                             | 0.015                  | 14            | 1.016     | -8.5164                                                    | 0.0102                                                              | -1.6518                                        | 0.0105                                                  | 0.4628                   | 0.0084                            | 0.2813                 | 0.0054                          | RD               |
| 08 41 04           | +67 39 39           | LHS2038          | 5.25                    | 3182                  | 12                             | 0.011                  | 10            | 1.013     | -9.4767                                                    | 0.0064                                                              | -2.2309                                        | 0.0192                                                  | 0.2523                   | 0.0059                            | 0.0989                 | 0.0047                          | RD               |
| 08 41 20           | +59 29 51           | LHS0252          | 6.38                    | 2903                  | 20                             | 0.011                  | 3             | 1.007     | -9.2287                                                    | 0.0065                                                              | -2.7819                                        | 0.0096                                                  | 0.1607                   | 0.0029                            | 0.1580                 | 0.0038                          | RD               |
| 08 44 45           | +18 13 07           | LHS5140          | 4.97                    | 3275                  | 11                             | 0.013                  | 6             | 1.016     | -8.9237                                                    | 0.0057                                                              | -1.6690                                        | 0.0359                                                  | 0.4546                   | 0.0190                            | 0.1763                 | 0.0162                          | RD               |
| 08 48 30           | +61 09 06           | LHS2051          | 5.37                    | 3093                  | 12                             | 0.012                  | 3             | 1.011     | -9.6083                                                    | 0.0059                                                              | -2.7010                                        | 0.0211                                                  | 0.1554                   | 0.0040                            | 0.0899                 | 0.0048                          | RD               |
| 08 51 44           | +18 07 30           | GJ1114           | 4.03                    | 3670                  | 21                             | 0.013                  | 10            | 1.032     | -8.6154                                                    | 0.0074                                                              | -1.6565                                        | 0.0203                                                  | 0.3673                   | 0.0096                            | 0.2003                 | 0.0102                          | RD               |
| 08 52 25           | +38 09 24           | LSPM0852+3809    | 4.83                    | 3322                  | 11                             | 0.012                  | 83            | 1.017     | -9.3075                                                    | 0.0063                                                              | -2.0734                                        | 0.0165                                                  | 0.2774                   | 0.0056                            | 0.1102                 | 0.0045                          | RD               |
| 08 53 28           | -39 24 41           | SCR0853-3924     | 4.61                    | 3404                  | 7                              | 0.013                  | 3             | 1.020     | -8.7426                                                    | 0.0072                                                              | -1.7836                                        | 0.0116                                                  | 0.3689                   | 0.0051                            | 0.2011                 | 0.0051                          | RD               |
| 08 53 36           | -03 29 32           | LHS2065          | 9.20                    | 2185                  | 100                            | 0.060                  | 253           | 1.001     | -9.8726                                                    | 0.0081                                                              | -3.5158                                        | 0.0085                                                  | 0.1218                   | 0.0112                            | 0.1328                 | 0.0123                          | RD               |
| 08 53 57           | -24 46 54           | LHS2067          | 6.37                    | 2909                  | 7                              | 0.013                  | 35            | 1.007     | -10.3578                                                   | 0.0066                                                              | -3.0516                                        | 0.0118                                                  | 0.1173                   | 0.0017                            | 0.0429                 | 0.0011                          | SD               |
| 08 55 08           | +01 32 47           | GJ0328           | 3.63                    | 3926                  | 19                             | 0.011                  | 3             | 1.047     | -8.1284                                                    | 0.0061                                                              | -1.0240                                        | 0.0163                                                  | 0.6647                   | 0.0140                            | 0.3065                 | 0.0125                          | RD               |
| 08 56 18           | -23 26 57           | LP844+033        | 6.13                    | 3008                  | 18                             | 0.010                  | 3             | 1.009     | -9.6630                                                    | 0.0057                                                              | -2.4232                                        | 0.0306                                                  | 0.2262                   | 0.0084                            | 0.0892                 | 0.0070                          | RD               |
| 08 56 30           | +43 36 03           | LHS2074          | 5.58                    | 3075                  | 10                             | 0.012                  | 48            | 1.010     | -9.7380                                                    | 0.0065                                                              | -2.6375                                        | 0.0219                                                  | 0.1691                   | 0.0044                            | 0.0783                 | 0.0043                          | RD               |
| 08 58 35           | +07 58 56           | L546-024         | 6.63                    | 2865                  | 15                             | 0.012                  | 3             | 1.006     | -10.0532                                                   | 0.0070                                                              | -2.9614                                        | 0.0361                                                  | 0.1342                   | 0.0057                            | 0.0628                 | 0.0058                          | RD               |
| 08 58 51           | +38 44 26           | G115-038         | 5.04                    | 3184                  | 16                             | 0.011                  | 7             | 1.013     | -9.4053                                                    | 0.0055                                                              | -2.3373                                        | 0.0185                                                  | 0.2229                   | 0.0052                            | 0.1072                 | 0.0050                          | RD               |
| 08 59 05           | -31 13 27           | GJ1118           | 5.20                    | 3182                  | 12                             | 0.012                  | 10            | 1.013     | -9.1300                                                    | 0.0061                                                              | -2.1344                                        | 0.0149                                                  | 0.2818                   | 0.0053                            | 0.1473                 | 0.0054                          | RD               |
| 08 59 36           | +53 43 51           | G194-047         | 5.18                    | 3200                  | 12                             | 0.017                  | 8             | 1.013     | -8.9553                                                    | 0.0070                                                              | -1.9887                                        | 0.0165                                                  | 0.3296                   | 0.0067                            | 0.1781                 | 0.0071                          | RD               |
| 08 59 56           | +06 10 05           | L546-025         | 5.43                    | 3117                  | 10                             | 0.011                  | 20            | 1.011     | -9.3864                                                    | 0.0073                                                              | -2.2282                                        | 0.0174                                                  | 0.2636                   | 0.0056                            | 0.1143                 | 0.0048                          | RD               |
| 08 59 56           | +72 57 37           | LHS2088          | 5.37                    | 3120                  | 16                             | 0.010                  | 57            | 1.011     | -9.2745                                                    | 0.0061                                                              | -2.5107                                        | 0.0134                                                  | 0.1901                   | 0.0035                            | 0.1298                 | 0.0043                          | RD               |
| 09 00 24           | +21 50 05           | LHS2090          | 7.67                    | 2630                  | 20                             | 0.012                  | 33            | 1.003     | -9.1918                                                    | 0.0071                                                              | -3.0904                                        | 0.0077                                                  | 0.1373                   | 0.0024                            | 0.2008                 | 0.0038                          | RD               |
| 09 00 32           | +46 35 11           | GJ1119           | 5.58                    | 3076                  | 19                             | 0.011                  | 3             | 1.010     | -8.8213                                                    | 0.0057                                                              | -2.3229                                        | 0.0094                                                  | 0.2427                   | 0.0040                            | 0.2249                 | 0.0053                          | RD               |
| 09 00 48           | +05 14 41           | GJ0333.2         | 4.60                    | 3401                  | 16                             | 0.013                  | 3             | 1.020     | -8.7841                                                    | 0.0069                                                              | -1.5632                                        | 0.0392                                                  | 0.4763                   | 0.0219                            | 0.1920                 | 0.0192                          | RD               |
| 09 01 50           | +09 05 11           | G041-017         | 5.50                    | 3101                  | 9                              | 0.010                  | 15            | 1.011     | -9.5327                                                    | 0.0063                                                              | -2.2966                                        | 0.0243                                                  | 0.2463                   | 0.0070                            | 0.0976                 | 0.0060                          | RD               |
| 09 02 07           | +00 33 20           | LHS5142          | 7.41                    | 2645                  | 30                             | 0.015                  | 23            | 1.003     | -10.2678                                                   | 0.0072                                                              | -3.1725                                        | 0.0337                                                  | 0.1235                   | 0.0055                            | 0.0575                 | 0.0051                          | RD               |
| 09 02 20           | +08 28 06           | LHS2094          | 4.46                    | 3474                  | 10                             | 0.012                  | 15            | 1.023     | -8.5797                                                    | 0.0077                                                              | -1.5042                                        | 0.0324                                                  | 0.4886                   | 0.0185                            | 0.2329                 | 0.0191                          | RD               |
| 09 02 53           | +68 03 47           | LP060-179        | 4.94                    | 3267                  | 16                             | 0.014                  | 43            | 1.015     | -8.7499                                                    | 0.0068                                                              | -2.1247                                        | 0.0153                                                  | 0.2704                   | 0.0055                            | 0.2165                 | 0.0081                          | RD               |
| 09 03 43           | +52 02 53           | G194-052         | 4.87                    | 3295                  | 8                              | 0.012                  | 3             | 1.016     | -8.9350                                                    | 0.0062                                                              | -1.9802                                        | 0.0147                                                  | 0.3138                   | 0.0055                            | 0.1719                 | 0.0061                          | RD               |
| 09 07 03           | -22 08 50           | LHS2106          | 5.57                    | 3085                  | 14                             | 0.012                  | 24            | 1.010     | -9.1840                                                    | 0.0067                                                              | -2.3312                                        | 0.0102                                                  | 0.2391                   | 0.0035                            | 0.1473                 | 0.0034                          | RD               |
| 09 08 48           | +11 51 41           | LHS5144          | 5.43                    | 3115                  | 7                              | 0.013                  | 8             | 1.011     | -9.6621                                                    | 0.0067                                                              | -2.6287                                        | 0.0175                                                  | 0.1665                   | 0.0034                            | 0.0833                 | 0.0035                          | RD               |
| 09 09 24           | +40 06 05           | GJ1121           | 5.23                    | 3183                  | 10                             | 0.011                  | 56            | 1.013     | -9.4208                                                    | 0.0062                                                              | -2.2631                                        | 0.0272                                                  | 0.2429                   | 0.0078                            | 0.1054                 | 0.0073                          | RD               |
| 09 09 57           | -06 58 19           | DEN0909-0658     | 9.01                    | 2201                  | 135                            | 0.020                  | 45            | 1.001     | -10.9329                                                   | 0.0088                                                              | -3.6947                                        | 0.0438                                                  | 0.0977                   | 0.0129                            | 0.0386                 | 0.0064                          | RD               |
| 09 10 01           | +09 01 38           | G046-023         | 5.68                    | 3117                  | 11                             | 0.012                  | 66            | 1.011     | -9.6207                                                    | 0.0065                                                              | -2.4846                                        | 0.0210                                                  | 0.1963                   | 0.0049                            | 0.0873                 | 0.0046                          | RD               |
| 09 11 31           | +46 37 01           | GJ0336.1         | 3.88                    | 3776                  | 13                             | 0.011                  | 12            | 1.038     | -8.4411                                                    | 0.0070                                                              | -1.1651                                        | 0.0263                                                  | 0.6109                   | 0.0189                            | 0.2312                 | 0.0153                          | RD               |
| 09 13 23           | +03 40 43           | LHS6166          | 5.07                    | 3304                  | 14                             | 0.013                  | 3             | 1.017     | -9.3971                                                    | 0.0071                                                              | -2.3258                                        | 0.0145                                                  | 0.2098                   | 0.0039                            | 0.1005                 | 0.0035                          | RD               |
| 09 14 17           | -41 34 38           | SCR0914-4134     | 5.89                    | 2992                  | 10                             | 0.012                  | 3             | 1.008     | -9.3792                                                    | 0.0057                                                              | -2.7271                                        | 0.0068                                                  | 0.1612                   | 0.0016                            | 0.1251                 | 0.0016                          | RD               |
| 09 16 21           | -18 37 33           | L749-034         | 4.24                    | 3586                  | 16                             | 0.014                  | 86            | 1.028     | -8.2407                                                    | 0.0080                                                              | -1.5255                                        | 0.0155                                                  | 0.4474                   | 0.0089                            | 0.3229                 | 0.0118                          | RD               |
| 09 16 26           | -02 04 16           | LHS2122          | 5.03                    | 3259                  | 30                             | 0.012                  | 3             | 1.015     | -8.7299                                                    | 0.0065                                                              | -1.7707                                        | 0.0201                                                  | 0.4086                   | 0.0121                            | 0.2227                 | 0.0118                          | RD               |
| 09 17 05           | -77 49 23           | GJ1123           | 5.70                    | 3021                  | 27                             | 0.014                  | 115           | 1.009     | -8.7176                                                    | 0.0078                                                              | -2.3127                                        | 0.0111                                                  | 0.2547                   | 0.0056                            | 0.2628                 | 0.0075                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 09 17 07           | +20 07 54           | G041-030         | 5.16                    | 3183                  | 16                             | 0.010                   | 12            | 1.013     | -9.5178                                                                | 0.0060                                                                          | -2.6776                                          | 0.0240                                                    | 0.1508                      | 0.0044                               | 0.0942                 | 0.0058                        | RD                       |
| 09 17 46           | +58 25 22           | LHS0265          | 5.81                    | 3014                  | 4                              | 0.012                   | 47            | 1.009     | -9.4858                                                                | 0.0066                                                                          | -2.6589                                          | 0.0153                                                    | 0.1718                      | 0.0030                               | 0.1090                 | 0.0040                        | RD                       |
| 09 19 19           | +38 31 23           | GJ1122           | 5.37                    | 3035                  | 141                            | 0.010                   | 176           | 1.009     | -9.3229                                                                | 0.0065                                                                          | -2.3289                                          | 0.0139                                                    | 0.2476                      | 0.0234                               | 0.1297                 | 0.0128                        | RD                       |
| 09 19 20           | +21 54 32           | L369-027         | 6.78                    | 2829                  | 27                             | 0.010                   | 3             | 1.005     | -10.2983                                                               | 0.0063                                                                          | -3.0902                                          | 0.0341                                                    | 0.1186                      | 0.0052                               | 0.0486                 | 0.0043                        | RD                       |
| 09 20 22           | +26 43 43           | LHS0266          | 5.31                    | 3212                  | 10                             | 0.012                   | 44            | 1.014     | -9.7980                                                                | 0.0064                                                                          | -2.7173                                          | 0.0258                                                    | 0.1414                      | 0.0043                               | 0.0670                 | 0.0044                        | RD                       |
| 09 20 58           | +03 22 07           | LHS0267          | 4.80                    | 3330                  | 19                             | 0.011                   | 6             | 1.018     | -9.0824                                                                | 0.0077                                                                          | -2.0719                                          | 0.0161                                                    | 0.2766                      | 0.0060                               | 0.1421                 | 0.0056                        | RD                       |
| 09 21 14           | -21 04 44           | 2MA0921-2104     | 9.29                    | 2159                  | 57                             | 0.013                   | 36            | 1.001     | -10.5370                                                               | 0.0079                                                                          | -3.8599                                          | 0.0097                                                    | 0.0840                      | 0.0045                               | 0.0633                 | 0.0035                        | RD                       |
| 09 21 19           | +73 06 39           | LHS2126          | 5.57                    | 3087                  | 3                              | 0.011                   | 12            | 1.010     | -9.5228                                                                | 0.0056                                                                          | -2.9276                                          | 0.0156                                                    | 0.1202                      | 0.0022                               | 0.0996                 | 0.0038                        | RD                       |
| 09 21 38           | -00 16 55           | GJ0341           | 3.90                    | 3737                  | 42                             | 0.011                   | 3             | 1.036     | -7.8493                                                                | 0.0076                                                                          | -1.3160                                          | 0.0087                                                    | 0.5244                      | 0.0128                               | 0.4667                 | 0.0122                        | RD                       |
| 09 28 53           | -07 22 16           | GJ0347           | 4.47                    | 3463                  | 10                             | 0.010                   | 25            | 1.023     | -8.7054                                                                | 0.0069                                                                          | -1.7820                                          | 0.0215                                                    | 0.3571                      | 0.0091                               | 0.2028                 | 0.0108                        | RD                       |
| 09 29 11           | +25 58 09           | LHS0269          | 6.47                    | 2898                  | 15                             | 0.013                   | 3             | 1.007     | -9.7515                                                                | 0.0061                                                                          | -2.7620                                          | 0.0093                                                    | 0.1649                      | 0.0025                               | 0.0868                 | 0.0019                        | RD                       |
| 09 30 14           | +26 30 25           | LSPM0930+2630    | 4.79                    | 3354                  | 21                             | 0.010                   | 12            | 1.018     | -8.8875                                                                | 0.0067                                                                          | -1.6514                                          | 0.0131                                                    | 0.4425                      | 0.0086                               | 0.1753                 | 0.0057                        | RD                       |
| 09 30 45           | +00 19 22           | GJ1125           | 4.85                    | 3306                  | 21                             | 0.012                   | 136           | 1.017     | -8.4267                                                                | 0.0069                                                                          | -1.3448                                          | 0.0135                                                    | 0.3413                      | 0.0061                               | 0.3066                 | 0.0082                        | RD                       |
| 09 31 56           | +36 19 13           | GJ0353           | 3.92                    | 3749                  | 16                             | 0.012                   | 97            | 1.036     | -8.1359                                                                | 0.0085                                                                          | -1.9997                                          | 0.0239                                                    | 0.2946                      | 0.0082                               | 0.1146                 | 0.0068                        | RD                       |
| 09 33 20           | +78 47 03           | LSPM0933+7847    | 4.75                    | 3363                  | 5                              | 0.012                   | 19            | 1.019     | -9.2523                                                                | 0.0070                                                                          | -1.8414                                          | 0.0109                                                    | 0.3309                      | 0.0059                               | 0.3408                 | 0.0085                        | RD                       |
| 09 36 02           | -21 39 39           | GJ0357           | 4.45                    | 3476                  | 22                             | 0.014                   | 16            | 1.023     | -8.2478                                                                | 0.0080                                                                          | -2.1941                                          | 0.0105                                                    | 0.2594                      | 0.0040                               | 0.1252                 | 0.0031                        | RD                       |
| 09 37 04           | +20 34 39           | L211-022         | 5.15                    | 3205                  | 16                             | 0.011                   | 3             | 1.014     | -9.2587                                                                | 0.0063                                                                          | -3.3077                                          | 0.0219                                                    | 0.1054                      | 0.0031                               | 0.0610                 | 0.0035                        | RD                       |
| 09 39 23           | +29 43 27           | L314-044         | 7.55                    | 2649                  | 21                             | 0.014                   | 35            | 1.003     | -10.2151                                                               | 0.0063                                                                          | -1.4411                                          | 0.0401                                                    | 0.4883                      | 0.0232                               | 0.1892                 | 0.0194                        | RD                       |
| 09 39 24           | +31 45 17           | G117-034         | 4.19                    | 3603                  | 20                             | 0.013                   | 6             | 1.029     | -8.6968                                                                | 0.0069                                                                          | -1.6511                                          | 0.0112                                                    | 0.4396                      | 0.0067                               | 0.4312                 | 0.0094                        | YG                       |
| 09 39 46           | -41 04 03           | GJ0358           | 4.72                    | 3365                  | 14                             | 0.015                   | 56            | 1.019     | -8.0999                                                                | 0.0090                                                                          | -2.5488                                          | 0.0158                                                    | 0.1833                      | 0.0035                               | 0.1386                 | 0.0053                        | RD                       |
| 09 41 02           | +22 01 28           | GJ0359           | 5.43                    | 3109                  | 8                              | 0.010                   | 4             | 1.011     | -9.2231                                                                | 0.0062                                                                          | -1.4926                                          | 0.0114                                                    | 0.4818                      | 0.0087                               | 0.3954                 | 0.0101                        | RD                       |
| 09 41 10           | +13 12 35           | GJ0361           | 4.27                    | 3522                  | 22                             | 0.011                   | 3             | 1.025     | -8.0961                                                                | 0.0082                                                                          | -1.7540                                          | 0.0227                                                    | 0.4143                      | 0.0119                               | 0.2288                 | 0.0133                        | RD                       |
| 09 42 23           | +55 59 01           | GJ0363           | 4.97                    | 3267                  | 19                             | 0.010                   | 9             | 1.015     | -8.7018                                                                | 0.0059                                                                          | -1.4449                                          | 0.0097                                                    | 0.5280                      | 0.0073                               | 0.4100                 | 0.0086                        | RD                       |
| 09 42 35           | +70 02 02           | GJ0360           | 4.51                    | 3458                  | 14                             | 0.010                   | 42            | 1.022     | -8.0967                                                                | 0.0070                                                                          | -1.7578                                          | 0.0251                                                    | 0.3677                      | 0.0108                               | 0.2170                 | 0.0137                        | RD                       |
| 09 42 36           | -19 14 05           | LHS2177          | 4.47                    | 3461                  | 10                             | 0.011                   | 20            | 1.022     | -8.6476                                                                | 0.0066                                                                          | -2.4397                                          | 0.0091                                                    | 0.2196                      | 0.0049                               | 0.3152                 | 0.0072                        | RD                       |
| 09 42 46           | -68 53 06           | GJ1128           | 5.70                    | 3024                  | 30                             | 0.014                   | 73            | 1.009     | -8.5581                                                                | 0.0085                                                                          | -2.2912                                          | 0.0100                                                    | 0.2491                      | 0.0034                               | 0.2205                 | 0.0040                        | RD                       |
| 09 43 46           | -17 47 06           | LHS0272          | 4.29                    | 3531                  | 21                             | 0.013                   | 114           | 1.025     | -9.1709                                                                | 0.0063                                                                          | -2.3587                                          | 0.0089                                                    | 0.1768                      | 0.0028                               | 0.1142                 | 0.0025                        | SD                       |
| 09 43 56           | +26 58 09           | LHS2181          | 4.86                    | 3302                  | 12                             | 0.012                   | 36            | 1.017     | -8.5606                                                                | 0.0069                                                                          | -1.7717                                          | 0.0282                                                    | 0.3974                      | 0.0132                               | 0.2635                 | 0.0188                        | RD                       |
| 09 44 24           | -73 58 38           | WT0244           | 5.80                    | 3011                  | 15                             | 0.016                   | 205           | 1.009     | -9.4790                                                                | 0.0065                                                                          | -1.4863                                          | 0.0164                                                    | 0.2733                      | 0.0059                               | 0.1101                 | 0.0045                        | RD                       |
| 09 44 30           | -45 46 36           | GJ0367           | 4.34                    | 3506                  | 34                             | 0.013                   | 62            | 1.024     | -7.9593                                                                | 0.0083                                                                          | -2.0612                                          | 0.0136                                                    | 0.3053                      | 0.0055                               | 0.2666                 | 0.0085                        | RD                       |
| 09 44 47           | -18 12 49           | GJ1129           | 5.20                    | 3189                  | 14                             | 0.011                   | 15            | 1.013     | -8.6109                                                                | 0.0073                                                                          | -2.0351                                          | 0.0109                                                    | 0.3764                      | 0.0052                               | 0.2594                 | 0.0061                        | YG                       |
| 09 44 54           | -12 20 54           | G161-071         | 6.16                    | 2916                  | 8                              | 0.012                   | 4             | 1.007     | -8.7904                                                                | 0.0069                                                                          | -2.3833                                          | 0.0314                                                    | 0.2551                      | 0.0093                               | 0.0965                 | 0.0077                        | RD                       |
| 09 45 08           | +71 44 51           | L036-276         | 6.23                    | 2899                  | 9                              | 0.009                   | 3             | 1.007     | -9.6591                                                                | 0.0054                                                                          | -2.4052                                          | 0.0085                                                    | 0.2309                      | 0.0050                               | 0.1790                 | 0.0042                        | RD                       |
| 09 45 58           | -32 53 30           | WT2458           | 5.76                    | 3009                  | 29                             | 0.013                   | 6             | 1.009     | -9.0582                                                                | 0.0075                                                                          | -1.3692                                          | 0.0110                                                    | 0.5148                      | 0.0074                               | 0.2999                 | 0.0074                        | RD                       |
| 09 46 48           | +76 02 38           | GJ0366           | 4.01                    | 3658                  | 12                             | 0.012                   | 3             | 1.031     | -8.2706                                                                | 0.0068                                                                          | -1.9533                                          | 0.0256                                                    | 0.3269                      | 0.0098                               | 0.1499                 | 0.0096                        | RD                       |
| 09 47 35           | +12 56 39           | L488-037         | 4.93                    | 3279                  | 10                             | 0.010                   | 5             | 1.016     | -9.0626                                                                | 0.0069                                                                          | -2.0751                                          | 0.0254                                                    | 0.2724                      | 0.0085                               | 0.1441                 | 0.0093                        | RD                       |
| 09 48 50           | +15 38 45           | G043-002         | 4.77                    | 3350                  | 19                             | 0.012                   | 18            | 1.018     | -9.0598                                                                | 0.0069                                                                          | -3.4214                                          | 0.0142                                                    | 0.0966                      | 0.0110                               | 0.0542                 | 0.0063                        | RD                       |
| 09 49 22           | +08 06 45           | LHS2195          | 8.55                    | 2591                  | 146                            | 0.061                   | 367           | 1.003     | -10.3555                                                               | 0.0076                                                                          | -1.6971                                          | 0.0172                                                    | 0.4438                      | 0.0099                               | 0.2111                 | 0.0090                        | RD                       |
| 09 50 41           | -13 48 39           | LP728-070        | 4.99                    | 3262                  | 17                             | 0.013                   | 3             | 1.015     | -8.7745                                                                | 0.0068                                                                          |                                                  |                                                           |                             |                                      |                        |                               | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 09 51 10           | -12 19 48           | GJ0369           | 3.91                    | 3748                  | 21                             | 0.013                   | 126           | 1.036     | -8.0763                                                                | 0.0074                                                                          | -1.3078                                        | 0.0127                                                  | 0.5262                   | 0.0096                            | 0.3572                 | 0.0107                          | RD                       |
| 09 53 28           | -31 45 08           | GJ1130           | 3.59                    | 3900                  | 21                             | 0.011                   | 3             | 1.045     | -8.2148                                                                | 0.0071                                                                          | -0.9549                                        | 0.0177                                                  | 0.7297                   | 0.0168                            | 0.2813                 | 0.0124                          | RD                       |
| 09 53 55           | +20 56 47           | LHS2206          | 5.69                    | 3015                  | 17                             | 0.010                   | 3             | 1.009     | -9.0569                                                                | 0.0052                                                                          | -2.6229                                        | 0.0085                                                  | 0.1789                   | 0.0027                            | 0.1784                 | 0.0038                          | RD                       |
| 09 55 24           | -27 15 41           | LP847-048        | 4.94                    | 3284                  | 19                             | 0.012                   | 15            | 1.016     | -8.5511                                                                | 0.0072                                                                          | -1.9483                                        | 0.0172                                                  | 0.3278                   | 0.0075                            | 0.2693                 | 0.0115                          | RD                       |
| 09 56 08           | +62 47 19           | GJ0373           | 3.77                    | 3796                  | 42                             | 0.013                   | 3             | 1.039     | -7.6788                                                                | 0.0084                                                                          | -1.1190                                        | 0.0099                                                  | 0.6374                   | 0.0158                            | 0.5502                 | 0.0153                          | RD                       |
| 09 58 57           | +05 58 00           | L549-006         | 5.73                    | 3110                  | 15                             | 0.013                   | 95            | 1.011     | -9.3440                                                                | 0.0066                                                                          | -2.5166                                        | 0.0167                                                  | 0.1900                   | 0.0041                            | 0.1205                 | 0.0050                          | RD                       |
| 09 59 18           | +43 50 26           | G116-072         | 5.03                    | 3231                  | 19                             | 0.012                   | 28            | 1.014     | -9.2305                                                                | 0.0064                                                                          | -1.9418                                        | 0.0205                                                  | 0.3413                   | 0.0090                            | 0.1273                 | 0.0066                          | RD                       |
| 09 59 46           | +47 12 11           | G146-005         | 5.17                    | 3195                  | 11                             | 0.011                   | 9             | 1.013     | -9.2663                                                                | 0.0061                                                                          | -2.1119                                        | 0.0178                                                  | 0.2870                   | 0.0062                            | 0.1249                 | 0.0055                          | RD                       |
| 09 59 52           | +02 46 49           | L549-010         | 4.94                    | 3288                  | 11                             | 0.009                   | 7             | 1.016     | -9.3408                                                                | 0.0068                                                                          | -2.3203                                        | 0.0210                                                  | 0.2131                   | 0.0054                            | 0.1082                 | 0.0057                          | RD                       |
| 10 01 11           | +81 09 23           | L006-124         | 5.86                    | 2996                  | 13                             | 0.012                   | 87            | 1.008     | -9.5006                                                                | 0.0074                                                                          | -2.5634                                        | 0.0277                                                  | 0.1940                   | 0.0064                            | 0.1084                 | 0.0076                          | RD                       |
| 10 01 11           | -30 23 25           | GJ0377           | 4.74                    | 3368                  | 30                             | 0.012                   | 17            | 1.019     | -8.3701                                                                | 0.0094                                                                          | -1.4632                                        | 0.0196                                                  | 0.5451                   | 0.0157                            | 0.3155                 | 0.0154                          | RD                       |
| 10 02 06           | +69 45 29           | L037-057         | 5.42                    | 3119                  | 8                              | 0.010                   | 6             | 1.011     | -9.2714                                                                | 0.0062                                                                          | -2.4629                                        | 0.0123                                                  | 0.2010                   | 0.0030                            | 0.1303                 | 0.0037                          | RD                       |
| 10 02 07           | +49 57 44           | L166-055         | 6.89                    | 2872                  | 62                             | 0.010                   | 3             | 1.006     | -9.9931                                                                | 0.0049                                                                          | -2.8123                                        | 0.0547                                                  | 0.1586                   | 0.0121                            | 0.0670                 | 0.0098                          | RD                       |
| 10 02 22           | +48 05 19           | GJ0378           | 3.94                    | 3725                  | 15                             | 0.011                   | 28            | 1.035     | -8.0757                                                                | 0.0067                                                                          | -1.2251                                        | 0.0121                                                  | 0.5861                   | 0.0094                            | 0.3619                 | 0.0102                          | RD                       |
| 10 02 42           | +14 59 13           | G043-023         | 5.43                    | 3112                  | 8                              | 0.013                   | 91            | 1.011     | -9.2342                                                                | 0.0071                                                                          | -2.5145                                        | 0.0225                                                  | 0.1903                   | 0.0050                            | 0.1366                 | 0.0076                          | RD                       |
| 10 02 49           | +48 27 33           | LHS6180          | 6.45                    | 2891                  | 20                             | 0.009                   | 3             | 1.006     | -9.3720                                                                | 0.0045                                                                          | -2.4348                                        | 0.0172                                                  | 0.2416                   | 0.0059                            | 0.1351                 | 0.0061                          | RD                       |
| 10 04 38           | -33 35 10           | LHS5166          | 5.33                    | 3101                  | 15                             | 0.011                   | 3             | 1.021     | -9.3142                                                                | 0.0066                                                                          | -2.2968                                        | 0.0449                                                  | 0.2462                   | 0.0130                            | 0.1255                 | 0.0144                          | RD                       |
| 10 04 51           | -31 05 28           | LP903-021        | 4.38                    | 3508                  | 14                             | 0.014                   | 9             | 1.024     | -8.7011                                                                | 0.0085                                                                          | -1.4829                                        | 0.0354                                                  | 0.4909                   | 0.0204                            | 0.1986                 | 0.0177                          | RD                       |
| 10 05 16           | +17 03 26           | L429-028         | 5.85                    | 3000                  | 9                              | 0.012                   | 57            | 1.008     | -9.8329                                                                | 0.0065                                                                          | -2.5550                                        | 0.0306                                                  | 0.1954                   | 0.0070                            | 0.0738                 | 0.0057                          | RD                       |
| 10 06 44           | +41 42 53           | LHS2220          | 3.93                    | 3734                  | 10                             | 0.011                   | 3             | 1.036     | -8.5717                                                                | 0.0065                                                                          | -1.4463                                        | 0.0254                                                  | 0.4520                   | 0.0134                            | 0.2034                 | 0.0130                          | RD                       |
| 10 06 57           | +02 57 52           | GJ0378.2         | 3.55                    | 3937                  | 19                             | 0.012                   | 10            | 1.048     | -8.1301                                                                | 0.0072                                                                          | -0.9274                                        | 0.0203                                                  | 0.7391                   | 0.0186                            | 0.3043                 | 0.0153                          | RD                       |
| 10 07 59           | +09 14 46           | GJ1131           | 5.05                    | 3232                  | 12                             | 0.011                   | 52            | 1.014     | -9.3968                                                                | 0.0063                                                                          | -2.4220                                        | 0.0223                                                  | 0.1962                   | 0.0052                            | 0.1050                 | 0.0059                          | RD                       |
| 10 09 30           | +51 17 20           | LHS2224          | 4.96                    | 3264                  | 8                              | 0.012                   | 3             | 1.015     | -9.0704                                                                | 0.0057                                                                          | -2.3279                                        | 0.0193                                                  | 0.2144                   | 0.0049                            | 0.1499                 | 0.0072                          | RD                       |
| 10 11 44           | +35 18 44           | G118-037         | 5.27                    | 3171                  | 17                             | 0.011                   | 3             | 1.013     | -9.4049                                                                | 0.0058                                                                          | -2.4187                                        | 0.0164                                                  | 0.2046                   | 0.0045                            | 0.1081                 | 0.0045                          | RD                       |
| 10 12 18           | -03 44 44           | GJ0382           | 4.28                    | 3536                  | 53                             | 0.012                   | 157           | 1.026     | -7.6546                                                                | 0.0080                                                                          | -1.3611                                        | 0.0101                                                  | 0.5558                   | 0.0179                            | 0.6520                 | 0.0230                          | YG                       |
| 10 13 07           | -13 56 20           | SSS1013-1356     | 5.83                    | 2989                  | 83                             | 0.019                   | 58            | 1.008     | -11.2943                                                               | 0.0102                                                                          | -3.4135                                        | 0.0432                                                  | 0.0733                   | 0.0055                            | 0.0138                 | 0.0017                          | SD                       |
| 10 13 21           | +46 47 26           | L167-017         | 6.52                    | 2871                  | 12                             | 0.011                   | 5             | 1.006     | -9.7434                                                                | 0.0055                                                                          | -2.7572                                        | 0.0228                                                  | 0.1691                   | 0.0047                            | 0.0893                 | 0.0052                          | RD                       |
| 10 14 19           | +21 04 29           | GJ2079           | 3.78                    | 3804                  | 11                             | 0.010                   | 21            | 1.039     | -8.1120                                                                | 0.0075                                                                          | -0.8904                                        | 0.0195                                                  | 0.8261                   | 0.0192                            | 0.3328                 | 0.0158                          | YC                       |
| 10 14 52           | -47 09 24           | GJ1132           | 5.17                    | 3210                  | 18                             | 0.012                   | 91            | 1.014     | -9.0402                                                                | 0.0069                                                                          | -2.3842                                        | 0.0112                                                  | 0.2078                   | 0.0035                            | 0.1606                 | 0.0042                          | RD                       |
| 10 16 46           | -11 57 42           | GJ0386           | 4.52                    | 3452                  | 17                             | 0.012                   | 3             | 1.022     | -8.2495                                                                | 0.0077                                                                          | -1.5091                                        | 0.0161                                                  | 0.4921                   | 0.0103                            | 0.3450                 | 0.0134                          | RD                       |
| 10 19 17           | +65 49 57           | G235-066         | 5.10                    | 3196                  | 20                             | 0.012                   | 3             | 1.013     | -9.6784                                                                | 0.0055                                                                          | -2.5014                                        | 0.0180                                                  | 0.1831                   | 0.0044                            | 0.0777                 | 0.0036                          | RD                       |
| 10 19 36           | +19 52 12           | GJ0388           | 4.70                    | 3346                  | 67                             | 0.014                   | 142           | 1.018     | -7.5029                                                                | 0.0090                                                                          | -1.6298                                        | 0.0108                                                  | 0.4556                   | 0.0191                            | 0.8670                 | 0.0383                          | RD                       |
| 10 19 51           | -41 48 46           | LT03790          | 4.15                    | 3598                  | 18                             | 0.010                   | 3             | 1.029     | -8.6359                                                                | 0.0062                                                                          | -1.4382                                        | 0.0270                                                  | 0.4914                   | 0.0160                            | 0.2035                 | 0.0140                          | RD                       |
| 10 22 25           | -60 10 38           | GJ0389           | 3.87                    | 3780                  | 17                             | 0.013                   | 3             | 1.038     | -8.3564                                                                | 0.0080                                                                          | -1.2667                                        | 0.0177                                                  | 0.5424                   | 0.0121                            | 0.2543                 | 0.0108                          | RD                       |
| 10 23 52           | +43 53 33           | L212-062         | 6.15                    | 2917                  | 11                             | 0.011                   | 3             | 1.007     | -9.4036                                                                | 0.0063                                                                          | -2.5211                                        | 0.0226                                                  | 0.2148                   | 0.0058                            | 0.1279                 | 0.0073                          | RD                       |
| 10 25 11           | -10 13 43           | GJ0390           | 4.14                    | 3627                  | 15                             | 0.010                   | 3             | 1.030     | -8.0538                                                                | 0.0080                                                                          | -1.3795                                        | 0.0124                                                  | 0.5174                   | 0.0085                            | 0.3914                 | 0.0107                          | RD                       |
| 10 25 26           | +05 12 39           | LSPM1025+0512    | 7.06                    | 2744                  | 45                             | 0.017                   | 173           | 1.004     | -10.1013                                                               | 0.0075                                                                          | -2.9243                                        | 0.0444                                                  | 0.1527                   | 0.0093                            | 0.0647                 | 0.0076                          | RD                       |
| 10 27 00           | +55 06 53           | LHS5170          | 5.16                    | 3203                  | 11                             | 0.012                   | 15            | 1.014     | -9.3485                                                                | 0.0075                                                                          | -2.0577                                        | 0.0282                                                  | 0.3039                   | 0.0101                            | 0.1130                 | 0.0080                          | RD                       |
| 10 28 28           | +48 14 20           | LHS2268          | 5.02                    | 3238                  | 15                             | 0.010                   | 3             | 1.015     | -8.9749                                                                | 0.0056                                                                          | -1.8370                                        | 0.0208                                                  | 0.3835                   | 0.0099                            | 0.1701                 | 0.0090                          | RD                       |
| 10 28 56           | +00 50 28           | GJ0393           | 4.32                    | 3522                  | 49                             | 0.019                   | 216           | 1.025     | -7.7700                                                                | 0.0078                                                                          | -1.5690                                        | 0.0100                                                  | 0.4411                   | 0.0134                            | 0.5755                 | 0.0193                          | YG                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 10 30 51           | -35 46 39           | LTT03855         | 3.95                    | 3752                  | 29                             | 0.011                   | 3             | 1.037     | -8.5399                                                                | 0.0064                                                                          | -1.2624                                          | 0.0226                                                    | 0.5532                      | 0.0167                               | 0.2090                 | 0.0122                        | RD                       |
| 10 32 33           | +06 30 08           | L550-135         | 6.35                    | 2921                  | 20                             | 0.014                   | 175           | 1.007     | -9.5915                                                                | 0.0068                                                                          | -2.5789                                          | 0.0783                                                    | 0.2006                      | 0.0183                               | 0.1028                 | 0.0207                        | RD                       |
| 10 34 30           | +46 18 09           | L167-064         | 4.79                    | 3342                  | 31                             | 0.035                   | 192           | 1.018     | -9.0173                                                                | 0.0078                                                                          | -1.9075                                          | 0.0125                                                    | 0.3317                      | 0.0078                               | 0.1520                 | 0.0050                        | RD                       |
| 10 35 27           | +69 26 59           | LHS0283          | 4.79                    | 3309                  | 11                             | 0.011                   | 44            | 1.017     | -8.5188                                                                | 0.0061                                                                          | -1.8489                                          | 0.0144                                                    | 0.3620                      | 0.0064                               | 0.2753                 | 0.0096                        | RD                       |
| 10 36 01           | +05 07 13           | GJ0398           | 5.09                    | 3226                  | 10                             | 0.012                   | 3             | 1.014     | -8.7368                                                                | 0.0068                                                                          | -1.9170                                          | 0.0403                                                    | 0.3522                      | 0.0165                               | 0.2254                 | 0.0232                        | RD                       |
| 10 36 48           | +50 55 04           | L127-502         | 5.55                    | 3085                  | 10                             | 0.011                   | 14            | 1.010     | -9.3271                                                                | 0.0067                                                                          | -2.2319                                          | 0.0131                                                    | 0.2681                      | 0.0044                               | 0.1249                 | 0.0038                        | RD                       |
| 10 37 45           | -27 46 39           | LTT03896         | 5.42                    | 3117                  | 11                             | 0.015                   | 81            | 1.011     | -8.8046                                                                | 0.0085                                                                          | -1.9569                                          | 0.0120                                                    | 0.3603                      | 0.0056                               | 0.2232                 | 0.0056                        | YC                       |
| 10 38 48           | -86 32 44           | LHPM2-2758       | 5.13                    | 3207                  | 13                             | 0.015                   | 3             | 1.014     | -8.9419                                                                | 0.0085                                                                          | -2.1948                                          | 0.0171                                                    | 0.2588                      | 0.0055                               | 0.1801                 | 0.0072                        | RD                       |
| 10 39 41           | -06 55 26           | GJ0399           | 4.49                    | 3454                  | 17                             | 0.014                   | 23            | 1.022     | -8.3917                                                                | 0.0086                                                                          | -1.5083                                          | 0.0208                                                    | 0.4918                      | 0.0127                               | 0.2925                 | 0.0148                        | RD                       |
| 10 41 38           | +37 36 39           | GJ1134           | 5.27                    | 3160                  | 18                             | 0.015                   | 26            | 1.012     | -8.7765                                                                | 0.0077                                                                          | -2.2524                                          | 0.0129                                                    | 0.2495                      | 0.0047                               | 0.2244                 | 0.0068                        | RD                       |
| 10 41 52           | -36 38 00           | GJ1136           | 3.76                    | 3796                  | 31                             | 0.012                   | 3             | 1.039     | -8.1601                                                                | 0.0083                                                                          | -1.2470                                          | 0.0301                                                    | 0.5502                      | 0.0211                               | 0.3162                 | 0.0243                        | RD                       |
| 10 44 21           | -61 12 36           | LHS0288          | 6.17                    | 2912                  | 14                             | 0.015                   | 37            | 1.007     | -8.8003                                                                | 0.0076                                                                          | -2.9486                                          | 0.0094                                                    | 0.1318                      | 0.0019                               | 0.2571                 | 0.0049                        | RD                       |
| 10 48 13           | -11 20 10           | LHS0292          | 7.85                    | 2621                  | 19                             | 0.012                   | 3             | 1.003     | -8.9678                                                                | 0.0067                                                                          | -3.1589                                          | 0.0097                                                    | 0.1278                      | 0.0023                               | 0.2618                 | 0.0064                        | RD                       |
| 10 48 15           | -39 56 07           | DEN1048-3956     | 8.94                    | 2366                  | 91                             | 0.012                   | 45            | 1.001     | -9.2311                                                                | 0.0082                                                                          | -3.5243                                          | 0.0083                                                    | 0.1029                      | 0.0080                               | 0.2371                 | 0.0184                        | RD                       |
| 10 49 03           | +05 02 23           | LHS2314          | 7.53                    | 2666                  | 28                             | 0.015                   | 222           | 1.003     | -10.4400                                                               | 0.0074                                                                          | -3.1728                                          | 0.0254                                                    | 0.1215                      | 0.0044                               | 0.0464                 | 0.0031                        | RD                       |
| 10 50 26           | +33 06 04           | LHS2317          | 5.06                    | 3235                  | 23                             | 0.011                   | 3             | 1.014     | -8.9054                                                                | 0.0055                                                                          | -1.6894                                          | 0.0284                                                    | 0.4552                      | 0.0162                               | 0.1846                 | 0.0136                        | YC                       |
| 10 50 52           | +06 48 29           | GJ0402           | 5.34                    | 3166                  | 23                             | 0.011                   | 62            | 1.012     | -8.2802                                                                | 0.0091                                                                          | -2.1208                                          | 0.0126                                                    | 0.2892                      | 0.0059                               | 0.3958                 | 0.0114                        | YC                       |
| 10 52 04           | +13 59 51           | GJ0403           | 4.93                    | 3288                  | 6                              | 0.013                   | 43            | 1.016     | -8.8011                                                                | 0.0065                                                                          | -2.0723                                          | 0.0125                                                    | 0.2836                      | 0.0042                               | 0.2015                 | 0.0058                        | RD                       |
| 10 52 14           | +05 55 10           | LHS2320          | 5.91                    | 2992                  | 11                             | 0.011                   | 3             | 1.008     | -9.3177                                                                | 0.0063                                                                          | -2.6928                                          | 0.0114                                                    | 0.1676                      | 0.0025                               | 0.1342                 | 0.0036                        | RD                       |
| 10 54 00           | +16 06 06           | L431-032         | 6.33                    | 2911                  | 17                             | 0.015                   | 165           | 1.007     | -10.0412                                                               | 0.0065                                                                          | -2.8450                                          | 0.0309                                                    | 0.1486                      | 0.0056                               | 0.0617                 | 0.0049                        | RD                       |
| 10 55 34           | -09 21 26           | LHS2328          | 4.94                    | 3275                  | 9                              | 0.012                   | 13            | 1.016     | -9.1217                                                                | 0.0063                                                                          | -2.0890                                          | 0.0134                                                    | 0.2804                      | 0.0046                               | 0.1404                 | 0.0045                        | RD                       |
| 10 56 28           | +07 00 53           | GJ0406           | 7.53                    | 2636                  | 35                             | 0.024                   | 120           | 1.003     | -8.2417                                                                | 0.0102                                                                          | -2.9880                                          | 0.0104                                                    | 0.1537                      | 0.0045                               | 0.5968                 | 0.0176                        | RD                       |
| 10 56 46           | +32 46 28           | LSPM1056+3246    | 5.63                    | 3119                  | 5                              | 0.009                   | 3             | 1.011     | -9.6423                                                                | 0.0061                                                                          | -2.5992                                          | 0.0260                                                    | 0.1718                      | 0.0052                               | 0.0850                 | 0.0056                        | RD                       |
| 10 57 04           | +22 17 20           | L373-035         | 6.37                    | 2912                  | 17                             | 0.012                   | 121           | 1.007     | -9.9064                                                                | 0.0065                                                                          | -2.6984                                          | 0.0255                                                    | 0.1758                      | 0.0055                               | 0.0719                 | 0.0047                        | RD                       |
| 10 57 38           | +69 35 48           | GJ0406.1         | 3.56                    | 3956                  | 19                             | 0.009                   | 124           | 1.049     | -8.2814                                                                | 0.0067                                                                          | -1.0674                                          | 0.0167                                                    | 0.6231                      | 0.0134                               | 0.2532                 | 0.0105                        | RD                       |
| 10 58 28           | -10 46 31           | LP731-076        | 5.80                    | 3013                  | 12                             | 0.014                   | 117           | 1.009     | -9.1878                                                                | 0.0065                                                                          | -2.4221                                          | 0.0119                                                    | 0.2258                      | 0.0036                               | 0.1537                 | 0.0043                        | RD                       |
| 10 58 35           | -31 08 38           | LHS2335          | 4.46                    | 3479                  | 15                             | 0.014                   | 76            | 1.023     | -8.6573                                                                | 0.0080                                                                          | -1.5698                                          | 0.0155                                                    | 0.4518                      | 0.0089                               | 0.2124                 | 0.0077                        | RD                       |
| 10 58 48           | -15 48 17           | DEN1058-1548     | 10.49                   | 1862                  | 160                            | 0.057                   | 275           | 1.001     | -10.9359                                                               | 0.0091                                                                          | -3.9698                                          | 0.0117                                                    | 0.0995                      | 0.0172                               | 0.0538                 | 0.0093                        | RD                       |
| 10 59 06           | +30 15 12           | LHS2337          | 5.76                    | 2997                  | 36                             | 0.009                   | 3             | 1.008     | -9.6009                                                                | 0.0058                                                                          | -2.4085                                          | 0.0237                                                    | 0.2318                      | 0.0085                               | 0.0966                 | 0.0062                        | RD                       |
| 11 00 04           | +22 49 59           | GJ0408           | 4.53                    | 3409                  | 34                             | 0.009                   | 174           | 1.020     | -7.8506                                                                | 0.0065                                                                          | -1.7039                                          | 0.3845                                                    | 0.4031                      | 0.1786                               | 0.5599                 | 0.2482                        | YC                       |
| 11 00 36           | +37 28 50           | LHS2340          | 5.61                    | 3127                  | 14                             | 0.012                   | 3             | 1.011     | -9.6285                                                                | 0.0052                                                                          | -2.3398                                          | 0.0191                                                    | 0.2304                      | 0.0055                               | 0.0859                 | 0.0042                        | RD                       |
| 11 00 50           | +12 04 11           | LSPM1100+1204    | 6.18                    | 3024                  | 19                             | 0.013                   | 45            | 1.009     | -9.6556                                                                | 0.0066                                                                          | -2.5758                                          | 0.0289                                                    | 0.1878                      | 0.0067                               | 0.0891                 | 0.0066                        | RD                       |
| 11 01 20           | +03 00 17           | LHS0296          | 5.15                    | 3198                  | 12                             | 0.014                   | 93            | 1.013     | -9.2515                                                                | 0.0067                                                                          | -2.4387                                          | 0.0164                                                    | 0.1966                      | 0.0040                               | 0.1268                 | 0.0051                        | RD                       |
| 11 02 19           | +16 30 30           | GJ1141           | 4.05                    | 3644                  | 24                             | 0.011                   | 19            | 1.031     | -8.6052                                                                | 0.0080                                                                          | -1.5349                                          | 0.0566                                                    | 0.4286                      | 0.0285                               | 0.2055                 | 0.0298                        | RD                       |
| 11 02 38           | +21 58 02           | GJ0410           | 3.88                    | 3765                  | 29                             | 0.010                   | 99            | 1.037     | -7.8871                                                                | 0.0068                                                                          | -1.2511                                          | 0.0085                                                    | 0.5566                      | 0.0101                               | 0.4401                 | 0.0096                        | YC                       |
| 11 03 10           | +36 39 09           | L263-064         | 5.04                    | 3241                  | 19                             | 0.010                   | 74            | 1.015     | -9.1444                                                                | 0.0062                                                                          | -1.8877                                          | 0.0168                                                    | 0.3609                      | 0.0082                               | 0.1396                 | 0.0059                        | RD                       |
| 11 03 21           | +13 37 57           | LP491-051        | 5.05                    | 3235                  | 19                             | 0.017                   | 13            | 1.014     | -8.8575                                                                | 0.0089                                                                          | -1.9836                                          | 0.0198                                                    | 0.3244                      | 0.0084                               | 0.1950                 | 0.0094                        | RD                       |
| 11 05 28           | +43 31 37           | GJ0412           | 4.00                    | 3653                  | 92                             | 0.015                   | 286           | 1.031     | -7.5080                                                                | 0.0080                                                                          | -1.6394                                          | 0.0082                                                    | 0.3782                      | 0.0195                               | 0.7234                 | 0.0374                        | RD                       |
| 11 05 43           | +10 14 10           | LHS2348          | 4.57                    | 3419                  | 15                             | 0.010                   | 3             | 1.021     | -8.7780                                                                | 0.0077                                                                          | -1.6965                                          | 0.0398                                                    | 0.4042                      | 0.0189                               | 0.1914                 | 0.0194                        | RD                       |



## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 11 06 18           | +04 28 33           | LHS2351          | 8.12                    | 2556                  | 22                             | 0.013                   | 26            | 1.002     | -10.3585                                                   | 0.0075                                                              | -3.2279                                        | 0.0290                                                  | 0.1241                   | 0.0046                            | 0.0555                 | 0.0041                          | RD               |
| 11 07 28           | -19 17 30           | NLT26359         | 3.76                    | 3799                  | 18                             | 0.013                   | 17            | 1.039     | -8.2509                                                    | 0.0093                                                              | -1.2128                                        | 0.0162                                                  | 0.5713                   | 0.0120                            | 0.2843                 | 0.0106                          | RD               |
| 11 08 49           | +39 55 13           | L214-042         | 6.16                    | 2902                  | 22                             | 0.010                   | 4             | 1.007     | -9.6863                                                    | 0.0055                                                              | -2.4522                                        | 0.0330                                                  | 0.2351                   | 0.0096                            | 0.0934                 | 0.0080                          | RD               |
| 11 09 31           | -24 35 55           | GJ0413.1         | 4.34                    | 3517                  | 19                             | 0.012                   | 70            | 1.025     | -8.0893                                                    | 0.0077                                                              | -1.5334                                        | 0.0110                                                  | 0.4608                   | 0.0076                            | 0.3996                 | 0.0098                          | RD               |
| 11 11 52           | +33 32 11           | G119-062         | 4.88                    | 3294                  | 6                              | 0.012                   | 3             | 1.016     | -8.6731                                                    | 0.0072                                                              | -1.9105                                        | 0.0146                                                  | 0.3404                   | 0.0058                            | 0.2326                 | 0.0079                          | RD               |
| 11 12 38           | +03 38 46           | L552-018         | 5.69                    | 3014                  | 20                             | 0.012                   | 90            | 1.009     | -9.8301                                                    | 0.0067                                                              | -2.5436                                        | 0.0289                                                  | 0.1961                   | 0.0070                            | 0.0733                 | 0.0054                          | RD               |
| 11 13 01           | +10 25 06           | 2MA1113+1025     | 5.32                    | 3212                  | 8                              | 0.011                   | 55            | 1.014     | -9.3798                                                    | 0.0065                                                              | -2.1351                                        | 0.0217                                                  | 0.2764                   | 0.0071                            | 0.1084                 | 0.0059                          | RD               |
| 11 16 00           | -57 32 52           | GJ0422           | 4.60                    | 3421                  | 17                             | 0.019                   | 135           | 1.021     | -8.4639                                                    | 0.0081                                                              | -1.7623                                        | 0.0159                                                  | 0.3744                   | 0.0079                            | 0.2745                 | 0.0104                          | RD               |
| 11 16 07           | -30 10 41           | NLT26813         | 3.57                    | 3584                  | 297                            | 0.011                   | 33            | 1.028     | -8.2800                                                    | 0.0100                                                              | -1.0539                                        | 0.0234                                                  | 0.7707                   | 0.1293                            | 0.3089                 | 0.0540                          | YC               |
| 11 16 22           | -14 41 36           | GJ1144           | 3.52                    | 3967                  | 24                             | 0.011                   | 24            | 1.050     | -8.1579                                                    | 0.0079                                                              | -1.1566                                        | 0.0141                                                  | 0.5591                   | 0.0113                            | 0.2903                 | 0.0098                          | RD               |
| 11 17 07           | -27 48 49           | GJ1145           | 3.57                    | 3966                  | 17                             | 0.010                   | 94            | 1.050     | -8.0695                                                    | 0.0072                                                              | -1.0789                                        | 0.0122                                                  | 0.6117                   | 0.0101                            | 0.3216                 | 0.0090                          | RD               |
| 11 19 31           | +46 41 43           | LHS2395          | 6.58                    | 2870                  | 13                             | 0.011                   | 4             | 1.006     | -9.4291                                                    | 0.0054                                                              | -2.9077                                        | 0.0128                                                  | 0.1423                   | 0.0025                            | 0.1284                 | 0.0041                          | RD               |
| 11 20 05           | +65 50 47           | GJ1146           | 3.79                    | 3772                  | 60                             | 0.010                   | 148           | 1.038     | -7.8036                                                    | 0.0063                                                              | -2.2157                                        | 0.0081                                                  | 0.4631                   | 0.0154                            | 0.4828                 | 0.0166                          | RD               |
| 11 21 38           | +06 08 26           | GJ1146           | 4.60                    | 3404                  | 18                             | 0.014                   | 138           | 1.020     | -9.2426                                                    | 0.0054                                                              | -2.2358                                        | 0.0150                                                  | 0.2526                   | 0.0055                            | 0.1024                 | 0.0040                          | RD               |
| 11 22 36           | +35 46 19           | L264-044         | 5.27                    | 3171                  | 21                             | 0.012                   | 8             | 1.013     | -9.4517                                                    | 0.0054                                                              | -2.2358                                        | 0.0150                                                  | 0.2526                   | 0.0055                            | 0.1024                 | 0.0040                          | RD               |
| 11 22 43           | -32 05 40           | LHS2400          | 6.18                    | 2910                  | 10                             | 0.014                   | 107           | 1.007     | -9.8114                                                    | 0.0068                                                              | -2.6085                                        | 0.0234                                                  | 0.1953                   | 0.0054                            | 0.0804                 | 0.0047                          | RD               |
| 11 23 08           | +25 53 37           | LHS0302          | 5.68                    | 3012                  | 19                             | 0.012                   | 3             | 1.009     | -9.5021                                                    | 0.0054                                                              | -2.6149                                        | 0.0158                                                  | 0.1810                   | 0.0040                            | 0.1072                 | 0.0044                          | RD               |
| 11 23 45           | +08 33 48           | GJ2085           | 3.99                    | 3703                  | 21                             | 0.010                   | 23            | 1.034     | -8.4846                                                    | 0.0073                                                              | -1.3197                                        | 0.0225                                                  | 0.5318                   | 0.0150                            | 0.2287                 | 0.0130                          | RD               |
| 11 23 57           | -18 21 49           | LHS2401          | 4.78                    | 3334                  | 21                             | 0.012                   | 3             | 1.018     | -9.0052                                                    | 0.0071                                                              | -1.9826                                        | 0.0212                                                  | 0.3058                   | 0.0084                            | 0.1549                 | 0.0083                          | RD               |
| 11 25 00           | +40 00 13           | HIP055718        | 3.51                    | 3988                  | 18                             | 0.010                   | 22            | 1.051     | -8.2681                                                    | 0.0072                                                              | -1.0454                                        | 0.0152                                                  | 0.6287                   | 0.0124                            | 0.2530                 | 0.0092                          | RD               |
| 11 25 01           | +43 19 39           | LHS2403          | 5.61                    | 3137                  | 24                             | 0.015                   | 113           | 1.012     | -9.5141                                                    | 0.0071                                                              | -2.3780                                        | 0.0195                                                  | 0.2191                   | 0.0059                            | 0.0974                 | 0.0049                          | RD               |
| 11 25 29           | +78 15 56           | LHS2405          | 4.22                    | 3572                  | 14                             | 0.011                   | 38            | 1.027     | -8.8066                                                    | 0.0068                                                              | -1.6157                                        | 0.0775                                                  | 0.4063                   | 0.0364                            | 0.1696                 | 0.0338                          | RD               |
| 11 30 06           | +48 48 23           | L169-051         | 6.74                    | 2879                  | 48                             | 0.010                   | 3             | 1.006     | -10.2263                                                   | 0.0052                                                              | -3.0202                                        | 0.0378                                                  | 0.1242                   | 0.0068                            | 0.0510                 | 0.0052                          | RD               |
| 11 30 42           | -08 05 43           | LP672-042        | 4.91                    | 3301                  | 15                             | 0.011                   | 93            | 1.017     | -8.5547                                                    | 0.0067                                                              | -1.8185                                        | 0.0251                                                  | 0.3767                   | 0.0114                            | 0.2654                 | 0.0168                          | RD               |
| 11 31 08           | -14 57 21           | LHS0306          | 5.69                    | 3016                  | 26                             | 0.015                   | 16            | 1.009     | -9.1254                                                    | 0.0077                                                              | -2.5294                                        | 0.0111                                                  | 0.1991                   | 0.0042                            | 0.1649                 | 0.0047                          | RD               |
| 11 31 43           | +22 40 02           | GJ0430.1         | 3.95                    | 3738                  | 8                              | 0.012                   | 3             | 1.036     | -8.1493                                                    | 0.0078                                                              | -1.2511                                        | 0.0127                                                  | 0.5647                   | 0.0086                            | 0.3301                 | 0.0091                          | RD               |
| 11 31 47           | -41 02 47           | GJ0431           | 5.01                    | 3265                  | 17                             | 0.012                   | 3             | 1.015     | -8.3019                                                    | 0.0082                                                              | -1.7751                                        | 0.0133                                                  | 0.4049                   | 0.0075                            | 0.3630                 | 0.0111                          | RD               |
| 11 32 18           | -16 58 07           | LP792-033        | 3.98                    | 3665                  | 20                             | 0.012                   | 18            | 1.032     | -8.6040                                                    | 0.0072                                                              | -1.3930                                        | 0.0272                                                  | 0.4988                   | 0.0165                            | 0.2034                 | 0.0140                          | RD               |
| 11 32 41           | -26 51 56           | TWA008           | 4.80                    | 3345                  | 31                             | 0.013                   | 16            | 1.018     | -8.6739                                                    | 0.0078                                                              | -0.8798                                        | 0.0177                                                  | 1.0813                   | 0.0297                            | 0.2254                 | 0.0103                          | YG               |
| 11 34 38           | -23 52 15           | LHS2427          | 3.90                    | 3740                  | 21                             | 0.014                   | 3             | 1.036     | -8.5139                                                    | 0.0078                                                              | -1.5163                                        | 0.0176                                                  | 0.4156                   | 0.0096                            | 0.2167                 | 0.0093                          | RD               |
| 11 35 27           | -32 32 24           | GJ0433           | 4.22                    | 3569                  | 32                             | 0.011                   | 35            | 1.027     | -7.8915                                                    | 0.0082                                                              | -1.4957                                        | 0.0099                                                  | 0.4675                   | 0.0100                            | 0.4874                 | 0.0121                          | RD               |
| 11 36 16           | +56 24 02           | LSPM1136+5624    | 5.64                    | 3032                  | 28                             | 0.011                   | 3             | 1.009     | -9.4743                                                    | 0.0063                                                              | -2.4866                                        | 0.0145                                                  | 0.2070                   | 0.0051                            | 0.1091                 | 0.0042                          | RD               |
| 11 38 17           | -77 21 49           | SCR1138-7721     | 6.26                    | 2903                  | 8                              | 0.013                   | 117           | 1.007     | -9.1520                                                    | 0.0064                                                              | -2.8184                                        | 0.0073                                                  | 0.1540                   | 0.0016                            | 0.1725                 | 0.0023                          | RD               |
| 11 38 25           | -41 22 33           | GJ1147           | 5.18                    | 3200                  | 15                             | 0.014                   | 3             | 1.013     | -9.1267                                                    | 0.0078                                                              | -2.2719                                        | 0.0106                                                  | 0.2378                   | 0.0037                            | 0.1462                 | 0.0033                          | RD               |
| 11 39 51           | -31 59 21           | TWA026           | 8.95                    | 2218                  | 135                            | 0.013                   | 52            | 1.001     | -10.4745                                                   | 0.0072                                                              | -2.8201                                        | 0.0177                                                  | 0.2633                   | 0.0324                            | 0.0645                 | 0.0083                          | YG               |
| 11 41 22           | -36 24 35           | SP1141-3624      | 5.40                    | 3113                  | 8                              | 0.013                   | 57            | 1.011     | -8.7748                                                    | 0.0075                                                              | -2.4096                                        | 0.0089                                                  | 0.2145                   | 0.0025                            | 0.2317                 | 0.0037                          | RD               |
| 11 41 45           | +42 45 07           | GJ1148           | 5.10                    | 3213                  | 13                             | 0.010                   | 69            | 1.014     | -8.4162                                                    | 0.0068                                                              | -1.8182                                        | 0.0125                                                  | 0.3979                   | 0.0066                            | 0.3287                 | 0.0096                          | RD               |
| 11 42 11           | +26 42 24           | GJ0436           | 4.58                    | 3417                  | 20                             | 0.012                   | 123           | 1.021     | -8.0912                                                    | 0.0071                                                              | -1.5871                                        | 0.0115                                                  | 0.4590                   | 0.0081                            | 0.4224                 | 0.0115                          | RD               |
| 11 43 20           | -51 50 26           | GJ0438           | 4.03                    | 3687                  | 26                             | 0.010                   | 126           | 1.033     | -8.1485                                                    | 0.0073                                                              | -1.5830                                        | 0.0120                                                  | 0.3961                   | 0.0077                            | 0.3397                 | 0.0100                          | RD               |
| 11 45 34           | -20 21 12           | LP793-033        | 4.34                    | 3524                  | 14                             | 0.015                   | 3             | 1.025     | -8.6304                                                    | 0.0076                                                              | -1.5662                                        | 0.0290                                                  | 0.4421                   | 0.0152                            | 0.2135                 | 0.0156                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 11 46 43           | -14 00 52           | GJ0443           | 4.62                    | 3412                  | 24                             | 0.013                  | 3             | 1.021     | -8.5037                                                    | 0.0068                                                              | -1.4295                                        | 0.0266                                                  | 0.5520                   | 0.0186                            | 0.2635                 | 0.0179                          | RD               |
| 11 47 41           | +00 15 20           | L613-049         | 5.15                    | 3209                  | 14                             | 0.017                  | 40            | 1.014     | -8.9473                                                    | 0.0087                                                              | -1.8555                                        | 0.0257                                                  | 0.3820                   | 0.0118                            | 0.1787                 | 0.0114                          | RD               |
| 11 47 41           | +78 41 28           | GJ0445           | 4.84                    | 3291                  | 25                             | 0.015                  | 118           | 1.016     | -8.0390                                                    | 0.0085                                                              | -2.0889                                        | 0.0093                                                  | 0.2777                   | 0.0051                            | 0.4836                 | 0.0099                          | RD               |
| 11 47 44           | +00 48 17           | GJ0447           | 5.50                    | 3085                  | 37                             | 0.016                  | 128           | 1.010     | -7.9720                                                    | 0.0083                                                              | -2.4259                                        | 0.0086                                                  | 0.2144                   | 0.0056                            | 0.5946                 | 0.0158                          | RD               |
| 11 47 52           | +17 42 40           | L433-054         | 5.12                    | 3208                  | 11                             | 0.012                  | 52            | 1.014     | -9.5222                                                    | 0.0063                                                              | -2.3062                                        | 0.0190                                                  | 0.2275                   | 0.0052                            | 0.0923                 | 0.0044                          | RD               |
| 11 48 35           | +07 41 40           | G010-052         | 5.10                    | 3225                  | 10                             | 0.013                  | 3             | 1.014     | -9.1398                                                    | 0.0067                                                              | -1.9154                                        | 0.0167                                                  | 0.3532                   | 0.0071                            | 0.1418                 | 0.0058                          | RD               |
| 11 50 58           | +48 22 39           | GJ1151           | 5.60                    | 3126                  | 10                             | 0.013                  | 5             | 1.011     | -8.7728                                                    | 0.0072                                                              | -2.4702                                        | 0.0102                                                  | 0.1985                   | 0.0027                            | 0.2303                 | 0.0049                          | RD               |
| 11 51 07           | +35 16 19           | GJ0450           | 4.13                    | 3605                  | 53                             | 0.012                  | 162           | 1.029     | -7.8677                                                    | 0.0071                                                              | -1.5030                                        | 0.0083                                                  | 0.4544                   | 0.0140                            | 0.4910                 | 0.0159                          | RD               |
| 11 53 16           | -07 22 28           | GJ0452           | 4.42                    | 3491                  | 18                             | 0.014                  | 17            | 1.024     | -8.6364                                                    | 0.0079                                                              | -1.5864                                        | 0.0297                                                  | 0.4400                   | 0.0157                            | 0.2160                 | 0.0162                          | RD               |
| 11 53 53           | +06 59 56           | LHS2471          | 7.81                    | 2542                  | 25                             | 0.012                  | 3             | 1.002     | -9.9211                                                    | 0.0065                                                              | -3.1101                                        | 0.0149                                                  | 0.1437                   | 0.0037                            | 0.0929                 | 0.0037                          | RD               |
| 11 54 08           | +09 48 23           | GJ0452.1         | 4.94                    | 3283                  | 12                             | 0.015                  | 92            | 1.016     | -8.8324                                                    | 0.0080                                                              | -2.2315                                        | 0.0196                                                  | 0.2368                   | 0.0056                            | 0.1950                 | 0.0093                          | RD               |
| 11 55 40           | -37 27 36           | 2MA1155-3727     | 9.49                    | 2123                  | 63                             | 0.014                  | 49            | 1.001     | -10.4956                                                   | 0.0084                                                              | -3.8540                                        | 0.0129                                                  | 0.0875                   | 0.0054                            | 0.0687                 | 0.0045                          | RD               |
| 11 55 43           | -22 24 59           | LPS11-346        | 8.27                    | 2529                  | 15                             | 0.013                  | 24            | 1.002     | -9.7941                                                    | 0.0073                                                              | -3.2032                                        | 0.0113                                                  | 0.1304                   | 0.0023                            | 0.1086                 | 0.0029                          | RD               |
| 11 55 49           | -38 16 49           | GJ2086           | 4.02                    | 3700                  | 11                             | 0.011                  | 73            | 1.034     | -8.8000                                                    | 0.0065                                                              | -1.5325                                        | 0.0311                                                  | 0.4169                   | 0.0151                            | 0.1593                 | 0.0126                          | RD               |
| 11 57 33           | +11 49 40           | LHS2482          | 4.27                    | 3568                  | 18                             | 0.010                  | 24            | 1.027     | -8.6769                                                    | 0.0062                                                              | -1.4086                                        | 0.0301                                                  | 0.5170                   | 0.0186                            | 0.1974                 | 0.0151                          | RD               |
| 11 57 46           | -01 49 03           | SCR1157-0149     | 5.97                    | 3054                  | 15                             | 0.011                  | 3             | 1.010     | -9.7476                                                    | 0.0062                                                              | -2.6637                                        | 0.0144                                                  | 0.1664                   | 0.0032                            | 0.0786                 | 0.0028                          | RD               |
| 12 02 34           | +08 25 51           | LHS0320          | 4.01                    | 3668                  | 29                             | 0.013                  | 3             | 1.032     | -9.5956                                                    | 0.0070                                                              | -1.9239                                        | 0.0610                                                  | 0.2703                   | 0.0195                            | 0.0649                 | 0.0102                          | SD               |
| 12 03 18           | +38 52 47           | LHS2503          | 5.18                    | 3192                  | 13                             | 0.010                  | 8             | 1.013     | -9.4979                                                    | 0.0063                                                              | -2.2638                                        | 0.0137                                                  | 0.2414                   | 0.0043                            | 0.0959                 | 0.0032                          | RD               |
| 12 05 30           | +69 32 23           | LFT13356         | 5.18                    | 3198                  | 10                             | 0.012                  | 3             | 1.013     | -8.8595                                                    | 0.0065                                                              | -2.0105                                        | 0.0242                                                  | 0.3219                   | 0.0092                            | 0.1991                 | 0.0121                          | RD               |
| 12 05 36           | +56 23 45           | LP094-367        | 6.36                    | 2909                  | 14                             | 0.012                  | 96            | 1.007     | -9.6985                                                    | 0.0068                                                              | -2.6305                                        | 0.0367                                                  | 0.1905                   | 0.0083                            | 0.0916                 | 0.0086                          | RD               |
| 12 06 58           | -35 00 52           | SCR1206-3500     | 5.54                    | 3081                  | 19                             | 0.012                  | 14            | 1.010     | -9.3733                                                    | 0.0056                                                              | -2.1339                                        | 0.0157                                                  | 0.3008                   | 0.0066                            | 0.1187                 | 0.0048                          | RD               |
| 12 07 58           | +77 15 01           | LHS2513          | 4.73                    | 3356                  | 17                             | 0.012                  | 75            | 1.018     | -9.1589                                                    | 0.0063                                                              | -2.0497                                        | 0.0187                                                  | 0.2794                   | 0.0067                            | 0.1281                 | 0.0060                          | RD               |
| 12 08 22           | -00 28 58           | GJ0456           | 3.64                    | 3904                  | 12                             | 0.012                  | 64            | 1.046     | -8.6260                                                    | 0.0079                                                              | -1.3399                                        | 0.0280                                                  | 0.4673                   | 0.0153                            | 0.1748                 | 0.0122                          | RD               |
| 12 09 07           | +47 36 05           | LHS2516          | 5.69                    | 3034                  | 27                             | 0.011                  | 3             | 1.009     | -9.4697                                                    | 0.0066                                                              | -2.4209                                        | 0.0134                                                  | 0.2229                   | 0.0053                            | 0.1096                 | 0.0039                          | RD               |
| 12 10 06           | -15 04 17           | LHS2520          | 5.23                    | 3183                  | 21                             | 0.013                  | 3             | 1.013     | -8.4619                                                    | 0.0073                                                              | -1.7503                                        | 0.0153                                                  | 0.4385                   | 0.0097                            | 0.3178                 | 0.0121                          | YC               |
| 12 10 57           | +41 03 28           | G123-008         | 3.58                    | 3910                  | 22                             | 0.011                  | 34            | 1.046     | -8.4118                                                    | 0.0066                                                              | -1.2488                                        | 0.0178                                                  | 0.5174                   | 0.0121                            | 0.2230                 | 0.0100                          | RD               |
| 12 12 21           | +54 29 09           | GJ0458           | 3.73                    | 3818                  | 30                             | 0.010                  | 13            | 1.040     | -8.0201                                                    | 0.0072                                                              | -1.1447                                        | 0.0120                                                  | 0.6117                   | 0.0129                            | 0.3672                 | 0.0112                          | RD               |
| 12 12 58           | +74 16 49           | LP020-304        | 4.87                    | 3304                  | 13                             | 0.012                  | 115           | 1.017     | -9.3099                                                    | 0.0063                                                              | -2.2335                                        | 0.0127                                                  | 0.2332                   | 0.0039                            | 0.1110                 | 0.0034                          | RD               |
| 12 13 33           | -25 55 25           | LPS2-057         | 3.92                    | 3744                  | 17                             | 0.013                  | 3             | 1.036     | -8.6292                                                    | 0.0068                                                              | -1.3953                                        | 0.0217                                                  | 0.4767                   | 0.0127                            | 0.1894                 | 0.0103                          | RD               |
| 12 14 08           | -23 45 17           | SCR1214-2345     | 5.73                    | 3004                  | 28                             | 0.013                  | 117           | 1.009     | -9.0169                                                    | 0.0081                                                              | -2.4438                                        | 0.0109                                                  | 0.2215                   | 0.0050                            | 0.1883                 | 0.0053                          | RD               |
| 12 14 17           | +00 37 26           | GJ1154           | 6.12                    | 3009                  | 18                             | 0.014                  | 3             | 1.009     | -8.7652                                                    | 0.0082                                                              | -2.4242                                        | 0.0152                                                  | 0.2258                   | 0.0048                            | 0.2507                 | 0.0091                          | RD               |
| 12 14 40           | -46 03 14           | SCR1214-4603     | 6.22                    | 2901                  | 9                              | 0.011                  | 4             | 1.007     | -9.5230                                                    | 0.0065                                                              | -2.6645                                        | 0.0084                                                  | 0.1842                   | 0.0021                            | 0.1127                 | 0.0019                          | RD               |
| 12 15 08           | +48 43 57           | GJ0458.2         | 3.76                    | 3841                  | 12                             | 0.011                  | 3             | 1.042     | -8.3117                                                    | 0.0067                                                              | -1.0250                                        | 0.0221                                                  | 0.6938                   | 0.0182                            | 0.2593                 | 0.0143                          | RD               |
| 12 18 59           | +11 07 34           | GJ1156           | 6.35                    | 2912                  | 18                             | 0.014                  | 3             | 1.007     | -8.7894                                                    | 0.0078                                                              | -2.6573                                        | 0.0103                                                  | 0.1843                   | 0.0031                            | 0.2603                 | 0.0063                          | RD               |
| 12 20 34           | -82 25 58           | NLT30359         | 5.12                    | 3212                  | 18                             | 0.015                  | 56            | 1.014     | -8.4362                                                    | 0.0078                                                              | -1.7444                                        | 0.0161                                                  | 0.4334                   | 0.0086                            | 0.3213                 | 0.0122                          | YC               |
| 12 23 00           | +64 01 51           | GJ0463           | 4.47                    | 3466                  | 15                             | 0.012                  | 14            | 1.023     | -8.5044                                                    | 0.0066                                                              | -1.4880                                        | 0.0161                                                  | 0.5001                   | 0.0103                            | 0.2552                 | 0.0101                          | RD               |
| 12 23 01           | -46 37 09           | GJ1157           | 5.23                    | 3178                  | 10                             | 0.011                  | 3             | 1.013     | -9.0381                                                    | 0.0062                                                              | -2.1338                                        | 0.0076                                                  | 0.2827                   | 0.0030                            | 0.1641                 | 0.0024                          | RD               |
| 12 23 54           | +12 34 49           | GJ0464           | 3.76                    | 3854                  | 21                             | 0.010                  | 74            | 1.042     | -8.2651                                                    | 0.0066                                                              | -1.1259                                        | 0.0233                                                  | 0.6137                   | 0.0178                            | 0.2719                 | 0.0160                          | RD               |
| 12 24 27           | -04 43 37           | LHS0326          | 3.69                    | 3801                  | 31                             | 0.012                  | 127           | 1.039     | -10.0616                                                   | 0.0063                                                              | -2.1855                                        | 0.0418                                                  | 0.1862                   | 0.0095                            | 0.0353                 | 0.0038                          | SD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 12 24 52           | -12 38 36           | BR1222-1221      | 9.17                    | 2302                  | 89                             | 0.014                  | 16            | 1.001     | -10.4324                                                   | 0.0079                                                              | -3.4733                                        | 0.0293                                                  | 0.1153                   | 0.0097                            | 0.0628                 | 0.0067                          | RD               |
| 12 24 52           | -18 14 32           | GJ0465           | 4.34                    | 3524                  | 18                             | 0.014                  | 193           | 1.025     | -8.4128                                                    | 0.0063                                                              | -2.0138                                        | 0.0091                                                  | 0.2641                   | 0.0039                            | 0.2743                 | 0.0058                          | SC               |
| 12 29 14           | +53 32 45           | LHS0331          | 4.94                    | 3270                  | 13                             | 0.012                  | 66            | 1.016     | -9.3571                                                    | 0.0062                                                              | -2.0682                                        | 0.0114                                                  | 0.2881                   | 0.0044                            | 0.1074                 | 0.0029                          | RD               |
| 12 29 27           | +22 59 47           | LP377-100        | 5.18                    | 3193                  | 8                              | 0.011                  | 3             | 1.013     | -9.2950                                                    | 0.0069                                                              | -2.0956                                        | 0.0200                                                  | 0.2928                   | 0.0069                            | 0.1210                 | 0.0060                          | RD               |
| 12 29 35           | -55 59 37           | GJ1158           | 5.20                    | 3190                  | 9                              | 0.016                  | 6             | 1.013     | -8.9225                                                    | 0.0082                                                              | -2.1912                                        | 0.0113                                                  | 0.2627                   | 0.0037                            | 0.1861                 | 0.0043                          | RD               |
| 12 29 54           | -05 27 24           | LHS2567          | 5.12                    | 3165                  | 64                             | 0.014                  | 36            | 1.012     | -8.8722                                                    | 0.0082                                                              | -1.7339                                        | 0.0143                                                  | 0.4517                   | 0.0197                            | 0.2003                 | 0.0103                          | YC               |
| 12 31 16           | +08 48 38           | GJ0471           | 3.77                    | 3797                  | 27                             | 0.012                  | 3             | 1.039     | -7.9725                                                    | 0.0074                                                              | -1.2058                                        | 0.0106                                                  | 0.5765                   | 0.0109                            | 0.3921                 | 0.0101                          | RD               |
| 12 34 53           | +05 03 54           | LHS0335          | 3.61                    | 3870                  | 59                             | 0.015                  | 73            | 1.043     | -10.7439                                                   | 0.0077                                                              | -2.9455                                        | 0.1054                                                  | 0.0749                   | 0.0094                            | 0.0155                 | 0.0042                          | SD               |
| 12 35 01           | +09 49 43           | GJ0476           | 4.26                    | 3561                  | 8                              | 0.011                  | 11            | 1.027     | -8.5036                                                    | 0.0066                                                              | -1.4844                                        | 0.0251                                                  | 0.4758                   | 0.0139                            | 0.2420                 | 0.0152                          | RD               |
| 12 36 28           | +35 12 01           | G123-045         | 5.54                    | 3088                  | 8                              | 0.011                  | 19            | 1.010     | -9.0223                                                    | 0.0056                                                              | -2.4183                                        | 0.0101                                                  | 0.2159                   | 0.0028                            | 0.1771                 | 0.0041                          | RD               |
| 12 37 52           | -52 00 06           | GJ0479           | 4.66                    | 3392                  | 14                             | 0.011                  | 116           | 1.020     | -8.0823                                                    | 0.0073                                                              | -1.6230                                        | 0.0118                                                  | 0.4469                   | 0.0072                            | 0.4331                 | 0.0116                          | YG               |
| 12 38 36           | +05 21 39           | LHS2593          | 5.37                    | 3222                  | 26                             | 0.015                  | 112           | 1.014     | -9.6640                                                    | 0.0065                                                              | -2.4716                                        | 0.0232                                                  | 0.1865                   | 0.0058                            | 0.0777                 | 0.0047                          | RD               |
| 12 38 47           | -04 19 17           | GJ1162           | 5.11                    | 3216                  | 16                             | 0.012                  | 30            | 1.014     | -9.0847                                                    | 0.0066                                                              | -1.9997                                        | 0.0274                                                  | 0.3222                   | 0.0107                            | 0.1520                 | 0.0106                          | RD               |
| 12 38 49           | -38 22 54           | LHS0337          | 5.36                    | 3099                  | 18                             | 0.128                  | 247           | 1.011     | -8.6453                                                    | 0.0082                                                              | -2.5409                                        | 0.0099                                                  | 0.1861                   | 0.0031                            | 0.2714                 | 0.0056                          | RD               |
| 12 38 52           | +11 41 46           | GJ0480           | 4.82                    | 3321                  | 27                             | 0.012                  | 3             | 1.017     | -8.3653                                                    | 0.0068                                                              | -1.5770                                        | 0.0169                                                  | 0.4915                   | 0.0124                            | 0.3261                 | 0.0142                          | YC               |
| 12 39 05           | +47 02 23           | G123-049         | 4.35                    | 3520                  | 15                             | 0.011                  | 3             | 1.025     | -8.7599                                                    | 0.0050                                                              | -1.5886                                        | 0.0427                                                  | 0.4317                   | 0.0215                            | 0.1843                 | 0.0202                          | RD               |
| 12 40 46           | -43 33 59           | GJ0480.1         | 4.83                    | 3314                  | 20                             | 0.013                  | 95            | 1.017     | -8.6303                                                    | 0.0078                                                              | -2.3331                                        | 0.0154                                                  | 0.2067                   | 0.0044                            | 0.2414                 | 0.0090                          | RD               |
| 12 41 29           | +19 05 01           | G059-034         | 5.58                    | 3083                  | 12                             | 0.011                  | 6             | 1.010     | -9.5227                                                    | 0.0067                                                              | -2.3774                                        | 0.0382                                                  | 0.2269                   | 0.0101                            | 0.0998                 | 0.0097                          | RD               |
| 12 43 36           | +25 06 22           | LFT18236         | 4.78                    | 3332                  | 18                             | 0.011                  | 58            | 1.018     | -8.9291                                                    | 0.0063                                                              | -1.7031                                        | 0.0279                                                  | 0.4224                   | 0.0143                            | 0.1693                 | 0.0121                          | RD               |
| 12 44 01           | -11 10 30           | LHS5226          | 5.55                    | 3090                  | 5                              | 0.013                  | 16            | 1.011     | -9.1837                                                    | 0.0063                                                              | -2.4056                                        | 0.0119                                                  | 0.2187                   | 0.0031                            | 0.1468                 | 0.0040                          | RD               |
| 12 45 47           | +52 55 19           | LP131-055        | 5.22                    | 3180                  | 17                             | 0.010                  | 3             | 1.013     | -9.3886                                                    | 0.0056                                                              | -2.0978                                        | 0.0182                                                  | 0.2943                   | 0.0069                            | 0.1095                 | 0.0051                          | RD               |
| 12 45 53           | -55 06 50           | SCR1245-5506     | 5.54                    | 3090                  | 9                              | 0.011                  | 3             | 1.011     | -8.9693                                                    | 0.0075                                                              | -2.4423                                        | 0.0096                                                  | 0.2097                   | 0.0026                            | 0.1879                 | 0.0035                          | RD               |
| 12 46 52           | +31 48 11           | LHS2632          | 7.70                    | 2611                  | 29                             | 0.012                  | 21            | 1.003     | -10.3041                                                   | 0.0068                                                              | -3.2626                                        | 0.0199                                                  | 0.1142                   | 0.0036                            | 0.0566                 | 0.0030                          | RD               |
| 12 47 01           | +46 37 33           | LHS2633          | 4.54                    | 3444                  | 22                             | 0.012                  | 15            | 1.022     | -8.5612                                                    | 0.0062                                                              | -1.4246                                        | 0.0223                                                  | 0.5447                   | 0.0156                            | 0.2420                 | 0.0138                          | RD               |
| 12 47 10           | -03 34 18           | LHS2634          | 4.71                    | 3372                  | 21                             | 0.012                  | 12            | 1.019     | -8.8369                                                    | 0.0069                                                              | -1.6644                                        | 0.0199                                                  | 0.4312                   | 0.0113                            | 0.1838                 | 0.0092                          | RD               |
| 12 47 15           | -05 25 13           | SCR1247-0525     | 5.49                    | 3102                  | 9                              | 0.015                  | 151           | 1.011     | -9.4226                                                    | 0.0067                                                              | -2.3254                                        | 0.0114                                                  | 0.2381                   | 0.0034                            | 0.1107                 | 0.0028                          | RD               |
| 12 47 57           | +09 45 05           | GJ0486           | 5.06                    | 3230                  | 15                             | 0.016                  | 129           | 1.014     | -8.2346                                                    | 0.0084                                                              | -1.8950                                        | 0.0128                                                  | 0.3603                   | 0.0062                            | 0.4007                 | 0.0112                          | RD               |
| 12 50 44           | -00 46 05           | GJ0488           | 3.59                    | 3950                  | 59                             | 0.176                  | 341           | 1.049     | -7.5376                                                    | 0.0100                                                              | -0.9917                                        | 0.0107                                                  | 0.6818                   | 0.0219                            | 0.5980                 | 0.0199                          | RD               |
| 12 50 53           | -21 21 14           | LEHPM2-0174      | 8.23                    | 2517                  | 29                             | 0.016                  | 137           | 1.002     | -9.8894                                                    | 0.0074                                                              | -2.9178                                        | 0.0149                                                  | 0.1827                   | 0.0053                            | 0.0982                 | 0.0041                          | RD               |
| 12 51 04           | +29 17 57           | LP321-150        | 5.32                    | 3164                  | 5                              | 0.011                  | 3             | 1.012     | -9.5738                                                    | 0.0057                                                              | -2.5580                                        | 0.0176                                                  | 0.1751                   | 0.0036                            | 0.0894                 | 0.0039                          | RD               |
| 12 51 28           | +24 16 36           | G149-014         | 5.25                    | 3210                  | 30                             | 0.010                  | 3             | 1.014     | -9.6226                                                    | 0.0054                                                              | -2.3490                                        | 0.0387                                                  | 0.2163                   | 0.0104                            | 0.0821                 | 0.0083                          | RD               |
| 12 54 32           | +44 59 35           | LHS2650          | 5.95                    | 2802                  | 220                            | 0.149                  | 485           | 1.005     | -9.4834                                                    | 0.0073                                                              | -2.5788                                        | 0.0221                                                  | 0.2179                   | 0.0347                            | 0.1265                 | 0.0210                          | YC               |
| 12 55 57           | +50 55 22           | LHS2651          | 4.82                    | 3318                  | 15                             | 0.012                  | 112           | 1.017     | -9.5014                                                    | 0.0063                                                              | -2.3675                                        | 0.0174                                                  | 0.1982                   | 0.0043                            | 0.0883                 | 0.0038                          | RD               |
| 12 57 51           | +37 59 51           | LHS2655          | 5.85                    | 3020                  | 15                             | 0.741                  | 150           | 1.009     | -9.7479                                                    | 0.0104                                                              | -2.6850                                        | 0.0211                                                  | 0.1660                   | 0.0044                            | 0.0803                 | 0.0040                          | RD               |
| 12 59 05           | -43 36 25           | SIP1259-4336     | 8.49                    | 2465                  | 38                             | 0.014                  | 51            | 1.002     | -9.6408                                                    | 0.0073                                                              | -3.3598                                        | 0.0075                                                  | 0.1146                   | 0.0036                            | 0.1363                 | 0.0043                          | RD               |
| 12 59 50           | +16 10 33           | LP436-065        | 5.48                    | 3100                  | 10                             | 0.012                  | 126           | 1.011     | -9.5429                                                    | 0.0063                                                              | -2.3791                                        | 0.0146                                                  | 0.2241                   | 0.0040                            | 0.0965                 | 0.0034                          | RD               |
| 13 00 26           | -34 36 24           | HIP063480        | 3.92                    | 3777                  | 23                             | 0.012                  | 62            | 1.038     | -8.3146                                                    | 0.0071                                                              | -1.2288                                        | 0.0186                                                  | 0.5676                   | 0.0140                            | 0.2674                 | 0.0125                          | RD               |
| 13 00 34           | +05 41 08           | GJ0493.1         | 5.77                    | 3003                  | 27                             | 0.016                  | 15            | 1.009     | -8.8050                                                    | 0.0093                                                              | -2.4889                                        | 0.0122                                                  | 0.2104                   | 0.0048                            | 0.2404                 | 0.0070                          | RD               |
| 13 01 20           | -03 11 42           | LHS2668          | 4.00                    | 3659                  | 23                             | 0.013                  | 19            | 1.032     | -8.3925                                                    | 0.0073                                                              | -2.4272                                        | 0.0191                                                  | 0.4811                   | 0.0122                            | 0.2604                 | 0.0125                          | RD               |
| 13 01 44           | +26 20 30           | G149-030         | 5.02                    | 3195                  | 14                             | 0.011                  | 3             | 1.013     | -9.4268                                                    | 0.0066                                                              | -2.1617                                        | 0.0191                                                  | 0.2709                   | 0.0064                            | 0.1038                 | 0.0049                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 13 02 16           | +87 06 58           | LP001-324        | 5.01                    | 3251                  | 14                             | 0.010                   | 7             | 1.015     | -9.3979                                                                | 0.0054                                                                          | -2.2322                                        | 0.0214                                                  | 0.2412                   | 0.0063                            | 0.1037                 | 0.0056                          | RD                       |
| 13 05 37           | +19 34 57           | LSPM1305+1934    | 7.04                    | 2737                  | 53                             | 0.015                   | 212           | 1.004     | -10.2540                                                               | 0.0069                                                                          | -3.0179                                        | 0.0424                                                  | 0.1377                   | 0.0086                            | 0.0546                 | 0.0063                          | RD                       |
| 13 06 50           | +30 50 54           | LHS2674a         | 6.15                    | 2904                  | 22                             | 0.010                   | 5             | 1.007     | -9.4738                                                                | 0.0051                                                                          | -2.4596                                        | 0.0351                                                  | 0.2328                   | 0.0101                            | 0.1191                 | 0.0108                          | RD                       |
| 13 09 20           | -40 09 27           | LHS0346          | 4.87                    | 3296                  | 7                              | 0.014                   | 44            | 1.016     | -8.8701                                                                | 0.0070                                                                          | -1.9565                                        | 0.0106                                                  | 0.3224                   | 0.0041                            | 0.1852                 | 0.0041                          | RD                       |
| 13 09 22           | -23 30 36           | CE303            | 8.83                    | 2395                  | 129                            | 0.010                   | 3             | 1.002     | -10.1230                                                               | 0.0057                                                                          | -3.3099                                        | 0.0101                                                  | 0.1286                   | 0.0139                            | 0.0829                 | 0.0091                          | RD                       |
| 13 09 35           | +28 59 07           | GJ1167           | 5.59                    | 3096                  | 10                             | 0.013                   | 157           | 1.011     | -9.1608                                                                | 0.0072                                                                          | -2.4821                                        | 0.0098                                                  | 0.1995                   | 0.0026                            | 0.1502                 | 0.0030                          | YG                       |
| 13 10 13           | +47 45 19           | LHS2686          | 5.84                    | 3004                  | 11                             | 0.011                   | 3             | 1.009     | -9.2091                                                                | 0.0061                                                                          | -2.5306                                        | 0.0137                                                  | 0.2005                   | 0.0035                            | 0.1510                 | 0.0050                          | RD                       |
| 13 13 09           | -41 30 40           | WT0392           | 5.49                    | 3102                  | 11                             | 0.010                   | 10            | 1.011     | -8.6879                                                                | 0.0072                                                                          | -2.0372                                        | 0.0109                                                  | 0.3317                   | 0.0048                            | 0.2579                 | 0.0061                          | YC                       |
| 13 14 06           | +03 53 59           | LHS2699          | 4.91                    | 3298                  | 17                             | 0.012                   | 75            | 1.016     | -9.1311                                                                | 0.0065                                                                          | -2.0530                                        | 0.0158                                                  | 0.2881                   | 0.0060                            | 0.1369                 | 0.0054                          | RD                       |
| 13 14 24           | +66 22 33           | LP065-357        | 6.84                    | 2803                  | 45                             | 0.012                   | 20            | 1.005     | -9.9733                                                                | 0.0057                                                                          | -3.0390                                        | 0.0223                                                  | 0.1282                   | 0.0053                            | 0.0719                 | 0.0046                          | RD                       |
| 13 16 33           | +27 52 30           | GJ1169           | 4.82                    | 3318                  | 18                             | 0.010                   | 55            | 1.017     | -9.0497                                                                | 0.0064                                                                          | -2.1658                                        | 0.0121                                                  | 0.2500                   | 0.0044                            | 0.1486                 | 0.0044                          | RD                       |
| 13 17 58           | +36 17 57           | GJ1170           | 3.94                    | 3715                  | 16                             | 0.010                   | 3             | 1.034     | -8.5441                                                                | 0.0058                                                                          | -1.3807                                        | 0.0201                                                  | 0.4925                   | 0.0122                            | 0.2122                 | 0.0108                          | RD                       |
| 13 18 02           | +02 14 01           | LP557-046        | 5.05                    | 3244                  | 18                             | 0.011                   | 47            | 1.015     | -8.8643                                                                | 0.0070                                                                          | -1.7209                                        | 0.0239                                                  | 0.4364                   | 0.0130                            | 0.1924                 | 0.0116                          | YC                       |
| 13 18 54           | +22 50 05           | LP378-1017       | 5.15                    | 3209                  | 19                             | 0.013                   | 3             | 1.014     | -9.6437                                                                | 0.0065                                                                          | -2.5380                                        | 0.0418                                                  | 0.1742                   | 0.0086                            | 0.0802                 | 0.0086                          | RD                       |
| 13 19 40           | +33 20 48           | GJ0507.1         | 4.25                    | 3588                  | 28                             | 0.012                   | 33            | 1.028     | -8.2126                                                                | 0.0075                                                                          | -1.2531                                        | 0.0132                                                  | 0.6116                   | 0.0133                            | 0.3332                 | 0.0110                          | RD                       |
| 13 20 04           | -35 24 44           | LHS2718          | 4.86                    | 3304                  | 11                             | 0.014                   | 3             | 1.017     | -8.8750                                                                | 0.0082                                                                          | -2.1072                                        | 0.0095                                                  | 0.2697                   | 0.0035                            | 0.1832                 | 0.0031                          | RD                       |
| 13 20 25           | -01 39 27           | LP977-016        | 4.04                    | 3687                  | 19                             | 0.011                   | 13            | 1.033     | -8.6419                                                                | 0.0079                                                                          | -1.4804                                        | 0.0313                                                  | 0.4458                   | 0.0167                            | 0.1925                 | 0.0152                          | RD                       |
| 13 20 58           | +34 16 44           | GJ0508.2         | 4.08                    | 3678                  | 21                             | 14.62                   | 78            | 1.033     | -8.2588                                                                | 0.3759                                                                          | -1.3508                                        | 0.3761                                                  | 0.5199                   | 0.2252                            | 0.3006                 | 0.1305                          | RD                       |
| 13 21 38           | +39 59 49           | LP218-084        | 5.46                    | 3106                  | 7                              | 0.011                   | 3             | 1.011     | -9.6170                                                                | 0.0063                                                                          | -2.4188                                        | 0.0453                                                  | 0.2133                   | 0.0112                            | 0.0883                 | 0.0102                          | RD                       |
| 13 22 19           | +39 02 38           | LP218-089        | 6.67                    | 2919                  | 18                             | 0.011                   | 3             | 1.007     | -10.0532                                                               | 0.0055                                                                          | -2.9666                                        | 0.0255                                                  | 0.1285                   | 0.0041                            | 0.0605                 | 0.0040                          | RD                       |
| 13 22 57           | +24 28 03           | LHS0350          | 5.00                    | 3242                  | 13                             | 0.012                   | 3             | 1.015     | -8.8541                                                                | 0.0078                                                                          | -2.0870                                        | 0.0178                                                  | 0.2868                   | 0.0063                            | 0.1950                 | 0.0084                          | RD                       |
| 13 23 38           | -25 54 45           | LHS2729          | 5.11                    | 3225                  | 12                             | 0.014                   | 39            | 1.014     | -8.8172                                                                | 0.0089                                                                          | -2.0306                                        | 0.0128                                                  | 0.3092                   | 0.0052                            | 0.2055                 | 0.0056                          | RD                       |
| 13 25 48           | -28 22 26           | GJ0510           | 4.12                    | 3627                  | 25                             | 0.012                   | 3             | 1.030     | -8.3787                                                                | 0.0073                                                                          | -1.4373                                        | 0.0186                                                  | 0.4842                   | 0.0124                            | 0.2694                 | 0.0127                          | RD                       |
| 13 27 54           | -26 57 01           | LP855-014        | 4.24                    | 3568                  | 8                              | 0.014                   | 20            | 1.027     | -8.6597                                                                | 0.0088                                                                          | -1.5169                                        | 0.0272                                                  | 0.4564                   | 0.0144                            | 0.2013                 | 0.0135                          | RD                       |
| 13 29 21           | +11 26 27           | GJ0513           | 4.58                    | 3423                  | 15                             | 0.012                   | 48            | 1.021     | -8.6738                                                                | 0.0078                                                                          | -1.7761                                        | 0.0469                                                  | 0.3680                   | 0.0201                            | 0.2153                 | 0.0258                          | RD                       |
| 13 30 00           | +10 22 38           | GJ0514           | 4.01                    | 3695                  | 93                             | 0.024                   | 269           | 1.033     | -7.6292                                                                | 0.0080                                                                          | -1.3734                                        | 0.0086                                                  | 0.5021                   | 0.0258                            | 0.6150                 | 0.0319                          | RD                       |
| 13 30 31           | +19 09 34           | GJ1171           | 5.49                    | 3101                  | 9                              | 0.014                   | 114           | 1.011     | -9.3978                                                                | 0.0068                                                                          | -2.5768                                        | 0.0286                                                  | 0.1783                   | 0.0060                            | 0.1140                 | 0.0082                          | RD                       |
| 13 30 41           | -20 39 03           | LEP1330-2039     | 5.07                    | 3237                  | 21                             | 0.010                   | 3             | 1.015     | -8.6582                                                                | 0.0061                                                                          | -1.7081                                        | 0.0128                                                  | 0.4449                   | 0.0088                            | 0.2450                 | 0.0080                          | YC                       |
| 13 32 00           | +66 36 01           | LHS2748          | 4.99                    | 3270                  | 11                             | 0.011                   | 9             | 1.016     | -9.3151                                                                | 0.0068                                                                          | -2.0851                                        | 0.0148                                                  | 0.2825                   | 0.0052                            | 0.1127                 | 0.0040                          | RD                       |
| 13 33 16           | +62 25 38           | LHS2751          | 5.13                    | 3212                  | 23                             | 0.010                   | 3             | 1.014     | -9.4611                                                                | 0.0057                                                                          | -2.2412                                        | 0.0325                                                  | 0.2446                   | 0.0098                            | 0.0987                 | 0.0083                          | RD                       |
| 13 34 22           | +04 40 03           | GJ1172           | 3.59                    | 3960                  | 22                             | 0.014                   | 31            | 1.049     | -8.1300                                                                | 0.0096                                                                          | -0.9750                                        | 0.0171                                                  | 0.6916                   | 0.0156                            | 0.3008                 | 0.0120                          | RD                       |
| 13 35 40           | +60 51 46           | LSPM1335+6051    | 5.06                    | 3222                  | 17                             | 0.011                   | 93            | 1.014     | -9.3225                                                                | 0.0070                                                                          | -2.2679                                        | 0.0108                                                  | 0.2357                   | 0.0038                            | 0.1151                 | 0.0029                          | RD                       |
| 13 37 28           | +35 43 04           | GJ0519           | 3.54                    | 3934                  | 55                             | 0.012                   | 162           | 1.048     | -7.7638                                                                | 0.0070                                                                          | -1.1912                                        | 0.0088                                                  | 0.5463                   | 0.0161                            | 0.4646                 | 0.0149                          | YG                       |
| 13 38 58           | -06 14 13           | NLT34755         | 3.66                    | 3896                  | 13                             | 0.012                   | 19            | 1.045     | -8.4158                                                                | 0.0083                                                                          | -1.1762                                        | 0.0241                                                  | 0.5667                   | 0.0162                            | 0.2236                 | 0.0133                          | RD                       |
| 13 40 07           | -04 11 10           | GJ0521.1         | 3.59                    | 3930                  | 23                             | 0.015                   | 3             | 1.047     | -8.0053                                                                | 0.0093                                                                          | -1.1721                                        | 0.0119                                                  | 0.5596                   | 0.0100                            | 0.3526                 | 0.0087                          | RD                       |
| 13 40 08           | +43 46 38           | GJ1174           | 4.99                    | 3187                  | 16                             | 0.010                   | 3             | 1.013     | -8.7992                                                                | 0.0072                                                                          | -1.8988                                        | 0.0273                                                  | 0.3686                   | 0.0122                            | 0.2149                 | 0.0148                          | RD                       |
| 13 40 18           | +47 12 29           | LHS2777          | 5.56                    | 3080                  | 13                             | 0.010                   | 125           | 1.010     | -9.6584                                                                | 0.0061                                                                          | -2.4858                                        | 0.0209                                                  | 0.2008                   | 0.0051                            | 0.0856                 | 0.0045                          | RD                       |
| 13 41 11           | +30 01 26           | LHS0358          | 5.39                    | 3118                  | 16                             | 0.014                   | 168           | 1.011     | -9.8655                                                                | 0.0061                                                                          | -2.7348                                        | 0.0182                                                  | 0.1470                   | 0.0034                            | 0.0658                 | 0.0030                          | RD                       |
| 13 41 28           | +32 27 22           | LTT13989         | 4.89                    | 3288                  | 11                             | 0.010                   | 3             | 1.016     | -9.4167                                                                | 0.0060                                                                          | -2.1302                                        | 0.0173                                                  | 0.2653                   | 0.0056                            | 0.0992                 | 0.0042                          | RD                       |
| 13 42 43           | +33 17 24           | LHS2784          | 4.99                    | 3190                  | 14                             | 0.011                   | 7             | 1.013     | -8.4751                                                                | 0.0061                                                                          | -2.0511                                        | 0.0138                                                  | 0.3087                   | 0.0056                            | 0.3116                 | 0.0106                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^{\delta}$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 13 43 41           | -40 02 29           | SCR1343-4002     | 5.81                    | 3012                  | 13                             | 0.017                         | 194           | 1.009     | -9.4343                                                                | 0.0064                                                                          | -2.4783                                          | 0.0097                                                    | 0.2117                      | 0.0030                               | 0.1158                 | 0.0026                        | RD                       |
| 13 45 05           | +17 47 08           | GJ0525           | 3.59                    | 3924                  | 31                             | 0.012                         | 72            | 1.047     | -8.0602                                                                | 0.0065                                                                          | -1.3246                                          | 0.0086                                                    | 0.4709                      | 0.0087                               | 0.3320                 | 0.0075                        | RD                       |
| 13 45 44           | +14 53 29           | GJ0526           | 4.05                    | 3643                  | 104                            | 33.619                        | 458           | 1.031     | -7.3342                                                                | 0.0183                                                                          | -1.3723                                          | 0.0183                                                    | 0.5172                      | 0.0314                               | 0.8886                 | 0.0541                        | RD                       |
| 13 45 51           | -17 58 06           | LHS2794          | 4.97                    | 3278                  | 10                             | 0.017                         | 6             | 1.016     | -8.4505                                                                | 0.0085                                                                          | -1.8699                                          | 0.0168                                                    | 0.3601                      | 0.0073                               | 0.3034                 | 0.0118                        | RD                       |
| 13 46 18           | +07 13 38           | LSPM1346+0713    | 5.60                    | 3082                  | 20                             | 0.013                         | 13            | 1.010     | -9.6605                                                                | 0.0068                                                                          | -2.5042                                          | 0.0242                                                    | 0.1963                      | 0.0061                               | 0.0853                 | 0.0053                        | RD                       |
| 13 48 13           | +23 36 49           | GJ1179           | 6.14                    | 2919                  | 9                              | 0.012                         | 3             | 1.007     | -9.4175                                                                | 0.0064                                                                          | -2.7596                                          | 0.0132                                                    | 0.1630                      | 0.0027                               | 0.1257                 | 0.0039                        | RD                       |
| 13 48 48           | +04 06 02           | LTT14031         | 5.46                    | 3112                  | 6                              | 0.011                         | 3             | 1.011     | -9.2629                                                                | 0.0058                                                                          | -2.4394                                          | 0.0169                                                    | 0.2074                      | 0.0041                               | 0.1322                 | 0.0055                        | RD                       |
| 13 50 52           | +36 44 17           | LTT14045         | 5.23                    | 3187                  | 12                             | 0.010                         | 3             | 1.013     | -9.0766                                                                | 0.0056                                                                          | -2.1817                                          | 0.0214                                                    | 0.2660                      | 0.0068                               | 0.1561                 | 0.0084                        | RD                       |
| 13 52 51           | +66 49 06           | LHS2819          | 6.12                    | 3009                  | 15                             | 0.010                         | 3             | 1.009     | -9.6009                                                                | 0.0051                                                                          | -2.8012                                          | 0.0095                                                    | 0.1463                      | 0.0022                               | 0.0958                 | 0.0023                        | RD                       |
| 13 52 53           | -18 20 17           | LP798-051        | 4.16                    | 3618                  | 18                             | 0.010                         | 3             | 1.030     | -8.6820                                                                | 0.0074                                                                          | -1.4526                                          | 0.0337                                                    | 0.4780                      | 0.0191                               | 0.1908                 | 0.0163                        | RD                       |
| 13 53 38           | +77 37 08           | LP021-224        | 5.70                    | 3036                  | 33                             | 0.010                         | 3             | 1.009     | -9.5364                                                                | 0.0062                                                                          | -2.3164                                          | 0.0190                                                    | 0.2511                      | 0.0077                               | 0.1014                 | 0.0052                        | RD                       |
| 13 53 47           | +78 51 07           | GJ0534.2         | 5.12                    | 3209                  | 9                              | 0.010                         | 3             | 1.014     | -8.8096                                                                | 0.0056                                                                          | -2.1570                                          | 0.0166                                                    | 0.2700                      | 0.0054                               | 0.2095                 | 0.0086                        | RD                       |
| 13 58 05           | -39 37 55           | SSS1358-3938     | 5.09                    | 3215                  | 8                              | 0.015                         | 118           | 1.014     | -9.2521                                                                | 0.0063                                                                          | -2.6526                                          | 0.0074                                                    | 0.1520                      | 0.0015                               | 0.1253                 | 0.0017                        | SD                       |
| 13 58 16           | -12 02 59           | LP739-002        | 5.57                    | 3084                  | 6                              | 0.010                         | 11            | 1.010     | -9.2730                                                                | 0.0062                                                                          | -2.2467                                          | 0.0123                                                    | 0.2637                      | 0.0039                               | 0.1331                 | 0.0038                        | RD                       |
| 13 59 10           | -19 50 04           | LHS2836          | 5.44                    | 3115                  | 12                             | 0.023                         | 60            | 1.011     | -8.6966                                                                | 0.0099                                                                          | -2.1373                                          | 0.0107                                                    | 0.2931                      | 0.0043                               | 0.2532                 | 0.0044                        | RD                       |
| 14 01 03           | -02 39 18           | GJ0536           | 4.00                    | 3687                  | 42                             | 0.011                         | 142           | 1.033     | -7.8938                                                                | 0.0075                                                                          | -1.3965                                          | 0.0100                                                    | 0.4909                      | 0.0126                               | 0.4554                 | 0.0136                        | RD                       |
| 14 02 20           | +43 00 59           | LSPM1402+4300    | 3.95                    | 3727                  | 22                             | 0.012                         | 3             | 1.035     | -8.3078                                                                | 0.0060                                                                          | -1.2170                                          | 0.0186                                                    | 0.5907                      | 0.0144                               | 0.2767                 | 0.0131                        | RD                       |
| 14 02 47           | -24 31 50           | LHS2852          | 5.58                    | 3066                  | 32                             | 0.011                         | 3             | 1.010     | -9.7839                                                                | 0.0051                                                                          | -2.6331                                          | 0.0483                                                    | 0.1710                      | 0.0101                               | 0.0748                 | 0.0094                        | RD                       |
| 14 06 51           | +31 33 47           | LP324-070        | 5.73                    | 3018                  | 17                             | 0.013                         | 129           | 1.009     | -9.7459                                                                | 0.0068                                                                          | -2.5299                                          | 0.0316                                                    | 0.1987                      | 0.0076                               | 0.0806                 | 0.0065                        | RD                       |
| 14 06 56           | +38 36 56           | LHS0364          | 3.70                    | 3816                  | 62                             | 0.011                         | 130           | 1.040     | -8.9288                                                                | 0.0061                                                                          | -2.5436                                          | 0.0503                                                    | 0.1224                      | 0.0081                               | 0.0426                 | 0.0057                        | SD                       |
| 14 07 48           | +57 11 45           | LHS2864          | 5.16                    | 3201                  | 6                              | 0.008                         | 8             | 1.013     | -9.3104                                                                | 0.0063                                                                          | -2.1353                                          | 0.0191                                                    | 0.2782                      | 0.0062                               | 0.1183                 | 0.0056                        | RD                       |
| 14 08 13           | +80 35 50           | GJ0540           | 4.02                    | 3712                  | 22                             | 0.008                         | 3             | 1.034     | -8.1595                                                                | 0.0067                                                                          | -1.2089                                          | 0.0107                                                    | 0.6011                      | 0.0102                               | 0.3309                 | 0.0085                        | RD                       |
| 14 08 23           | +75 51 07           | LHS2866          | 4.03                    | 3676                  | 17                             | 0.011                         | 21            | 1.032     | -8.6389                                                                | 0.0070                                                                          | -1.3503                                          | 0.0783                                                    | 0.5208                      | 0.0472                               | 0.1943                 | 0.0391                        | RD                       |
| 14 10 57           | -31 17 25           | NHTT36465        | 4.14                    | 3629                  | 20                             | 0.012                         | 3             | 1.030     | -8.3146                                                                | 0.0082                                                                          | -1.3699                                          | 0.0171                                                    | 0.5225                      | 0.0117                               | 0.2895                 | 0.0119                        | RD                       |
| 14 13 31           | -06 57 32           | LTT05574         | 3.60                    | 3909                  | 25                             | 0.011                         | 58            | 1.046     | -8.2140                                                                | 0.0076                                                                          | -1.1451                                          | 0.0166                                                    | 0.5835                      | 0.0134                               | 0.2803                 | 0.0115                        | RD                       |
| 14 15 17           | +45 00 53           | LHS2884          | 4.63                    | 3399                  | 14                             | 0.011                         | 78            | 1.020     | -8.5496                                                                | 0.0061                                                                          | -1.6296                                          | 0.0436                                                    | 0.4418                      | 0.0225                               | 0.2519                 | 0.0282                        | RD                       |
| 14 15 33           | +04 39 31           | GJ1182           | 5.68                    | 3011                  | 23                             | 0.014                         | 17            | 1.009     | -9.1636                                                                | 0.0066                                                                          | -2.3797                                          | 0.0216                                                    | 0.2373                      | 0.0069                               | 0.1582                 | 0.0088                        | RD                       |
| 14 17 24           | +45 26 40           | GJ0541.2         | 3.65                    | 3888                  | 12                             | 0.010                         | 24            | 1.045     | -8.2264                                                                | 0.0073                                                                          | -1.1734                                          | 0.0127                                                    | 0.5708                      | 0.0090                               | 0.2792                 | 0.0080                        | RD                       |
| 14 20 07           | -09 37 13           | GJ0545           | 4.86                    | 3290                  | 6                              | 0.017                         | 3             | 1.016     | -8.8508                                                                | 0.0077                                                                          | -2.0633                                          | 0.0111                                                    | 0.2862                      | 0.0038                               | 0.1901                 | 0.0043                        | RD                       |
| 14 20 37           | -75 16 06           | SCR1420-7516     | 5.15                    | 3199                  | 9                              | 0.012                         | 9             | 1.013     | -9.1422                                                                | 0.0070                                                                          | -1.9166                                          | 0.0196                                                    | 0.3585                      | 0.0084                               | 0.1438                 | 0.0069                        | RD                       |
| 14 20 39           | +46 02 34           | LHS2897          | 5.44                    | 3103                  | 12                             | 0.011                         | 61            | 1.011     | -9.5632                                                                | 0.0063                                                                          | -2.6683                                          | 0.0236                                                    | 0.1603                      | 0.0045                               | 0.0941                 | 0.0056                        | RD                       |
| 14 20 53           | +36 57 17           | LHS0370          | 5.90                    | 2993                  | 8                              | 0.011                         | 3             | 1.008     | -9.8232                                                                | 0.0069                                                                          | -2.7313                                          | 0.0132                                                    | 0.1602                      | 0.0026                               | 0.0750                 | 0.0023                        | RD                       |
| 14 21 15           | -01 07 20           | LHS2899          | 5.03                    | 3248                  | 19                             | 0.012                         | 3             | 1.015     | -8.9299                                                                | 0.0075                                                                          | -2.1811                                          | 0.0146                                                    | 0.2564                      | 0.0052                               | 0.1780                 | 0.0063                        | RD                       |
| 14 21 33           | +82 57 00           | LP008-100        | 5.50                    | 3099                  | 7                              | 0.010                         | 45            | 1.011     | -9.6941                                                                | 0.0062                                                                          | -2.4861                                          | 0.0274                                                    | 0.1982                      | 0.0063                               | 0.0811                 | 0.0056                        | RD                       |
| 14 21 38           | +56 27 18           | LP097-817        | 5.84                    | 3001                  | 6                              | 0.011                         | 15            | 1.009     | -9.9734                                                                | 0.0057                                                                          | -2.8553                                          | 0.0230                                                    | 0.1382                      | 0.0037                               | 0.0627                 | 0.0036                        | RD                       |
| 14 22 20           | +23 52 35           | LP381-049        | 5.87                    | 2998                  | 7                              | 0.010                         | 3             | 1.008     | -9.5888                                                                | 0.0058                                                                          | -2.4288                                          | 0.0277                                                    | 0.2262                      | 0.0073                               | 0.0978                 | 0.0069                        | RD                       |
| 14 22 43           | +16 24 46           | LP440-013        | 5.60                    | 3075                  | 9                              | 0.009                         | 3             | 1.010     | -9.5008                                                                | 0.0067                                                                          | -2.2399                                          | 0.0456                                                    | 0.2673                      | 0.0141                               | 0.1029                 | 0.0120                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 14 23 06           | -68 22 58           | GJ2107           | 3.66                    | 3896                  | 22                             | 0.012                   | 112           | 1.045     | -8.2228                                                                | 0.0075                               | -0.9869                                          | 0.0168                                                    | 0.7047                      | 0.0158                               | 0.2793                 | 0.0115                        | RD                       |
| 14 24 56           | +08 53 16           | LHS2913          | 4.64                    | 3394                  | 10                             | 0.015                   | 11            | 1.020     | -8.6950                                                                | 0.0073                               | -1.9247                                          | 0.0280                                                    | 0.3155                      | 0.0103                               | 0.2137                 | 0.0150                        | RD                       |
| 14 25 43           | +23 37 01           | GJ0548           | 3.79                    | 3817                  | 14                             | 0.009                   | 15            | 1.040     | -7.9904                                                                | 0.0078                               | -1.0801                                          | 0.0109                                                    | 0.6593                      | 0.0095                               | 0.3801                 | 0.0086                        | RD                       |
| 14 27 56           | -00 22 31           | GJ1183           | 5.54                    | 3088                  | 15                             | 0.012                   | 3             | 1.010     | -9.0896                                                                | 0.0067                               | -2.1753                                          | 0.0235                                                    | 0.2856                      | 0.0082                               | 0.1639                 | 0.0097                        | RD                       |
| 14 28 04           | +13 56 13           | LHS2919          | 7.61                    | 2668                  | 54                             | 0.009                   | 3             | 1.003     | -9.8136                                                                | 0.0048                               | -3.1009                                          | 0.0186                                                    | 0.1318                      | 0.0060                               | 0.0954                 | 0.0059                        | RD                       |
| 14 28 32           | +45 54 33           | LHS2921          | 6.51                    | 2873                  | 13                             | 0.009                   | 3             | 1.006     | -9.9344                                                                | 0.0051                               | -2.8016                                          | 0.0370                                                    | 0.1604                      | 0.0070                               | 0.0716                 | 0.0068                        | RD                       |
| 14 29 30           | +15 31 58           | GJ0552           | 4.29                    | 3514                  | 15                             | 0.010                   | 3             | 1.025     | -8.1991                                                                | 0.0067                               | -1.4056                                          | 0.0134                                                    | 0.5349                      | 0.0094                               | 0.3528                 | 0.0113                        | RD                       |
| 14 29 43           | -62 40 47           | Proxima Centauri | 6.75                    | 2805                  | 46                             | 0.299                   | 358           | 1.005     | -7.5009                                                                | 0.0113                               | -2.7774                                          | 0.0113                                                    | 0.1730                      | 0.0061                               | 1.2370                 | 0.0434                        | RD                       |
| 14 30 48           | -08 38 47           | GJ0553           | 3.61                    | 3940                  | 32                             | 0.018                   | 202           | 1.048     | -7.9014                                                                | 0.0079                               | -0.9549                                          | 0.0129                                                    | 0.7149                      | 0.0158                               | 0.3954                 | 0.0128                        | RD                       |
| 14 30 56           | +08 58 02           | LP500-046        | 6.50                    | 2891                  | 17                             | 0.012                   | 3             | 1.006     | -10.0580                                                               | 0.0053                               | -2.7843                                          | 0.0345                                                    | 0.1616                      | 0.0067                               | 0.0613                 | 0.0054                        | RD                       |
| 14 31 01           | -12 17 46           | GJ0553.1         | 5.00                    | 3267                  | 13                             | 0.014                   | 59            | 1.015     | -8.4769                                                                | 0.0084                               | -1.9074                                          | 0.0194                                                    | 0.3473                      | 0.0082                               | 0.2964                 | 0.0139                        | RD                       |
| 14 31 13           | +75 26 42           | LSPM1431+7526    | 5.27                    | 3173                  | 7                              | 0.011                   | 13            | 1.013     | -9.2842                                                                | 0.0062                               | -2.4645                                          | 0.0205                                                    | 0.1939                      | 0.0047                               | 0.1241                 | 0.0063                        | RD                       |
| 14 31 38           | -25 25 33           | LHS0375          | 4.13                    | 3594                  | 48                             | 0.011                   | 32            | 1.028     | -10.1883                                                               | 0.0071                               | -2.9336                                          | 0.0126                                                    | 0.0881                      | 0.0027                               | 0.0342                 | 0.0013                        | SD                       |
| 14 32 08           | +08 11 31           | LHS2935          | 6.51                    | 2886                  | 14                             | 0.010                   | 3             | 1.006     | -9.4359                                                                | 0.0063                               | -2.7182                                          | 0.0084                                                    | 0.1750                      | 0.0024                               | 0.1259                 | 0.0024                        | RD                       |
| 14 32 15           | +49 39 06           | LHS2936          | 4.70                    | 3352                  | 22                             | 0.013                   | 14            | 1.018     | -9.0646                                                                | 0.0084                               | -2.0992                                          | 0.0145                                                    | 0.2645                      | 0.0056                               | 0.1431                 | 0.0050                        | RD                       |
| 14 34 17           | -12 31 10           | GJ0555           | 5.40                    | 3125                  | 25                             | 0.023                   | 185           | 1.011     | -8.0942                                                                | 0.0087                               | -2.0117                                          | 0.0102                                                    | 0.3366                      | 0.0066                               | 0.5034                 | 0.0117                        | YC                       |
| 14 39 00           | +18 39 39           | LHS0377          | 5.70                    | 3015                  | 20                             | 0.014                   | 3             | 1.009     | -10.6792                                                               | -3.0909                              | 0.0129                                           | 0.0072                                                    | 0.0021                      | 0.0276                               | 0.0009                 | SD                            | RD                       |
| 14 39 28           | +19 29 16           | 2MA1439+1929     | 10.11                   | 2104                  | 46                             | 0.010                   | 40            | 1.001     | -10.5196                                                               | 0.0078                               | -3.7099                                          | 0.0084                                                    | 0.1051                      | 0.0047                               | 0.0681                 | 0.0031                        | RD                       |
| 14 40 23           | +13 39 23           | 2MA1440+1339     | 7.65                    | 2616                  | 30                             | 0.010                   | 3             | 1.003     | -10.3603                                                               | 0.0055                               | -3.1718                                          | 0.0120                                                    | 0.1264                      | 0.0034                               | 0.0529                 | 0.0019                        | RD                       |
| 14 44 07           | -34 26 47           | SCR1444-3426     | 5.29                    | 3170                  | 9                              | 0.012                   | 3             | 1.013     | -9.2578                                                                | 0.0064                               | -2.3934                                          | 0.0093                                                    | 0.2108                      | 0.0025                               | 0.1282                 | 0.0025                        | RD                       |
| 14 44 20           | -20 19 26           | SSS1444-2019     | 8.32                    | 2584                  | 85                             | 0.013                   | 4             | 1.003     | -10.4768                                                               | 0.0067                               | -3.5408                                          | 0.0135                                                    | 0.0847                      | 0.0057                               | 0.0474                 | 0.0034                        | SD                       |
| 14 46 01           | +46 33 25           | LHS2973          | 5.46                    | 3109                  | 3                              | 0.011                   | 82            | 1.011     | -9.4287                                                                | 0.0062                               | -2.4987                                          | 0.0245                                                    | 0.1941                      | 0.0055                               | 0.1094                 | 0.0067                        | RD                       |
| 14 47 55           | -03 09 36           | GJ1185           | 4.27                    | 3525                  | 26                             | 0.012                   | 9             | 1.025     | -9.2347                                                                | 0.0065                               | -2.1515                                          | 0.0314                                                    | 0.2252                      | 0.0088                               | 0.1064                 | 0.0086                        | SC                       |
| 14 49 33           | -26 06 21           | GJ0563.2         | 4.04                    | 3680                  | 11                             | 0.013                   | 96            | 1.033     | -8.6768                                                                | 0.0072                               | -1.5955                                          | 0.0673                                                    | 0.3918                      | 0.0304                               | 0.1855                 | 0.0320                        | RD                       |
| 14 50 28           | -08 38 37           | LHS0381          | 3.86                    | 3758                  | 37                             | 0.011                   | 145           | 1.037     | -10.0785                                                               | 0.0062                               | -2.4590                                          | 0.0858                                                    | 0.1391                      | 0.0140                               | 0.0354                 | 0.0078                        | SD                       |
| 14 51 57           | +63 07 59           | LP067-182        | 5.69                    | 3015                  | 17                             | 0.012                   | 19            | 1.009     | -9.4769                                                                | 0.0074                               | -2.3729                                          | 0.0704                                                    | 0.2386                      | 0.0195                               | 0.1101                 | 0.0199                        | RD                       |
| 14 53 37           | +11 34 13           | GJ1186           | 5.72                    | 3110                  | 14                             | 0.013                   | 3             | 1.011     | -9.5959                                                                | 0.0064                               | -2.6098                                          | 0.0277                                                    | 0.1707                      | 0.0057                               | 0.0902                 | 0.0063                        | RD                       |
| 14 53 36           | -15 33 44           | LHS0385          | 3.55                    | 3885                  | 40                             | 0.013                   | 137           | 1.044     | -9.9725                                                                | 0.0065                               | -2.2534                                          | 0.0276                                                    | 0.1649                      | 0.0063                               | 0.0375                 | 0.0027                        | SD                       |
| 14 56 27           | +17 54 60           | LHS3001          | 5.96                    | 3034                  | 41                             | 0.013                   | 11            | 1.009     | -9.6702                                                                | 0.0062                               | -2.6904                                          | 0.0092                                                    | 0.1635                      | 0.0047                               | 0.0870                 | 0.0028                        | RD                       |
| 14 56 38           | -28 09 49           | LHS3003          | 8.05                    | 2542                  | 32                             | 0.013                   | 19            | 1.002     | -9.4109                                                                | 0.0076                               | -3.2824                                          | 0.0095                                                    | 0.1178                      | 0.0032                               | 0.1670                 | 0.0051                        | RD                       |
| 14 57 21           | +14 58 55           | LHS3005          | 5.17                    | 3199                  | 7                              | 0.013                   | 20            | 1.013     | -9.5564                                                                | 0.0063                               | -2.3205                                          | 0.0276                                                    | 0.2251                      | 0.0072                               | 0.0892                 | 0.0062                        | RD                       |
| 14 57 33           | -06 19 49           | LP681-091        | 3.63                    | 3903                  | 18                             | 0.014                   | 22            | 1.046     | -8.7237                                                                | 0.0082                               | -1.4503                                          | 0.0496                                                    | 0.4118                      | 0.0238                               | 0.1563                 | 0.0198                        | SC                       |
| 14 57 54           | +56 39 25           | GJ1187           | 6.26                    | 2898                  | 9                              | 0.015                   | 9             | 1.007     | -9.4617                                                                | 0.0069                               | -2.9171                                          | 0.0173                                                    | 0.1380                      | 0.0029                               | 0.1212                 | 0.0051                        | RD                       |
| 15 01 08           | +22 50 02           | TVL513-46546     | 9.14                    | 2218                  | 105                            | 0.018                   | 44            | 1.001     | -10.1596                                                               | 0.0083                               | -3.6155                                          | 0.0087                                                    | 0.1054                      | 0.0100                               | 0.0927                 | 0.0088                        | RD                       |
| 15 02 08           | +75 27 53           | LP022-174        | 6.71                    | 2805                  | 30                             | 0.011                   | 4             | 1.005     | -9.7076                                                                | 0.0052                               | -1.7425                                          | 0.0194                                                    | 0.1800                      | 0.0056                               | 0.0975                 | 0.0052                        | RD                       |
| 15 03 25           | +03 46 57           | GJ1188           | 3.61                    | 3908                  | 33                             | 0.012                   | 81            | 1.046     | -8.9446                                                                | 0.0073                               | -2.7939                                          | 0.0386                                                    | 0.2766                      | 0.0131                               | 0.1209                 | 0.0120                        | SC                       |
| 15 03 35           | +84 38 27           | LHS3017          | 4.84                    | 3299                  | 10                             | 0.011                   | 44            | 1.016     | -9.3860                                                                | 0.0062                               | -2.3096                                          | 0.0149                                                    | 0.2143                      | 0.0039                               | 0.1021                 | 0.0037                        | RD                       |
| 15 04 18           | +60 23 05           | LHS3018          | 4.10                    | 3641                  | 11                             | 0.012                   | 3             | 1.031     | -8.3790                                                                | 0.0063                               | -1.3806                                          | 0.0119                                                    | 0.5128                      | 0.0077                               | 0.2671                 | 0.0074                        | RD                       |
| 15 07 24           | +24 56 08           | GJ0579           | 3.58                    | 3940                  | 12                             | 0.010                   | 3             | 1.048     | -8.1689                                                                | 0.0061                               | -1.2274                                          | 0.0268                                                    | 0.5225                      | 0.0165                               | 0.2906                 | 0.0197                        | RD                       |
| 15 07 28           | -20 00 43           | 2MA1507-2000     | 8.16                    | 2536                  | 24                             | 0.012                   | 16            | 1.002     | -10.1070                                                               | 0.0071                               | -2.8695                                          | 0.0096                                                    | 0.1904                      | 0.0041                               | 0.0753                 | 0.0020                        | YC                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 15 09 36           | +03 10 01           | LHS3030          | 4.61                    | 3409                  | 15                             | 0.012                   | 16            | 1.020     | -8.4165                                                    | 0.0073                                                              | -1.6121                                        | 0.0172                                                  | 0.4480                   | 0.0098                            | 0.2918                 | 0.0122                          | RD               |
| 15 10 05           | +19 21 28           | LP442-010        | 5.10                    | 3213                  | 9                              | 0.011                   | 36            | 1.014     | -8.9864                                                    | 0.0065                                                              | -2.0316                                        | 0.0209                                                  | 0.3111                   | 0.0077                            | 0.1704                 | 0.0089                          | RD               |
| 15 10 12           | +46 24 06           | LHS3031          | 5.37                    | 3093                  | 15                             | 0.010                   | 51            | 1.011     | -9.6269                                                    | 0.0063                                                              | -2.4326                                        | 0.0260                                                  | 0.2116                   | 0.0067                            | 0.0880                 | 0.0058                          | RD               |
| 15 11 51           | -10 14 18           | LHS3032          | 5.38                    | 3121                  | 8                              | 0.012                   | 92            | 1.011     | -9.2423                                                    | 0.0065                                                              | -2.4047                                        | 0.0210                                                  | 0.2146                   | 0.0053                            | 0.1346                 | 0.0070                          | RD               |
| 15 14 47           | +64 33 44           | LHS3044          | 5.02                    | 3251                  | 16                             | 0.010                   | 3             | 1.015     | -9.2650                                                    | 0.0058                                                              | -2.2848                                        | 0.0090                                                  | 0.2270                   | 0.0033                            | 0.1208                 | 0.0026                          | RD               |
| 15 15 44           | -07 25 21           | G151-037         | 5.22                    | 3191                  | 9                              | 0.013                   | 49            | 1.013     | -8.7913                                                    | 0.0076                                                              | -1.8410                                        | 0.0112                                                  | 0.3928                   | 0.0056                            | 0.2163                 | 0.0051                          | RD               |
| 15 16 37           | +53 55 46           | G201-045         | 5.69                    | 3001                  | 28                             | 0.010                   | 3             | 1.009     | -9.6915                                                    | 0.0050                                                              | -2.5426                                        | 0.0245                                                  | 0.1980                   | 0.0067                            | 0.0867                 | 0.0056                          | RD               |
| 15 16 41           | +39 10 49           | LP222-065        | 7.30                    | 2661                  | 48                             | 0.012                   | 41            | 1.003     | -9.7301                                                    | 0.0057                                                              | -2.8502                                        | 0.0191                                                  | 0.1768                   | 0.0075                            | 0.1056                 | 0.0063                          | RD               |
| 15 17 03           | +69 51 50           | LP041-530        | 5.39                    | 3096                  | 10                             | 0.011                   | 25            | 1.011     | -9.5403                                                    | 0.0065                                                              | -2.3690                                        | 0.0139                                                  | 0.2273                   | 0.0039                            | 0.0971                 | 0.0032                          | RD               |
| 15 17 56           | +55 53 27           | LP135-222        | 5.29                    | 3107                  | 30                             | 0.011                   | 3             | 1.011     | -9.7086                                                    | 0.0062                                                              | -2.4705                                        | 0.0293                                                  | 0.2007                   | 0.0078                            | 0.0794                 | 0.0061                          | RD               |
| 15 19 27           | -07 43 20           | GJ0581           | 4.72                    | 3361                  | 29                             | 0.013                   | 19            | 1.019     | -8.0123                                                    | 0.0080                                                              | -1.9217                                        | 0.0088                                                  | 0.3228                   | 0.0064                            | 0.4782                 | 0.0103                          | RD               |
| 15 21 01           | +50 53 23           | LP135-272        | 8.65                    | 2378                  | 116                            | 0.013                   | 245           | 1.001     | -10.2096                                                   | 0.0070                                                              | -3.0514                                        | 0.0425                                                  | 0.1756                   | 0.0192                            | 0.0761                 | 0.0111                          | YC               |
| 15 21 16           | +39 45 17           | LP222-070        | 6.74                    | 2907                  | 28                             | 0.011                   | 118           | 1.007     | -9.6897                                                    | 0.0069                                                              | -1.9217                                        | 0.0080                                                  | 0.2229                   | 0.0056                            | 0.0927                 | 0.0036                          | RD               |
| 15 21 53           | +20 58 40           | HIP075187        | 4.35                    | 3516                  | 16                             | 0.010                   | 3             | 1.025     | -7.9569                                                    | 0.0069                                                              | -1.3489                                        | 0.0113                                                  | 0.5704                   | 0.0090                            | 0.4658                 | 0.0120                          | RD               |
| 15 23 51           | +17 27 57           | GJ0585           | 5.44                    | 3114                  | 18                             | 0.023                   | 185           | 1.011     | -9.0155                                                    | 0.0068                                                              | -2.4249                                        | 0.0134                                                  | 0.2107                   | 0.0041                            | 0.1755                 | 0.0057                          | RD               |
| 15 26 33           | +55 22 21           | LP135-316        | 5.81                    | 3001                  | 20                             | 0.010                   | 3             | 1.009     | -9.6642                                                    | 0.0046                                                              | -2.4074                                        | 0.0399                                                  | 0.2315                   | 0.0111                            | 0.0896                 | 0.0092                          | RD               |
| 15 28 01           | +25 47 24           | GJ0587.1         | 3.83                    | 3796                  | 15                             | 0.011                   | 15            | 1.039     | -8.5263                                                    | 0.0076                                                              | -1.2512                                        | 0.0282                                                  | 0.5475                   | 0.0183                            | 0.2074                 | 0.0147                          | RD               |
| 15 29 07           | -17 22 55           | LP802-069        | 3.71                    | 3870                  | 28                             | 0.011                   | 23            | 1.043     | -8.3164                                                    | 0.0070                                                              | -1.0292                                        | 0.0283                                                  | 0.6802                   | 0.0243                            | 0.2541                 | 0.0185                          | RD               |
| 15 29 44           | +42 52 49           | LHS3075          | 5.49                    | 3097                  | 12                             | 0.012                   | 41            | 1.011     | -9.2059                                                    | 0.0064                                                              | -2.1291                                        | 0.0173                                                  | 0.2994                   | 0.0064                            | 0.1425                 | 0.0061                          | RD               |
| 15 30 30           | +09 26 01           | LP502-056        | 6.49                    | 2892                  | 13                             | 0.012                   | 3             | 1.006     | -9.2217                                                    | 0.0061                                                              | -2.9080                                        | 0.0163                                                  | 0.1400                   | 0.0029                            | 0.1604                 | 0.0065                          | RD               |
| 15 32 13           | -41 16 32           | GJ0588           | 4.55                    | 3413                  | 74                             | 0.018                   | 231           | 1.021     | -7.5657                                                    | 0.0080                                                              | -1.5241                                        | 0.0087                                                  | 0.4947                   | 0.0220                            | 0.7754                 | 0.0350                          | RD               |
| 15 33 39           | +46 15 03           | LP176-055        | 5.05                    | 3246                  | 23                             | 0.010                   | 3             | 1.015     | -9.1120                                                    | 0.0055                                                              | -1.9388                                        | 0.0197                                                  | 0.3393                   | 0.0091                            | 0.1445                 | 0.0074                          | RD               |
| 15 34 12           | +46 19 43           | LSPM1534+4619    | 4.82                    | 3335                  | 21                             | 0.013                   | 149           | 1.018     | -9.2481                                                    | 0.0060                                                              | -2.0059                                        | 0.0234                                                  | 0.2975                   | 0.0088                            | 0.1171                 | 0.0070                          | RD               |
| 15 34 31           | +14 16 18           | GJ1193           | 5.10                    | 3222                  | 8                              | 0.010                   | 3             | 1.014     | -9.2157                                                    | 0.0065                                                              | -2.1001                                        | 0.0234                                                  | 0.2859                   | 0.0078                            | 0.1302                 | 0.0076                          | RD               |
| 15 34 51           | +18 00 12           | LP443-017        | 6.01                    | 3051                  | 15                             | 0.009                   | 3             | 1.010     | -9.6223                                                    | 0.0056                                                              | -2.6894                                        | 0.0251                                                  | 0.1618                   | 0.0049                            | 0.0909                 | 0.0058                          | RD               |
| 15 34 57           | -14 18 49           | 2MA1534-1418     | 8.85                    | 2437                  | 32                             | 0.013                   | 24            | 1.002     | -9.9729                                                    | 0.0069                                                              | -3.4009                                        | 0.0080                                                  | 0.1118                   | 0.0031                            | 0.0952                 | 0.0028                          | RD               |
| 15 35 21           | +17 42 47           | GJ0589           | 4.40                    | 3484                  | 15                             | 0.013                   | 19            | 1.023     | -8.8069                                                    | 0.0064                                                              | -1.9795                                        | 0.0110                                                  | 0.2810                   | 0.0043                            | 0.1782                 | 0.0046                          | RD               |
| 15 35 46           | +22 09 04           | LHS3091          | 4.81                    | 3315                  | 11                             | 0.014                   | 3             | 1.017     | -8.8279                                                    | 0.0074                                                              | -1.7945                                        | 0.0292                                                  | 0.3842                   | 0.0132                            | 0.1922                 | 0.0141                          | RD               |
| 15 36 34           | -37 54 23           | GJ0590           | 5.12                    | 3203                  | 6                              | 0.012                   | 3             | 1.014     | -8.7420                                                    | 0.0070                                                              | -2.2501                                        | 0.0086                                                  | 0.2434                   | 0.0026                            | 0.2272                 | 0.0035                          | RD               |
| 15 36 58           | -14 08 02           | GJ0592           | 5.18                    | 3202                  | 11                             | 0.011                   | 91            | 1.013     | -8.7319                                                    | 0.0072                                                              | -1.9859                                        | 0.0232                                                  | 0.3303                   | 0.0091                            | 0.2301                 | 0.0133                          | RD               |
| 15 40 30           | -26 13 43           | SIP1540-2613     | 8.27                    | 2569                  | 40                             | 0.023                   | 225           | 1.003     | -10.0881                                                   | 0.0073                                                              | -3.2443                                        | 0.0103                                                  | 0.1205                   | 0.0040                            | 0.0750                 | 0.0028                          | RD               |
| 15 40 44           | -51 01 36           | WHS1540-5101     | 7.40                    | 2673                  | 32                             | 0.015                   | 3             | 1.004     | -8.9879                                                    | 0.0079                                                              | -3.0420                                        | 0.0085                                                  | 0.1404                   | 0.0036                            | 0.2458                 | 0.0066                          | RD               |
| 15 43 18           | -20 15 33           | GJ2116           | 4.04                    | 3660                  | 27                             | 0.010                   | 44            | 1.032     | -9.2145                                                    | 0.0065                                                              | -2.0587                                        | 0.0127                                                  | 0.2325                   | 0.0048                            | 0.1010                 | 0.0033                          | SD               |
| 15 43 48           | +25 52 38           | G167-054         | 5.30                    | 3226                  | 21                             | 0.011                   | 13            | 1.014     | -9.3786                                                    | 0.0060                                                              | -2.1823                                        | 0.0176                                                  | 0.2595                   | 0.0062                            | 0.1076                 | 0.0048                          | RD               |
| 15 45 40           | -20 36 17           | LHS0407          | 4.52                    | 3415                  | 12                             | 0.013                   | 85            | 1.021     | -10.4668                                                   | 0.0066                                                              | -3.0219                                        | 0.0267                                                  | 0.0881                   | 0.0028                            | 0.0275                 | 0.0019                          | SD               |
| 15 46 32           | -47 14 01           | LHS3114          | 3.65                    | 3910                  | 29                             | 0.011                   | 24            | 1.046     | -8.4269                                                    | 0.0072                                                              | -1.1605                                        | 0.0341                                                  | 0.5730                   | 0.0240                            | 0.2192                 | 0.0192                          | RD               |
| 15 47 15           | +01 49 22           | LP623-040        | 7.02                    | 2737                  | 40                             | 0.011                   | 10            | 1.004     | -9.6576                                                    | 0.0067                                                              | -2.7247                                        | 0.0274                                                  | 0.1932                   | 0.0083                            | 0.1085                 | 0.0081                          | YC               |
| 15 48 04           | +59 39 02           | G224-084         | 5.32                    | 3170                  | 19                             | 0.010                   | 36            | 1.013     | -9.1956                                                    | 0.0062                                                              | -2.0186                                        | 0.0218                                                  | 0.3246                   | 0.0091                            | 0.1377                 | 0.0077                          | RD               |
| 15 49 36           | +51 02 57           | G202-016         | 4.30                    | 3575                  | 40                             | 0.018                   | 266           | 1.027     | -8.7533                                                    | 0.0080                                                              | -1.6976                                        | 0.0272                                                  | 0.3693                   | 0.0142                            | 0.1801                 | 0.0128                          | RD               |
| 15 49 38           | +34 48 57           | LHS3122          | 5.36                    | 3097                  | 23                             | 0.012                   | 15            | 1.011     | -8.8606                                                    | 0.0068                                                              | -1.9059                                        | 0.0288                                                  | 0.3870                   | 0.0141                            | 0.2120                 | 0.0157                          | YC               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 15 49 55           | +79 39 52           | LP022-420        | 5.90                    | 2998                  | 3                              | 0.012                  | 146           | 1.008     | -9.2776                                                    | 0.0064                                                              | -2.5931                                        | 0.0278                                                  | 0.1872                   | 0.0060                            | 0.1400                 | 0.0098                          | RD               |
| 15 51 22           | +29 31 06           | LHS3124          | 4.88                    | 3292                  | 7                              | 0.012                  | 12            | 1.016     | -8.9347                                                    | 0.0069                                                              | -1.8913                                        | 0.0169                                                  | 0.3484                   | 0.0070                            | 0.1723                 | 0.0070                          | RD               |
| 15 52 45           | -26 23 14           | LHS5303          | 7.23                    | 2725                  | 26                             | 0.010                  | 66            | 1.004     | -9.5182                                                    | 0.0069                                                              | -2.9753                                        | 0.0076                                                  | 0.1460                   | 0.0030                            | 0.1285                 | 0.0028                          | RD               |
| 15 53 06           | +34 45 14           | LHS3129          | 4.67                    | 3398                  | 20                             | 0.014                  | 3             | 1.020     | -8.5195                                                    | 0.0086                                                              | -1.3244                                        | 0.0242                                                  | 0.6282                   | 0.0191                            | 0.2609                 | 0.0158                          | YC               |
| 15 55 05           | +33 50 51           | LHS3132          | 5.48                    | 3100                  | 17                             | 0.014                  | 227           | 1.011     | -9.8746                                                    | 0.0060                                                              | -2.6157                                        | 0.0423                                                  | 0.1706                   | 0.0085                            | 0.0659                 | 0.0071                          | RD               |
| 15 55 16           | -09 56 06           | 2MA1555-0956     | 9.60                    | 2162                  | 61                             | 0.016                  | 116           | 1.001     | -10.4503                                                   | 0.0078                                                              | -3.7001                                        | 0.0105                                                  | 0.1007                   | 0.0058                            | 0.0698                 | 0.0042                          | RD               |
| 15 59 51           | +14 59 48           | LHS3142          | 4.73                    | 3357                  | 16                             | 0.011                  | 51            | 1.018     | -9.3842                                                    | 0.0064                                                              | -2.0934                                        | 0.0557                                                  | 0.2656                   | 0.0172                            | 0.0988                 | 0.0141                          | RD               |
| 15 59 53           | -08 15 11           | GJ0606           | 4.15                    | 3620                  | 19                             | 0.014                  | 64            | 1.030     | -8.1752                                                    | 0.0083                                                              | -1.4019                                        | 0.0139                                                  | 0.5060                   | 0.0096                            | 0.3416                 | 0.0109                          | RD               |
| 16 01 44           | +30 10 51           | LTT14770         | 4.65                    | 3386                  | 7                              | 0.012                  | 16            | 1.020     | -8.8071                                                    | 0.0059                                                              | -1.8014                                        | 0.0394                                                  | 0.3651                   | 0.0166                            | 0.1886                 | 0.0190                          | RD               |
| 16 02 42           | +01 31 58           | LSPM1602+0131    | 6.53                    | 2879                  | 6                              | 0.013                  | 36            | 1.006     | -9.7632                                                    | 0.0066                                                              | -2.8656                                        | 0.0481                                                  | 0.1483                   | 0.0082                            | 0.0868                 | 0.0107                          | RD               |
| 16 02 51           | +20 35 21           | GJ0609           | 5.22                    | 3181                  | 11                             | 0.010                  | 78            | 1.013     | -8.6354                                                    | 0.0064                                                              | -2.1430                                        | 0.0149                                                  | 0.2792                   | 0.0052                            | 0.2605                 | 0.0094                          | RD               |
| 16 04 20           | -06 16 46           | LHS3149          | 6.11                    | 3021                  | 17                             | 0.010                  | 3             | 1.009     | -9.5659                                                    | 0.0068                                                              | -2.6229                                        | 0.0327                                                  | 0.1782                   | 0.0070                            | 0.0990                 | 0.0083                          | RD               |
| 16 04 23           | -33 03 40           | LP917-019        | 3.52                    | 3974                  | 8                              | 0.010                  | 39            | 1.050     | -8.2039                                                    | 0.0072                                                              | -0.9893                                        | 0.0225                                                  | 0.6754                   | 0.0177                            | 0.2743                 | 0.0152                          | RD               |
| 16 07 31           | -04 42 10           | SIP1607-0442     | 9.07                    | 2388                  | 70                             | 0.016                  | 78            | 1.002     | -10.1726                                                   | 0.0078                                                              | -3.2887                                        | 0.0127                                                  | 0.1325                   | 0.0080                            | 0.0788                 | 0.0051                          | RD               |
| 16 08 15           | -10 62 14           | GJ1198           | 5.16                    | 3191                  | 11                             | 0.011                  | 3             | 1.013     | -9.4803                                                    | 0.0058                                                              | -2.3314                                        | 0.0256                                                  | 0.2234                   | 0.0068                            | 0.0979                 | 0.0063                          | RD               |
| 16 09 03           | +52 56 38           | HIP079126        | 3.86                    | 3786                  | 12                             | 0.011                  | 14            | 1.038     | -8.1493                                                    | 0.0070                                                              | -1.1971                                        | 0.0104                                                  | 0.5859                   | 0.0079                            | 0.3219                 | 0.0071                          | RD               |
| 16 10 02           | +06 04 47           | LSPM1610+0604    | 4.78                    | 3331                  | 15                             | 0.011                  | 58            | 1.018     | -9.4562                                                    | 0.0064                                                              | -2.1676                                        | 0.0310                                                  | 0.2476                   | 0.0091                            | 0.0924                 | 0.0073                          | RD               |
| 16 11 28           | +07 04 00           | LP564+045        | 4.71                    | 3362                  | 15                             | 0.013                  | 72            | 1.019     | -9.2612                                                    | 0.0064                                                              | -1.9704                                        | 0.0175                                                  | 0.3049                   | 0.0067                            | 0.1134                 | 0.0049                          | RD               |
| 16 12 03           | +31 58 48           | G168-035         | 5.06                    | 3219                  | 16                             | 0.010                  | 3             | 1.014     | -9.4615                                                    | 0.0051                                                              | -2.2670                                        | 0.0158                                                  | 0.2365                   | 0.0049                            | 0.0983                 | 0.0040                          | RD               |
| 16 12 42           | -18 52 32           | LP804-027        | 4.78                    | 3359                  | 37                             | 0.014                  | 9             | 1.019     | -8.3427                                                    | 0.0078                                                              | -1.5312                                        | 0.0210                                                  | 0.5065                   | 0.0166                            | 0.3272                 | 0.0182                          | RD               |
| 16 13 06           | -70 09 08           | LHS3167          | 5.32                    | 3159                  | 20                             | 0.034                  | 96            | 1.012     | -9.0706                                                    | 0.0085                                                              | -2.1356                                        | 0.0109                                                  | 0.2856                   | 0.0050                            | 0.1600                 | 0.0038                          | RD               |
| 16 14 22           | -28 30 37           | LHS3169          | 4.84                    | 3307                  | 9                              | 0.011                  | 3             | 1.017     | -8.9127                                                    | 0.0065                                                              | -1.8733                                        | 0.0135                                                  | 0.3525                   | 0.0058                            | 0.1752                 | 0.0056                          | RD               |
| 16 14 33           | +19 06 11           | GJ1200           | 4.66                    | 3379                  | 13                             | 0.012                  | 14            | 1.019     | -8.9496                                                    | 0.0067                                                              | -1.9959                                        | 0.0158                                                  | 0.2931                   | 0.0058                            | 0.1607                 | 0.0062                          | RD               |
| 16 15 10           | +31 51 48           | LSPM1615+3151    | 5.55                    | 3129                  | 19                             | 0.012                  | 11            | 1.011     | -9.5163                                                    | 0.0061                                                              | -2.6670                                        | 0.0121                                                  | 0.1579                   | 0.0029                            | 0.0976                 | 0.0030                          | RD               |
| 16 16 43           | +67 14 20           | GJ0617           | 3.64                    | 3895                  | 56                             | 0.010                  | 124           | 1.045     | -7.5667                                                    | 0.0078                                                              | -1.0159                                        | 0.0085                                                  | 0.6818                   | 0.0207                            | 0.5946                 | 0.0187                          | RD               |
| 16 20 04           | -37 31 45           | GJ0618           | 4.66                    | 3348                  | 60                             | 0.011                  | 17            | 1.018     | -8.0456                                                    | 0.0079                                                              | -1.7129                                        | 0.0118                                                  | 0.4137                   | 0.0159                            | 0.4638                 | 0.0201                          | RD               |
| 16 21 25           | +24 43 21           | LP385-066        | 3.93                    | 3678                  | 51                             | 0.014                  | 15            | 1.033     | -10.8403                                                   | 0.0074                                                              | -3.2611                                        | 0.0460                                                  | 0.0576                   | 0.0034                            | 0.0154                 | 0.0019                          | SD               |
| 16 21 32           | +35 19 37           | LP275-020        | 6.49                    | 2867                  | 17                             | 0.012                  | 13            | 1.006     | -10.0553                                                   | 0.0054                                                              | -3.0395                                        | 0.0220                                                  | 0.1225                   | 0.0034                            | 0.0625                 | 0.0035                          | RD               |
| 16 22 41           | -48 39 20           | GJ0618.4         | 4.20                    | 3600                  | 11                             | 0.011                  | 56            | 1.029     | -8.6969                                                    | 0.0078                                                              | -1.4513                                        | 0.0354                                                  | 0.4836                   | 0.0199                            | 0.1895                 | 0.0170                          | RD               |
| 16 23 08           | -24 42 35           | GJ0620           | 3.83                    | 3795                  | 16                             | 0.011                  | 6             | 1.039     | -8.1668                                                    | 0.0079                                                              | -1.2377                                        | 0.0167                                                  | 0.5565                   | 0.0116                            | 0.3139                 | 0.0125                          | RD               |
| 16 25 13           | -21 56 14           | GJ0622           | 3.69                    | 3872                  | 20                             | 0.012                  | 26            | 1.044     | -8.2848                                                    | 0.0075                                                              | -1.2763                                        | 0.0192                                                  | 0.5113                   | 0.0125                            | 0.2633                 | 0.0125                          | RD               |
| 16 25 25           | +54 18 15           | GJ0625           | 4.29                    | 3525                  | 34                             | 0.013                  | 148           | 1.025     | -7.9628                                                    | 0.0070                                                              | -1.8381                                        | 0.0075                                                  | 0.3230                   | 0.0068                            | 0.4600                 | 0.0100                          | RD               |
| 16 26 52           | -38 12 33           | SCR1626-3812     | 6.31                    | 2918                  | 22                             | 0.013                  | 140           | 1.007     | -9.5371                                                    | 0.0068                                                              | -2.7473                                        | 0.0121                                                  | 0.1656                   | 0.0034                            | 0.1097                 | 0.0034                          | RD               |
| 16 27 33           | -10 00 29           | GJ2120           | 4.02                    | 3703                  | 26                             | 0.010                  | 26            | 1.034     | -8.3624                                                    | 0.0071                                                              | -1.1488                                        | 0.0319                                                  | 0.6473                   | 0.0255                            | 0.2632                 | 0.0215                          | RD               |
| 16 30 18           | -12 39 45           | GJ0628           | 5.00                    | 3173                  | 52                             | 0.016                  | 251           | 1.013     | -7.7120                                                    | 0.0087                                                              | -1.9569                                        | 0.0092                                                  | 0.3477                   | 0.0119                            | 0.7580                 | 0.0264                          | RD               |
| 16 31 18           | +40 51 52           | G180-060         | 6.25                    | 2896                  | 15                             | 0.010                  | 3             | 1.007     | -9.1647                                                    | 0.0059                                                              | -2.5100                                        | 0.0148                                                  | 0.2208                   | 0.0044                            | 0.1709                 | 0.0063                          | RD               |
| 16 31 28           | +47 10 21           | LSPM1631+4710    | 5.28                    | 3179                  | 10                             | 0.011                  | 3             | 1.013     | -9.1128                                                    | 0.0059                                                              | -2.2529                                        | 0.0133                                                  | 0.2464                   | 0.0041                            | 0.1506                 | 0.0048                          | RD               |
| 16 31 35           | +17 33 49           | GJ1202           | 4.64                    | 3389                  | 12                             | 0.010                  | 100           | 1.020     | -8.9216                                                    | 0.0059                                                              | -1.9677                                        | 0.0162                                                  | 0.3010                   | 0.0060                            | 0.1650                 | 0.0066                          | RD               |
| 16 32 35           | +40 24 04           | LSPM1632+4024    | 4.64                    | 3375                  | 15                             | 0.011                  | 3             | 1.019     | -10.0282                                                   | 0.0066                                                              | -3.0896                                        | 0.0297                                                  | 0.0834                   | 0.0030                            | 0.0465                 | 0.0035                          | SC               |



## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 16 32 45           | +12 36 46           | GJ1203           | 4.49                    | 3430                  | 21                             | 0.011                   | 76            | 1.021     | -8.7135                                                                | 0.0062                                                                          | -1.7091                                        | 0.0207                                                  | 0.3959                   | 0.0106                            | 0.2048                 | 0.0108                          | RD                       |
| 16 32 53           | +09 50 26           | G138-040         | 4.88                    | 3295                  | 11                             | 0.013                   | 8             | 1.016     | -8.9455                                                                | 0.0075                                                                          | -2.1726                                        | 0.0154                                                  | 0.2515                   | 0.0048                            | 0.1699                 | 0.0062                          | RD                       |
| 16 32 58           | -06 31 48           | SIP1632-0631     | 8.58                    | 2371                  | 140                            | 0.013                   | 38            | 1.001     | -10.5110                                                               | 0.0068                                                                          | -3.4696                                        | 0.0139                                                  | 0.1092                   | 0.0130                            | 0.0541                 | 0.0066                          | RD                       |
| 16 33 42           | -09 33 12           | LP745-070        | 3.64                    | 3909                  | 14                             | 0.015                   | 19            | 1.046     | -8.6092                                                                | 0.0080                                                                          | -1.1407                                        | 0.0339                                                  | 0.5863                   | 0.0232                            | 0.1778                 | 0.0152                          | YG                       |
| 16 35 25           | -27 18 55           | LHS3218          | 5.18                    | 3189                  | 8                              | 0.011                   | 3             | 1.013     | -9.2814                                                                | 0.0059                                                                          | -2.2493                                        | 0.0086                                                  | 0.2458                   | 0.0027                            | 0.1232                 | 0.0022                          | RD                       |
| 16 35 40           | -30 51 20           | LHS0423          | 4.59                    | 3414                  | 14                             | 0.015                   | 66            | 1.021     | -8.8831                                                                | 0.0076                                                                          | -1.8099                                        | 0.0260                                                  | 0.3558                   | 0.0111                            | 0.1700                 | 0.0111                          | RD                       |
| 16 36 06           | +08 48 49           | GJ1204           | 5.30                    | 3231                  | 28                             | 0.014                   | 3             | 1.014     | -9.1140                                                                | 0.0069                                                                          | -2.2475                                        | 0.0288                                                  | 0.2400                   | 0.0090                            | 0.1456                 | 0.0108                          | RD                       |
| 16 36 58           | -40 41 09           | SCR1636-4041     | 5.13                    | 3215                  | 15                             | 0.012                   | 3             | 1.014     | -9.0294                                                                | 0.0078                                                                          | -1.8666                                        | 0.0156                                                  | 0.3757                   | 0.0076                            | 0.1620                 | 0.0060                          | RD                       |
| 16 39 30           | +50 34 04           | LHS5319          | 3.97                    | 3694                  | 23                             | 0.012                   | 276           | 1.033     | -8.7643                                                                | 0.0062                                                                          | -1.6221                                        | 0.0191                                                  | 0.3773                   | 0.0097                            | 0.1666                 | 0.0081                          | RD                       |
| 16 40 06           | +00 42 19           | LP625-034        | 5.49                    | 3108                  | 13                             | 0.039                   | 175           | 1.011     | -9.0071                                                                | 0.0076                                                                          | -2.4281                                        | 0.0114                                                  | 0.2107                   | 0.0033                            | 0.1779                 | 0.0045                          | RD                       |
| 16 40 21           | +67 36 05           | LP069-457        | 6.70                    | 2823                  | 15                             | 0.011                   | 4             | 1.005     | -9.3491                                                                | 0.0068                                                                          | -2.5952                                        | 0.0156                                                  | 0.2107                   | 0.0044                            | 0.1454                 | 0.0056                          | YC                       |
| 16 40 32           | +05 51 45           | G138-052         | 5.12                    | 3208                  | 10                             | 0.011                   | 3             | 1.014     | -9.4448                                                                | 0.0054                                                                          | -2.1583                                        | 0.0161                                                  | 0.2698                   | 0.0052                            | 0.1009                 | 0.0040                          | RD                       |
| 16 40 45           | -45 59 59           | GJ0633           | 4.62                    | 3396                  | 20                             | 0.011                   | 27            | 1.020     | -8.8803                                                                | 0.0062                                                                          | -1.9387                                        | 0.0107                                                  | 0.3101                   | 0.0053                            | 0.1725                 | 0.0045                          | RD                       |
| 16 40 48           | +36 19 00           | LT14949          | 4.30                    | 3581                  | 44                             | 0.010                   | 173           | 1.028     | -8.5475                                                                | 0.0066                                                                          | -1.4851                                        | 0.0204                                                  | 0.4701                   | 0.0159                            | 0.2275                 | 0.0127                          | RD                       |
| 16 41 28           | -43 59 11           | GJ0634           | 4.25                    | 3558                  | 25                             | 0.014                   | 125           | 1.027     | -8.5734                                                                | 0.0071                                                                          | -1.5963                                        | 0.0504                                                  | 0.4189                   | 0.0250                            | 0.2237                 | 0.0290                          | RD                       |
| 16 42 04           | +10 25 59           | LHS0425          | 4.12                    | 3620                  | 30                             | 0.013                   | 128           | 1.030     | -10.0084                                                               | 0.0063                                                                          | -2.3367                                        | 0.0844                                                  | 0.1725                   | 0.0170                            | 0.0414                 | 0.0090                          | SD                       |
| 16 42 15           | +41 59 43           | G203-021         | 5.50                    | 3081                  | 32                             | 0.011                   | 18            | 1.010     | -9.5748                                                                | 0.0066                                                                          | -2.4148                                        | 0.0191                                                  | 0.2177                   | 0.0066                            | 0.0942                 | 0.0048                          | RD                       |
| 16 45 22           | -13 19 52           | 2MA1645-1319     | 9.46                    | 2135                  | 49                             | 0.013                   | 48            | 1.001     | -10.3601                                                               | 0.0075                                                                          | -3.7782                                        | 0.0084                                                  | 0.0943                   | 0.0044                            | 0.0794                 | 0.0038                          | RD                       |
| 16 45 43           | +04 44 40           | LHS5321          | 6.12                    | 2921                  | 8                              | 0.013                   | 3             | 1.007     | -9.6657                                                                | 0.0059                                                                          | -2.7763                                        | 0.0307                                                  | 0.1598                   | 0.0057                            | 0.0944                 | 0.0074                          | RD                       |
| 16 46 14           | +16 28 41           | LHS3240          | 4.56                    | 3410                  | 14                             | 0.012                   | 3             | 1.020     | -8.5017                                                                | 0.0056                                                                          | -1.5985                                        | 0.0212                                                  | 0.4549                   | 0.0117                            | 0.2645                 | 0.0142                          | RD                       |
| 16 46 32           | +34 34 55           | LHS3241          | 7.11                    | 2733                  | 24                             | 0.010                   | 20            | 1.004     | -9.6273                                                                | 0.0065                                                                          | -2.9840                                        | 0.0075                                                  | 0.1437                   | 0.0029                            | 0.1127                 | 0.0024                          | RD                       |
| 16 47 55           | -05 09 12           | LP154-205        | 5.10                    | 3215                  | 11                             | 0.011                   | 46            | 1.014     | -9.2357                                                                | 0.0066                                                                          | -2.3890                                        | 0.0089                                                  | 0.2059                   | 0.0025                            | 0.1278                 | 0.0024                          | RD                       |
| 16 48 24           | -72 58 34           | GJ0637           | 4.13                    | 3628                  | 17                             | 0.012                   | 85            | 1.030     | -8.5219                                                                | 0.0079                                                                          | -1.6264                                        | 0.0156                                                  | 0.3891                   | 0.0079                            | 0.2282                 | 0.0084                          | RD                       |
| 16 48 46           | -15 44 20           | LP806-008        | 4.17                    | 3620                  | 28                             | 0.011                   | 7             | 1.030     | -8.3529                                                                | 0.0066                                                                          | -1.3365                                        | 0.0185                                                  | 0.5456                   | 0.0144                            | 0.2784                 | 0.0133                          | RD                       |
| 16 49 01           | +08 38 33           | LP566-006        | 5.03                    | 3233                  | 17                             | 0.011                   | 10            | 1.014     | -9.3247                                                                | 0.0069                                                                          | -2.0425                                        | 0.0175                                                  | 0.3035                   | 0.0069                            | 0.1141                 | 0.0050                          | RD                       |
| 16 50 57           | +35 55 58           | LSPM1650+3555E   | 5.37                    | 3094                  | 26                             | 0.011                   | 11            | 1.011     | -9.4827                                                                | 0.0067                                                                          | -2.4701                                        | 0.0182                                                  | 0.2026                   | 0.0054                            | 0.1038                 | 0.0050                          | RD                       |
| 16 50 58           | +22 27 06           | G169-029         | 5.77                    | 2996                  | 25                             | 0.011                   | 19            | 1.008     | -8.6706                                                                | 0.0066                                                                          | -2.5184                                        | 0.0076                                                  | 0.3561                   | 0.0137                            | 0.1709                 | 0.0139                          | SC                       |
| 16 51 07           | +78 09 18           | LHS3247          | 6.68                    | 2820                  | 33                             | 0.011                   | 3             | 1.005     | -9.9731                                                                | 0.0064                                                                          | -3.1040                                        | 0.0185                                                  | 0.1176                   | 0.0037                            | 0.0711                 | 0.0036                          | RD                       |
| 16 52 49           | +63 04 39           | LSPM1652+6304    | 5.62                    | 3032                  | 26                             | 0.011                   | 13            | 1.009     | -9.2248                                                                | 0.0069                                                                          | -2.5174                                        | 0.0232                                                  | 0.1997                   | 0.0064                            | 0.1455                 | 0.0088                          | RD                       |
| 16 53 15           | +00 00 15           | LP626-013        | 7.58                    | 2540                  | 78                             | 0.019                   | 174           | 1.002     | -10.1803                                                               | 0.0081                                                                          | -2.9442                                        | 0.0396                                                  | 0.1741                   | 0.0133                            | 0.0690                 | 0.0081                          | RD                       |
| 16 53 39           | +56 03 27           | G226-033         | 4.95                    | 3193                  | 21                             | 0.011                   | 53            | 1.013     | -9.3190                                                                | 0.0066                                                                          | -2.3510                                        | 0.0157                                                  | 0.2181                   | 0.0048                            | 0.1177                 | 0.0047                          | RD                       |
| 16 54 12           | +11 54 53           | GJ0642           | 3.64                    | 3890                  | 16                             | 0.014                   | 104           | 1.045     | -8.4260                                                                | 0.0078                                                                          | -1.3540                                        | 0.0197                                                  | 0.4631                   | 0.0112                            | 0.2217                 | 0.0107                          | RD                       |
| 16 55 38           | -32 04 04           | LT06745          | 3.52                    | 4004                  | 23                             | 0.011                   | 22            | 1.052     | -8.0042                                                                | 0.0069                                                                          | -0.9865                                        | 0.0115                                                  | 0.6676                   | 0.0118                            | 0.3402                 | 0.0094                          | RD                       |
| 16 56 34           | -20 46 37           | SCR1656-2046     | 6.95                    | 2891                  | 17                             | 0.010                   | 3             | 1.006     | -9.9172                                                                | 0.0053                                                                          | -3.0171                                        | 0.0136                                                  | 0.1236                   | 0.0022                            | 0.0721                 | 0.0020                          | RD                       |
| 16 56 45           | -37 03 39           | GJ0645           | 4.10                    | 3647                  | 18                             | 0.011                   | 3             | 1.031     | -8.5637                                                                | 0.0074                                                                          | -1.6001                                        | 0.0674                                                  | 0.3970                   | 0.0311                            | 0.2153                 | 0.0373                          | RD                       |
| 16 57 06           | -04 20 56           | GJ1207           | 5.13                    | 3217                  | 10                             | 0.050                   | 125           | 1.014     | -8.5413                                                                | 0.0107                                                                          | -2.1697                                        | 0.0121                                                  | 0.2648                   | 0.0040                            | 0.2839                 | 0.0057                          | RD                       |
| 16 58 08           | +25 44 39           | GJ0649           | 4.07                    | 3656                  | 30                             | 0.011                   | 125           | 1.031     | -7.8762                                                                | 0.0073                                                                          | -1.3573                                        | 0.0094                                                  | 0.5223                   | 0.0103                            | 0.4726                 | 0.0113                          | RD                       |
| 16 59 28           | -09 58 18           | SCR1659-6958     | 5.66                    | 3119                  | 14                             | 0.012                   | 3             | 1.011     | -9.5864                                                                | 0.0060                                                                          | -2.4693                                        | 0.0099                                                  | 0.1995                   | 0.0029                            | 0.0907                 | 0.0021                          | RD                       |
| 17 01 34           | +07 09 48           | G139-007         | 5.22                    | 3187                  | 10                             | 0.011                   | 44            | 1.013     | -9.6331                                                                | 0.0065                                                                          | -2.4934                                        | 0.0229                                                  | 0.1859                   | 0.0050                            | 0.0823                 | 0.0047                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 17 01 46           | +74 11 51           | LP043-292        | 5.09                    | 3223                  | 6                              | 0.012                  | 123           | 1.014     | -9.1382                                                                | 0.0060                                                                          | -2.2941                                        | 0.0173                                                  | 0.2287                   | 0.0046                            | 0.1423                 | 0.0061                          | RD                       |
| 17 02 50           | -06 04 07           | HIP083405        | 3.91                    | 3760                  | 13                             | 0.013                  | 10            | 1.037     | -8.3973                                                                | 0.0078                                                                          | -1.3481                                        | 0.0181                                                  | 0.4992                   | 0.0109                            | 0.2453                 | 0.0107                          | RD                       |
| 17 03 24           | +51 24 23           | LHS3262          | 5.62                    | 3033                  | 28                             | 0.012                  | 16            | 1.009     | -8.8933                                                                | 0.0064                                                                          | -2.4572                                        | 0.0103                                                  | 0.2140                   | 0.0047                            | 0.2130                 | 0.0062                          | RD                       |
| 17 04 22           | +16 55 56           | GJ1209           | 4.50                    | 3426                  | 16                             | 0.013                  | 145           | 1.021     | -8.7636                                                                | 0.0067                                                                          | -1.7985                                        | 0.0248                                                  | 0.3579                   | 0.0108                            | 0.1938                 | 0.0121                          | RD                       |
| 17 07 08           | +21 33 14           | GJ0655           | 4.64                    | 3398                  | 10                             | 0.010                  | 11            | 1.020     | -8.4840                                                                | 0.0067                                                                          | -1.6950                                        | 0.0145                                                  | 0.4099                   | 0.0073                            | 0.2717                 | 0.0094                          | RD                       |
| 17 07 13           | +41 36 45           | LP226-038        | 5.77                    | 3011                  | 12                             | 0.012                  | 132           | 1.009     | -9.6654                                                                | 0.0072                                                                          | -2.5183                                        | 0.0268                                                  | 0.2023                   | 0.0064                            | 0.0888                 | 0.0060                          | RD                       |
| 17 09 26           | +39 09 37           | LHS3267          | 4.79                    | 3326                  | 14                             | 0.010                  | 3             | 1.017     | -9.2798                                                                | 0.0065                                                                          | -2.0757                                        | 0.0302                                                  | 0.2760                   | 0.0099                            | 0.1135                 | 0.0087                          | RD                       |
| 17 10 59           | -52 30 56           | L268-067         | 3.99                    | 3704                  | 18                             | 0.011                  | 3             | 1.034     | -8.0324                                                                | 0.0078                                                                          | -1.3455                                        | 0.0127                                                  | 0.5160                   | 0.0091                            | 0.3847                 | 0.0111                          | RD                       |
| 17 11 35           | +38 26 34           | LT15087          | 4.81                    | 3314                  | 12                             | 0.011                  | 3             | 1.017     | -8.3935                                                                | 0.0063                                                                          | -1.7400                                        | 0.0121                                                  | 0.4091                   | 0.0064                            | 0.3170                 | 0.0090                          | RD                       |
| 17 11 46           | +40 29 02           | G203-050         | 5.63                    | 3128                  | 27                             | 0.009                  | 82            | 1.011     | -9.8113                                                                | 0.0063                                                                          | -3.0524                                        | 0.0307                                                  | 0.1013                   | 0.0040                            | 0.0696                 | 0.0055                          | RD                       |
| 17 15 18           | +04 57 50           | GJ1214           | 5.93                    | 2994                  | 15                             | 0.011                  | 16            | 1.008     | -9.2695                                                                | 0.0068                                                                          | -2.4765                                        | 0.0096                                                  | 0.2147                   | 0.0032                            | 0.1417                 | 0.0030                          | RD                       |
| 17 16 01           | +11 03 28           | L1205-067        | 4.01                    | 3652                  | 19                             | 0.011                  | 12            | 1.031     | -8.3437                                                                | 0.0066                                                                          | -1.3482                                        | 0.0187                                                  | 0.5290                   | 0.0126                            | 0.2765                 | 0.0129                          | RD                       |
| 17 16 41           | +08 03 30           | GJ2128           | 4.42                    | 3489                  | 15                             | 0.010                  | 116           | 1.021     | -8.4992                                                                | 0.0075                                                                          | -1.6575                                        | 0.0186                                                  | 0.4061                   | 0.0094                            | 0.2534                 | 0.0117                          | RD                       |
| 17 19 53           | +41 42 50           | GJ0671           | 4.50                    | 3427                  | 4                              | 0.011                  | 3             | 1.021     | -8.4159                                                                | 0.0066                                                                          | -1.7311                                        | 0.0107                                                  | 0.3865                   | 0.0048                            | 0.2889                 | 0.0066                          | RD                       |
| 17 19 54           | +26 30 03           | GJ0669           | 5.00                    | 3190                  | 21                             | 0.011                  | 11            | 1.013     | -8.2664                                                                | 0.0075                                                                          | -1.6862                                        | 0.0109                                                  | 0.4698                   | 0.0086                            | 0.3961                 | 0.0102                          | YC                       |
| 17 20 46           | +49 15 20           | GJ1216           | 5.15                    | 3190                  | 12                             | 0.011                  | 55            | 1.013     | -9.4315                                                                | 0.0061                                                                          | -2.5010                                        | 0.0194                                                  | 0.1840                   | 0.0043                            | 0.1036                 | 0.0050                          | RD                       |
| 17 21 03           | +12 58 44           | LP507-015        | 5.93                    | 3022                  | 20                             | 0.011                  | 106           | 1.009     | -9.8183                                                                | 0.0066                                                                          | -2.6374                                        | 0.0294                                                  | 0.1751                   | 0.0064                            | 0.0740                 | 0.0056                          | RD                       |
| 17 21 55           | +21 25 48           | G170-036         | 5.35                    | 3095                  | 23                             | 0.012                  | 14            | 1.011     | -9.1116                                                                | 0.0061                                                                          | -2.3622                                        | 0.0158                                                  | 0.2292                   | 0.0054                            | 0.1590                 | 0.0065                          | RD                       |
| 17 22 18           | +59 50 04           | LP102-072        | 5.13                    | 3215                  | 13                             | 0.012                  | 100           | 1.014     | -9.5855                                                                | 0.0071                                                                          | -2.4745                                        | 0.0274                                                  | 0.1866                   | 0.0061                            | 0.0854                 | 0.0059                          | RD                       |
| 17 22 43           | +60 08 21           | LP102-071        | 5.28                    | 3173                  | 20                             | 0.013                  | 19            | 1.013     | -9.3829                                                                | 0.0056                                                                          | -2.2701                                        | 0.0161                                                  | 0.2424                   | 0.0054                            | 0.1107                 | 0.0046                          | RD                       |
| 17 23 49           | -32 15 16           | GJ0672.1         | 4.12                    | 3528                  | 164                            | 0.021                  | 230           | 1.025     | -8.6145                                                                | 0.0069                                                                          | -1.3739                                        | 0.0408                                                  | 0.5503                   | 0.0572                            | 0.2169                 | 0.0302                          | RD                       |
| 17 23 57           | +13 38 20           | LSPM1723+1338    | 5.10                    | 3216                  | 8                              | 0.010                  | 37            | 1.014     | -9.1599                                                                | 0.0063                                                                          | -2.1644                                        | 0.0112                                                  | 0.2666                   | 0.0037                            | 0.1394                 | 0.0036                          | RD                       |
| 17 24 40           | +61 47 51           | LSPM1724+6147    | 4.79                    | 3330                  | 20                             | 0.010                  | 3             | 1.018     | -9.1205                                                                | 0.0060                                                                          | -1.9970                                        | 0.0240                                                  | 0.3014                   | 0.0091                            | 0.1360                 | 0.0084                          | RD                       |
| 17 24 42           | +04 22 49           | LP567-029        | 6.02                    | 3039                  | 22                             | 0.011                  | 3             | 1.009     | -9.6937                                                                | 0.0061                                                                          | -2.4797                                        | 0.0383                                                  | 0.2077                   | 0.0096                            | 0.0844                 | 0.0083                          | RD                       |
| 17 26 36           | +20 31 25           | LP447-051        | 6.09                    | 3038                  | 21                             | 0.010                  | 103           | 1.009     | -9.8041                                                                | 0.0066                                                                          | -2.5473                                        | 0.0464                                                  | 0.1922                   | 0.0106                            | 0.0744                 | 0.0089                          | RD                       |
| 17 27 40           | +14 29 02           | GJ1219           | 4.79                    | 3314                  | 18                             | 0.011                  | 112           | 1.017     | -9.2359                                                                | 0.0061                                                                          | -2.2481                                        | 0.0136                                                  | 0.2280                   | 0.0044                            | 0.1202                 | 0.0041                          | RD                       |
| 17 28 07           | -62 27 15           | GJ1218           | 5.17                    | 3199                  | 14                             | 0.016                  | 33            | 1.013     | -8.7304                                                                | 0.0091                                                                          | -1.8106                                        | 0.0120                                                  | 0.4049                   | 0.0066                            | 0.2309                 | 0.0056                          | RD                       |
| 17 28 40           | -46 53 43           | GJ0674           | 4.54                    | 3397                  | 67                             | 0.017                  | 256           | 1.020     | -7.5910                                                                | 0.0084                                                                          | -1.7813                                        | 0.0088                                                  | 0.3714                   | 0.0151                            | 0.7603                 | 0.0314                          | YG                       |
| 17 29 27           | -80 08 57           | LHS3295          | 4.88                    | 3293                  | 8                              | 0.013                  | 3             | 1.016     | -8.5916                                                                | 0.0066                                                                          | -1.9023                                        | 0.0119                                                  | 0.3438                   | 0.0050                            | 0.2556                 | 0.0069                          | RD                       |
| 17 30 06           | +54 39 32           | LSPM1730+5439    | 4.99                    | 3263                  | 29                             | 0.011                  | 7             | 1.015     | -8.9518                                                                | 0.0062                                                                          | -1.7238                                        | 0.0182                                                  | 0.4301                   | 0.0119                            | 0.1720                 | 0.0083                          | RD                       |
| 17 30 11           | -51 38 13           | GJ0676           | 3.77                    | 3814                  | 25                             | 0.012                  | 18            | 1.040     | -7.9448                                                                | 0.0071                                                                          | -1.0251                                        | 0.0134                                                  | 0.7035                   | 0.0143                            | 0.4012                 | 0.0133                          | RD                       |
| 17 30 23           | +05 32 55           | GJ0678.1         | 3.88                    | 3750                  | 44                             | 0.012                  | 193           | 1.036     | -7.7792                                                                | 0.0081                                                                          | -1.2892                                        | 0.0092                                                  | 0.5371                   | 0.0139                            | 0.5024                 | 0.0140                          | RD                       |
| 17 30 27           | +33 44 53           | LSPM1730+3344    | 4.91                    | 3291                  | 14                             | 0.010                  | 3             | 1.016     | -9.1212                                                                | 0.0052                                                                          | -1.9086                                        | 0.0192                                                  | 0.3189                   | 0.0076                            | 0.1391                 | 0.0068                          | RD                       |
| 17 31 04           | +35 04 08           | LSPM1731+3504    | 5.69                    | 3037                  | 32                             | 0.010                  | 39            | 1.009     | -9.7221                                                                | 0.0063                                                                          | -2.5658                                        | 0.0451                                                  | 0.1882                   | 0.0106                            | 0.0818                 | 0.0096                          | RD                       |
| 17 31 07           | -24 52 44           | SCR1731-2452     | 4.82                    | 3322                  | 21                             | 0.010                  | 3             | 1.017     | -9.0365                                                                | 0.0068                                                                          | -1.7492                                        | 0.0351                                                  | 0.4029                   | 0.0171                            | 0.1505                 | 0.0135                          | RD                       |
| 17 31 17           | +82 05 20           | GJ1220           | 5.40                    | 3118                  | 9                              | 0.010                  | 3             | 1.011     | -9.1954                                                                | 0.0057                                                                          | -2.4831                                        | 0.0151                                                  | 0.1965                   | 0.0036                            | 0.1423                 | 0.0053                          | RD                       |
| 17 31 30           | +27 21 23           | LSPM1731+2721    | 8.95                    | 2225                  | 131                            | 0.018                  | 63            | 1.001     | -10.2520                                                               | 0.0087                                                                          | -3.6214                                        | 0.0122                                                  | 0.1040                   | 0.0124                            | 0.0828                 | 0.0100                          | RD                       |
| 17 31 45           | +30 56 05           | LP332-033        | 5.60                    | 3072                  | 13                             | 0.012                  | 18            | 1.010     | -9.7448                                                                | 0.0054                                                                          | -2.7017                                        | 0.0219                                                  | 0.1573                   | 0.0042                            | 0.0779                 | 0.0043                          | RD                       |
| 17 32 28           | +10 23 02           | LSPM1732+1023    | 5.24                    | 3182                  | 9                              | 0.011                  | 17            | 1.013     | -9.5618                                                                | 0.0059                                                                          | -2.3257                                        | 0.0222                                                  | 0.2261                   | 0.0059                            | 0.0896                 | 0.0050                          | RD                       |
| 17 36 18           | +13 46 23           | LP508-014        | 5.30                    | 3106                  | 26                             | 0.011                  | 13            | 1.011     | -9.5314                                                                | 0.0061                                                                          | -2.3505                                        | 0.0256                                                  | 0.2307                   | 0.0078                            | 0.0974                 | 0.0065                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 17 36 26           | +68 20 21           | GJ0687           | 4.62                    | 3353                  | 83                             | 0.017                   | 191           | 1.018     | -7.4618                                                                | 0.0095                                                                          | -1.6536                                        | 0.0097                                                  | 0.4414                   | 0.0224                            | 0.9052                 | 0.0460                          | RD                       |
| 17 37 36           | +22 05 50           | G170-054         | 5.19                    | 3194                  | 13                             | 0.010                   | 3             | 1.013     | -9.2618                                                                | 0.0054                                                                          | -2.2269                                        | 0.0163                                                  | 0.2515                   | 0.0052                            | 0.1256                 | 0.0051                          | RD                       |
| 17 37 53           | +18 35 30           | GJ0686           | 4.04                    | 3660                  | 47                             | 0.012                   | 169           | 1.032     | -7.8435                                                                | 0.0075                                                                          | -1.5369                                        | 0.0091                                                  | 0.4239                   | 0.0118                            | 0.4897                 | 0.0148                          | RD                       |
| 17 38 33           | -58 32 34           | L204-148         | 4.85                    | 3308                  | 10                             | 0.014                   | 82            | 1.017     | -8.7434                                                                | 0.0078                                                                          | -1.8470                                        | 0.0118                                                  | 0.3630                   | 0.0054                            | 0.2127                 | 0.0054                          | RD                       |
| 17 39 31           | +27 45 44           | L1422-016        | 3.86                    | 3805                  | 29                             | 0.012                   | 177           | 1.040     | -8.5321                                                                | 0.0073                                                                          | -1.2424                                        | 0.0277                                                  | 0.5505                   | 0.0195                            | 0.2050                 | 0.0145                          | RD                       |
| 17 41 54           | +09 40 54           | LP508-020        | 7.92                    | 2604                  | 23                             | 0.011                   | 3             | 1.003     | -10.1924                                                               | 0.0073                                                                          | -3.4312                                        | 0.0186                                                  | 0.0946                   | 0.0026                            | 0.0647                 | 0.0031                          | RD                       |
| 17 42 11           | -08 49 00           | LHS3315          | 4.60                    | 3417                  | 22                             | 0.012                   | 136           | 1.021     | -9.2643                                                                | 0.0062                                                                          | -2.0343                                        | 0.0330                                                  | 0.2743                   | 0.0110                            | 0.1095                 | 0.0093                          | RD                       |
| 17 42 32           | -16 38 25           | GJ0690.1         | 4.32                    | 3520                  | 13                             | 0.012                   | 98            | 1.025     | -9.0990                                                                | 0.0062                                                                          | -2.0277                                        | 0.0443                                                  | 0.2604                   | 0.0134                            | 0.1247                 | 0.0141                          | SC                       |
| 17 42 42           | +75 37 19           | LP024-054        | 5.48                    | 3101                  | 11                             | 0.011                   | 36            | 1.011     | -9.2441                                                                | 0.0062                                                                          | -2.4711                                        | 0.0162                                                  | 0.2014                   | 0.0040                            | 0.1360                 | 0.0054                          | RD                       |
| 17 43 56           | +43 22 43           | GJ0694           | 4.49                    | 3457                  | 16                             | 0.011                   | 48            | 1.022     | -8.0472                                                                | 0.0073                                                                          | -1.5950                                        | 0.0086                                                  | 0.4444                   | 0.0060                            | 0.4342                 | 0.0075                          | RD                       |
| 17 45 34           | +46 51 20           | GJ0694.2         | 3.93                    | 3751                  | 14                             | 0.012                   | 7             | 1.036     | -8.3387                                                                | 0.0072                                                                          | -1.1802                                        | 0.0124                                                  | 0.6087                   | 0.0099                            | 0.2637                 | 0.0075                          | RD                       |
| 17 46 05           | +24 39 05           | LHS3324          | 4.62                    | 3381                  | 11                             | 0.013                   | 17            | 1.019     | -8.8728                                                                | 0.0071                                                                          | -2.0672                                        | 0.0153                                                  | 0.2698                   | 0.0051                            | 0.1755                 | 0.0064                          | RD                       |
| 17 46 13           | -32 06 09           | GJ2130           | 4.25                    | 3594                  | 16                             | 0.011                   | 152           | 1.028     | -8.1500                                                                | 0.0074                                                                          | -1.3527                                        | 0.0123                                                  | 0.5433                   | 0.0092                            | 0.3568                 | 0.0100                          | RD                       |
| 17 46 29           | -08 42 37           | LT07077          | 5.37                    | 3099                  | 19                             | 0.016                   | 152           | 1.011     | -8.6536                                                                | 0.0076                                                                          | -1.9337                                        | 0.0123                                                  | 0.3744                   | 0.0071                            | 0.2687                 | 0.0078                          | YC                       |
| 17 46 34           | -57 19 09           | GJ0693           | 4.75                    | 3351                  | 35                             | 0.013                   | 168           | 1.018     | -8.0768                                                                | 0.0077                                                                          | -2.0484                                        | 0.0096                                                  | 0.2806                   | 0.0066                            | 0.4465                 | 0.0120                          | RD                       |
| 17 46 41           | -32 14 04           | SCR1746-3214     | 6.77                    | 2848                  | 28                             | 0.012                   | 32            | 1.006     | -9.5379                                                                | 0.0073                                                                          | -2.9370                                        | 0.0126                                                  | 0.1396                   | 0.0034                            | 0.1150                 | 0.0039                          | RD                       |
| 17 49 59           | +22 41 07           | LHS3332          | 7.55                    | 2656                  | 23                             | 0.028                   | 189           | 1.003     | -10.2965                                                               | 0.0077                                                                          | -3.3645                                        | 0.0302                                                  | 0.0982                   | 0.0038                            | 0.0552                 | 0.0043                          | RD                       |
| 17 50 15           | +23 45 51           | LHS3333          | 5.07                    | 3225                  | 18                             | 0.010                   | 3             | 1.014     | -9.0722                                                                | 0.0067                                                                          | -1.8798                                        | 0.0403                                                  | 0.3679                   | 0.0176                            | 0.1533                 | 0.0158                          | RD                       |
| 17 50 34           | -06 03 01           | GJ0696           | 3.62                    | 3923                  | 20                             | 0.012                   | 3             | 1.047     | -8.1993                                                                | 0.0068                                                                          | -1.0314                                        | 0.0203                                                  | 0.6604                   | 0.0168                            | 0.2830                 | 0.0144                          | YG                       |
| 17 54 17           | +07 22 45           | GJ1222           | 5.15                    | 3200                  | 15                             | 0.039                   | 114           | 1.013     | -8.8814                                                                | 0.0086                                                                          | -2.0158                                        | 0.0138                                                  | 0.3196                   | 0.0059                            | 0.1940                 | 0.0060                          | RD                       |
| 17 55 33           | +58 24 28           | LHS3339          | 7.11                    | 2729                  | 28                             | 0.012                   | 3             | 1.004     | -10.1383                                                               | 0.0065                                                                          | -2.9933                                        | 0.0110                                                  | 0.1426                   | 0.0035                            | 0.0627                 | 0.0020                          | RD                       |
| 17 56 52           | +19 05 56           | LSPM1756+1905    | 5.75                    | 3007                  | 26                             | 0.011                   | 56            | 1.009     | -9.6373                                                                | 0.0065                                                                          | -2.3465                                        | 0.0196                                                  | 0.2473                   | 0.0071                            | 0.0920                 | 0.0047                          | RD                       |
| 17 57 14           | -41 59 29           | LT07138          | 4.14                    | 3628                  | 8                              | 0.011                   | 3             | 1.030     | -8.4885                                                                | 0.0075                                                                          | -1.5252                                        | 0.0113                                                  | 0.4372                   | 0.0060                            | 0.2372                 | 0.0057                          | RD                       |
| 17 57 15           | +70 42 01           | LP044-162        | 8.32                    | 2512                  | 21                             | 0.016                   | 114           | 1.002     | -9.9983                                                                | 0.0070                                                                          | -2.9420                                        | 0.0115                                                  | 0.1784                   | 0.0038                            | 0.0870                 | 0.0026                          | RD                       |
| 17 57 48           | +04 41 36           | BARNARDS         | 5.02                    | 3153                  | 72                             | 0.012                   | 397           | 1.012     | -7.4621                                                                | 0.0086                                                                          | -2.4408                                        | 0.0086                                                  | 0.2017                   | 0.0094                            | 1.0235                 | 0.0478                          | RD                       |
| 17 57 51           | +46 35 19           | LHS3343          | 4.68                    | 3384                  | 13                             | 0.010                   | 18            | 1.019     | -8.4730                                                                | 0.0063                                                                          | -1.6682                                        | 0.0109                                                  | 0.4262                   | 0.0063                            | 0.2775                 | 0.0070                          | RD                       |
| 17 58 57           | +80 42 44           | LHS3344          | 4.76                    | 3353                  | 23                             | 0.011                   | 9             | 1.018     | -8.9298                                                                | 0.0064                                                                          | -1.7304                                        | 0.0232                                                  | 0.4041                   | 0.0122                            | 0.1670                 | 0.0099                          | RD                       |
| 18 02 17           | +64 15 44           | LP071-082        | 5.82                    | 3005                  | 7                              | 0.011                   | 3             | 1.009     | -8.7949                                                                | 0.0068                                                                          | -2.4423                                        | 0.0152                                                  | 0.2217                   | 0.0040                            | 0.2429                 | 0.0088                          | RD                       |
| 18 02 46           | +37 31 03           | GJ1223           | 5.90                    | 2981                  | 17                             | 0.009                   | 3             | 1.008     | -9.2860                                                                | 0.0063                                                                          | -2.7255                                        | 0.0155                                                  | 0.1626                   | 0.0035                            | 0.1402                 | 0.0055                          | RD                       |
| 18 04 11           | +83 50 28           | LSPM1804+8350    | 4.95                    | 3271                  | 23                             | 0.010                   | 3             | 1.016     | -8.9576                                                                | 0.0056                                                                          | -2.0189                                        | 0.0323                                                  | 0.3047                   | 0.0122                            | 0.1700                 | 0.0142                          | RD                       |
| 18 04 18           | +35 57 26           | G182-037         | 3.96                    | 3748                  | 36                             | 0.010                   | 44            | 1.036     | -8.3819                                                                | 0.0075                                                                          | -1.2360                                        | 0.0174                                                  | 0.5715                   | 0.0159                            | 0.2512                 | 0.0115                          | RD                       |
| 18 04 38           | +13 54 14           | LSPM1804+1354    | 4.58                    | 3415                  | 11                             | 0.012                   | 3             | 1.021     | -9.1126                                                                | 0.0065                                                                          | -2.0646                                        | 0.0098                                                  | 0.2653                   | 0.0035                            | 0.1305                 | 0.0028                          | RD                       |
| 18 05 08           | -03 01 53           | GJ0701           | 4.06                    | 3649                  | 71                             | 0.012                   | 204           | 1.031     | -7.7470                                                                | 0.0081                                                                          | -1.4713                                        | 0.0093                                                  | 0.4598                   | 0.0184                            | 0.5505                 | 0.0228                          | RD                       |
| 18 05 29           | +01 32 36           | LT15340          | 4.87                    | 3295                  | 13                             | 0.015                   | 3             | 1.016     | -8.9817                                                                | 0.0086                                                                          | -1.9595                                        | 0.0188                                                  | 0.3215                   | 0.0074                            | 0.1629                 | 0.0073                          | RD                       |
| 18 06 48           | +17 20 47           | LP449-010        | 5.22                    | 3184                  | 8                              | 0.010                   | 12            | 1.013     | -9.1607                                                                | 0.0063                                                                          | -2.4654                                        | 0.0126                                                  | 0.1923                   | 0.0030                            | 0.1420                 | 0.0042                          | RD                       |
| 18 07 33           | -15 57 47           | GJ1224           | 5.68                    | 3004                  | 31                             | 0.015                   | 17            | 1.009     | -8.8397                                                                | 0.0074                                                                          | -2.5523                                        | 0.0082                                                  | 0.1954                   | 0.0044                            | 0.2309                 | 0.0055                          | RD                       |
| 18 08 12           | +11 34 47           | LSPM1808+1134    | 5.98                    | 2980                  | 15                             | 0.012                   | 22            | 1.008     | -9.6432                                                                | 0.0067                                                                          | -2.5836                                        | 0.0179                                                  | 0.1917                   | 0.0044                            | 0.0931                 | 0.0042                          | RD                       |
| 18 09 18           | +27 06 26           | LP390-006        | 5.45                    | 3115                  | 12                             | 0.017                   | 174           | 1.011     | -9.5523                                                                | 0.0070                                                                          | -2.3462                                        | 0.0172                                                  | 0.2305                   | 0.0049                            | 0.0945                 | 0.0040                          | RD                       |
| 18 09 41           | +31 52 13           | LP334-011        | 3.96                    | 3728                  | 13                             | 0.009                   | 21            | 1.035     | -8.5855                                                                | 0.0067                                                                          | -1.4272                                        | 0.0307                                                  | 0.4635                   | 0.0167                            | 0.2009                 | 0.0157                          | RD                       |
| 18 13 07           | +26 01 52           | LP390-016        | 5.26                    | 3170                  | 17                             | 0.011                   | 3             | 1.013     | -8.9295                                                                | 0.0064                                                                          | -1.9483                                        | 0.0128                                                  | 0.3520                   | 0.0064                            | 0.1870                 | 0.0059                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 18 13 41           | +21 05 41           | LHS3368          | 4.86                    | 3295                  | 8                              | 0.012                   | 16            | 1.016     | -9.5332                                                    | 0.0073                                                              | -2.3600                                        | 0.0160                                                  | 0.2027                   | 0.0039                            | 0.0864                 | 0.0033                          | RD               |
| 18 13 53           | -77 08 21           | LHS3370          | 4.98                    | 3266                  | 10                             | 0.012                   | 78            | 1.015     | -9.8189                                                    | 0.0065                                                              | -2.5879                                        | 0.0436                                                  | 0.1588                   | 0.0080                            | 0.0633                 | 0.0070                          | RD               |
| 18 14 48           | +78 43 10           | LP024-194        | 5.09                    | 3223                  | 8                              | 0.010                   | 73            | 1.014     | -9.3498                                                    | 0.0061                                                              | -2.2545                                        | 0.0275                                                  | 0.2393                   | 0.0077                            | 0.1115                 | 0.0078                          | RD               |
| 18 15 00           | +19 39 26           | LP449-015        | 4.36                    | 3504                  | 17                             | 0.012                   | 103           | 1.024     | -9.1028                                                    | 0.0067                                                              | -2.0515                                        | 0.0119                                                  | 0.2557                   | 0.0043                            | 0.1253                 | 0.0035                          | SC               |
| 18 15 44           | +18 56 20           | LTT15403         | 3.86                    | 3772                  | 11                             | 0.011                   | 54            | 1.038     | -8.3910                                                    | 0.0069                                                              | -1.1802                                        | 0.0244                                                  | 0.6019                   | 0.0172                            | 0.2455                 | 0.0150                          | RD               |
| 18 16 02           | +13 54 48           | GJ0708.2         | 3.63                    | 3852                  | 14                             | 0.012                   | 12            | 1.042     | -8.2072                                                    | 0.0078                                                              | -1.1890                                        | 0.0144                                                  | 0.5712                   | 0.0104                            | 0.2909                 | 0.0097                          | RD               |
| 18 16 18           | +01 31 28           | GJ0708.3         | 4.62                    | 3419                  | 15                             | 0.051                   | 167           | 1.021     | -8.8273                                                    | 0.0086                                                              | -1.8901                                        | 0.0527                                                  | 0.3234                   | 0.0198                            | 0.1808                 | 0.0243                          | RD               |
| 18 16 31           | +45 33 28           | GJ0709           | 3.83                    | 3814                  | 24                             | 0.057                   | 500           | 1.040     | -8.2489                                                    | 0.0084                                                              | -1.2918                                        | 0.0114                                                  | 0.5177                   | 0.0094                            | 0.2829                 | 0.0072                          | RD               |
| 18 16 32           | +04 52 46           | G140-051         | 5.87                    | 3000                  | 18                             | 0.013                   | 17            | 1.008     | -9.2877                                                    | 0.0071                                                              | -2.5669                                        | 0.0098                                                  | 0.1928                   | 0.0031                            | 0.1383                 | 0.0031                          | RD               |
| 18 17 15           | +68 33 19           | GJ1225           | 5.35                    | 3091                  | 11                             | 0.011                   | 3             | 1.011     | -9.6978                                                    | 0.0061                                                              | -2.6687                                        | 0.0240                                                  | 0.1614                   | 0.0046                            | 0.0812                 | 0.0049                          | RD               |
| 18 18 04           | +38 46 33           | LHS0462          | 4.66                    | 3352                  | 62                             | 0.011                   | 38            | 1.018     | -8.5500                                                    | 0.0064                                                              | -1.9833                                        | 0.0125                                                  | 0.3023                   | 0.0120                            | 0.2589                 | 0.0121                          | RD               |
| 18 18 57           | +66 11 33           | LHS3376          | 5.54                    | 3080                  | 14                             | 0.013                   | 74            | 1.010     | -8.8873                                                    | 0.0081                                                              | -2.6761                                        | 0.0109                                                  | 0.1612                   | 0.0025                            | 0.2079                 | 0.0047                          | RD               |
| 18 22 07           | +06 20 38           | GJ0712           | 4.67                    | 3369                  | 12                             | 0.014                   | 9             | 1.019     | -8.8168                                                    | 0.0074                                                              | -2.0335                                        | 0.0120                                                  | 0.2824                   | 0.0044                            | 0.1884                 | 0.0050                          | RD               |
| 18 22 27           | +62 03 02           | GJ1227           | 5.72                    | 3010                  | 34                             | 0.014                   | 6             | 1.009     | -8.8367                                                    | 0.0072                                                              | -2.4984                                        | 0.0104                                                  | 0.2072                   | 0.0053                            | 0.2308                 | 0.0071                          | RD               |
| 18 23 28           | +28 10 04           | LTT15435         | 5.02                    | 3184                  | 17                             | 0.011                   | 10            | 1.013     | -8.6820                                                    | 0.0061                                                              | -1.9372                                        | 0.0146                                                  | 0.3533                   | 0.0070                            | 0.2464                 | 0.0090                          | RD               |
| 18 25 05           | +24 38 05           | LTT15449         | 3.81                    | 3821                  | 36                             | 0.020                   | 3             | 1.040     | -8.4052                                                    | 0.0089                                                              | -1.2314                                        | 0.0203                                                  | 0.5529                   | 0.0166                            | 0.2354                 | 0.0121                          | RD               |
| 18 25 32           | +38 21 13           | LHS3385          | 3.78                    | 3765                  | 10                             | 0.010                   | 3             | 1.037     | -8.5882                                                    | 0.0062                                                              | -1.3146                                        | 0.0202                                                  | 0.5174                   | 0.0124                            | 0.1963                 | 0.0099                          | RD               |
| 18 26 17           | +01 46 21           | LP630-081        | 5.74                    | 3008                  | 28                             | 0.012                   | 66            | 1.009     | -9.4054                                                    | 0.0068                                                              | -2.4055                                        | 0.0136                                                  | 0.2308                   | 0.0056                            | 0.1200                 | 0.0044                          | RD               |
| 18 26 20           | -65 47 41           | WTO562           | 5.92                    | 2991                  | 14                             | 0.013                   | 87            | 1.008     | -9.5273                                                    | 0.0067                                                              | -2.5656                                        | 0.0095                                                  | 0.1941                   | 0.0028                            | 0.1055                 | 0.0022                          | RD               |
| 18 26 47           | -65 42 40           | SCR1826-6542     | 7.80                    | 2611                  | 19                             | 0.014                   | 12            | 1.003     | -9.6398                                                    | 0.0072                                                              | -2.7887                                        | 0.0088                                                  | 0.1971                   | 0.0034                            | 0.1217                 | 0.0026                          | YC               |
| 18 30 12           | -58 16 28           | LTT07341         | 3.85                    | 3799                  | 26                             | 0.011                   | 85            | 1.039     | -8.0112                                                    | 0.0082                                                              | -1.1938                                        | 0.0186                                                  | 0.5839                   | 0.0148                            | 0.3747                 | 0.0172                          | YG               |
| 18 30 55           | +47 36 00           | LP182-004        | 6.07                    | 3033                  | 19                             | 0.010                   | 3             | 1.009     | -9.8838                                                    | 0.0047                                                              | -2.8040                                        | 0.0268                                                  | 0.1435                   | 0.0048                            | 0.0681                 | 0.0047                          | RD               |
| 18 31 56           | +77 30 37           | LP024-256        | 5.51                    | 3104                  | 5                              | 0.012                   | 69            | 1.011     | -9.4181                                                    | 0.0061                                                              | -2.4751                                        | 0.0455                                                  | 0.2001                   | 0.0105                            | 0.1111                 | 0.0129                          | RD               |
| 18 32 33           | +04 04 21           | LTT15471         | 4.76                    | 3334                  | 12                             | 0.010                   | 57            | 1.018     | -9.4004                                                    | 0.0063                                                              | -2.2272                                        | 0.0130                                                  | 0.2308                   | 0.0038                            | 0.0983                 | 0.0030                          | RD               |
| 18 35 18           | +45 44 39           | GJ0720           | 3.78                    | 3819                  | 8                              | 0.009                   | 3             | 1.040     | -8.0292                                                    | 0.0066                                                              | -1.1726                                        | 0.0085                                                  | 0.5920                   | 0.0063                            | 0.3631                 | 0.0059                          | RD               |
| 18 35 38           | +32 59 53           | LEP1835+3259     | 9.07                    | 2269                  | 106                            | 0.011                   | 28            | 1.001     | -9.5328                                                    | 0.0073                                                              | -3.5323                                        | 0.0074                                                  | 0.1109                   | 0.0104                            | 0.1822                 | 0.0172                          | RD               |
| 18 35 52           | +80 05 40           | LP025-002        | 5.01                    | 3257                  | 12                             | 0.010                   | 3             | 1.015     | -8.9488                                                    | 0.0059                                                              | -2.0087                                        | 0.0154                                                  | 0.2776                   | 0.0054                            | 0.1733                 | 0.0066                          | RD               |
| 18 36 19           | +13 36 26           | LTT15483         | 5.08                    | 3220                  | 5                              | 0.012                   | 3             | 1.014     | -8.6335                                                    | 0.0068                                                              | -2.0087                                        | 0.0122                                                  | 0.3181                   | 0.0046                            | 0.2547                 | 0.0070                          | RD               |
| 18 37 32           | +20 30 42           | LSPM1837+2030    | 6.62                    | 2930                  | 26                             | 0.011                   | 3             | 1.007     | -9.8235                                                    | 0.0053                                                              | -3.0250                                        | 0.0192                                                  | 0.1193                   | 0.0034                            | 0.0782                 | 0.0040                          | RD               |
| 18 39 33           | +29 52 17           | LP335-012        | 8.00                    | 2571                  | 28                             | 0.014                   | 10            | 1.003     | -9.8227                                                    | 0.0076                                                              | -3.1776                                        | 0.0089                                                  | 0.1299                   | 0.0031                            | 0.1016                 | 0.0027                          | RD               |
| 18 39 48           | +16 48 50           | LSPM1839+1648    | 6.24                    | 2900                  | 6                              | 0.010                   | 3             | 1.007     | -9.9604                                                    | 0.0060                                                              | -2.6717                                        | 0.0309                                                  | 0.1828                   | 0.0065                            | 0.0682                 | 0.0053                          | RD               |
| 18 40 00           | +33 24 54           | LTT15504         | 4.86                    | 3309                  | 14                             | 0.011                   | 3             | 1.017     | -8.9908                                                    | 0.0061                                                              | -1.8569                                        | 0.0233                                                  | 0.3589                   | 0.0101                            | 0.1599                 | 0.0094                          | RD               |
| 18 40 02           | +72 40 54           | LP044-334        | 7.50                    | 2655                  | 12                             | 0.010                   | 3             | 1.003     | -9.8063                                                    | 0.0061                                                              | -2.8386                                        | 0.0160                                                  | 0.1800                   | 0.0037                            | 0.0971                 | 0.0039                          | RD               |
| 18 40 18           | -10 27 55           | GJ0723           | 4.01                    | 3682                  | 37                             | 0.010                   | 26            | 1.033     | -8.5950                                                    | 0.0071                                                              | -1.4278                                        | 0.0552                                                  | 0.4749                   | 0.0316                            | 0.2037                 | 0.0290                          | RD               |
| 18 40 57           | -13 22 47           | GJ0724           | 4.07                    | 3677                  | 16                             | 0.013                   | 19            | 1.033     | -8.2485                                                    | 0.0082                                                              | -1.3180                                        | 0.0165                                                  | 0.5403                   | 0.0112                            | 0.3043                 | 0.0118                          | RD               |
| 18 41 10           | -43 47 33           | SCR1841-4347     | 6.86                    | 2816                  | 22                             | 0.012                   | 76            | 1.005     | -9.6044                                                    | 0.0071                                                              | -2.9397                                        | 0.0079                                                  | 0.1424                   | 0.0026                            | 0.1090                 | 0.0022                          | RD               |
| 18 41 37           | +39 42 12           | G205-035         | 5.05                    | 3237                  | 18                             | 0.014                   | 3             | 1.015     | -9.0321                                                    | 0.0059                                                              | -2.4192                                        | 0.0091                                                  | 0.1962                   | 0.0030                            | 0.1593                 | 0.0035                          | RD               |
| 18 41 48           | +24 22 00           | LSPM1841+2421    | 6.83                    | 2832                  | 24                             | 0.012                   | 3             | 1.006     | -10.0811                                                   | 0.0066                                                              | -3.1249                                        | 0.0224                                                  | 0.1137                   | 0.0035                            | 0.0622                 | 0.0036                          | RD               |
| 18 41 59           | +31 49 50           | LTT15513         | 4.59                    | 3411                  | 8                              | 0.009                   | 43            | 1.021     | -8.3454                                                    | 0.0066                                                              | -1.7383                                        | 0.0144                                                  | 0.3870                   | 0.0067                            | 0.3163                 | 0.0108                          | RD               |
| 18 42 45           | +13 54 17           | G141-029         | 5.29                    | 3159                  | 12                             | 0.011                   | 12            | 1.012     | -8.7168                                                    | 0.0068                                                              | -2.1312                                        | 0.0114                                                  | 0.2870                   | 0.0044                            | 0.2405                 | 0.0063                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s $^{-1}$ cm $^{-2}$ ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop $^c$<br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|------------------|
| 18 43 07           | -54 36 48           | LHS5341          | 5.48                    | 3105                  | 16                             | 0.011                   | 5             | 1.011     | -8.7258                                                    | 0.0068                                                              | -2.2444                                        | 0.0080                                                  | 0.2608                   | 0.0036                            | 0.2464                 | 0.0042                          | RD               |
| 18 43 13           | -33 22 46           | LFT07419         | 3.92                    | 3747                  | 22                             | 0.011                   | 3             | 1.036     | -8.1467                                                    | 0.0064                                                              | -1.3073                                        | 0.0174                                                  | 0.5268                   | 0.0122                            | 0.3295                 | 0.0144                          | RD               |
| 18 44 54           | +74 08 55           | LSPM1844+7408    | 6.26                    | 2895                  | 10                             | 0.013                   | 3             | 1.007     | -9.8757                                                    | 0.0066                                                              | -2.9780                                        | 0.0392                                                  | 0.1289                   | 0.0059                            | 0.0754                 | 0.0075                          | RD               |
| 18 45 23           | +18 51 59           | G184-024         | 5.30                    | 3212                  | 9                              | 0.016                   | 3             | 1.014     | -9.0677                                                    | 0.0072                                                              | -2.3548                                        | 0.0087                                                  | 0.2147                   | 0.0025                            | 0.1554                 | 0.0025                          | RD               |
| 18 45 52           | +52 27 41           | LHS3409          | 4.89                    | 3284                  | 10                             | 0.012                   | 3             | 1.016     | -9.7480                                                    | 0.0066                                                              | -2.6695                                        | 0.0119                                                  | 0.1430                   | 0.0022                            | 0.0679                 | 0.0019                          | SD               |
| 18 48 18           | +07 41 21           | G141-036         | 6.35                    | 2914                  | 18                             | 0.015                   | 129           | 1.007     | -8.9307                                                    | 0.0071                                                              | -2.7249                                        | 0.0115                                                  | 0.1703                   | 0.0030                            | 0.2209                 | 0.0061                          | RD               |
| 18 48 51           | -82 14 42           | SIP1848-8214     | 8.05                    | 2578                  | 28                             | 0.019                   | 239           | 1.003     | -10.0161                                                   | 0.0072                                                              | -3.0256                                        | 0.0140                                                  | 0.1539                   | 0.0042                            | 0.0809                 | 0.0031                          | RD               |
| 18 49 06           | -03 15 18           | LP691-015        | 5.53                    | 3089                  | 16                             | 0.012                   | 12            | 1.010     | -9.2028                                                    | 0.0060                                                              | -2.3897                                        | 0.0404                                                  | 0.2230                   | 0.0106                            | 0.1438                 | 0.0149                          | RD               |
| 18 49 49           | -23 50 10           | GJ0729           | 5.13                    | 3190                  | 41                             | 0.011                   | 125           | 1.013     | -7.8331                                                    | 0.0082                                                              | -2.3939                                        | 0.0085                                                  | 0.2080                   | 0.0057                            | 0.6523                 | 0.0184                          | RD               |
| 18 49 51           | -57 26 49           | LHS3413          | 5.23                    | 3189                  | 11                             | 0.012                   | 14            | 1.013     | -8.6911                                                    | 0.0075                                                              | -2.0260                                        | 0.0130                                                  | 0.3180                   | 0.0052                            | 0.2431                 | 0.0072                          | RD               |
| 18 50 01           | +03 05 17           | GJ0730           | 3.88                    | 3776                  | 25                             | 0.013                   | 19            | 1.038     | -8.3583                                                    | 0.0072                                                              | -1.2314                                        | 0.0195                                                  | 0.5662                   | 0.0147                            | 0.2544                 | 0.0125                          | RD               |
| 18 50 27           | -62 03 04           | HIP092451        | 4.00                    | 3715                  | 22                             | 0.011                   | 56            | 1.034     | -8.3080                                                    | 0.0074                                                              | -1.3943                                        | 0.0163                                                  | 0.4848                   | 0.0108                            | 0.2784                 | 0.0112                          | RD               |
| 18 51 45           | +26 41 57           | GJ0731           | 3.83                    | 3794                  | 13                             | 0.013                   | 22            | 1.039     | -8.1399                                                    | 0.0077                                                              | -1.2785                                        | 0.0129                                                  | 0.5313                   | 0.0087                            | 0.3241                 | 0.0094                          | RD               |
| 18 52 25           | -37 30 36           | L489-043         | 5.15                    | 3198                  | 11                             | 0.015                   | 3             | 1.013     | -8.7147                                                    | 0.0077                                                              | -1.8574                                        | 0.0106                                                  | 0.3840                   | 0.0054                            | 0.2353                 | 0.0051                          | RD               |
| 18 52 34           | +45 38 33           | G205-040         | 5.40                    | 3119                  | 4                              | 0.011                   | 3             | 1.011     | -9.5677                                                    | 0.0059                                                              | -2.4002                                        | 0.0225                                                  | 0.2160                   | 0.0056                            | 0.0926                 | 0.0052                          | RD               |
| 18 53 31           | +20 22 36           | LSPM1853+2022    | 5.48                    | 3098                  | 7                              | 0.011                   | 13            | 1.011     | -9.6803                                                    | 0.0071                                                              | -2.6485                                        | 0.0140                                                  | 0.1645                   | 0.0028                            | 0.0825                 | 0.0027                          | RD               |
| 18 55 48           | -69 14 15           | SCR1855-6914     | 7.10                    | 2635                  | 90                             | 0.013                   | 92            | 1.003     | -9.6031                                                    | 0.0069                                                              | -2.9816                                        | 0.0076                                                  | 0.1550                   | 0.0107                            | 0.1246                 | 0.0086                          | RD               |
| 18 56 26           | +46 22 54           | G205-047         | 5.23                    | 3180                  | 15                             | 0.010                   | 13            | 1.013     | -9.1995                                                    | 0.0059                                                              | -2.3344                                        | 0.0164                                                  | 0.2241                   | 0.0047                            | 0.1361                 | 0.0056                          | RD               |
| 18 58 00           | +05 54 29           | GJ0740           | 3.85                    | 3776                  | 41                             | 0.010                   | 81            | 1.038     | -7.7604                                                    | 0.0077                                                              | -1.1905                                        | 0.0105                                                  | 0.5935                   | 0.0149                            | 0.5064                 | 0.0151                          | RD               |
| 18 58 45           | +15 04 50           | LSPM1858+1504    | 5.54                    | 3089                  | 8                              | 0.013                   | 8             | 1.010     | -9.6546                                                    | 0.0064                                                              | -2.4266                                        | 0.0164                                                  | 0.2137                   | 0.0042                            | 0.0855                 | 0.0034                          | RD               |
| 18 59 07           | -48 16 28           | GJ0739           | 4.44                    | 3476                  | 9                              | 0.012                   | 16            | 1.023     | -8.3327                                                    | 0.0081                                                              | -1.5339                                        | 0.0169                                                  | 0.4715                   | 0.0095                            | 0.3091                 | 0.0122                          | RD               |
| 18 59 38           | +08 29 00           | G141-053         | 5.69                    | 2991                  | 49                             | 0.011                   | 26            | 1.008     | -9.5990                                                    | 0.0061                                                              | -2.6804                                        | 0.0471                                                  | 0.1701                   | 0.0108                            | 0.0971                 | 0.0121                          | RD               |
| 19 03 17           | -13 34 05           | GJ0741           | 5.24                    | 3103                  | 33                             | 0.011                   | 24            | 1.011     | -9.5300                                                    | 0.0068                                                              | -2.4737                                        | 0.0322                                                  | 0.2005                   | 0.0086                            | 0.0977                 | 0.0082                          | RD               |
| 19 05 17           | +45 07 15           | G205-055         | 4.86                    | 3305                  | 10                             | 0.012                   | 3             | 1.017     | -9.2848                                                    | 0.0059                                                              | -2.1814                                        | 0.0263                                                  | 0.2476                   | 0.0077                            | 0.1143                 | 0.0076                          | RD               |
| 19 06 54           | +23 54 14           | LSPM1906+2354    | 5.06                    | 3244                  | 18                             | 0.013                   | 64            | 1.015     | -9.6818                                                    | 0.0072                                                              | -2.8881                                        | 0.0158                                                  | 0.1139                   | 0.0024                            | 0.0751                 | 0.0029                          | SC               |
| 19 07 06           | +20 53 17           | GJ0745           | 4.26                    | 3552                  | 16                             | 0.013                   | 69            | 1.026     | -8.2392                                                    | 0.0089                                                              | -1.8691                                        | 0.0106                                                  | 0.3071                   | 0.0047                            | 0.3297                 | 0.0066                          | RD               |
| 19 07 13           | +44 16 07           | LP230-029        | 5.65                    | 3043                  | 35                             | 0.010                   | 3             | 1.009     | -9.5552                                                    | 0.0054                                                              | -2.5886                                        | 0.0145                                                  | 0.1827                   | 0.0052                            | 0.0987                 | 0.0042                          | RD               |
| 19 07 22           | +04 43 55           | LP571-164        | 7.07                    | 2744                  | 76                             | 0.013                   | 180           | 1.004     | -10.0260                                                   | 0.0074                                                              | -2.9238                                        | 0.0264                                                  | 0.1528                   | 0.0096                            | 0.0706                 | 0.0061                          | RD               |
| 19 08 16           | +26 35 06           | GJ1231           | 5.67                    | 3018                  | 24                             | 0.012                   | 15            | 1.009     | -9.5225                                                    | 0.0065                                                              | -2.5043                                        | 0.0185                                                  | 0.2047                   | 0.0054                            | 0.1042                 | 0.0050                          | RD               |
| 19 09 51           | +17 40 06           | GJ1232           | 5.60                    | 2853                  | 281                            | 0.015                   | 317           | 1.006     | -8.6945                                                    | 0.0163                                                              | -2.1615                                        | 0.0175                                                  | 0.3398                   | 0.0674                            | 0.3025                 | 0.0603                          | YC               |
| 19 12 25           | -55 52 08           | GJ0747.4         | 3.92                    | 3758                  | 15                             | 0.011                   | 57            | 1.037     | -8.5714                                                    | 0.0070                                                              | -1.4143                                        | 0.0305                                                  | 0.4630                   | 0.0167                            | 0.2009                 | 0.0155                          | RD               |
| 19 12 28           | +38 26 16           | LSPM1912+3826    | 6.42                    | 2904                  | 7                              | 0.012                   | 147           | 1.007     | -9.8764                                                    | 0.0066                                                              | -2.7672                                        | 0.0222                                                  | 0.1633                   | 0.0042                            | 0.0749                 | 0.0041                          | RD               |
| 19 12 29           | +35 33 52           | G207-022         | 4.41                    | 3486                  | 7                              | 0.012                   | 22            | 1.024     | -8.6872                                                    | 0.0067                                                              | -1.7538                                        | 0.0226                                                  | 0.3769                   | 0.0099                            | 0.2043                 | 0.0115                          | RD               |
| 19 12 39           | -36 14 57           | WIS1912-3615     | 5.14                    | 3197                  | 8                              | 0.012                   | 3             | 1.013     | -9.1773                                                    | 0.0080                                                              | -2.6368                                        | 0.0107                                                  | 0.1703                   | 0.0023                            | 0.1382                 | 0.0029                          | RD               |
| 19 12 45           | +39 43 22           | LSPM1912+3943    | 4.85                    | 3308                  | 11                             | 0.012                   | 90            | 1.017     | -9.5965                                                    | 0.0061                                                              | -2.7044                                        | 0.0342                                                  | 0.1353                   | 0.0054                            | 0.0796                 | 0.0069                          | SC               |
| 19 14 39           | +19 19 04           | LHS3445          | 4.78                    | 3321                  | 16                             | 0.012                   | 22            | 1.017     | -8.3914                                                    | 0.0067                                                              | -1.3567                                        | 0.0155                                                  | 0.6334                   | 0.0129                            | 0.3165                 | 0.0121                          | YC               |
| 19 16 55           | +05 10 08           | GJ0752           | 4.43                    | 3440                  | 93                             | 0.014                   | 93            | 1.022     | -7.5226                                                    | 0.0090                                                              | -1.4946                                        | 0.0090                                                  | 0.5037                   | 0.0278                            | 0.8020                 | 0.0444                          | RD               |
| 19 17 32           | +28 33 14           | LSPM1917+2833    | 6.04                    | 2918                  | 38                             | 0.011                   | 3             | 1.007     | -9.7072                                                    | 0.0055                                                              | -2.7210                                        | 0.0163                                                  | 0.1706                   | 0.0054                            | 0.0901                 | 0.0043                          | RD               |
| 19 19 41           | +41 27 49           | LP230-040        | 6.39                    | 2906                  | 8                              | 0.011                   | 3             | 1.007     | -9.8960                                                    | 0.0060                                                              | -3.0202                                        | 0.0263                                                  | 0.1219                   | 0.0037                            | 0.0731                 | 0.0049                          | RD               |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 19 20 15           | +28 48 42           | LSPM1920+2848    | 5.30                    | 3104                  | 21                             | 0.009                   | 3             | 1.011     | -9.4159                                                                | 0.0061                                                                          | -2.3479                                        | 0.0125                                                  | 0.2316                   | 0.0046                            | 0.1114                 | 0.0036                          | RD                       |
| 19 20 48           | -45 33 30           | GJ0754           | 5.41                    | 3117                  | 7                              | 0.013                   | 84            | 1.011     | -8.4382                                                                | 0.0067                                                                          | -2.3999                                        | 0.0077                                                  | 0.2164                   | 0.0021                            | 0.3405                 | 0.0046                          | RD                       |
| 19 20 54           | -82 33 16           | LHS0475          | 5.00                    | 3262                  | 18                             | 0.016                   | 71            | 1.015     | -8.7723                                                                | 0.0077                                                                          | -2.1159                                        | 0.0091                                                  | 0.2740                   | 0.0042                            | 0.2116                 | 0.0040                          | RD                       |
| 19 21 38           | +20 52 03           | GJ1235           | 5.55                    | 3086                  | 10                             | 0.014                   | 21            | 1.010     | -8.8964                                                                | 0.0067                                                                          | -2.3823                                        | 0.0106                                                  | 0.2253                   | 0.0031                            | 0.2049                 | 0.0048                          | RD                       |
| 19 21 51           | +28 39 58           | GJ0756           | 4.04                    | 3676                  | 7                              | 0.013                   | 17            | 1.032     | -8.6393                                                                | 0.0065                                                                          | -1.4413                                        | 0.0260                                                  | 0.4692                   | 0.0141                            | 0.1942                 | 0.0127                          | RD                       |
| 19 22 02           | +07 02 31           | GJ1236           | 4.70                    | 3366                  | 18                             | 0.011                   | 13            | 1.019     | -8.7430                                                                | 0.0062                                                                          | -2.2131                                        | 0.0081                                                  | 0.2301                   | 0.0033                            | 0.2056                 | 0.0038                          | RD                       |
| 19 22 41           | +29 26 02           | LHS3459          | 5.38                    | 3119                  | 8                              | 0.011                   | 39            | 1.011     | -9.6790                                                                | 0.0061                                                                          | -2.6090                                        | 0.0195                                                  | 0.1698                   | 0.0039                            | 0.0815                 | 0.0040                          | RD                       |
| 19 24 16           | +75 33 12           | GJ1238           | 6.42                    | 2907                  | 16                             | 0.011                   | 3             | 1.007     | -9.3461                                                                | 0.0051                                                                          | -2.6996                                        | 0.0178                                                  | 0.1762                   | 0.0041                            | 0.1376                 | 0.0063                          | RD                       |
| 19 25 31           | +09 38 23           | LSPM1925+0938    | 9.00                    | 2367                  | 88                             | 0.017                   | 105           | 1.001     | -9.8919                                                                | 0.0078                                                                          | -3.0784                                        | 0.0192                                                  | 0.1718                   | 0.0134                            | 0.1107                 | 0.0097                          | YC                       |
| 19 26 02           | +24 26 17           | G185-023         | 5.57                    | 3086                  | 12                             | 0.010                   | 7             | 1.010     | -9.2212                                                                | 0.0057                                                                          | -2.1974                                        | 0.0096                                                  | 0.2787                   | 0.0037                            | 0.1410                 | 0.0032                          | RD                       |
| 19 29 48           | +68 35 38           | LSPM1929+6835    | 5.60                    | 3080                  | 6                              | 0.012                   | 17            | 1.010     | -9.6804                                                                | 0.0060                                                                          | -2.4298                                        | 0.0236                                                  | 0.2141                   | 0.0059                            | 0.0834                 | 0.0049                          | RD                       |
| 19 31 05           | -03 06 18           | SCR1931-0306     | 6.58                    | 2878                  | 18                             | 0.011                   | 3             | 1.006     | -9.8520                                                                | 0.0060                                                                          | -2.8717                                        | 0.0075                                                  | 0.1474                   | 0.0023                            | 0.0784                 | 0.0015                          | RD                       |
| 19 31 24           | -21 34 23           | 2MA1931-2134     | 4.77                    | 3361                  | 17                             | 0.012                   | 20            | 1.019     | -8.8171                                                                | 0.0082                                                                          | -1.4931                                        | 0.0348                                                  | 0.5287                   | 0.0219                            | 0.1893                 | 0.0167                          | YG                       |
| 19 31 40           | +68 43 43           | LP072-467        | 5.34                    | 3159                  | 17                             | 0.012                   | 27            | 1.012     | -9.3703                                                                | 0.0066                                                                          | -2.1484                                        | 0.0250                                                  | 0.2815                   | 0.0086                            | 0.1134                 | 0.0072                          | RD                       |
| 19 31 52           | +19 06 59           | LSPM1931+1906    | 6.23                    | 2890                  | 18                             | 0.011                   | 3             | 1.006     | -9.3729                                                                | 0.0049                                                                          | -2.3491                                        | 0.0182                                                  | 0.2669                   | 0.0066                            | 0.1350                 | 0.0064                          | RD                       |
| 19 32 38           | +00 34 39           | GJ0761.2         | 3.62                    | 3925                  | 17                             | 0.012                   | 47            | 1.047     | -8.3128                                                                | 0.0075                                                                          | -1.1187                                        | 0.0171                                                  | 0.5966                   | 0.0128                            | 0.2481                 | 0.0103                          | RD                       |
| 19 34 04           | -52 25 14           | L275-026         | 4.51                    | 3286                  | 14                             | 0.013                   | 9             | 1.016     | -8.8511                                                                | 0.0063                                                                          | -1.7917                                        | 0.0176                                                  | 0.3922                   | 0.0087                            | 0.1905                 | 0.0084                          | RD                       |
| 19 34 55           | +53 15 24           | LHS3472          | 4.91                    | 3369                  | 17                             | 0.013                   | 3             | 1.019     | -8.7439                                                                | 0.0044                                                                          | -1.9648                                        | 0.4068                                                  | 0.3057                   | 0.0037                            | 0.0853                 | 0.0033                          | RD                       |
| 19 37 53           | +21 15 35           | LSPM1937+2115    | 5.88                    | 2989                  | 18                             | 0.010                   | 3             | 1.008     | -9.7136                                                                | 0.0058                                                                          | -2.6655                                        | 0.0151                                                  | 0.1733                   | 0.0037                            | 0.0853                 | 0.0033                          | RD                       |
| 19 38 44           | +33 11 36           | G125-023         | 5.20                    | 3193                  | 6                              | 0.010                   | 21            | 1.013     | -9.2133                                                                | 0.0061                                                                          | -2.2848                                        | 0.0123                                                  | 0.2355                   | 0.0034                            | 0.1329                 | 0.0038                          | RD                       |
| 19 39 33           | +71 52 19           | LTT18490         | 3.79                    | 3822                  | 36                             | 0.017                   | 81            | 1.041     | -8.4890                                                                | 0.0091                                                                          | -1.2998                                        | 0.0153                                                  | 0.5108                   | 0.0131                            | 0.2136                 | 0.0082                          | RD                       |
| 19 39 36           | -26 45 07           | LP869-042        | 3.83                    | 3806                  | 19                             | 0.011                   | 9             | 1.040     | -8.2686                                                                | 0.0070                                                                          | -1.0420                                        | 0.0206                                                  | 0.6931                   | 0.0178                            | 0.2776                 | 0.0143                          | RD                       |
| 19 41 54           | +03 09 16           | GJ1242           | 4.36                    | 3499                  | 18                             | 0.010                   | 67            | 1.024     | -9.0476                                                                | 0.0062                                                                          | -1.8196                                        | 0.0270                                                  | 0.3349                   | 0.0110                            | 0.1340                 | 0.0092                          | RD                       |
| 19 42 10           | +65 38 30           | G260-031         | 4.81                    | 3326                  | 11                             | 0.010                   | 79            | 1.017     | -9.0826                                                                | 0.0060                                                                          | -1.9037                                        | 0.0164                                                  | 0.3364                   | 0.0067                            | 0.1424                 | 0.0058                          | RD                       |
| 19 42 13           | -20 45 48           | SCR1942-2045     | 5.57                    | 3078                  | 8                              | 0.013                   | 3             | 1.010     | -9.2164                                                                | 0.0057                                                                          | -2.3167                                        | 0.0085                                                  | 0.2442                   | 0.0027                            | 0.1425                 | 0.0026                          | RD                       |
| 19 45 50           | +32 23 14           | LTT15769         | 4.09                    | 3608                  | 20                             | 0.009                   | 3             | 1.029     | -8.3326                                                                | 0.0074                                                                          | -1.6673                                        | 0.0192                                                  | 0.3753                   | 0.0093                            | 0.2869                 | 0.0137                          | RD                       |
| 19 46 48           | +12 04 59           | LHS0479          | 3.79                    | 3793                  | 31                             | 0.012                   | 127           | 1.039     | -9.7625                                                                | 0.0062                                                                          | -1.9405                                        | 0.0544                                                  | 0.2480                   | 0.0161                            | 0.0501                 | 0.0070                          | SD                       |
| 19 48 23           | -08 22 52           | WT2180           | 6.32                    | 2921                  | 15                             | 0.014                   | 135           | 1.007     | -9.8354                                                                | 0.0068                                                                          | -2.8014                                        | 0.0194                                                  | 0.1552                   | 0.0038                            | 0.0776                 | 0.0038                          | RD                       |
| 19 50 03           | +32 35 02           | LHS3489          | 4.58                    | 3391                  | 30                             | 0.010                   | 7             | 1.020     | -8.7870                                                                | 0.0057                                                                          | -1.8308                                        | 0.0258                                                  | 0.3521                   | 0.0121                            | 0.1926                 | 0.0130                          | RD                       |
| 19 51 00           | +20 09 56           | LSPM1950+2009    | 5.08                    | 3216                  | 16                             | 0.012                   | 3             | 1.014     | -9.3736                                                                | 0.0065                                                                          | -2.3206                                        | 0.0126                                                  | 0.2227                   | 0.0039                            | 0.1090                 | 0.0033                          | RD                       |
| 19 51 09           | +46 29 00           | GJ1243           | 5.06                    | 3228                  | 12                             | 0.012                   | 79            | 1.014     | -8.7959                                                                | 0.0063                                                                          | -2.0956                                        | 0.0111                                                  | 0.2864                   | 0.0042                            | 0.2103                 | 0.0054                          | RD                       |
| 19 55 53           | +51 16 22           | LHS3499          | 4.01                    | 3689                  | 12                             | 0.012                   | 14            | 1.033     | -8.7551                                                                | 0.0072                                                                          | -1.4724                                        | 0.0259                                                  | 0.4493                   | 0.0137                            | 0.1688                 | 0.0109                          | RD                       |
| 19 58 16           | +02 02 16           | LHS3505          | 4.41                    | 3493                  | 10                             | 0.012                   | 88            | 1.024     | -8.6756                                                                | 0.0065                                                                          | -1.7848                                        | 0.0268                                                  | 0.3499                   | 0.0110                            | 0.2063                 | 0.0140                          | RD                       |
| 19 58 17           | +65 02 19           | G260-038         | 4.92                    | 3288                  | 14                             | 0.011                   | 23            | 1.016     | -8.8454                                                                | 0.0062                                                                          | -1.6984                                        | 0.0185                                                  | 0.4361                   | 0.0100                            | 0.1914                 | 0.0089                          | RD                       |
| 20 03 23           | +67 16 49           | G262-003         | 4.70                    | 3380                  | 12                             | 0.012                   | 24            | 1.019     | -9.1141                                                                | 0.0058                                                                          | -1.9889                                        | 0.0337                                                  | 0.2954                   | 0.0117                            | 0.1330                 | 0.0114                          | RD                       |
| 20 03 51           | +05 59 44           | GJ1248           | 4.24                    | 3555                  | 19                             | 0.011                   | 16            | 1.027     | -8.7694                                                                | 0.0076                                                                          | -2.0229                                        | 0.0126                                                  | 0.2568                   | 0.0046                            | 0.1788                 | 0.0052                          | SC                       |
| 20 04 05           | -05 36 01           | GJ0774           | 4.29                    | 3520                  | 19                             | 0.012                   | 32            | 1.025     | -8.4462                                                                | 0.0075                                                                          | -1.7142                                        | 0.0371                                                  | 0.3736                   | 0.0164                            | 0.2645                 | 0.0250                          | RD                       |
| 20 04 31           | -23 42 02           | LP870-065        | 5.32                    | 3213                  | 19                             | 0.015                   | 28            | 1.014     | -8.7838                                                                | 0.0083                                                                          | -1.7696                                        | 0.0151                                                  | 0.4209                   | 0.0088                            | 0.2153                 | 0.0077                          | YC                       |
| 20 04 57           | +03 21 08           | LSPM2004+0321    | 6.03                    | 3035                  | 11                             | 0.010                   | 3             | 1.009     | -9.4098                                                                | 0.0059                                                                          | -2.5579                                        | 0.0174                                                  | 0.1903                   | 0.0041                            | 0.1174                 | 0.0051                          | RD                       |
| 20 05 44           | +52 58 18           | LTT15891         | 4.88                    | 3299                  | 8                              | 0.013                   | 23            | 1.016     | -9.0004                                                                | 0.0075                                                                          | -1.9155                                        | 0.0179                                                  | 0.3375                   | 0.0071                            | 0.1591                 | 0.0068                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M/C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 20 06 16           | +16 09 22           | G143-028         | 5.18                    | 3188                  | 9                              | 0.014                   | 18            | 1.013     | -9.4234                                                                | 0.0067                                                                          | -2.1783                                          | 0.0124                                                    | 0.2669                      | 0.0041                               | 0.1047                 | 0.0030                        | RD                       |
| 20 06 31           | +15 59 17           | G143-029         | 4.36                    | 3510                  | 10                             | 0.012                   | 62            | 1.025     | -9.2206                                                                | 0.0066                                                                          | -1.9638                                          | 0.0259                                                    | 0.2820                      | 0.0086                               | 0.1091                 | 0.0071                        | RD                       |
| 20 07 15           | -54 21 49           | LT07944          | 4.36                    | 3504                  | 23                             | 0.013                   | 150           | 1.024     | -9.8270                                                                | 0.0063                                                                          | -2.8371                                          | 0.0118                                                    | 0.1035                      | 0.0020                               | 0.0545                 | 0.0016                        | SC                       |
| 20 07 43           | +18 59 00           | G143-030         | 5.05                    | 3235                  | 16                             | 0.012                   | 60            | 1.014     | -9.1311                                                                | 0.0069                                                                          | -1.9270                                          | 0.0190                                                    | 0.3462                      | 0.0083                               | 0.1423                 | 0.0067                        | RD                       |
| 20 07 48           | -31 45 29           | GJ0781.1         | 4.63                    | 3393                  | 8                              | 0.014                   | 19            | 1.020     | -8.6933                                                                | 0.0078                                                                          | -1.8134                                          | 0.0318                                                    | 0.3588                      | 0.0133                               | 0.2142                 | 0.0172                        | RD                       |
| 20 08 18           | +33 18 13           | GJ1250           | 5.87                    | 2998                  | 10                             | 0.013                   | 128           | 1.008     | -9.3691                                                                | 0.0063                                                                          | -2.2034                                          | 0.0511                                                    | 0.2933                      | 0.0174                               | 0.1260                 | 0.0165                        | YC                       |
| 20 09 18           | -01 13 38           | 2MA2009-0113     | 5.96                    | 3016                  | 18                             | 0.016                   | 154           | 1.009     | -9.1411                                                                | 0.0069                                                                          | -2.6102                                          | 0.0098                                                    | 0.1814                      | 0.0030                               | 0.1619                 | 0.0037                        | RD                       |
| 20 10 40           | +40 40 09           | G209-018         | 5.54                    | 3092                  | 6                              | 0.012                   | 34            | 1.011     | -9.7033                                                                | 0.0067                                                                          | -2.4992                                          | 0.0162                                                    | 0.1961                      | 0.0037                               | 0.0806                 | 0.0031                        | RD                       |
| 20 13 00           | +01 12 59           | LSPM2012+0112    | 6.17                    | 2915                  | 7                              | 0.012                   | 3             | 1.007     | -9.5851                                                                | 0.0069                                                                          | -2.6791                                          | 0.0162                                                    | 0.1794                      | 0.0034                               | 0.1039                 | 0.0040                        | RD                       |
| 20 13 53           | -45 09 51           | GJ0784           | 3.67                    | 3826                  | 135                            | 8.243                   | 304           | 1.041     | -7.2907                                                                | 0.0226                                                                          | -1.2113                                          | 0.0228                                                    | 0.5644                      | 0.0426                               | 0.8469                 | 0.0641                        | RD                       |
| 20 13 58           | +06 41 16           | GJ0784.2         | 5.16                    | 3224                  | 27                             | 0.014                   | 15            | 1.014     | -8.9788                                                                | 0.0074                                                                          | -1.7844                                          | 0.0199                                                    | 0.4108                      | 0.0116                               | 0.1708                 | 0.0087                        | RD                       |
| 20 16 11           | -75 31 05           | SCR2016-7531     | 6.33                    | 2918                  | 20                             | 0.013                   | 85            | 1.007     | -9.5704                                                                | 0.0069                                                                          | -2.7224                                          | 0.0116                                                    | 0.1704                      | 0.0033                               | 0.1055                 | 0.0031                        | RD                       |
| 20 19 50           | -58 16 43           | LEHPM2-0783      | 7.51                    | 2651                  | 16                             | 0.014                   | 66            | 1.003     | -9.6883                                                                | 0.0075                                                                          | -2.7771                                          | 0.0101                                                    | 0.1937                      | 0.0032                               | 0.1116                 | 0.0026                        | YC                       |
| 20 22 15           | +31 17 45           | G186-024         | 5.43                    | 3110                  | 6                              | 0.012                   | 74            | 1.011     | -9.3604                                                                | 0.0065                                                                          | -2.3382                                          | 0.0122                                                    | 0.2333                      | 0.0034                               | 0.1183                 | 0.0033                        | RD                       |
| 20 22 42           | -58 17 09           | GJ0788.1         | 3.60                    | 3891                  | 23                             | 0.014                   | 8             | 1.045     | -8.3746                                                                | 0.0075                                                                          | -1.3035                                          | 0.0175                                                    | 0.4906                      | 0.0114                               | 0.2350                 | 0.0102                        | RD                       |
| 20 24 51           | +74 12 25           | LHS3547          | 5.93                    | 2985                  | 12                             | 0.009                   | 3             | 1.008     | -9.5123                                                                | 0.0045                                                                          | -2.6324                                          | 0.0221                                                    | 0.1806                      | 0.0048                               | 0.1078                 | 0.0061                        | RD                       |
| 20 26 05           | +58 34 23           | GJ1253           | 5.95                    | 3055                  | 24                             | 0.045                   | 93            | 1.010     | -8.9925                                                                | 0.0111                                                                          | -2.5744                                          | 0.0151                                                    | 0.1842                      | 0.0044                               | 0.1872                 | 0.0063                        | RD                       |
| 20 27 29           | +35 59 25           | LHS0491          | 3.87                    | 3757                  | 33                             | 0.495                   | 183           | 1.037     | -9.9378                                                                | 0.0250                                                                          | -2.0622                                          | 0.0928                                                    | 0.2198                      | 0.0238                               | 0.0417                 | 0.0097                        | SD                       |
| 20 27 42           | -27 44 52           | GJ0791           | 4.61                    | 3406                  | 9                              | 0.012                   | 3             | 1.020     | -8.4104                                                                | 0.0066                                                                          | -1.5837                                          | 0.0193                                                    | 0.4637                      | 0.0106                               | 0.2943                 | 0.0141                        | RD                       |
| 20 27 42           | -56 27 25           | GJ1252           | 4.29                    | 3549                  | 15                             | 0.009                   | 96            | 1.026     | -8.8004                                                                | 0.0067                                                                          | -1.7125                                          | 0.0196                                                    | 0.3682                      | 0.0089                               | 0.1730                 | 0.0084                        | RD                       |
| 20 28 04           | -76 40 16           | GJ1251           | 5.28                    | 3160                  | 14                             | 0.012                   | 6             | 1.012     | -9.1219                                                                | 0.0066                                                                          | -2.4224                                          | 0.0140                                                    | 0.2052                      | 0.0038                               | 0.1508                 | 0.0051                        | RD                       |
| 20 28 44           | -11 28 31           | L755-019         | 4.97                    | 3283                  | 21                             | 0.013                   | 3             | 1.016     | -8.7007                                                                | 0.0065                                                                          | -1.6573                                          | 0.0151                                                    | 0.4586                      | 0.0099                               | 0.2268                 | 0.0087                        | YG                       |
| 20 30 32           | +65 26 58           | GJ0793           | 4.63                    | 3381                  | 22                             | 0.013                   | 12            | 1.019     | -8.0335                                                                | 0.0086                                                                          | -1.7298                                          | 0.0093                                                    | 0.3979                      | 0.0067                               | 0.4612                 | 0.0087                        | RD                       |
| 20 31 26           | +38 33 44           | GJ0792           | 5.12                    | 3210                  | 8                              | 0.010                   | 3             | 1.014     | -9.0291                                                                | 0.0058                                                                          | -2.2082                                          | 0.0091                                                    | 0.2544                      | 0.0029                               | 0.1626                 | 0.0032                        | RD                       |
| 20 33 16           | +28 23 45           | G210-026         | 5.47                    | 3103                  | 15                             | 0.011                   | 109           | 1.011     | -9.3627                                                                | 0.0068                                                                          | -2.1876                                          | 0.0149                                                    | 0.2787                      | 0.0055                               | 0.1185                 | 0.0043                        | RD                       |
| 20 33 38           | -25 56 52           | SCR2033-2556     | 5.99                    | 3015                  | 3                              | 0.011                   | 3             | 1.009     | -9.2770                                                                | 0.0050                                                                          | -1.4140                                          | 0.0304                                                    | 0.7195                      | 0.0252                               | 0.1385                 | 0.0107                        | YG                       |
| 20 33 40           | +61 45 14           | GJ1254           | 5.14                    | 3209                  | 16                             | 0.013                   | 3             | 1.014     | -8.6655                                                                | 0.0091                                                                          | -1.7692                                          | 0.0207                                                    | 0.4219                      | 0.0109                               | 0.2472                 | 0.0124                        | YC                       |
| 20 33 42           | +36 35 59           | G209-036         | 5.23                    | 3198                  | 13                             | 0.012                   | 116           | 1.013     | -9.1358                                                                | 0.0061                                                                          | -1.9278                                          | 0.0133                                                    | 0.3541                      | 0.0061                               | 0.1449                 | 0.0047                        | RD                       |
| 20 34 33           | +07 57 35           | LP575-026        | 5.43                    | 3113                  | 10                             | 0.014                   | 26            | 1.011     | -9.5854                                                                | 0.0069                                                                          | -2.4402                                          | 0.0266                                                    | 0.2071                      | 0.0065                               | 0.0911                 | 0.0061                        | RD                       |
| 20 34 43           | +03 20 51           | LHS3564          | 4.29                    | 3519                  | 17                             | 0.012                   | 15            | 1.025     | -8.6885                                                                | 0.0070                                                                          | -1.5385                                          | 0.0203                                                    | 0.4577                      | 0.0116                               | 0.2002                 | 0.0101                        | RD                       |
| 20 34 55           | +59 17 27           | G230-043         | 4.96                    | 3269                  | 19                             | 0.011                   | 8             | 1.016     | -9.0752                                                                | 0.0055                                                                          | -1.9133                                          | 0.0168                                                    | 0.3445                      | 0.0078                               | 0.1487                 | 0.0064                        | RD                       |
| 20 36 08           | -36 07 12           | SCR2036-3607     | 4.49                    | 3465                  | 9                              | 0.011                   | 8             | 1.023     | -8.5269                                                                | 0.0070                                                                          | -1.6186                                          | 0.0120                                                    | 0.4305                      | 0.0064                               | 0.2488                 | 0.0067                        | RD                       |
| 20 36 22           | +51 00 05           | LSPM2036+5100    | 6.05                    | 3031                  | 34                             | 0.016                   | 3             | 1.009     | -10.8497                                                               | 0.0070                                                                          | -3.0237                                          | 0.0263                                                    | 0.1116                      | 0.0042                               | 0.0224                 | 0.0016                        | SD                       |
| 20 38 16           | +63 49 37           | LP074-023        | 6.17                    | 3028                  | 34                             | 0.011                   | 41            | 1.009     | -9.8470                                                                | 0.0075                                                                          | -2.6210                                          | 0.0292                                                    | 0.1778                      | 0.0072                               | 0.0713                 | 0.0055                        | RD                       |
| 20 39 24           | -29 26 35           | LHS3566          | 7.25                    | 2713                  | 42                             | 0.015                   | 198           | 1.004     | -9.9516                                                                | 0.0073                                                                          | -2.9724                                          | 0.0216                                                    | 0.1477                      | 0.0059                               | 0.0787                 | 0.0048                        | RD                       |
| 20 40 27           | +65 00 27           | G262-023         | 5.69                    | 3115                  | 23                             | 0.012                   | 3             | 1.011     | -9.5510                                                                | 0.0058                                                                          | -2.3683                                          | 0.0164                                                    | 0.2246                      | 0.0054                               | 0.0946                 | 0.0040                        | RD                       |
| 20 40 34           | +15 29 59           | GJ1256           | 5.72                    | 3016                  | 29                             | 0.017                   | 103           | 1.009     | -8.8418                                                                | 0.0067                                                                          | -2.3975                                          | 0.0100                                                    | 0.2317                      | 0.0051                               | 0.2285                 | 0.0064                        | RD                       |
| 20 41 11           | +18 00 05           | LSPM2041+1800    | 6.60                    | 2867                  | 16                             | 0.010                   | 3             | 1.006     | -9.9243                                                                | 0.0049                                                                          | -2.8529                                          | 0.0349                                                    | 0.1518                      | 0.0063                               | 0.0727                 | 0.0065                        | RD                       |
| 20 41 47           | +49 38 48           | LSPM2041+4938    | 5.88                    | 3004                  | 6                              | 0.010                   | 145           | 1.009     | -9.5549                                                                | 0.0072                                                                          | -2.4315                                          | 0.0201                                                    | 0.2247                      | 0.0053                               | 0.1014                 | 0.0050                        | RD                       |
| 20 42 57           | -18 55 06           | GJ0800           | 4.06                    | 3670                  | 15                             | 0.011                   | 17            | 1.032     | -8.3238                                                                | 0.0075                                                                          | -1.3348                                          | 0.0191                                                    | 0.5319                      | 0.0125                               | 0.2801                 | 0.0131                        | RD                       |

# Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 20 43 24           | +04 45 55           | LHS5358          | 6.28                    | 2926                  | 20                             | 0.013                  | 137           | 1.007     | -9.4206                                                                | 0.0069                                                                          | -2.7307                                          | 0.0162                                                    | 0.1678                      | 0.0039                               | 0.1247                 | 0.0051                        | RD                       |
| 20 43 41           | +64 16 54           | G262-026         | 3.77                    | 3830                  | 37                             | 0.011                  | 175           | 1.041     | -8.6476                                                                | 0.0067                                                                          | -1.5028                                          | 0.0166                                                    | 0.4026                      | 0.0110                               | 0.1772                 | 0.0079                        | SC                       |
| 20 44 22           | +13 39 01           | LSPM2044+1339    | 5.87                    | 2906                  | 123                            | 0.010                  | 290           | 1.007     | -9.7983                                                                | 0.0079                                                                          | -2.7453                                          | 0.0221                                                    | 0.1672                      | 0.0147                               | 0.0818                 | 0.0082                        | RD                       |
| 20 44 38           | +15 17 35           | LSPM2044+1517    | 8.44                    | 2490                  | 29                             | 0.021                  | 224           | 1.002     | -9.8419                                                                | 0.0068                                                                          | -3.4281                                          | 0.0147                                                    | 0.1038                      | 0.0030                               | 0.1060                 | 0.0044                        | RD                       |
| 20 45 02           | -63 32 07           | SIP2045-6332     | 9.84                    | 2040                  | 57                             | 0.025                  | 82            | 1.001     | -10.3843                                                               | 0.0081                                                                          | -3.1250                                          | 0.0166                                                    | 0.2192                      | 0.0130                               | 0.0846                 | 0.0058                        | YC                       |
| 20 45 04           | +44 29 57           | GJ0806           | 4.24                    | 3566                  | 14                             | 0.010                  | 111           | 1.027     | -8.2491                                                                | 0.0064                                                                          | -1.5791                                          | 0.0097                                                    | 0.4253                      | 0.0058                               | 0.3234                 | 0.0070                        | RD                       |
| 20 45 10           | -31 20 27           | GJ0803           | 4.12                    | 3629                  | 84                             | 0.038                  | 306           | 1.030     | -7.4508                                                                | 0.0078                                                                          | -0.9671                                          | 0.0085                                                    | 0.8307                      | 0.0394                               | 0.7828                 | 0.0376                        | YG                       |
| 20 45 22           | +35 08 15           | LSPM2045+3508    | 5.88                    | 3005                  | 6                              | 0.015                  | 256           | 1.009     | -9.5865                                                                | 0.0064                                                                          | -2.5596                                          | 0.0143                                                    | 0.1937                      | 0.0033                               | 0.0977                 | 0.0033                        | RD                       |
| 20 46 37           | -81 43 14           | LHS3583          | 4.67                    | 3395                  | 13                             | 0.012                  | 74            | 1.020     | -8.4105                                                                | 0.0071                                                                          | -1.8684                                          | 0.0130                                                    | 0.3362                      | 0.0056                               | 0.2962                 | 0.0089                        | RD                       |
| 20 46 44           | -11 48 13           | LP756-003        | 5.37                    | 3215                  | 19                             | 0.012                  | 3             | 1.014     | -9.0895                                                                | 0.0065                                                                          | -2.0336                                          | 0.0132                                                    | 0.3100                      | 0.0060                               | 0.1512                 | 0.0049                        | RD                       |
| 20 48 51           | +11 27 20           | LP516-007        | 4.65                    | 3386                  | 16                             | 0.011                  | 19            | 1.020     | -9.2101                                                                | 0.0064                                                                          | -2.2495                                          | 0.0128                                                    | 0.2181                      | 0.0038                               | 0.1186                 | 0.0037                        | RD                       |
| 20 49 27           | +33 36 51           | LSPM2049+3336    | 7.52                    | 2650                  | 21                             | 0.010                  | 3             | 1.003     | -10.0188                                                               | 0.0053                                                                          | -3.1824                                          | 0.0121                                                    | 0.1216                      | 0.0026                               | 0.0763                 | 0.0025                        | RD                       |
| 20 50 16           | -34 24 43           | LEP2050-3424     | 5.75                    | 3012                  | 14                             | 0.013                  | 87            | 1.009     | -8.9244                                                                | 0.0085                                                                          | -2.4768                                          | 0.0094                                                    | 0.2121                      | 0.0030                               | 0.2083                 | 0.0036                        | RD                       |
| 20 51 42           | -79 18 40           | GJ0808           | 4.15                    | 3614                  | 12                             | 0.014                  | 55            | 1.029     | -8.6890                                                                | 0.0079                                                                          | -1.7076                                          | 0.0177                                                    | 0.3572                      | 0.0077                               | 0.1897                 | 0.0081                        | RD                       |
| 20 52 33           | -16 58 29           | LP816-060        | 5.30                    | 3228                  | 29                             | 0.012                  | 86            | 1.014     | -8.1901                                                                | 0.0086                                                                          | -2.1814                                          | 0.0120                                                    | 0.2595                      | 0.0059                               | 0.4224                 | 0.0126                        | RD                       |
| 20 52 58           | +43 10 24           | LSPM2052+4310    | 4.85                    | 3316                  | 10                             | 0.011                  | 90            | 1.017     | -9.0094                                                                | 0.0071                                                                          | -2.1282                                          | 0.0108                                                    | 0.2615                      | 0.0036                               | 0.1559                 | 0.0036                        | RD                       |
| 20 53 09           | -01 33 04           | 2MA2053-0133     | 6.00                    | 3041                  | 14                             | 0.010                  | 3             | 1.009     | -9.6496                                                                | 0.0058                                                                          | -2.6354                                          | 0.0168                                                    | 0.1734                      | 0.0037                               | 0.0887                 | 0.0037                        | RD                       |
| 20 53 20           | +62 09 16           | GJ0809           | 3.94                    | 3689                  | 96                             | 0.101                  | 326           | 1.033     | -7.4477                                                                | 0.0097                                                                          | -1.2550                                          | 0.0099                                                    | 0.5773                      | 0.0307                               | 0.7603                 | 0.0406                        | RD                       |
| 20 53 33           | +10 37 02           | LHS3593          | 5.49                    | 3097                  | 11                             | 0.011                  | 3             | 1.011     | -9.1099                                                                | 0.0069                                                                          | -2.3619                                          | 0.0143                                                    | 0.2290                      | 0.0041                               | 0.1591                 | 0.0054                        | RD                       |
| 20 55 18           | +20 56 06           | LSPM2055+2056    | 4.89                    | 3294                  | 10                             | 0.012                  | 12            | 1.016     | -9.4511                                                                | 0.0062                                                                          | -2.1818                                          | 0.0221                                                    | 0.2490                      | 0.0065                               | 0.0950                 | 0.0053                        | RD                       |
| 20 56 47           | -10 26 55           | GJ0811.1         | 4.62                    | 3413                  | 19                             | 0.012                  | 3             | 1.021     | -8.4316                                                                | 0.0074                                                                          | -1.5354                                          | 0.0216                                                    | 0.4884                      | 0.0133                               | 0.2862                 | 0.0155                        | RD                       |
| 20 56 48           | -04 50 49           | GJ0812           | 4.88                    | 3288                  | 12                             | 0.010                  | 3             | 1.016     | -8.4907                                                                | 0.0070                                                                          | -1.5452                                          | 0.0237                                                    | 0.5202                      | 0.0147                               | 0.2880                 | 0.0171                        | YC                       |
| 20 57 25           | +22 21 46           | GJ0813           | 4.36                    | 3504                  | 11                             | 0.015                  | 11            | 1.024     | -8.6898                                                                | 0.0084                                                                          | -1.9014                                          | 0.0141                                                    | 0.3039                      | 0.0053                               | 0.2016                 | 0.0063                        | RD                       |
| 20 57 54           | -02 52 30           | DEN2057-0252     | 9.96                    | 2051                  | 38                             | 0.022                  | 152           | 1.001     | -10.6020                                                               | 0.0083                                                                          | -3.7985                                          | 0.0244                                                    | 0.0999                      | 0.0046                               | 0.0651                 | 0.0046                        | RD                       |
| 20 58 42           | +34 16 27           | LTT16135         | 3.81                    | 3802                  | 14                             | 0.011                  | 19            | 1.039     | -8.5040                                                                | 0.0066                                                                          | -1.2450                                          | 0.0244                                                    | 0.5498                      | 0.0159                               | 0.2122                 | 0.0130                        | RD                       |
| 21 01 33           | +39 57 04           | LSPM2101+3957    | 6.06                    | 3029                  | 15                             | 0.010                  | 31            | 1.009     | -9.7914                                                                | 0.0068                                                                          | -2.6068                                          | 0.0231                                                    | 0.1806                      | 0.0051                               | 0.0759                 | 0.0044                        | RD                       |
| 21 01 58           | -06 19 08           | GJ0816           | 4.58                    | 3412                  | 14                             | 0.009                  | 3             | 1.021     | -8.3478                                                                | 0.0066                                                                          | -1.5385                                          | 0.0174                                                    | 0.4867                      | 0.0105                               | 0.3152                 | 0.0135                        | RD                       |
| 21 02 47           | +22 37 12           | LP396-018        | 5.29                    | 3212                  | 10                             | 0.011                  | 12            | 1.014     | -9.8250                                                                | 0.0074                                                                          | -2.5619                                          | 0.0314                                                    | 0.1690                      | 0.0062                               | 0.0649                 | 0.0051                        | RD                       |
| 21 03 14           | -56 57 48           | GJ2151           | 4.91                    | 3287                  | 10                             | 0.012                  | 13            | 1.016     | -8.8416                                                                | 0.0066                                                                          | -2.0972                                          | 0.0331                                                    | 0.2757                      | 0.0106                               | 0.1924                 | 0.0162                        | RD                       |
| 21 04 15           | -10 37 37           | 2MA2104-1037     | 10.00                   | 1929                  | 153                            | 0.036                  | 111           | 1.001     | -10.8475                                                               | 0.0126                                                                          | -3.8011                                          | 0.0189                                                    | 0.1126                      | 0.0181                               | 0.0555                 | 0.0091                        | RD                       |
| 21 04 53           | -16 57 32           | GJ0817           | 3.91                    | 3687                  | 16                             | 0.014                  | 13            | 1.033     | -8.6123                                                                | 0.0082                                                                          | -1.6107                                          | 0.0213                                                    | 0.3838                      | 0.0100                               | 0.1992                 | 0.0104                        | RD                       |
| 21 05 14           | -55 03 56           | SCR2105-5503     | 5.33                    | 3221                  | 30                             | 0.011                  | 3             | 1.014     | -9.1732                                                                | 0.0050                                                                          | -2.3408                                          | 0.0107                                                    | 0.2170                      | 0.0048                               | 0.1368                 | 0.0043                        | RD                       |
| 21 09 17           | -13 18 09           | GJ0821           | 3.96                    | 3706                  | 19                             | 0.013                  | 51            | 1.034     | -8.3719                                                                | 0.0076                                                                          | -1.7043                                          | 0.0126                                                    | 0.3409                      | 0.0061                               | 0.2599                 | 0.0076                        | SC                       |
| 21 10 04           | +66 15 02           | LSPM2110+6615    | 5.70                    | 3115                  | 22                             | 0.013                  | 9             | 1.011     | -9.7400                                                                | 0.0063                                                                          | -2.4706                                          | 0.0241                                                    | 0.1997                      | 0.0062                               | 0.0762                 | 0.0047                        | RD                       |
| 21 11 27           | +65 53 27           | LSPM2111+6553    | 4.49                    | 3455                  | 11                             | 0.012                  | 33            | 1.022     | -9.1230                                                                | 0.0067                                                                          | -2.0225                                          | 0.0139                                                    | 0.2720                      | 0.0047                               | 0.1260                 | 0.0042                        | RD                       |
| 21 11 50           | -43 36 49           | LHS3639          | 4.32                    | 3524                  | 9                              | 0.011                  | 68            | 1.025     | -8.7089                                                                | 0.0074                                                                          | -1.8173                                          | 0.0245                                                    | 0.3310                      | 0.0095                               | 0.1950                 | 0.0119                        | RD                       |
| 21 14 48           | +16 04 50           | G145-029         | 5.09                    | 3228                  | 21                             | 0.011                  | 3             | 1.014     | -9.0369                                                                | 0.0070                                                                          | -1.7717                                          | 0.0135                                                    | 0.4158                      | 0.0085                               | 0.1594                 | 0.0054                        | YC                       |
| 21 17 15           | -38 52 03           | GJ0825           | 3.57                    | 3991                  | 186                            | 25.456                 | 291           | 1.051     | -6.8222                                                                | 0.0323                                                                          | -1.1350                                          | 0.0323                                                    | 0.5663                      | 0.0567                               | 1.3350                 | 0.1338                        | RD                       |
| 21 20 10           | -67 39 06           | L117-123         | 4.07                    | 3682                  | 31                             | 0.014                  | 23            | 1.033     | -8.3720                                                                | 0.0077                                                                          | -1.2408                                          | 0.0207                                                    | 0.5888                      | 0.0173                               | 0.2633                 | 0.0140                        | RD                       |
| 21 21 58           | +15 49 39           | G145-036         | 5.27                    | 3169                  | 9                              | 0.009                  | 11            | 1.013     | -9.6384                                                                | 0.0059                                                                          | -2.4460                                          | 0.0249                                                    | 0.1985                      | 0.0058                               | 0.0827                 | 0.0052                        | RD                       |



## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 21 22 17           | -43 14 05           | SCR2122+4314     | 5.18                    | 3207                  | 17                             | 0.011                  | 43            | 1.014     | -9.0001                                                                | 0.0068                                                                          | -1.8815                                          | 0.0164                                                    | 0.3712                      | 0.0081                               | 0.1684                 | 0.0069                        | RD                       |
| 21 23 07           | +29 01 35           | LP341-025        | 5.29                    | 3173                  | 5                              | 0.012                  | 17            | 1.013     | -9.6179                                                                | 0.0064                                                                          | -2.3899                                          | 0.0155                                                    | 0.2112                      | 0.0038                               | 0.0845                 | 0.0032                        | RD                       |
| 21 23 26           | +67 34 15           | G262-041         | 5.19                    | 3207                  | 14                             | 0.012                  | 7             | 1.014     | -9.4202                                                                | 0.0067                                                                          | -2.1677                                          | 0.0218                                                    | 0.2671                      | 0.0071                               | 0.1038                 | 0.0057                        | RD                       |
| 21 24 18           | -46 41 35           | GJ0826.2         | 4.34                    | 3531                  | 11                             | 0.011                  | 84            | 1.025     | -8.9018                                                                | 0.0072                                                                          | -1.6271                                          | 0.0474                                                    | 0.4106                      | 0.0226                               | 0.1556                 | 0.0189                        | RD                       |
| 21 24 32           | +40 03 60           | LEP2124+4003     | 6.53                    | 2874                  | 12                             | 0.010                  | 3             | 1.006     | -9.5325                                                                | 0.0060                                                                          | -2.6857                                          | 0.0105                                                    | 0.1831                      | 0.0027                               | 0.1136                 | 0.0028                        | RD                       |
| 21 27 05           | -38 44 51           | APM2127-3844     | 5.32                    | 3098                  | 17                             | 0.013                  | 113           | 1.011     | -9.4032                                                                | 0.0065                                                                          | -2.2931                                          | 0.0138                                                    | 0.2477                      | 0.0048                               | 0.1134                 | 0.0039                        | RD                       |
| 21 27 17           | -06 50 39           | GJ0828.2         | 3.93                    | 3746                  | 30                             | 0.011                  | 105           | 1.036     | -8.4922                                                                | 0.0079                                                                          | -1.5668                                          | 0.0185                                                    | 0.3909                      | 0.0104                               | 0.2215                 | 0.0104                        | RD                       |
| 21 27 25           | +55 53 15           | LSPM2127+5553    | 8.56                    | 2446                  | 33                             | 0.013                  | 53            | 1.002     | -10.2179                                                               | 0.0059                                                                          | -3.2922                                          | 0.0154                                                    | 0.1258                      | 0.0041                               | 0.0712                 | 0.0033                        | RD                       |
| 21 27 26           | -42 15 18           | 2MA2127-4215     | 8.45                    | 2431                  | 74                             | 0.016                  | 54            | 1.002     | -10.7433                                                               | 0.0082                                                                          | -3.5011                                          | 0.0379                                                    | 0.1001                      | 0.0075                               | 0.0394                 | 0.0045                        | RD                       |
| 21 27 46           | +07 17 56           | LHS3677          | 4.07                    | 3677                  | 12                             | 0.012                  | 100           | 1.033     | -8.6454                                                                | 0.0069                                                                          | -1.3697                                          | 0.0633                                                    | 0.5090                      | 0.0373                               | 0.1927                 | 0.0313                        | RD                       |
| 21 28 18           | -22 18 32           | LTT08526         | 4.54                    | 3445                  | 19                             | 0.011                  | 72            | 1.022     | -8.7262                                                                | 0.0072                                                                          | -1.6604                                          | 0.0146                                                    | 0.4151                      | 0.0083                               | 0.2001                 | 0.0071                        | RD                       |
| 21 30 07           | -77 10 38           | SCR2130-7710     | 6.64                    | 2925                  | 22                             | 0.013                  | 3             | 1.007     | -9.9134                                                                | 0.0059                                                                          | -2.7738                                          | 0.0132                                                    | 0.1597                      | 0.0034                               | 0.0707                 | 0.0024                        | RD                       |
| 21 30 48           | -40 42 30           | LHS0510          | 4.99                    | 3188                  | 16                             | 0.011                  | 115           | 1.013     | -8.9208                                                                | 0.0072                                                                          | -1.5327                                          | 0.0149                                                    | 0.2402                      | 0.0048                               | 0.1867                 | 0.0067                        | RD                       |
| 21 33 34           | -49 00 33           | GJ0832           | 4.16                    | 3564                  | 104                            | 1.947                  | 199           | 1.027     | -7.4168                                                                | 0.0263                                                                          | -1.5327                                          | 0.0264                                                    | 0.4493                      | 0.0295                               | 0.8443                 | 0.0557                        | RD                       |
| 21 34 50           | +51 32 14           | LHS3693          | 4.51                    | 3423                  | 16                             | 0.010                  | 3             | 1.021     | -8.5539                                                                | 0.0066                                                                          | -1.5537                                          | 0.0200                                                    | 0.4752                      | 0.0118                               | 0.2471                 | 0.0124                        | RD                       |
| 21 36 25           | -44 01 00           | WT0795           | 5.62                    | 3127                  | 23                             | 0.011                  | 3             | 1.011     | -9.1391                                                                | 0.0056                                                                          | -2.3285                                          | 0.0071                                                    | 0.2334                      | 0.0040                               | 0.1510                 | 0.0030                        | RD                       |
| 21 37 14           | +16 50 27           | LP458-013        | 5.02                    | 3255                  | 21                             | 0.011                  | 3             | 1.015     | -9.4031                                                                | 0.0058                                                                          | -2.4260                                          | 0.0301                                                    | 0.1926                      | 0.0071                               | 0.1028                 | 0.0080                        | RD                       |
| 21 37 56           | -63 42 43           | HIP106803        | 3.98                    | 3716                  | 31                             | 0.010                  | 12            | 1.035     | -8.2759                                                                | 0.0067                                                                          | -1.1263                                          | 0.0245                                                    | 0.6598                      | 0.0217                               | 0.2888                 | 0.0183                        | YC                       |
| 21 38 44           | -33 39 55           | LHS0512          | 4.98                    | 3273                  | 11                             | 0.013                  | 9             | 1.016     | -8.7226                                                                | 0.0073                                                                          | -2.0555                                          | 0.0133                                                    | 0.2918                      | 0.0049                               | 0.2226                 | 0.0068                        | RD                       |
| 21 41 58           | +27 41 15           | LP342-014        | 4.96                    | 3266                  | 13                             | 0.009                  | 3             | 1.015     | -9.2783                                                                | 0.0052                                                                          | -2.1089                                          | 0.0142                                                    | 0.2755                      | 0.0050                               | 0.1179                 | 0.0042                        | RD                       |
| 21 44 09           | +17 03 35           | G126-030         | 5.22                    | 3188                  | 13                             | 0.011                  | 9             | 1.013     | -9.0812                                                                | 0.0056                                                                          | -2.2460                                          | 0.0139                                                    | 0.2469                      | 0.0044                               | 0.1552                 | 0.0053                        | RD                       |
| 21 44 13           | +06 38 29           | LTT18537         | 4.68                    | 3379                  | 14                             | 0.013                  | 25            | 1.019     | -8.6525                                                                | 0.0073                                                                          | -1.5205                                          | 0.0302                                                    | 0.5067                      | 0.0181                               | 0.2263                 | 0.0173                        | RD                       |
| 21 44 30           | -60 58 39           | HIP107345        | 3.79                    | 3825                  | 17                             | 0.011                  | 3             | 1.041     | -8.7628                                                                | 0.0061                                                                          | -0.9879                                          | 0.0493                                                    | 0.7302                      | 0.0420                               | 0.1556                 | 0.0197                        | YG                       |
| 21 45 09           | +61 47 45           | LTT16365         | 4.70                    | 3391                  | 17                             | 0.012                  | 26            | 1.020     | -9.1429                                                                | 0.0070                                                                          | -1.9582                                          | 0.0169                                                    | 0.3039                      | 0.0066                               | 0.1278                 | 0.0053                        | RD                       |
| 21 45 22           | +38 13 05           | LSPM2146+3813    | 4.97                    | 3189                  | 18                             | 0.011                  | 36            | 1.013     | -8.5474                                                                | 0.0068                                                                          | -2.4023                                          | 0.0089                                                    | 0.2062                      | 0.0031                               | 0.2869                 | 0.0058                        | RD                       |
| 21 46 40           | +66 48 11           | G232-032         | 5.21                    | 3184                  | 9                              | 0.011                  | 8             | 1.013     | -9.3732                                                                | 0.0065                                                                          | -2.2533                                          | 0.0198                                                    | 0.2455                      | 0.0058                               | 0.1112                 | 0.0055                        | RD                       |
| 21 46 40           | -00 10 24           | GJ1263           | 5.17                    | 3201                  | 10                             | 0.013                  | 24            | 1.013     | -8.5474                                                                | 0.0068                                                                          | -2.4023                                          | 0.0089                                                    | 0.2062                      | 0.0031                               | 0.2869                 | 0.0058                        | RD                       |
| 21 46 43           | -85 43 05           | L002-077         | 5.40                    | 3119                  | 12                             | 0.012                  | 39            | 1.011     | -8.9081                                                                | 0.0071                                                                          | -2.0174                                          | 0.0146                                                    | 0.3358                      | 0.0062                               | 0.1980                 | 0.0069                        | YG                       |
| 21 46 56           | +46 38 06           | LTT16369         | 5.15                    | 3199                  | 18                             | 0.018                  | 3             | 1.013     | -8.9896                                                                | 0.0080                                                                          | -2.0662                                          | 0.0096                                                    | 0.3016                      | 0.0047                               | 0.1713                 | 0.0034                        | RD                       |
| 21 47 40           | +45 07 33           | G212-058         | 4.55                    | 3414                  | 13                             | 0.012                  | 3             | 1.021     | -9.2461                                                                | 0.0067                                                                          | -1.9596                                          | 0.0137                                                    | 0.2994                      | 0.0053                               | 0.1119                 | 0.0036                        | RD                       |
| 21 47 52           | +50 14 48           | LHS3711          | 4.78                    | 3319                  | 13                             | 0.014                  | 3             | 1.017     | -9.0718                                                                | 0.0094                                                                          | -1.9291                                          | 0.0177                                                    | 0.3281                      | 0.0072                               | 0.1448                 | 0.0059                        | RD                       |
| 21 48 15           | +27 55 42           | LHS3713          | 4.30                    | 3533                  | 8                              | 0.011                  | 5             | 1.026     | -8.7153                                                                | 0.0065                                                                          | -1.6979                                          | 0.0355                                                    | 0.3780                      | 0.0155                               | 0.1927                 | 0.0174                        | RD                       |
| 21 49 26           | -63 06 52           | LHS3719          | 4.67                    | 3390                  | 4                              | 0.010                  | 9             | 1.020     | -8.8249                                                                | 0.0064                                                                          | -1.8903                                          | 0.0118                                                    | 0.3289                      | 0.0045                               | 0.1844                 | 0.0049                        | RD                       |
| 21 51 48           | +13 36 15           | LP518-058        | 5.51                    | 3098                  | 14                             | 0.011                  | 90            | 1.011     | -9.0958                                                                | 0.0061                                                                          | -2.1940                                          | 0.0139                                                    | 0.2776                      | 0.0051                               | 0.1616                 | 0.0055                        | RD                       |
| 21 51 53           | +46 35 16           | LTT16387         | 4.95                    | 3293                  | 15                             | 0.012                  | 23            | 1.016     | -9.3992                                                                | 0.0070                                                                          | -2.1170                                          | 0.0309                                                    | 0.2685                      | 0.0099                               | 0.1009                 | 0.0079                        | RD                       |
| 21 52 10           | +05 37 36           | HIP107948        | 4.80                    | 3331                  | 21                             | 0.013                  | 3             | 1.018     | -8.6353                                                                | 0.0080                                                                          | -1.1718                                          | 0.0753                                                    | 0.7791                      | 0.0682                               | 0.2376                 | 0.0459                        | YG                       |
| 21 52 12           | +27 25 00           | LHS3725          | 4.79                    | 3307                  | 10                             | 0.010                  | 3             | 1.017     | -9.3507                                                                | 0.0064                                                                          | -2.1125                                          | 0.0176                                                    | 0.2677                      | 0.0056                               | 0.1058                 | 0.0046                        | RD                       |
| 21 53 58           | +42 35 33           | LSPM2153+4235    | 7.01                    | 2761                  | 30                             | 0.013                  | 20            | 1.005     | -10.0718                                                               | 0.0065                                                                          | -2.8377                                          | 0.0253                                                    | 0.1666                      | 0.0061                               | 0.0662                 | 0.0044                        | RD                       |
| 21 53 59           | +41 46 45           | GJ0839           | 3.59                    | 3935                  | 29                             | 0.011                  | 3             | 1.048     | -8.2853                                                                | 0.0068                                                                          | -1.0641                                          | 0.0169                                                    | 0.6320                      | 0.0155                               | 0.2547                 | 0.0110                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 21 54 45           | -46 59 34           | GJ0838.6         | 4.37                    | 3499                  | 16                             | 0.012                  | 55            | 1.024     | -8.6766                                                                | 0.0071                                                                          | -1.8630                                          | 0.0245                                                    | 0.3186                      | 0.0095                               | 0.2053                 | 0.0127                        | RD                       |
| 21 55 14           | +42 51 48           | G215-023         | 4.93                    | 3301                  | 3                              | 0.011                  | 3             | 1.017     | -9.4581                                                                | 0.0066                                                                          | -2.1950                                          | 0.0210                                                    | 0.2443                      | 0.0059                               | 0.0939                 | 0.0049                        | RD                       |
| 21 56 55           | -01 54 09           | LHS0516          | 5.67                    | 3018                  | 16                             | 0.011                  | 3             | 1.009     | -9.3323                                                                | 0.0060                                                                          | -2.5851                                          | 0.0195                                                    | 0.1865                      | 0.0046                               | 0.1297                 | 0.0064                        | RD                       |
| 21 57 26           | +08 08 14           | LTT16412         | 4.19                    | 3588                  | 28                             | 0.012                  | 13            | 1.028     | -8.3893                                                                | 0.0078                                                                          | -1.2429                                          | 0.0171                                                    | 0.6186                      | 0.0156                               | 0.2718                 | 0.0118                        | RD                       |
| 21 58 25           | +75 35 21           | GJ0842.2         | 3.84                    | 3799                  | 20                             | 0.013                  | 12            | 1.039     | -8.3080                                                                | 0.0076                                                                          | -1.1843                                          | 0.0122                                                    | 0.5904                      | 0.0103                               | 0.2663                 | 0.0074                        | YG                       |
| 21 58 35           | +61 17 06           | LEP2158+6117     | 6.78                    | 2759                  | 36                             | 0.018                  | 33            | 1.005     | -9.9359                                                                | 0.0074                                                                          | -2.9840                                          | 0.0137                                                    | 0.1409                      | 0.0043                               | 0.0775                 | 0.0031                        | RD                       |
| 21 58 50           | -32 28 18           | LHS3739          | 5.16                    | 3201                  | 9                              | 0.010                  | 18            | 1.013     | -9.5160                                                                | 0.0059                                                                          | -2.4465                                          | 0.0086                                                    | 0.1945                      | 0.0022                               | 0.0934                 | 0.0017                        | RD                       |
| 21 59 35           | -59 45 10           | GJ0842           | 3.98                    | 3709                  | 21                             | 0.011                  | 37            | 1.034     | -7.9305                                                                | 0.0077                                                                          | -1.2766                                          | 0.0119                                                    | 0.5568                      | 0.0099                               | 0.4313                 | 0.0118                        | RD                       |
| 22 01 13           | +28 18 25           | G188-038         | 5.27                    | 3171                  | 8                              | 0.011                  | 3             | 1.013     | -8.4158                                                                | 0.0068                                                                          | -2.0299                                          | 0.0094                                                    | 0.3200                      | 0.0038                               | 0.3375                 | 0.0064                        | YG                       |
| 22 01 49           | +16 28 03           | GJ0844           | 4.47                    | 3469                  | 14                             | 0.011                  | 87            | 1.023     | -8.1335                                                                | 0.0072                                                                          | -1.2232                                          | 0.0171                                                    | 0.6773                      | 0.0143                               | 0.3905                 | 0.0162                        | YC                       |
| 22 02 10           | +01 24 01           | GJ0846           | 3.85                    | 3774                  | 46                             | 0.014                  | 114           | 1.038     | -7.7439                                                                | 0.0091                                                                          | -1.2308                                          | 0.0111                                                    | 0.5671                      | 0.0157                               | 0.5165                 | 0.0162                        | RD                       |
| 22 02 29           | -37 04 51           | LHS3746          | 4.72                    | 3333                  | 15                             | 0.012                  | 24            | 1.015     | -8.3861                                                                | 0.0069                                                                          | -2.1473                                          | 0.0087                                                    | 0.2675                      | 0.0047                               | 0.3341                 | 0.0067                        | RD                       |
| 22 03 27           | -50 38 38           | LHS3748          | 4.29                    | 3514                  | 9                              | 0.011                  | 3             | 1.025     | -8.7636                                                                | 0.0063                                                                          | -1.6387                                          | 0.0409                                                    | 0.4090                      | 0.0194                               | 0.1842                 | 0.0193                        | RD                       |
| 22 04 22           | +15 05 52           | LSPM2204+1505    | 6.39                    | 2900                  | 16                             | 0.013                  | 155           | 1.007     | -9.7442                                                                | 0.0065                                                                          | -2.6729                                          | 0.0253                                                    | 0.1826                      | 0.0057                               | 0.0875                 | 0.0056                        | RD                       |
| 22 05 51           | -11 54 51           | LTT08848         | 3.69                    | 3859                  | 18                             | 0.013                  | 12            | 1.043     | -8.1515                                                                | 0.0083                                                                          | -0.9630                                          | 0.0272                                                    | 0.7384                      | 0.0241                               | 0.3090                 | 0.0210                        | RD                       |
| 22 06 23           | +17 22 21           | LTT16466         | 5.06                    | 3238                  | 19                             | 0.011                  | 95            | 1.015     | -8.9294                                                                | 0.0063                                                                          | -1.9658                                          | 0.0155                                                    | 0.3304                      | 0.0070                               | 0.1792                 | 0.0070                        | RD                       |
| 22 06 30           | +02 22 32           | LP639-019        | 5.28                    | 3164                  | 13                             | 0.011                  | 12            | 1.012     | -9.4752                                                                | 0.0060                                                                          | -2.5101                                          | 0.0232                                                    | 0.1850                      | 0.0052                               | 0.1002                 | 0.0059                        | RD                       |
| 22 06 41           | -44 58 07           | WT0870           | 5.54                    | 3084                  | 13                             | 0.011                  | 10            | 1.010     | -9.2757                                                                | 0.0057                                                                          | -2.2850                                          | 0.0104                                                    | 0.2523                      | 0.0037                               | 0.1326                 | 0.0033                        | RD                       |
| 22 07 48           | +05 39 10           | LP579-024        | 5.97                    | 3014                  | 19                             | 0.010                  | 3             | 1.009     | -9.8441                                                                | 0.0060                                                                          | -2.6690                                          | 0.0245                                                    | 0.1697                      | 0.0052                               | 0.0722                 | 0.0045                        | RD                       |
| 22 08 13           | +10 36 42           | LP519-036        | 5.44                    | 3117                  | 12                             | 0.010                  | 3             | 1.011     | -9.6074                                                                | 0.0062                                                                          | -2.3166                                          | 0.0195                                                    | 0.2382                      | 0.0056                               | 0.0886                 | 0.0043                        | RD                       |
| 22 09 40           | -04 38 27           | GJ0849           | 4.79                    | 3343                  | 42                             | 0.015                  | 179           | 1.018     | -7.9294                                                                | 0.0084                                                                          | -1.5441                                          | 0.0098                                                    | 0.5038                      | 0.0138                               | 0.5316                 | 0.0158                        | YC                       |
| 22 09 43           | +41 02 06           | G214-012         | 4.79                    | 3356                  | 24                             | 0.015                  | 3             | 1.018     | -8.8321                                                                | 0.0067                                                                          | -1.6261                                          | 0.0312                                                    | 0.4550                      | 0.0176                               | 0.1866                 | 0.0150                        | RD                       |
| 22 10 22           | +42 50 58           | LSPM2210+4250    | 5.32                    | 3217                  | 19                             | 0.012                  | 129           | 1.014     | -9.5646                                                                | 0.0066                                                                          | -2.5165                                          | 0.0140                                                    | 0.1777                      | 0.0035                               | 0.0874                 | 0.0030                        | RD                       |
| 22 11 17           | +41 00 55           | G214-014         | 3.71                    | 3819                  | 15                             | 0.011                  | 8             | 1.040     | -8.5597                                                                | 0.0071                                                                          | -1.3382                                          | 0.0229                                                    | 0.4894                      | 0.0134                               | 0.1972                 | 0.0113                        | RD                       |
| 22 11 30           | +18 25 34           | GJ0851           | 4.41                    | 3490                  | 27                             | 0.015                  | 11            | 1.024     | -7.9939                                                                | 0.0081                                                                          | -1.3648                                          | 0.0102                                                    | 0.5684                      | 0.0109                               | 0.4531                 | 0.0108                        | RD                       |
| 22 12 36           | +08 33 11           | LHS3773          | 4.50                    | 3419                  | 11                             | 0.011                  | 3             | 1.021     | -8.6350                                                                | 0.0056                                                                          | -1.7332                                          | 0.0276                                                    | 0.3875                      | 0.0126                               | 0.2256                 | 0.0158                        | RD                       |
| 22 13 36           | +25 58 11           | L1436-028        | 4.96                    | 3275                  | 9                              | 0.011                  | 3             | 1.016     | -9.1458                                                                | 0.0051                                                                          | -2.1172                                          | 0.0146                                                    | 0.2714                      | 0.0048                               | 0.1366                 | 0.0049                        | RD                       |
| 22 13 43           | -17 41 09           | GJ1265           | 5.52                    | 3083                  | 10                             | 0.015                  | 3             | 1.011     | -8.9631                                                                | 0.0086                                                                          | -2.4327                                          | 0.0196                                                    | 0.2116                      | 0.0050                               | 0.1889                 | 0.0089                        | RD                       |
| 22 14 31           | +27 51 19           | GJ0851.5         | 3.63                    | 3897                  | 12                             | 0.011                  | 22            | 1.045     | -8.2798                                                                | 0.0071                                                                          | -1.1645                                          | 0.0166                                                    | 0.5742                      | 0.0115                               | 0.2615                 | 0.0104                        | RD                       |
| 22 16 20           | +70 56 40           | GJ1266           | 4.10                    | 3623                  | 32                             | 0.011                  | 142           | 1.030     | -8.8148                                                                | 0.0073                                                                          | -1.6301                                          | 0.0233                                                    | 0.3886                      | 0.0124                               | 0.1634                 | 0.0098                        | RD                       |
| 22 17 18           | -08 48 13           | GJ0852           | 5.40                    | 3038                  | 111                            | 0.011                  | 22            | 1.009     | -8.9401                                                                | 0.0083                                                                          | -2.4416                                          | 0.0166                                                    | 0.2171                      | 0.0164                               | 0.2011                 | 0.0166                        | RD                       |
| 22 21 43           | -65 31 33           | L119-033         | 4.39                    | 3499                  | 11                             | 0.013                  | 3             | 1.024     | -8.7000                                                                | 0.0065                                                                          | -1.6642                                          | 0.0263                                                    | 0.4006                      | 0.0124                               | 0.1999                 | 0.0133                        | RD                       |
| 22 23 07           | -17 36 26           | LHS3799          | 5.98                    | 3044                  | 25                             | 0.015                  | 3             | 1.009     | -8.6745                                                                | 0.0079                                                                          | -2.4574                                          | 0.0096                                                    | 0.2123                      | 0.0042                               | 0.2719                 | 0.0064                        | RD                       |
| 22 23 33           | -57 13 14           | GJ0855           | 3.99                    | 3715                  | 20                             | 0.011                  | 3             | 1.034     | -8.3168                                                                | 0.0062                                                                          | -1.2614                                          | 0.0185                                                    | 0.5650                      | 0.0135                               | 0.2756                 | 0.0129                        | RD                       |
| 22 24 56           | +52 00 19           | GJ1268           | 5.74                    | 3022                  | 11                             | 0.012                  | 139           | 1.009     | -9.4513                                                                | 0.0070                                                                          | -2.6287                                          | 0.0148                                                    | 0.1769                      | 0.0033                               | 0.1128                 | 0.0040                        | RD                       |
| 22 25 17           | +59 24 50           | G232-070         | 5.02                    | 3191                  | 20                             | 0.013                  | 3             | 1.013     | -8.8549                                                                | 0.0078                                                                          | -1.8360                                          | 0.0184                                                    | 0.3953                      | 0.0097                               | 0.2011                 | 0.0092                        | RD                       |
| 22 25 51           | +31 48 50           | G189-018         | 5.05                    | 3183                  | 10                             | 0.012                  | 137           | 1.013     | -9.4438                                                                | 0.0063                                                                          | -2.1765                                          | 0.0171                                                    | 0.2683                      | 0.0055                               | 0.1026                 | 0.0043                        | RD                       |
| 22 26 16           | +03 00 19           | LP640-073        | 5.08                    | 3229                  | 25                             | 0.011                  | 3             | 1.014     | -9.1873                                                                | 0.0074                                                                          | -2.0693                                          | 0.0133                                                    | 0.2959                      | 0.0064                               | 0.1339                 | 0.0045                        | RD                       |
| 22 27 03           | +06 49 33           | LTT16577         | 5.11                    | 3221                  | 18                             | 0.015                  | 99            | 1.014     | -8.9602                                                                | 0.0071                                                                          | -2.1859                                          | 0.0129                                                    | 0.2593                      | 0.0048                               | 0.1749                 | 0.0054                        | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 22 27 08           | +77 51 58           | LP027-095        | 5.99                    | 3043                  | 21                             | 0.012                  | 3             | 1.009     | -9.4628                                                                | 0.0053                                                                          | -2.5829                                        | 0.0164                                                  | 0.1839                   | 0.0043                            | 0.1098                 | 0.0047                          | RD                       |
| 22 28 46           | +18 55 54           | LFT16590         | 3.76                    | 3796                  | 19                             | 0.012                  | 12            | 1.039     | -8.3971                                                                | 0.0067                                                                          | -1.2167                                        | 0.0179                                                  | 0.5698                   | 0.0130                            | 0.2407                 | 0.0107                          | RD                       |
| 22 28 54           | -13 25 18           | LHS0523          | 7.42                    | 2714                  | 18                             | 0.014                  | 63            | 1.004     | -9.7222                                                                | 0.0070                                                                          | -3.1240                                        | 0.0250                                                  | 0.1240                   | 0.0039                            | 0.1024                 | 0.0065                          | RD                       |
| 22 29 06           | +01 39 48           | LP640-074        | 3.74                    | 3857                  | 23                             | 0.012                  | 3             | 1.043     | -8.3016                                                                | 0.0077                                                                          | -1.1492                                        | 0.0200                                                  | 0.5964                   | 0.0155                            | 0.2602                 | 0.0129                          | RD                       |
| 22 29 11           | +54 56 51           | LSPM2229+5456    | 5.51                    | 3106                  | 9                              | 0.012                  | 24            | 1.011     | -9.7996                                                                | 0.0070                                                                          | -2.5110                                        | 0.0187                                                  | 0.1918                   | 0.0043                            | 0.0715                 | 0.0033                          | RD                       |
| 22 29 48           | +41 28 49           | GJ1270           | 5.20                    | 3183                  | 12                             | 0.011                  | 9             | 1.013     | -8.9108                                                                | 0.0062                                                                          | -2.1366                                        | 0.0185                                                  | 0.2810                   | 0.0063                            | 0.1895                 | 0.0087                          | RD                       |
| 22 31 05           | +23 50 57           | LSPM2231+2350    | 5.00                    | 3255                  | 17                             | 0.012                  | 14            | 1.015     | -9.4262                                                                | 0.0055                                                                          | -2.2606                                        | 0.0196                                                  | 0.2329                   | 0.0058                            | 0.1001                 | 0.0050                          | RD                       |
| 22 33 02           | +09 22 41           | GJ0863           | 4.02                    | 3685                  | 23                             | 0.012                  | 17            | 1.033     | -8.1695                                                                | 0.0083                                                                          | -1.4258                                        | 0.0151                                                  | 0.4753                   | 0.0101                            | 0.3319                 | 0.0119                          | RD                       |
| 22 34 00           | -25 14 33           | LP876-034        | 4.41                    | 3499                  | 19                             | 0.010                  | 6             | 1.024     | -8.4043                                                                | 0.0079                                                                          | -1.4969                                        | 0.0229                                                  | 0.4856                   | 0.0138                            | 0.2809                 | 0.0160                          | RD                       |
| 22 34 32           | +19 58 13           | LP460-042        | 5.37                    | 3095                  | 18                             | 0.012                  | 74            | 1.011     | -9.5741                                                                | 0.0065                                                                          | -2.3420                                        | 0.0165                                                  | 0.2345                   | 0.0052                            | 0.0934                 | 0.0039                          | RD                       |
| 22 34 47           | +27 57 54           | LSPM2234+2757    | 5.98                    | 3010                  | 13                             | 0.012                  | 19            | 1.009     | -9.8768                                                                | 0.0069                                                                          | -2.7746                                        | 0.0280                                                  | 0.1508                   | 0.0050                            | 0.0697                 | 0.0049                          | RD                       |
| 22 34 54           | -01 04 58           | LHS0526          | 5.30                    | 3210                  | 16                             | 0.011                  | 3             | 1.014     | -9.5075                                                                | 0.0053                                                                          | -2.2693                                        | 0.0382                                                  | 0.2371                   | 0.0107                            | 0.0937                 | 0.0092                          | RD                       |
| 22 40 01           | +05 32 16           | LSPM2240+0532    | 7.82                    | 2533                  | 24                             | 0.017                  | 199           | 1.002     | -10.3878                                                               | 0.0074                                                                          | -3.1706                                        | 0.0362                                                  | 0.1349                   | 0.0062                            | 0.0546                 | 0.0051                          | RD                       |
| 22 42 38           | +17 40 09           | GJ1271           | 4.58                    | 3413                  | 24                             | 0.011                  | 3             | 1.021     | -8.5454                                                                | 0.0067                                                                          | -2.8453                                        | 0.0497                                                  | 0.1699                   | 0.0105                            | 0.0668                 | 0.0086                          | RD                       |
| 22 43 23           | +22 08 18           | G127-050         | 5.74                    | 3001                  | 33                             | 0.010                  | 3             | 1.009     | -9.4378                                                                | 0.0052                                                                          | -2.3815                                        | 0.0246                                                  | 0.2384                   | 0.0085                            | 0.1162                 | 0.0077                          | RD                       |
| 22 44 58           | -33 15 02           | GJ0871.1         | 5.18                    | 3193                  | 12                             | 0.012                  | 3             | 1.013     | -8.4743                                                                | 0.0060                                                                          | -1.2751                                        | 0.0189                                                  | 0.7531                   | 0.0173                            | 0.3113                 | 0.0147                          | YG                       |
| 22 46 26           | -06 39 26           | LHS3850          | 6.14                    | 2999                  | 24                             | 0.012                  | 3             | 1.008     | -9.6970                                                                | 0.0062                                                                          | -2.6555                                        | 0.0380                                                  | 0.1741                   | 0.0081                            | 0.0863                 | 0.0085                          | RD                       |
| 22 46 50           | +44 20 03           | GJ0873           | 4.92                    | 3266                  | 56                             | 0.017                  | 225           | 1.015     | -7.7877                                                                | 0.0081                                                                          | -1.8870                                        | 0.0083                                                  | 0.3557                   | 0.0128                            | 0.6558                 | 0.0237                          | RD                       |
| 22 48 23           | +12 32 11           | LP521-018        | 6.77                    | 2850                  | 26                             | 0.013                  | 151           | 1.006     | -9.8762                                                                | 0.0066                                                                          | -2.8667                                        | 0.0298                                                  | 0.1512                   | 0.0059                            | 0.0778                 | 0.0060                          | RD                       |
| 22 50 19           | -07 05 24           | GJ0875           | 3.76                    | 3833                  | 15                             | 0.013                  | 3             | 1.041     | -8.0415                                                                | 0.0081                                                                          | -1.2463                                        | 0.0138                                                  | 0.5401                   | 0.0095                            | 0.3555                 | 0.0111                          | RD                       |
| 22 50 21           | +51 36 26           | LSPM2250+5136    | 5.65                    | 3130                  | 26                             | 0.010                  | 3             | 1.012     | -9.4558                                                                | 0.0056                                                                          | -2.5186                                        | 0.0175                                                  | 0.1872                   | 0.0049                            | 0.1046                 | 0.0049                          | RD                       |
| 22 50 36           | +61 46 10           | G241-025         | 5.76                    | 3016                  | 19                             | 0.012                  | 39            | 1.009     | -9.6006                                                                | 0.0070                                                                          | -2.3396                                        | 0.0211                                                  | 0.2477                   | 0.0068                            | 0.0954                 | 0.0051                          | RD                       |
| 22 50 38           | +34 51 22           | GJ1274           | 4.21                    | 3576                  | 14                             | 0.012                  | 26            | 1.028     | -8.6317                                                                | 0.0067                                                                          | -1.6251                                        | 0.0194                                                  | 0.4010                   | 0.0095                            | 0.2070                 | 0.0100                          | RD                       |
| 22 51 54           | +31 45 15           | GJ0875.1         | 4.75                    | 3363                  | 19                             | 0.010                  | 21            | 1.019     | -8.4272                                                                | 0.0069                                                                          | -1.5915                                        | 0.0148                                                  | 0.4715                   | 0.0097                            | 0.2963                 | 0.0108                          | RD                       |
| 22 52 40           | +75 04 19           | LP048-305        | 5.62                    | 3124                  | 17                             | 0.011                  | 3             | 1.011     | -9.0010                                                                | 0.0065                                                                          | -2.2902                                        | 0.0195                                                  | 0.2444                   | 0.0061                            | 0.1773                 | 0.0087                          | RD                       |
| 22 52 48           | -28 47 43           | LHS5394          | 4.29                    | 3519                  | 12                             | 0.014                  | 3             | 1.025     | -8.6762                                                                | 0.0090                                                                          | -1.5962                                        | 0.0258                                                  | 0.4282                   | 0.0131                            | 0.2031                 | 0.0129                          | RD                       |
| 22 53 17           | -14 15 49           | GJ0876           | 5.17                    | 3182                  | 52                             | 0.035                  | 209           | 1.013     | -7.7049                                                                | 0.0098                                                                          | -1.8726                                        | 0.0099                                                  | 0.3811                   | 0.0131                            | 0.7602                 | 0.0263                          | RD                       |
| 22 54 11           | +25 27 57           | LP401-010        | 6.68                    | 2813                  | 36                             | 0.012                  | 13            | 1.005     | -10.0536                                                               | 0.0066                                                                          | -2.9653                                        | 0.0192                                                  | 0.1386                   | 0.0047                            | 0.0651                 | 0.0035                          | RD                       |
| 22 54 22           | +60 59 44           | GJ0878           | 4.81                    | 3323                  | 16                             | 0.009                  | 3             | 1.017     | -8.8702                                                                | 0.0058                                                                          | -1.8702                                        | 0.0242                                                  | 0.3389                   | 0.0100                            | 0.1822                 | 0.0112                          | RD                       |
| 22 54 46           | -05 28 26           | LHS3872          | 5.08                    | 3222                  | 11                             | 0.011                  | 3             | 1.014     | -9.2136                                                                | 0.0067                                                                          | -1.9738                                        | 0.0468                                                  | 0.3308                   | 0.0179                            | 0.1305                 | 0.0156                          | RD                       |
| 22 55 27           | -52 18 10           | HIP113201        | 4.09                    | 3628                  | 30                             | 0.013                  | 3             | 1.030     | -8.6066                                                                | 0.0077                                                                          | -1.3231                                        | 0.0315                                                  | 0.5519                   | 0.0220                            | 0.2071                 | 0.0167                          | RD                       |
| 22 55 46           | -75 27 31           | GJ0877           | 4.58                    | 3410                  | 28                             | 0.013                  | 185           | 1.020     | -7.9768                                                                | 0.0071                                                                          | -1.6118                                        | 0.0083                                                  | 0.4480                   | 0.0085                            | 0.4839                 | 0.0104                          | RD                       |
| 22 55 57           | +05 45 18           | L1150-065        | 3.97                    | 3734                  | 20                             | 0.011                  | 3             | 1.036     | -8.5225                                                                | 0.0063                                                                          | -1.2508                                        | 0.0234                                                  | 0.5660                   | 0.0164                            | 0.2152                 | 0.0128                          | RD                       |
| 22 56 13           | +68 15 29           | LHS3877          | 4.63                    | 3383                  | 21                             | 0.012                  | 13            | 1.019     | -9.6561                                                                | 0.0068                                                                          | -2.3822                                        | 0.0253                                                  | 0.1875                   | 0.0059                            | 0.0711                 | 0.0046                          | SC                       |
| 22 56 25           | -60 03 49           | GJ1277           | 5.89                    | 2988                  | 13                             | 0.011                  | 13            | 1.008     | -8.9782                                                                | 0.0068                                                                          | -2.4611                                        | 0.0086                                                  | 0.2194                   | 0.0029                            | 0.1989                 | 0.0035                          | RD                       |
| 22 56 35           | +16 33 12           | GJ0880           | 4.13                    | 3607                  | 75                             | 0.014                  | 263           | 1.029     | -7.4335                                                                | 0.0082                                                                          | -1.2694                                        | 0.0087                                                  | 0.5937                   | 0.0254                            | 0.8083                 | 0.0350                          | RD                       |
| 22 58 15           | +61 44 27           | LP109-057        | 4.70                    | 3377                  | 11                             | 0.010                  | 29            | 1.019     | -9.4531                                                                | 0.0069                                                                          | -2.4310                                        | 0.0138                                                  | 0.1778                   | 0.0031                            | 0.0901                 | 0.0029                          | SC                       |
| 22 58 32           | +10 14 59           | LP521-055        | 6.18                    | 2909                  | 7                              | 0.011                  | 3             | 1.007     | -9.5457                                                                | 0.0059                                                                          | -2.3218                                        | 0.0268                                                  | 0.2718                   | 0.0085                            | 0.1092                 | 0.0074                          | RD                       |
| 23 00 33           | -23 57 10           | L718-071         | 4.14                    | 3636                  | 15                             | 0.013                  | 90            | 1.030     | -8.5993                                                                | 0.0073                                                                          | -1.4865                                        | 0.0223                                                  | 0.4550                   | 0.0122                            | 0.2078                 | 0.0115                          | RD                       |

## Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{M_C}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[ $L_{\odot}$ ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[ $L_{\odot}$ ]<br>(13) | R<br>$R_{\odot}$<br>(14) | $\sigma_R$<br>$R_{\odot}$<br>(15) | $\theta$<br>''<br>(16) | $\sigma_{\theta}$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|-------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------|--------------------------|-----------------------------------|------------------------|---------------------------------|--------------------------|
| 23 01 57           | +76 11 42           | LP027-277        | 5.39                    | 3117                  | 18                             | 0.011                   | 56            | 1.011     | -9.3850                                                                | 0.0068                                                                          | -2.3564                                        | 0.0152                                                  | 0.2275                   | 0.0047                            | 0.1145                 | 0.0043                          | RD                       |
| 23 02 52           | +43 38 16           | LSPM2302+4338    | 5.52                    | 3102                  | 7                              | 0.012                   | 169           | 1.011     | -9.0970                                                                | 0.0060                                                                          | -2.4028                                        | 0.0115                                                  | 0.2177                   | 0.0030                            | 0.1610                 | 0.0043                          | RD                       |
| 23 03 21           | -49 43 34           | HIP113850        | 3.86                    | 3786                  | 12                             | 0.013                   | 9             | 1.038     | -8.3369                                                                | 0.0086                                                                          | -1.2263                                        | 0.0198                                                  | 0.5664                   | 0.0134                            | 0.2593                 | 0.0123                          | RD                       |
| 23 06 05           | +63 55 34           | HIP114066        | 3.84                    | 3797                  | 23                             | 0.013                   | 20            | 1.039     | -8.4110                                                                | 0.0080                                                                          | -1.1376                                        | 0.0188                                                  | 0.6238                   | 0.0155                            | 0.2368                 | 0.0110                          | YG                       |
| 23 06 29           | -05 02 29           | 2MA2306-0502     | 8.49                    | 2459                  | 26                             | 0.011                   | 3             | 1.002     | -9.9595                                                                | 0.0060                                                                          | -3.2546                                        | 0.0090                                                  | 0.1300                   | 0.0031                            | 0.0949                 | 0.0027                          | RD                       |
| 23 06 58           | -05 08 59           | SSS2307-5009     | 8.91                    | 2261                  | 129                            | 0.015                   | 35            | 1.001     | -10.7667                                                               | 0.0081                                                                          | -3.6084                                        | 0.0167                                                  | 0.1023                   | 0.0118                            | 0.0443                 | 0.0053                          | RD                       |
| 23 07 20           | -84 52 04           | SCR2307-8452     | 5.68                    | 3041                  | 30                             | 0.010                   | 20            | 1.009     | -9.5138                                                                | 0.0069                                                                          | -2.6559                                        | 0.0146                                                  | 0.1693                   | 0.0044                            | 0.1036                 | 0.0041                          | RD                       |
| 23 07 30           | +68 40 05           | LHS0535          | 4.53                    | 3418                  | 19                             | 0.014                   | 3             | 1.021     | -8.7960                                                                | 0.0069                                                                          | -2.0215                                        | 0.0149                                                  | 0.2781                   | 0.0057                            | 0.1875                 | 0.0069                          | RD                       |
| 23 08 07           | +03 19 44           | GJ0889.1         | 3.84                    | 3777                  | 20                             | 0.010                   | 90            | 1.038     | -8.4303                                                                | 0.0067                                                                          | -1.5361                                        | 0.0161                                                  | 0.3985                   | 0.0085                            | 0.2341                 | 0.0093                          | RD                       |
| 23 08 20           | -15 24 36           | GJ0890           | 3.73                    | 3812                  | 27                             | 0.010                   | 3             | 1.040     | -8.4454                                                                | 0.0059                                                                          | -1.2130                                        | 0.0185                                                  | 0.5674                   | 0.0145                            | 0.2258                 | 0.0108                          | YG                       |
| 23 08 26           | +31 40 24           | LHS0536          | 3.69                    | 3854                  | 33                             | 0.012                   | 160           | 1.042     | -9.9683                                                                | 0.0070                                                                          | -2.1739                                        | 0.0586                                                  | 0.1836                   | 0.0128                            | 0.0383                 | 0.0058                          | SD                       |
| 23 09 58           | +55 06 47           | G233-042         | 6.37                    | 2913                  | 14                             | 0.010                   | 150           | 1.007     | -9.6071                                                                | 0.0063                                                                          | -2.7695                                        | 0.0149                                                  | 0.1619                   | 0.0032                            | 0.1015                 | 0.0037                          | RD                       |
| 23 10 16           | -25 55 53           | GJ0891           | 4.28                    | 3527                  | 20                             | 0.012                   | 65            | 1.025     | -8.4443                                                                | 0.0066                                                                          | -1.5461                                        | 0.0225                                                  | 0.4518                   | 0.0127                            | 0.2641                 | 0.0150                          | RD                       |
| 23 10 42           | -19 13 35           | GJ1281           | 4.22                    | 3565                  | 20                             | 0.012                   | 88            | 1.027     | -8.9133                                                                | 0.0070                                                                          | -1.6469                                        | 0.0254                                                  | 0.3936                   | 0.0123                            | 0.1506                 | 0.0097                          | RD                       |
| 23 11 54           | +50 32 15           | LSPM2311+5032    | 5.87                    | 3007                  | 8                              | 0.011                   | 164           | 1.009     | -9.6932                                                                | 0.0066                                                                          | -2.6369                                        | 0.0171                                                  | 0.1770                   | 0.0036                            | 0.0863                 | 0.0036                          | RD                       |
| 23 12 11           | -14 06 12           | LHS3909          | 4.75                    | 3348                  | 25                             | 0.010                   | 18            | 1.018     | -8.9589                                                                | 0.0065                                                                          | -1.9431                                        | 0.0171                                                  | 0.3174                   | 0.0078                            | 0.1621                 | 0.0071                          | RD                       |
| 23 13 47           | +21 17 29           | LP462-011        | 6.47                    | 2903                  | 20                             | 0.009                   | 3             | 1.007     | -9.9486                                                                | 0.0051                                                                          | -2.2284                                        | 0.0289                                                  | 0.3040                   | 0.0109                            | 0.0690                 | 0.0052                          | YG                       |
| 23 14 17           | -19 38 39           | GJ2154           | 3.86                    | 3793                  | 27                             | 0.012                   | 17            | 1.039     | -8.2595                                                                | 0.0076                                                                          | -1.1697                                        | 0.0199                                                  | 0.6022                   | 0.0163                            | 0.2824                 | 0.0142                          | RD                       |
| 23 15 52           | -37 33 31           | LHS0539          | 5.38                    | 3091                  | 13                             | 0.012                   | 32            | 1.011     | -9.5400                                                                | 0.0066                                                                          | -2.4912                                        | 0.0178                                                  | 0.1980                   | 0.0044                            | 0.0973                 | 0.0043                          | RD                       |
| 23 16 08           | +06 44 36           | LT16837          | 4.80                    | 3312                  | 10                             | 0.012                   | 8             | 1.017     | -9.0284                                                                | 0.0074                                                                          | -2.0283                                        | 0.0245                                                  | 0.2940                   | 0.0085                            | 0.1529                 | 0.0093                          | RD                       |
| 23 17 00           | -23 23 47           | L719-021         | 3.60                    | 3927                  | 22                             | 0.013                   | 3             | 1.047     | -8.4836                                                                | 0.0066                                                                          | -1.3303                                        | 0.0171                                                  | 0.4670                   | 0.0105                            | 0.2035                 | 0.0087                          | RD                       |
| 23 17 14           | +62 56 12           | G241-048         | 4.99                    | 3269                  | 9                              | 0.012                   | 16            | 1.016     | -9.5185                                                                | 0.0070                                                                          | -2.2905                                        | 0.0140                                                  | 0.2231                   | 0.0038                            | 0.0892                 | 0.0029                          | RD                       |
| 23 17 24           | +38 12 41           | LHS3923          | 4.50                    | 3427                  | 11                             | 0.011                   | 3             | 1.021     | -8.4348                                                                | 0.0067                                                                          | -1.4531                                        | 0.0252                                                  | 0.5324                   | 0.0159                            | 0.2827                 | 0.0179                          | RD                       |
| 23 17 50           | -48 18 47           | LHS3925          | 4.91                    | 3288                  | 9                              | 0.012                   | 3             | 1.016     | -9.1576                                                                | 0.0077                                                                          | -2.0041                                        | 0.0133                                                  | 0.3067                   | 0.0050                            | 0.1336                 | 0.0040                          | RD                       |
| 23 18 18           | +46 17 22           | GJ0894.1         | 3.88                    | 3790                  | 25                             | 0.011                   | 15            | 1.039     | -9.6291                                                                | 0.0065                                                                          | -1.1427                                        | 0.0222                                                  | 0.6222                   | 0.0179                            | 0.2343                 | 0.0133                          | RD                       |
| 23 21 13           | +30 23 10           | LP346-008        | 5.51                    | 3107                  | 8                              | 0.012                   | 166           | 1.011     | -8.4230                                                                | 0.0062                                                                          | -2.4230                                        | 0.0188                                                  | 0.2121                   | 0.0047                            | 0.0870                 | 0.0040                          | RD                       |
| 23 21 37           | +17 17 25           | LHS0543          | 5.14                    | 3205                  | 20                             | 0.013                   | 3             | 1.014     | -8.3056                                                                | 0.0066                                                                          | -1.7367                                        | 0.0127                                                  | 0.4392                   | 0.0084                            | 0.3752                 | 0.0118                          | YG                       |
| 23 24 00           | +28 34 04           | LHS3940          | 5.85                    | 3003                  | 5                              | 0.010                   | 7             | 1.009     | -9.7483                                                                | 0.0069                                                                          | -2.7498                                        | 0.0221                                                  | 0.1558                   | 0.0040                            | 0.0812                 | 0.0044                          | RD                       |
| 23 24 26           | +73 57 44           | LP048-485        | 5.31                    | 3172                  | 9                              | 0.011                   | 15            | 1.013     | -9.3771                                                                | 0.0065                                                                          | -2.2956                                        | 0.0191                                                  | 0.2356                   | 0.0053                            | 0.1116                 | 0.0053                          | RD                       |
| 23 24 31           | +57 51 16           | GJ0895           | 4.13                    | 3648                  | 29                             | 0.013                   | 3             | 1.031     | -8.0007                                                                | 0.0082                                                                          | -1.2728                                        | 0.0107                                                  | 0.5783                   | 0.0117                            | 0.4114                 | 0.0106                          | RD                       |
| 23 25 40           | +53 08 06           | LHS0543a         | 5.68                    | 3115                  | 14                             | 0.011                   | 19            | 1.011     | -9.3241                                                                | 0.0065                                                                          | -2.1166                                        | 0.0154                                                  | 0.3003                   | 0.0060                            | 0.1230                 | 0.0047                          | RD                       |
| 23 26 12           | +08 53 38           | GJ2155           | 3.67                    | 3890                  | 13                             | 0.010                   | 10            | 1.045     | -8.3623                                                                | 0.0071                                                                          | -1.1679                                        | 0.0188                                                  | 0.5740                   | 0.0130                            | 0.2386                 | 0.0110                          | RD                       |
| 23 29 23           | +41 28 07           | G190-028         | 7.92                    | 2600                  | 17                             | 0.011                   | 3             | 1.017     | -8.5065                                                                | 0.0062                                                                          | -1.6712                                        | 0.0120                                                  | 0.4428                   | 0.0075                            | 0.2783                 | 0.0081                          | RD                       |
| 23 30 16           | -47 36 45           | ADP2330-4737     | 4.82                    | 3314                  | 21                             | 0.014                   | 3             | 1.003     | -9.9159                                                                | 0.0067                                                                          | -3.1442                                        | 0.0210                                                  | 0.1320                   | 0.0038                            | 0.0893                 | 0.0048                          | RD                       |
| 23 31 22           | -27 49 50           | DEN2331-2749     | 8.48                    | 2494                  | 28                             | 0.017                   | 51            | 1.002     | -10.0899                                                               | 0.0076                                                                          | -3.2744                                        | 0.0150                                                  | 0.1236                   | 0.0035                            | 0.0795                 | 0.0033                          | RD                       |
| 23 31 52           | +19 56 14           | GJ0896           | 4.96                    | 3179                  | 112                            | 0.013                   | 3             | 1.013     | -7.7933                                                                | 0.0101                                                                          | -1.7059                                        | 0.0109                                                  | 0.4624                   | 0.0332                            | 0.6876                 | 0.0498                          | YG                       |
| 23 31 55           | +69 17 17           | LHS3967          | 5.84                    | 3008                  | 8                              | 0.010                   | 18            | 1.009     | -9.7526                                                                | 0.0069                                                                          | -2.6327                                        | 0.0233                                                  | 0.1777                   | 0.0049                            | 0.0805                 | 0.0047                          | RD                       |
| 23 34 03           | +00 10 46           | GJ0899           | 4.35                    | 3524                  | 9                              | 0.013                   | 3             | 1.025     | -8.3782                                                                | 0.0070                                                                          | -1.6005                                        | 0.0178                                                  | 0.4250                   | 0.0090                            | 0.2854                 | 0.0123                          | RD                       |
| 23 35 10           | -02 23 21           | GJ1286           | 6.55                    | 2882                  | 17                             | 0.010                   | 3             | 1.006     | -9.0423                                                                | 0.0057                                                                          | -2.8290                                        | 0.0124                                                  | 0.1545                   | 0.0029                            | 0.1987                 | 0.0063                          | RD                       |

# Fundamental Parameters

| R.A.<br>hms<br>(1) | Decl.<br>dms<br>(2) | Star Name<br>(3) | $V - K^a$<br>mag<br>(4) | $T_{eff}$<br>K<br>(5) | $\sigma_{T_{eff}}$<br>K<br>(6) | $\sigma_{MC}^b$<br>(7) | F iter<br>(8) | BC<br>(9) | $\log_{10} F_{bol}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(10) | $\sigma_{\log_{10} F_{bol}}$<br>[erg s <sup>-1</sup> cm <sup>-2</sup> ]<br>(11) | $\log_{10} L_{bol}$<br>[L <sub>⊙</sub> ]<br>(12) | $\sigma_{\log_{10} L_{bol}}$<br>[L <sub>⊙</sub> ]<br>(13) | R<br>R <sub>⊙</sub><br>(14) | $\sigma_R$<br>R <sub>⊙</sub><br>(15) | $\theta$<br>''<br>(16) | $\sigma_\theta$<br>''<br>(17) | Pop <sup>c</sup><br>(18) |
|--------------------|---------------------|------------------|-------------------------|-----------------------|--------------------------------|------------------------|---------------|-----------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|-----------------------------|--------------------------------------|------------------------|-------------------------------|--------------------------|
| 23 35 41           | +06 11 20           | LHS3978          | 6.00                    | 3040                  | 22                             | 0.011                  | 3             | 1.009     | -9.8115                                                                | 0.0058                                                                          | -2.5819                                          | 0.0246                                                    | 0.1845                      | 0.0058                               | 0.0736                 | 0.0047                        | RD                       |
| 23 36 26           | +55 29 44           | LTT16952         | 4.12                    | 3618                  | 28                             | 0.009                  | 3             | 1.030     | -8.6716                                                                | 0.0057                                                                          | -1.3847                                          | 0.0262                                                    | 0.5169                      | 0.0176                               | 0.1932                 | 0.0131                        | RD                       |
| 23 36 52           | -36 28 52           | LHS0547          | 5.34                    | 3092                  | 15                             | 0.013                  | 6             | 1.011     | -9.0583                                                                | 0.0081                                                                          | -2.4347                                          | 0.0130                                                    | 0.2113                      | 0.0038                               | 0.1694                 | 0.0050                        | RD                       |
| 23 37 36           | +16 22 03           | LP463-023        | 6.45                    | 2897                  | 12                             | 0.013                  | 3             | 1.007     | -9.5895                                                                | 0.0065                                                                          | -2.8481                                          | 0.0318                                                    | 0.1495                      | 0.0056                               | 0.1047                 | 0.0085                        | RD                       |
| 23 38 17           | -41 31 04           | LTT09635         | 4.44                    | 3483                  | 10                             | 0.014                  | 11            | 1.023     | -8.6558                                                                | 0.0077                                                                          | -1.6183                                          | 0.0296                                                    | 0.4262                      | 0.0147                               | 0.2122                 | 0.0158                        | RD                       |
| 23 38 42           | +39 09 26           | LHS3991          | 4.84                    | 3312                  | 11                             | 0.011                  | 3             | 1.017     | -9.1713                                                                | 0.0062                                                                          | -2.1927                                          | 0.0136                                                    | 0.2433                      | 0.0042                               | 0.1297                 | 0.0042                        | RD                       |
| 23 40 22           | +34 33 14           | LHS3997          | 6.19                    | 2906                  | 7                              | 0.012                  | 21            | 1.007     | -9.6248                                                                | 0.0074                                                                          | -2.6043                                          | 0.0205                                                    | 0.1967                      | 0.0047                               | 0.0999                 | 0.0050                        | RD                       |
| 23 41 55           | +44 10 39           | GJ0905           | 6.36                    | 2897                  | 27                             | 0.013                  | 41            | 1.007     | -8.1376                                                                | 0.0088                                                                          | -2.6422                                          | 0.0088                                                    | 0.1895                      | 0.0041                               | 0.5569                 | 0.0120                        | RD                       |
| 23 43 06           | +36 32 13           | GJ1289           | 5.34                    | 3099                  | 19                             | 0.013                  | 3             | 1.011     | -8.6025                                                                | 0.0070                                                                          | -2.2911                                          | 0.0112                                                    | 0.2481                      | 0.0044                               | 0.2850                 | 0.0077                        | RD                       |
| 23 43 53           | +61 02 16           | LHS4005a         | 4.74                    | 3340                  | 17                             | 0.011                  | 3             | 1.018     | -9.1034                                                                | 0.0063                                                                          | -2.0876                                          | 0.0148                                                    | 0.2699                      | 0.0054                               | 0.1378                 | 0.0051                        | RD                       |
| 23 44 21           | +21 36 05           | GJ1290           | 5.07                    | 3231                  | 13                             | 0.012                  | 3             | 1.014     | -8.9810                                                                | 0.0055                                                                          | -1.8002                                          | 0.0387                                                    | 0.4016                      | 0.0182                               | 0.1696                 | 0.0168                        | RD                       |
| 23 45 41           | +49 42 30           | LSPM2345+4942    | 5.21                    | 3220                  | 35                             | 0.012                  | 90            | 1.014     | -9.2826                                                                | 0.0068                                                                          | -2.2146                                          | 0.0136                                                    | 0.2510                      | 0.0068                               | 0.1207                 | 0.0046                        | RD                       |
| 23 46 28           | +74 34 10           | LP049-185        | 5.10                    | 3208                  | 14                             | 0.014                  | 157           | 1.014     | -9.4917                                                                | 0.0066                                                                          | -2.5146                                          | 0.0131                                                    | 0.1790                      | 0.0031                               | 0.0956                 | 0.0030                        | RD                       |
| 23 47 21           | +42 38 08           | LP239-052        | 6.08                    | 3019                  | 15                             | 0.011                  | 3             | 1.009     | -9.7698                                                                | 0.0057                                                                          | -2.7556                                          | 0.0213                                                    | 0.1531                      | 0.0041                               | 0.0783                 | 0.0042                        | RD                       |
| 23 48 03           | +49 00 57           | GJ0907           | 4.15                    | 3614                  | 18                             | 0.011                  | 3             | 1.029     | -8.7996                                                                | 0.0067                                                                          | -1.9215                                          | 0.0145                                                    | 0.2792                      | 0.0054                               | 0.1670                 | 0.0059                        | SC                       |
| 23 49 13           | +02 24 04           | GJ0908           | 3.94                    | 3692                  | 113                            | 1.329                  | 317           | 1.033     | -7.6077                                                                | 0.0074                                                                          | -1.5635                                          | 0.0080                                                    | 0.4041                      | 0.0250                               | 0.6315                 | 0.0394                        | RD                       |
| 23 49 54           | +27 21 41           | LP403-016        | 5.03                    | 3255                  | 13                             | 0.011                  | 8             | 1.015     | -9.3135                                                                | 0.0066                                                                          | -2.0505                                          | 0.0191                                                    | 0.2967                      | 0.0069                               | 0.1140                 | 0.0054                        | RD                       |
| 23 50 32           | -09 33 33           | LHS4021          | 5.40                    | 3131                  | 25                             | 0.031                  | 173           | 1.012     | -8.9440                                                                | 0.0097                                                                          | -2.0396                                          | 0.0153                                                    | 0.3247                      | 0.0077                               | 0.1885                 | 0.0068                        | YC                       |
| 23 50 54           | +38 29 33           | LP291-024        | 5.26                    | 3176                  | 19                             | 0.012                  | 13            | 1.013     | -9.2836                                                                | 0.0072                                                                          | -2.1493                                          | 0.0238                                                    | 0.2782                      | 0.0083                               | 0.1239                 | 0.0075                        | RD                       |
| 23 51 22           | +23 44 21           | G068-046         | 5.32                    | 3156                  | 17                             | 0.011                  | 3             | 1.012     | -9.2386                                                                | 0.0055                                                                          | -2.1007                                          | 0.0279                                                    | 0.2978                      | 0.0101                               | 0.1321                 | 0.0094                        | YG                       |
| 23 53 22           | +52 13 44           | LSPM2353+5213    | 5.13                    | 3220                  | 12                             | 0.018                  | 147           | 1.014     | -9.3115                                                                | 0.0075                                                                          | -2.0875                                          | 0.0186                                                    | 0.2906                      | 0.0066                               | 0.1168                 | 0.0053                        | RD                       |
| 23 53 25           | -70 56 41           | L085-031         | 5.23                    | 3189                  | 15                             | 0.014                  | 3             | 1.013     | -8.8287                                                                | 0.0077                                                                          | -2.1455                                          | 0.0143                                                    | 0.2770                      | 0.0052                               | 0.2075                 | 0.0070                        | YG                       |
| 23 53 50           | -75 37 57           | L026-027         | 4.47                    | 3471                  | 21                             | 0.012                  | 53            | 1.023     | -7.8878                                                                | 0.0074                                                                          | -1.3935                                          | 0.0087                                                    | 0.5558                      | 0.0088                               | 0.5173                 | 0.0098                        | RD                       |
| 23 53 59           | +28 28 15           | G130-021         | 5.60                    | 3081                  | 5                              | 0.011                  | 27            | 1.010     | -9.6119                                                                | 0.0069                                                                          | -2.4973                                          | 0.0166                                                    | 0.1979                      | 0.0038                               | 0.0902                 | 0.0036                        | RD                       |
| 23 54 01           | -33 16 24           | LHS4039          | 4.85                    | 3310                  | 23                             | 0.011                  | 4             | 1.017     | -9.1280                                                                | 0.0066                                                                          | -1.9188                                          | 0.0134                                                    | 0.3340                      | 0.0069                               | 0.1365                 | 0.0046                        | RD                       |
| 23 54 11           | +51 41 10           | G217-023         | 4.78                    | 3333                  | 13                             | 0.012                  | 4             | 1.018     | -9.1694                                                                | 0.0063                                                                          | -2.1999                                          | 0.0184                                                    | 0.2382                      | 0.0054                               | 0.1283                 | 0.0059                        | RD                       |
| 23 54 46           | -21 46 28           | GJ0911           | 3.67                    | 3888                  | 19                             | 0.012                  | 5             | 1.045     | -8.4431                                                                | 0.0076                                                                          | -1.1758                                          | 0.0279                                                    | 0.5693                      | 0.0191                               | 0.2176                 | 0.0153                        | RD                       |
| 23 54 51           | +38 31 36           | LSPM2354+3831    | 5.17                    | 3208                  | 9                              | 0.012                  | 50            | 1.014     | -8.9359                                                                | 0.0069                                                                          | -2.0396                                          | 0.0192                                                    | 0.3094                      | 0.0071                               | 0.1813                 | 0.0085                        | RD                       |
| 23 55 40           | -06 08 33           | GJ0912           | 4.45                    | 3483                  | 8                              | 0.011                  | 7             | 1.023     | -8.3513                                                                | 0.0081                                                                          | -1.3314                                          | 0.0234                                                    | 0.5929                      | 0.0162                               | 0.3013                 | 0.0173                        | RD                       |
| 23 56 11           | -34 26 05           | SSS2356-3426     | 8.81                    | 2389                  | 81                             | 0.023                  | 171           | 1.002     | -10.6153                                                               | 0.0077                                                                          | -3.5585                                          | 0.0161                                                    | 0.0970                      | 0.0068                               | 0.0473                 | 0.0037                        | RD                       |
| 23 57 44           | +23 18 17           | GJ1292           | 4.66                    | 3379                  | 15                             | 0.041                  | 103           | 1.019     | -8.4721                                                                | 0.0107                                                                          | -1.7014                                          | 0.0193                                                    | 0.4116                      | 0.0099                               | 0.2787                 | 0.0123                        | RD                       |
| 23 57 45           | +19 46 11           | LHS5411          | 4.85                    | 3317                  | 13                             | 0.012                  | 3             | 1.017     | -8.9497                                                                | 0.0066                                                                          | -1.9202                                          | 0.0229                                                    | 0.3318                      | 0.0091                               | 0.1668                 | 0.0096                        | RD                       |
| 23 58 02           | +78 36 30           | LHS4053          | 4.43                    | 3488                  | 11                             | 0.012                  | 17            | 1.024     | -9.2674                                                                | 0.0070                                                                          | -2.0741                                          | 0.0127                                                    | 0.2515                      | 0.0040                               | 0.1047                 | 0.0030                        | SC                       |
| 23 58 14           | -17 24 34           | LP764-040        | 4.45                    | 3356                  | 53                             | 0.014                  | 204           | 1.018     | -8.6855                                                                | 0.0071                                                                          | -1.0071                                          | 0.0851                                                    | 0.9278                      | 0.0954                               | 0.2209                 | 0.0488                        | YG                       |
| 23 58 33           | +07 39 31           | LTT17066         | 4.65                    | 3392                  | 11                             | 0.011                  | 9             | 1.020     | -8.4902                                                                | 0.0064                                                                          | -1.5272                                          | 0.0153                                                    | 0.4991                      | 0.0094                               | 0.2708                 | 0.0101                        | RD                       |
| 23 58 43           | -62 45 42           | APM2359-6246     | 6.44                    | 2944                  | 19                             | 0.016                  | 182           | 1.007     | -9.9507                                                                | 0.0069                                                                          | -2.8179                                          | 0.0212                                                    | 0.1500                      | 0.0042                               | 0.0669                 | 0.0036                        | RD                       |
| 23 59 50           | +47 45 45           | LHS4057          | 6.19                    | 2907                  | 11                             | 0.011                  | 4             | 1.007     | -9.7317                                                                | 0.0062                                                                          | -2.6796                                          | 0.0095                                                    | 0.1802                      | 0.0024                               | 0.0883                 | 0.0019                        | RD                       |
| 23 59 51           | -34 06 43           | LHS4058          | 5.09                    | 3217                  | 10                             | 0.010                  | 3             | 1.014     | -8.7896                                                                | 0.0056                                                                          | -1.8953                                          | 0.0150                                                    | 0.3631                      | 0.0066                               | 0.2132                 | 0.0079                        | RD                       |

- a Recall  $V - K > 7$  corresponds to the set of “cooler” stars and  $V - K < 7$  corresponds to the “warmer” stars.
- b Ratio of standard deviation of Monte Carlo results to the non-bolometric flux.
- c Population based on previously known status or criteria for candidacy described in §5.5.

## APPENDIX E

### ITEMIZED COMPARISON TO OTHER PUBLICATIONS

In the Table below, we directly compare our results star by star to those obtained by Casagrande et al. (2008), Boyajian et al. (2012b), Dieterich et al. (2014), Mann et al. (2015), Filippazzo et al. (2015), Kesseli et al. (2019), and Rabus et al. (2019) in that order.

Column 1 lists the name of the star. Columns 2–3 list our effective temperature and corresponding error, and Columns 4–5 list the same result from the publication in question. Column 6 contains the offset between the two results, namely the result from this effort minus that of the published effort. Columns 7–8 then report the ratio between this difference and our and the publication’s error bar. The equivalent values for bolometric luminosity are listed in Columns 9–15 and for radius in Columns 16–22.

We note that

- (a) For Casagrande et al. (2008), who do not provide radii, angular diameters ( $''$ ) are listed instead.
- (b) Mann et al. (2015) luminosities are calculated using their bolometric fluxes and our parallaxes.
- (c) Effective temperatures,  $T_{eff}$  are in units of  $K$ , bolometric luminosity,  $L_{bol}$ , is in units of  $\log_{10}(L/L_{\odot})$ , and radius,  $R$  is in units of  $R_{\odot}$ .

Table E.1: Comparisons of Stellar Effective Temperature,  
Luminosity, and Radius To Literature Results

| Star<br>(1)                                      | This Work        |                 | Published        |                 | This Work        |                 | Published        |                 | This Work   |                  | Published   |                  |
|--------------------------------------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|-------------|------------------|-------------|------------------|
|                                                  | $T_{eff}$<br>(2) | $\sigma$<br>(3) | $T_{eff}$<br>(4) | $\sigma$<br>(5) | $L_{bol}$<br>(6) | $\sigma$<br>(7) | $L_{bol}$<br>(8) | $\sigma$<br>(9) | $R$<br>(10) | $\sigma$<br>(11) | $R$<br>(12) | $\sigma$<br>(13) |
| Casagrande et al. (2008) <sup>a</sup> (84 Stars) |                  |                 |                  |                 |                  |                 |                  |                 |             |                  |             |                  |
| GJ1002                                           | 2915.0           | 16.0            | 2750.0           | 70.0            | -                | -               | -                | -               | 0.28073     | 0.00651          | 0.307       | 0.017            |
| GJ1009                                           | 3509.0           | 22.0            | 3397.0           | 154.0           | -                | -               | -                | -               | 0.28856     | 0.01416          | 0.306       | 0.029            |
| LHS1064                                          | 3461.0           | 19.0            | 3327.0           | 110.0           | -                | -               | -                | -               | 0.22277     | 0.01388          | 0.241       | 0.017            |
| GJ0027.1                                         | 3668.0           | 21.0            | 3573.0           | 112.0           | -                | -               | -                | -               | 0.20924     | 0.01568          | 0.22        | 0.014            |
| LTT00464                                         | 3797.0           | 21.0            | 3714.0           | 123.0           | -                | -               | -                | -               | 0.24341     | 0.01266          | 0.254       | 0.018            |
| LP707-016                                        | 3261.0           | 33.0            | 3112.0           | 116.0           | -                | -               | -                | -               | 0.21074     | 0.00789          | 0.23        | 0.018            |
| L221-060                                         | 3650.0           | 19.0            | 3501.0           | 96.0            | -                | -               | -                | -               | 0.25315     | 0.00910          | 0.274       | 0.016            |
| L797-030                                         | 3783.0           | 24.0            | 3719.0           | 143.0           | -                | -               | -                | -               | 0.24668     | 0.01688          | 0.254       | 0.02             |
| GJ0056.1                                         | 3558.0           | 13.0            | 3448.0           | 108.0           | -                | -               | -                | -               | 0.20488     | 0.01668          | 0.218       | 0.014            |
| HIP006365                                        | 3617.0           | 19.0            | 3556.0           | 130.0           | -                | -               | -                | -               | 0.22090     | 0.01447          | 0.228       | 0.017            |
| LHS1268                                          | 3812.0           | 35.0            | 3754.0           | 154.0           | -                | -               | -                | -               | 0.27887     | 0.01191          | 0.287       | 0.024            |
| GJ0078                                           | 3583.0           | 21.0            | 3478.0           | 78.0            | -                | -               | -                | -               | 0.19726     | 0.01040          | 0.209       | 0.01             |
| LHS1347                                          | 3415.0           | 19.0            | 3349.0           | 120.0           | -                | -               | -                | -               | 0.24269     | 0.01361          | 0.254       | 0.019            |
| GJ1050                                           | 3448.0           | 24.0            | 3315.0           | 83.0            | -                | -               | -                | -               | 0.24255     | 0.00937          | 0.262       | 0.014            |
| GJ1051                                           | 3688.0           | 16.0            | 3576.0           | 87.0            | -                | -               | -                | -               | 0.16550     | 0.01802          | 0.176       | 0.009            |
| GJ0118                                           | 3428.0           | 15.0            | 3268.0           | 57.0            | -                | -               | -                | -               | 0.29517     | 0.00835          | 0.323       | 0.013            |
| LP831-068                                        | 3519.0           | 28.0            | 3421.0           | 133.0           | -                | -               | -                | -               | 0.29935     | 0.01562          | 0.315       | 0.025            |
| LP889-037                                        | 3006.0           | 39.0            | 2913.0           | 59.0            | -                | -               | -                | -               | 0.13855     | 0.00565          | 0.146       | 0.007            |
| GJ0163                                           | 3372.0           | 17.0            | 3247.0           | 66.0            | -                | -               | -                | -               | 0.26274     | 0.00861          | 0.283       | 0.013            |
| LHS5094                                          | 3015.0           | 18.0            | 2923.0           | 50.0            | -                | -               | -                | -               | 0.16917     | 0.00765          | 0.18        | 0.007            |
| GJ0173                                           | 3563.0           | 16.0            | 3452.0           | 104.0           | -                | -               | -                | -               | 0.39174     | 0.00959          | 0.418       | 0.027            |
| LP715-039                                        | 3309.0           | 13.0            | 3161.0           | 59.0            | -                | -               | -                | -               | 0.19586     | 0.00947          | 0.214       | 0.009            |
| LP655-048                                        | 2504.0           | 27.0            | 2250.0           | 118.0           | -                | -               | -                | -               | 0.12638     | 0.00311          | 0.147       | 0.016            |
| GJ0180                                           | 3532.0           | 11.0            | 3395.0           | 79.0            | -                | -               | -                | -               | 0.31648     | 0.010480         | 0.342       | 0.017            |
| LHS1731                                          | 3337.0           | 24.0            | 3160.0           | 51.0            | -                | -               | -                | -               | 0.28952     | 0.00689          | 0.32        | 0.012            |
| LHS1747                                          | 3699.0           | 21.0            | 3557.0           | 108.0           | -                | -               | -                | -               | 0.19268     | 0.01982          | 0.207       | 0.013            |
| GJ0204.2                                         | 3418.0           | 8.0             | 3270.0           | 68.0            | -                | -               | -                | -               | 0.22466     | 0.02882          | 0.245       | 0.011            |
| LHS1767                                          | 3293.0           | 10.0            | 3147.0           | 47.0            | -                | -               | -                | -               | 0.16610     | 0.00469          | 0.182       | 0.006            |
| LP780-032                                        | 3028.0           | 229.0           | 3062.0           | 45.0            | -                | -               | -                | -               | 0.27934     | 0.04268          | 0.243       | 0.009            |
| GJ2055                                           | 3544.0           | 20.0            | 3439.0           | 134.0           | -                | -               | -                | -               | 0.28788     | 0.013723         | 0.304       | 0.025            |
| L528-016                                         | 3410.0           | 14.0            | 3288.0           | 134.0           | -                | -               | -                | -               | 0.23791     | 0.00588          | 0.255       | 0.021            |
| LHS1935                                          | 3384.0           | 12.0            | 3236.0           | 52.0            | -                | -               | -                | -               | 0.27281     | 0.01111          | 0.298       | 0.011            |
| GJ1123                                           | 3021.0           | 27.0            | 2905.0           | 58.0            | -                | -               | -                | -               | 0.26276     | 0.00753          | 0.281       | 0.012            |
| GJ0357                                           | 3476.0           | 22.0            | 3319.0           | 62.0            | -                | -               | -                | -               | 0.34080     | 0.00845          | 0.372       | 0.016            |
| GJ1128                                           | 3024.0           | 30.0            | 2918.0           | 56.0            | -                | -               | -                | -               | 0.31516     | 0.00716          | 0.336       | 0.014            |
| LP728-070                                        | 3262.0           | 17.0            | 3108.0           | 51.0            | -                | -               | -                | -               | 0.21108     | 0.00900          | 0.231       | 0.009            |
| GJ0369                                           | 3748.0           | 21.0            | 3650.0           | 93.0            | -                | -               | -                | -               | 0.35715     | 0.010732         | 0.378       | 0.02             |
| GJ0386                                           | 3452.0           | 17.0            | 3314.0           | 107.0           | -                | -               | -                | -               | 0.34503     | 0.013351         | 0.372       | 0.025            |
| GJ0390                                           | 3627.0           | 15.0            | 3537.0           | 123.0           | -                | -               | -                | -               | 0.39141     | 0.010732         | 0.413       | 0.03             |
| LHS0288                                          | 2912.0           | 14.0            | 2770.0           | 71.0            | -                | -               | -                | -               | 0.25708     | 0.004918         | 0.277       | 0.015            |
| LHS2401                                          | 3334.0           | 21.0            | 3194.0           | 49.0            | -                | -               | -                | -               | 0.15492     | 0.008322         | 0.168       | 0.006            |
| LHS0306                                          | 3016.0           | 26.0            | 2901.0           | 53.0            | -                | -               | -                | -               | 0.16487     | 0.004668         | 0.177       | 0.007            |
| LP792-033                                        | 3665.0           | 20.0            | 3583.0           | 108.0           | -                | -               | -                | -               | 0.20343     | 0.01402          | 0.213       | 0.014            |
| SCR1138-7721                                     | 2903.0           | 8.0             | 2774.0           | 68.0            | -                | -               | -                | -               | 0.17250     | 0.00228          | 0.184       | 0.01             |
| LHS2520                                          | 3183.0           | 21.0            | 3024.0           | 52.0            | -                | -               | -                | -               | 0.31781     | 0.01208          | 0.348       | 0.013            |
| L758-108                                         | 3396.0           | 18.0            | 3226.0           | 66.0            | -                | -               | -                | -               | 0.26953     | 0.00966          | 0.297       | 0.014            |
| GJ0465                                           | 3524.0           | 18.0            | 3382.0           | 60.0            | -                | -               | -                | -               | 0.27429     | 0.00576          | 0.294       | 0.012            |
| GJ1162                                           | 3216.0           | 16.0            | 3075.0           | 43.0            | -                | -               | -                | -               | 0.15195     | 0.01056          | 0.165       | 0.005            |
| LHS5226                                          | 3090.0           | 5.0             | 2940.0           | 52.0            | -                | -               | -                | -               | 0.14683     | 0.00399          | 0.16        | 0.006            |
| LHS2634                                          | 3372.0           | 21.0            | 3219.0           | 62.0            | -                | -               | -                | -               | 0.18382     | 0.00924          | 0.201       | 0.008            |
| LP739-002                                        | 3084.0           | 6.0             | 2939.0           | 50.0            | -                | -               | -                | -               | 0.13305     | 0.00380          | 0.146       | 0.006            |



Comparisons of Stellar Effective Temperature, Luminosity, and Radius To Literature Results

| Star         | This Work |          | Published |          | This Work |          | Published |          | This Work |          | Published |          |
|--------------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|
|              | $T_{eff}$ | $\sigma$ | $T_{eff}$ | $\sigma$ | $L_{bol}$ | $\sigma$ | $L_{bol}$ | $\sigma$ | $R$       | $\sigma$ | $R$       | $\sigma$ |
| (1)          | (2)       | (3)      | (4)       | (5)      | (6)       | (7)      | (8)       | (9)      | (10)      | (11)     | (12)      | (13)     |
| GJ2107       | 3896.0    | 22.0     | 3816.0    | 158.0    | -         | -        | -         | -        | 0.27926   | 0.01148  | 0.286     | 0.024    |
| GJ0592       | 3202.0    | 11.0     | 3061.0    | 45.0     | -         | -        | -         | -        | 0.23007   | 0.01327  | 0.25      | 0.009    |
| LP917-019    | 3974.0    | 8.0      | 3898.0    | 143.0    | -         | -        | -         | -        | 0.27431   | 0.01523  | 0.284     | 0.022    |
| GJ0618.4     | 3600.0    | 11.0     | 3486.0    | 113.0    | -         | -        | -         | -        | 0.18953   | 0.01697  | 0.202     | 0.014    |
| GJ2120       | 3703.0    | 26.0     | 3616.0    | 157.0    | -         | -        | -         | -        | 0.26322   | 0.021499 | 0.275     | 0.025    |
| GJ0637       | 3628.0    | 17.0     | 3470.0    | 70.0     | -         | -        | -         | -        | 0.22820   | 0.00843  | 0.249     | 0.011    |
| GJ0672.1     | 3528.0    | 164.0    | 3525.0    | 114.0    | -         | -        | -         | -        | 0.21692   | 0.03019  | 0.208     | 0.014    |
| GJ0739       | 3476.0    | 9.0      | 3366.0    | 89.0     | -         | -        | -         | -        | 0.30907   | 0.01222  | 0.329     | 0.019    |
| LP756-003    | 3215.0    | 19.0     | 3014.0    | 47.0     | -         | -        | -         | -        | 0.15115   | 0.00493  | 0.17      | 0.006    |
| GJ0816       | 3412.0    | 14.0     | 3302.0    | 95.0     | -         | -        | -         | -        | 0.315232  | 0.013519 | 0.337     | 0.021    |
| GJ0821       | 3706.0    | 19.0     | 3567.0    | 71.0     | -         | -        | -         | -        | 0.259924  | 0.00761  | 0.281     | 0.013    |
| LHS3639      | 3524.0    | 9.0      | 3363.0    | 51.0     | -         | -        | -         | -        | 0.19501   | 0.01190  | 0.213     | 0.008    |
| GJ0828.2     | 3746.0    | 30.0     | 3585.0    | 68.0     | -         | -        | -         | -        | 0.22147   | 0.01037  | 0.241     | 0.01     |
| HIP106803    | 3716.0    | 31.0     | 3655.0    | 185.0    | -         | -        | -         | -        | 0.28878   | 0.01830  | 0.297     | 0.031    |
| GJ0849       | 3343.0    | 42.0     | 3179.0    | 99.0     | -         | -        | -         | -        | 0.53160   | 0.01581  | 0.583     | 0.039    |
| GJ1277       | 2988.0    | 13.0     | 2836.0    | 66.0     | -         | -        | -         | -        | 0.19890   | 0.00352  | 0.218     | 0.011    |
| L718-071     | 3636.0    | 15.0     | 3472.0    | 103.0    | -         | -        | -         | -        | 0.20780   | 0.01152  | 0.226     | 0.014    |
| HIP113850    | 3786.0    | 12.0     | 3682.0    | 138.0    | -         | -        | -         | -        | 0.25929   | 0.01227  | 0.273     | 0.021    |
| LTTO9635     | 3483.0    | 10.0     | 3330.0    | 85.0     | -         | -        | -         | -        | 0.21223   | 0.01576  | 0.231     | 0.013    |
| L026-027     | 3471.0    | 21.0     | 3340.0    | 176.0    | -         | -        | -         | -        | 0.51734   | 0.00981  | 0.557     | 0.06     |
| GJ0911       | 3888.0    | 19.0     | 3791.0    | 115.0    | -         | -        | -         | -        | 0.21762   | 0.01530  | 0.227     | 0.014    |
| LP834-032    | 3187.0    | 18.0     | 3108.0    | 37.0     | -         | -        | -         | -        | 0.25349   | 0.00937  | 0.267     | 0.008    |
| LP776-025    | 3361.0    | 16.0     | 3212.0    | 58.0     | -         | -        | -         | -        | 0.29366   | 0.00889  | 0.322     | 0.013    |
| GJ0281       | 3875.0    | 25.0     | 3776.0    | 145.0    | -         | -        | -         | -        | 0.38276   | 0.01054  | 0.402     | 0.032    |
| G161-071     | 2916.0    | 8.0      | 2785.0    | 65.0     | -         | -        | -         | -        | 0.25938   | 0.00614  | 0.279     | 0.014    |
| GJ0382       | 3536.0    | 53.0     | 3445.0    | 144.0    | -         | -        | -         | -        | 0.65196   | 0.02295  | 0.685     | 0.059    |
| GJ0393       | 3522.0    | 49.0     | 3403.0    | 92.0     | -         | -        | -         | -        | 0.57553   | 0.01934  | 0.607     | 0.035    |
| GJ0696       | 3923.0    | 20.0     | 3863.0    | 151.0    | -         | -        | -         | -        | 0.28303   | 0.01439  | 0.291     | 0.024    |
| HIP107345    | 3825.0    | 17.0     | 3794.0    | 177.0    | -         | -        | -         | -        | 0.15560   | 0.01967  | 0.159     | 0.015    |
| LP764-040    | 3356.0    | 53.0     | 3316.0    | 145.0    | -         | -        | -         | -        | 0.22091   | 0.04876  | 0.236     | 0.021    |
| SCR0420-7005 | 2832.0    | 21.0     | 2586.0    | 84.0     | -         | -        | -         | -        | 0.07863   | 0.00171  | 0.09      | 0.006    |
| SCR0702-6102 | 2855.0    | 49.0     | 2577.0    | 58.0     | -         | -        | -         | -        | 0.11143   | 0.00416  | 0.132     | 0.006    |
| GJ0433       | 3569.0    | 32.0     | 3472.0    | 96.0     | -         | -        | -         | -        | 0.48742   | 0.01209  | 0.515     | 0.03     |

Boyajian et al. (2012b) (8 Stars)

|          |        |       |        |      |         |             |         |         |         |         |        |        |
|----------|--------|-------|--------|------|---------|-------------|---------|---------|---------|---------|--------|--------|
| BARNARDS | 3153.2 | 72.0  | 3224.0 | 10.0 | 0.00362 | 7.21372e-05 | 0.00338 | 3e-05   | 0.20172 | 0.00943 | 0.1867 | 0.0012 |
| GJ0015   | 3667.5 | 210.4 | 3563.0 | 11.0 | 0.02095 | 0.00139     | 0.02173 | 0.00021 | 0.35853 | 0.04283 | 0.3874 | 0.0023 |
| GJ0205   | 3677.5 | 160.1 | 3801.0 | 9.0  | 0.06211 | 0.00517     | 0.06163 | 0.00088 | 0.61396 | 0.05926 | 0.5735 | 0.0044 |
| GJ0412   | 3652.8 | 92.4  | 3497.0 | 39.0 | 0.02293 | 0.00043     | 0.02129 | 0.00026 | 0.37815 | 0.01947 | 0.3982 | 0.0091 |
| GJ0526   | 3642.7 | 103.6 | 3618.0 | 31.0 | 0.04243 | 0.00179     | 0.03603 | 0.00051 | 0.51719 | 0.03140 | 0.484  | 0.0084 |
| GJ0687   | 3353.4 | 82.8  | 3413.0 | 28.0 | 0.02220 | 0.00049     | 0.02128 | 0.00023 | 0.44144 | 0.02237 | 0.4183 | 0.007  |
| GJ0809   | 3688.8 | 95.7  | 3692.0 | 22.0 | 0.05559 | 0.00126     | 0.0499  | 0.00062 | 0.57725 | 0.03069 | 0.5472 | 0.0067 |
| GJ0880   | 3607.2 | 74.9  | 3713.0 | 11.0 | 0.05377 | 0.00107     | 0.05112 | 0.00074 | 0.59374 | 0.02538 | 0.5477 | 0.0048 |

Dieterich et al. (2014) (23 Stars)

|              |        |       |        |      |          |          |        |       |         |         |       |       |
|--------------|--------|-------|--------|------|----------|----------|--------|-------|---------|---------|-------|-------|
| 2MA0451-3402 | 2087.6 | 40.2  | 2146.0 | 41.0 | -3.67397 | 0.016030 | -3.676 | 0.029 | 0.11126 | 0.00475 | 0.104 | 0.005 |
| 2MA1555-0956 | 2161.5 | 60.5  | 2194.0 | 27.0 | -3.70006 | 0.010507 | -3.712 | 0.015 | 0.10071 | 0.00577 | 0.096 | 0.002 |
| 2MA1645-1319 | 2135.0 | 49.1  | 1925.0 | 66.0 | -3.77817 | 0.008421 | -3.793 | 0.011 | 0.09434 | 0.00444 | 0.113 | 0.008 |
| 2MA2104-1037 | 1928.7 | 153.2 | 1851.0 | 53.0 | -3.80113 | 0.018860 | -3.812 | 0.03  | 0.11259 | 0.01805 | 0.12  | 0.008 |
| BRI1222-1221 | 2302.2 | 88.9  | 2398.0 | 38.0 | -3.47325 | 0.029258 | -3.454 | 0.057 | 0.11527 | 0.00971 | 0.108 | 0.007 |
| DEN0652-2534 | 2173.9 | 99.3  | 2313.0 | 56.0 | -3.60744 | 0.010250 | -3.6   | 0.015 | 0.11077 | 0.01020 | 0.098 | 0.005 |
| DEN0812-2444 | 2156.7 | 86.8  | 2295.0 | 47.0 | -3.71585 | 0.012687 | -3.696 | 0.021 | 0.09934 | 0.00812 | 0.089 | 0.004 |

Comparisons of Stellar Effective Temperature, Luminosity, and Radius To Literature Results

| Star<br>(1)  | This Work        |                 | Published        |                 | This Work        |                 | Published        |                 | This Work   |                  | Published   |                  |
|--------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|-------------|------------------|-------------|------------------|
|              | $T_{eff}$<br>(2) | $\sigma$<br>(3) | $T_{eff}$<br>(4) | $\sigma$<br>(5) | $L_{bol}$<br>(6) | $\sigma$<br>(7) | $L_{bol}$<br>(8) | $\sigma$<br>(9) | $R$<br>(10) | $\sigma$<br>(11) | $R$<br>(12) | $\sigma$<br>(13) |
| ESO207-061   | 2344.0           | 81.1            | 2403.0           | 31.0            | -3.78759         | 0.022930        | -3.625           | 0.039           | 0.07743     | 0.00573          | 0.088       | 0.004            |
| GJ0406       | 2636.1           | 34.9            | 2700.0           | 56.0            | -2.98799         | 0.010409        | -3.036           | 0.044           | 0.15371     | 0.00447          | 0.138       | 0.009            |
| LEHPM2-0174  | 2517.4           | 29.0            | 2598.0           | 25.0            | -2.91784         | 0.014881        | -2.909           | 0.026           | 0.18273     | 0.00525          | 0.173       | 0.006            |
| LHS0132      | 2461.7           | 24.5            | 2513.0           | 29.0            | -3.20266         | 0.015725        | -3.194           | 0.03            | 0.13767     | 0.00371          | 0.133       | 0.005            |
| LHS0292      | 2620.7           | 18.7            | 2588.0           | 32.0            | -3.15886         | 0.009748        | -3.166           | 0.016           | 0.12775     | 0.00231          | 0.129       | 0.004            |
| LHS2065      | 2185.4           | 100.1           | 2324.0           | 27.0            | -3.51583         | 0.008457        | -3.516           | 0.01            | 0.12180     | 0.01122          | 0.107       | 0.002            |
| LHS3003      | 2542.2           | 31.8            | 2581.0           | 17.0            | -3.28240         | 0.009529        | -3.266           | 0.013           | 0.11776     | 0.00321          | 0.116       | 0.002            |
| LHS5303      | 2724.9           | 25.7            | 2718.0           | 12.0            | -2.97531         | 0.007616        | -2.972           | 0.008           | 0.14597     | 0.00303          | 0.147       | 0.001            |
| LP944-020    | 2171.5           | 96.7            | 2312.0           | 71.0            | -3.60073         | 0.008145        | -3.579           | 0.01            | 0.11187     | 0.01002          | 0.101       | 0.006            |
| NLTTO1261    | 2155.2           | 60.7            | 2315.0           | 54.0            | -3.47525         | 0.013840        | -3.505           | 0.042           | 0.13123     | 0.00768          | 0.109       | 0.007            |
| RG0050-2722  | 2329.3           | 95.0            | 2402.0           | 34.0            | -3.60115         | 0.043259        | -3.599           | 0.078           | 0.09718     | 0.00929          | 0.091       | 0.008            |
| SIP1607-0442 | 2387.8           | 70.2            | 2466.0           | 30.0            | -3.28868         | 0.012654        | -3.271           | 0.021           | 0.13252     | 0.00803          | 0.126       | 0.004            |
| SIP2045-6332 | 2040.1           | 57.3            | 2179.0           | 111.0           | -3.12500         | 0.016640        | -3.129           | 0.032           | 0.21919     | 0.01301          | 0.19        | 0.02             |
| SSS0829-1309 | 2083.8           | 65.3            | 2117.0           | 37.0            | -3.85585         | 0.008590        | -3.845           | 0.011           | 0.09057     | 0.00574          | 0.088       | 0.003            |
| SSS2307-5009 | 2261.0           | 128.8           | 2347.0           | 48.0            | -3.60836         | 0.016717        | -3.593           | 0.03            | 0.10229     | 0.01182          | 0.096       | 0.005            |
| SSS2356-3426 | 2389.0           | 81.0            | 2438.0           | 42.0            | -3.55847         | 0.016127        | -3.542           | 0.029           | 0.09704     | 0.00683          | 0.094       | 0.004            |

Mann et al. (2015)<sup>b</sup> (52 Stars)

|          |        |       |        |      |         |         |        |        |         |         |        |        |
|----------|--------|-------|--------|------|---------|---------|--------|--------|---------|---------|--------|--------|
| BARNARDS | 3153.2 | 72.0  | 3228.0 | 60.0 | 3.45066 | 0.06865 | 3.263  | 0.057  | 0.20172 | 0.00943 | 0.1863 | 0.0071 |
| GJ0015   | 3667.5 | 210.4 | 3603.0 | 60.0 | 5.25586 | 0.34952 | 5.669  | 0.045  | 0.35853 | 0.04283 | 0.388  | 0.013  |
| GJ0054.1 | 3006.1 | 22.8  | 3056.0 | 60.0 | 0.51327 | 0.00910 | 0.5206 | 0.0082 | 0.17354 | 0.00320 | 0.168  | 0.0085 |
| GJ0079   | 3858.5 | 49.5  | 3900.0 | 60.0 | 2.11448 | 0.03803 | 2.117  | 0.02   | 0.63377 | 0.01770 | 0.62   | 0.021  |
| GJ0173   | 3562.5 | 15.9  | 3671.0 | 61.0 | 0.82369 | 0.01336 | 0.8354 | 0.008  | 0.46695 | 0.00718 | 0.444  | 0.017  |
| GJ0176   | 3498.0 | 23.9  | 3680.0 | 60.0 | 1.27696 | 0.02291 | 1.254  | 0.011  | 0.49451 | 0.00925 | 0.452  | 0.019  |
| GJ0180   | 3531.6 | 10.8  | 3506.0 | 60.0 | 0.51919 | 0.00884 | 0.5257 | 0.0047 | 0.41195 | 0.00722 | 0.421  | 0.019  |
| GJ0205   | 3677.5 | 160.1 | 3801.0 | 60.0 | 6.15542 | 0.51113 | 6.34   | 0.054  | 0.61396 | 0.05926 | 0.581  | 0.019  |
| GJ0273   | 3169.5 | 54.3  | 3317.0 | 60.0 | 2.41721 | 0.05682 | 2.395  | 0.021  | 0.34239 | 0.01242 | 0.315  | 0.012  |
| GJ0281   | 3874.8 | 25.0  | 3771.0 | 60.0 | 1.10053 | 0.02074 | 1.0739 | 0.0094 | 0.59816 | 0.01129 | 0.626  | 0.025  |
| GJ0382   | 3536.4 | 52.9  | 3623.0 | 60.0 | 2.21522 | 0.04062 | 2.186  | 0.018  | 0.55583 | 0.01786 | 0.522  | 0.019  |
| GJ0393   | 3521.8 | 49.3  | 3548.0 | 60.0 | 1.69806 | 0.03036 | 1.612  | 0.013  | 0.44114 | 0.01336 | 0.42   | 0.016  |
| GJ0402   | 3166.1 | 22.7  | 3238.0 | 60.0 | 0.52453 | 0.01092 | 0.5261 | 0.0055 | 0.28919 | 0.00590 | 0.276  | 0.012  |
| GJ0406   | 2636.1 | 34.9  | 2818.0 | 60.0 | 0.57318 | 0.01345 | 0.5798 | 0.0069 | 0.15371 | 0.00447 | 0.1348 | 0.0058 |
| GJ0412   | 3652.8 | 92.4  | 3619.0 | 60.0 | 3.10438 | 0.05680 | 3.087  | 0.042  | 0.37815 | 0.01947 | 0.383  | 0.013  |
| GJ0436   | 3417.1 | 19.7  | 3479.0 | 60.0 | 0.81051 | 0.01319 | 0.8277 | 0.0093 | 0.45895 | 0.00806 | 0.449  | 0.019  |
| GJ0447   | 3084.7 | 37.3  | 3192.0 | 60.0 | 1.06655 | 0.02041 | 1.028  | 0.014  | 0.21441 | 0.00560 | 0.1967 | 0.0077 |
| GJ0488   | 3949.8 | 58.7  | 3989.0 | 60.0 | 2.90010 | 0.06686 | 2.721  | 0.021  | 0.68178 | 0.02194 | 0.646  | 0.02   |
| GJ0514   | 3694.7 | 93.1  | 3727.0 | 61.0 | 2.34875 | 0.04306 | 2.206  | 0.018  | 0.50208 | 0.02579 | 0.483  | 0.016  |
| GJ0526   | 3642.7 | 103.6 | 3649.0 | 60.0 | 4.63256 | 0.19477 | 4.013  | 0.053  | 0.51719 | 0.03140 | 0.478  | 0.016  |
| GJ0545   | 3289.8 | 6.2   | 3341.0 | 60.0 | 0.14098 | 0.00251 | 0.1403 | 0.0024 | 0.28618 | 0.00380 | 0.276  | 0.012  |
| GJ0555   | 3124.8 | 24.5  | 3211.0 | 60.0 | 0.80498 | 0.01610 | 0.7984 | 0.008  | 0.33660 | 0.00660 | 0.31   | 0.013  |
| GJ0581   | 3360.6 | 28.8  | 3395.0 | 60.0 | 0.97199 | 0.01796 | 0.9609 | 0.0077 | 0.32280 | 0.00642 | 0.311  | 0.012  |
| GJ0649   | 3656.1 | 30.0  | 3700.0 | 60.0 | 1.32975 | 0.02245 | 1.298  | 0.013  | 0.52233 | 0.01027 | 0.507  | 0.018  |
| GJ0687   | 3353.4 | 82.8  | 3439.0 | 60.0 | 3.45273 | 0.07567 | 3.363  | 0.028  | 0.44144 | 0.02237 | 0.414  | 0.015  |
| GJ0701   | 3649.1 | 70.5  | 3614.0 | 60.0 | 1.79066 | 0.03323 | 1.72   | 0.014  | 0.45984 | 0.01843 | 0.459  | 0.016  |
| GJ0729   | 3190.3 | 41.2  | 3240.0 | 60.0 | 1.46873 | 0.02758 | 1.451  | 0.017  | 0.20797 | 0.00574 | 0.2008 | 0.0076 |
| GJ0752   | 3440.3 | 93.4  | 3558.0 | 60.0 | 3.00213 | 0.06193 | 3.017  | 0.023  | 0.50365 | 0.02784 | 0.474  | 0.016  |
| GJ0809   | 3688.8 | 95.7  | 3791.0 | 60.0 | 3.56658 | 0.07951 | 3.348  | 0.036  | 0.57725 | 0.03069 | 0.529  | 0.017  |
| GJ0811.1 | 3412.7 | 18.9  | 3473.0 | 61.0 | 0.37015 | 0.00629 | 0.372  | 0.0038 | 0.48838 | 0.01331 | 0.456  | 0.028  |
| GJ0821   | 3706.2 | 19.4  | 3545.0 | 60.0 | 0.42473 | 0.00740 | 0.4185 | 0.0051 | 0.34092 | 0.00609 | 0.369  | 0.016  |
| GJ0875   | 3832.6 | 14.6  | 3740.0 | 61.0 | 0.90881 | 0.01685 | 0.8949 | 0.0081 | 0.54014 | 0.00950 | 0.563  | 0.024  |
| GJ0876   | 3181.6 | 51.8  | 3247.0 | 60.0 | 1.97299 | 0.04459 | 1.916  | 0.015  | 0.38111 | 0.01314 | 0.363  | 0.014  |
| GJ0880   | 3607.2 | 74.9  | 3720.0 | 60.0 | 3.68593 | 0.06953 | 3.545  | 0.027  | 0.59374 | 0.02538 | 0.549  | 0.018  |
| GJ0896   | 3179.3 | 112.4 | 3353.0 | 60.0 | 1.60957 | 0.03735 | 1.592  | 0.033  | 0.46239 | 0.03321 | 0.409  | 0.016  |

Comparisons of Stellar Effective Temperature, Luminosity, and Radius To Literature Results

| Star<br>(1) | This Work        |                 | Published        |                 | This Work        |                 | Published        |                 | This Work   |                  | Published   |                  |
|-------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|-------------|------------------|-------------|------------------|
|             | $T_{eff}$<br>(2) | $\sigma$<br>(3) | $T_{eff}$<br>(4) | $\sigma$<br>(5) | $L_{bol}$<br>(6) | $\sigma$<br>(7) | $L_{bol}$<br>(8) | $\sigma$<br>(9) | $R$<br>(10) | $\sigma$<br>(11) | $R$<br>(12) | $\sigma$<br>(13) |
| GJ1009      | 3508.6           | 22.4            | 3600.0           | 60.0            | 0.42049          | 0.00705         | 0.4175           | 0.0035          | 0.55781     | 0.01442          | 0.528       | 0.028            |
| GJ1097      | 3367.8           | 10.5            | 3448.0           | 60.0            | 0.43656          | 0.00744         | 0.4392           | 0.0086          | 0.39859     | 0.00597          | 0.404       | 0.019            |
| GJ1129      | 3189.2           | 13.7            | 3243.0           | 60.0            | 0.24493          | 0.00409         | 0.2462           | 0.0045          | 0.30525     | 0.00546          | 0.296       | 0.014            |
| GJ1207      | 3216.7           | 10.2            | 3229.0           | 60.0            | 0.28754          | 0.00705         | 0.2861           | 0.0046          | 0.26482     | 0.00404          | 0.262       | 0.011            |
| LHS0142     | 3672.5           | 30.0            | 3641.0           | 60.0            | 0.33847          | 0.00528         | 0.3354           | 0.0044          | 0.46043     | 0.01145          | 0.46        | 0.022            |
| LHS0272     | 3530.6           | 21.1            | 3302.0           | 65.0            | 0.06746          | 0.00097         | 0.06781          | 0.00079         | 0.17684     | 0.00279          | 0.1902      | 0.0082           |
| LHS0306     | 3015.7           | 25.6            | 3109.0           | 62.0            | 0.07492          | 0.00132         | 0.0774           | 0.0011          | 0.19913     | 0.00424          | 0.1901      | 0.0085           |
| LHS1302     | 3015.5           | 18.5            | 3011.0           | 61.0            | 0.06998          | 0.00098         | 0.07207          | 0.00082         | 0.17659     | 0.00264          | 0.1731      | 0.0078           |
| LHS1723     | 3109.2           | 10.5            | 3143.0           | 60.0            | 0.39023          | 0.00795         | 0.3994           | 0.0046          | 0.20253     | 0.00256          | 0.2005      | 0.0079           |
| LHS1731     | 3336.7           | 23.6            | 3365.0           | 60.0            | 0.34623          | 0.00582         | 0.3526           | 0.0041          | 0.28647     | 0.00521          | 0.284       | 0.013            |
| LHS1935     | 3383.7           | 12.3            | 3358.0           | 60.0            | 0.32511          | 0.00536         | 0.3236           | 0.0054          | 0.31101     | 0.00644          | 0.315       | 0.016            |
| LHS2520     | 3182.5           | 21.3            | 3385.0           | 60.0            | 0.34525          | 0.00580         | 0.3499           | 0.0036          | 0.43846     | 0.00970          | 0.39        | 0.018            |
| LHS4021     | 3131.1           | 24.9            | 3221.0           | 60.0            | 0.11375          | 0.00252         | 0.1196           | 0.0025          | 0.32467     | 0.00770          | 0.315       | 0.015            |
| LP816-060   | 3228.0           | 29.0            | 3205.0           | 60.0            | 0.64550          | 0.01273         | 0.659            | 0.013           | 0.25947     | 0.00589          | 0.266       | 0.012            |
| LP837-053   | 3443.1           | 20.5            | 3652.0           | 60.0            | 0.65460          | 0.01026         | 0.6642           | 0.0072          | 0.58624     | 0.01249          | 0.525       | 0.024            |
| LP838-016   | 3372.8           | 15.7            | 3356.0           | 60.0            | 0.28377          | 0.00596         | 0.2913           | 0.004           | 0.31291     | 0.00625          | 0.321       | 0.015            |
| LP847-048   | 3284.2           | 19.1            | 3346.0           | 60.0            | 0.28110          | 0.00463         | 0.2896           | 0.0038          | 0.32781     | 0.00753          | 0.321       | 0.016            |

Filippazzo et al. (2015) (20 Stars)

|              |        |       |        |       |          |          |       |      |         |         |      |      |
|--------------|--------|-------|--------|-------|----------|----------|-------|------|---------|---------|------|------|
| 2MA0451-3402 | 2087.6 | 40.2  | 2155.0 | 72.0  | -3.67397 | 0.016030 | -3.66 | 0.03 | 1.15784 | 0.04953 | 1.04 | 0.06 |
| 2MA1155-3727 | 2122.7 | 63.0  | 1793.0 | 80.0  | -3.85403 | 0.012871 | -4.01 | 0.04 | 0.91016 | 0.05571 | 1.00 | 0.08 |
| 2MA1555-0956 | 2161.5 | 60.5  | 2102.0 | 64.0  | -3.70006 | 0.010507 | -3.71 | 0.01 | 1.04803 | 0.06010 | 1.03 | 0.06 |
| 2MA2104-1037 | 1928.7 | 153.2 | 1994.0 | 73.0  | -3.80113 | 0.018860 | -3.81 | 0.03 | 1.17171 | 0.18789 | 1.02 | 0.07 |
| 2MA2127-4215 | 2431.0 | 74.3  | 2676.0 | 320.0 | -3.50105 | 0.037866 | -3.15 | 0.19 | 1.04196 | 0.07823 | 1.21 | 0.13 |
| 2MA2306-0502 | 2458.9 | 26.1  | 2557.0 | 64.0  | -3.25462 | 0.008960 | -3.28 | 0.03 | 1.35252 | 0.03192 | 1.14 | 0.04 |
| DEN0652-2534 | 2173.9 | 99.3  | 2231.0 | 60.0  | -3.60744 | 0.010250 | -3.59 | 0.01 | 1.15274 | 0.10619 | 1.05 | 0.05 |
| DEN1048-3956 | 2366.3 | 91.2  | 2307.0 | 51.0  | -3.52428 | 0.008283 | -3.51 | 0.0  | 1.07063 | 0.08319 | 1.07 | 0.05 |
| DEN2057-0252 | 2051.0 | 37.7  | 2044.0 | 87.0  | -3.79854 | 0.024379 | -3.76 | 0.05 | 1.03930 | 0.04811 | 1.02 | 0.07 |
| ESO207-061   | 2344.0 | 81.1  | 2151.0 | 114.0 | -3.78759 | 0.022930 | -3.66 | 0.07 | 0.80581 | 0.05969 | 1.03 | 0.07 |
| GJ0406       | 2636.1 | 34.9  | 2517.0 | 81.0  | -2.98799 | 0.010409 | -3.03 | 0.0  | 1.59959 | 0.04652 | 1.56 | 0.10 |
| LEHPM1-3396  | 2359.8 | 85.9  | 2173.0 | 71.0  | -3.65145 | 0.015007 | -3.64 | 0.03 | 0.92992 | 0.06959 | 1.04 | 0.06 |
| LHS0132      | 2461.7 | 24.5  | 2636.0 | 67.0  | -3.20266 | 0.015725 | -3.2  | 0.03 | 1.43265 | 0.03862 | 1.17 | 0.04 |
| LHS1604      | 2477.8 | 90.1  | 2810.0 | 60.0  | -3.11279 | 0.013262 | -3.02 | 0.02 | 1.56818 | 0.11664 | 1.27 | 0.04 |
| LHS2065      | 2185.4 | 100.1 | 2320.0 | 52.0  | -3.51583 | 0.008457 | -3.5  | 0.01 | 1.26753 | 0.11677 | 1.07 | 0.05 |
| LHS3003      | 2542.2 | 31.8  | 2511.0 | 65.0  | -3.28240 | 0.009529 | -3.32 | 0.03 | 1.22552 | 0.03348 | 1.12 | 0.05 |
| LP944-020    | 2171.5 | 96.7  | 1942.0 | 144.0 | -3.60073 | 0.008145 | -3.56 | 0.01 | 1.16420 | 0.10430 | 1.43 | 0.21 |
| NLTT01261    | 2155.2 | 60.7  | 2390.0 | 80.0  | -3.47525 | 0.013840 | -3.44 | 0.04 | 1.36564 | 0.07997 | 1.09 | 0.05 |
| SIP0641-4322 | 2099.0 | 44.5  | 1927.0 | 120.0 | -3.87545 | 0.045175 | -3.87 | 0.09 | 0.90823 | 0.06095 | 1.01 | 0.07 |
| TWA026       | 2218.4 | 134.6 | 2552.0 | 188.0 | -2.82010 | 0.017696 | -2.71 | 0.09 | 2.74035 | 0.33734 | 2.20 | 0.22 |

Kesseli et al. (2019) (18 Stars)

|         |        |      |        |       |         |             |         |             |         |         |       |       |
|---------|--------|------|--------|-------|---------|-------------|---------|-------------|---------|---------|-------|-------|
| LHS0156 | 3593.7 | 47.5 | 3400.0 | 100.0 | 0.00116 | 3.37809e-05 | 0.00200 | 4.62610e-05 | 0.08805 | 0.00265 | 0.129 | 0.008 |
| LHS0174 | 3566.2 | 28.8 | 3500.0 | 100.0 | 0.00528 | 0.00079     | 0.00395 | 8.19328e-05 | 0.19036 | 0.01468 | 0.171 | 0.01  |
| GJ1062  | 3878.5 | 39.5 | 3800.0 | 100.0 | 0.03692 | 0.01210     | 0.03681 | 0.02712     | 0.42558 | 0.07028 | 0.442 | 0.165 |
| LHS0364 | 3613.0 | 28.4 | 3500.0 | 100.0 | 0.00566 | 0.00031     | 0.00549 | 0.00013     | 0.19206 | 0.00607 | 0.202 | 0.012 |
| LHS3409 | 3816.0 | 61.9 | 3600.0 | 100.0 | 0.00286 | 0.00033     | 0.00322 | 0.00010     | 0.12236 | 0.00812 | 0.146 | 0.008 |
| LHS0012 | 3283.5 | 10.4 | 3200.0 | 100.0 | 0.00214 | 5.85833e-05 | 0.00231 | 0.00010     | 0.14295 | 0.00215 | 0.157 | 0.01  |
| LHS0161 | 3955.0 | 41.8 | 3900.0 | 100.0 | 0.02538 | 0.00318     | 0.02280 | 0.00099     | 0.33934 | 0.02248 | 0.331 | 0.018 |
| LHS0178 | 3857.8 | 46.0 | 3700.0 | 100.0 | 0.00531 | 0.00105     | 0.00682 | 9.42685e-05 | 0.16321 | 0.01663 | 0.201 | 0.011 |
| LHS0272 | 3680.0 | 33.6 | 3600.0 | 100.0 | 0.01119 | 0.00052     | 0.01603 | 0.00047     | 0.26029 | 0.00769 | 0.326 | 0.019 |
| LHS0326 | 3530.6 | 21.1 | 3400.0 | 100.0 | 0.00437 | 9.00586e-05 | 0.00370 | 8.53523e-05 | 0.17684 | 0.00279 | 0.175 | 0.011 |
| LHS2852 | 3801.4 | 31.3 | 3700.0 | 100.0 | 0.00652 | 0.00062     | 0.00712 | 0.00011     | 0.18620 | 0.00947 | 0.206 | 0.011 |

Comparisons of Stellar Effective Temperature, Luminosity, and Radius To Literature Results

| Star<br>(1)                    | This Work        |                 | Published        |                 | This Work        |                 | Published        |                 | This Work   |                  | Published   |                  |
|--------------------------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|-------------|------------------|-------------|------------------|
|                                | $T_{eff}$<br>(2) | $\sigma$<br>(3) | $T_{eff}$<br>(4) | $\sigma$<br>(5) | $L_{bol}$<br>(6) | $\sigma$<br>(7) | $L_{bol}$<br>(8) | $\sigma$<br>(9) | $R$<br>(10) | $\sigma$<br>(11) | $R$<br>(12) | $\sigma$<br>(13) |
| GJ0143.1                       | 3533.8           | 22.0            | 3400.0           | 100.0           | 0.01587          | 0.00057         | 0.01710          | 0.00039         | 0.33616     | 0.00734          | 0.377       | 0.023            |
| GJ1207                         | 3989.7           | 22.2            | 4000.0           | 100.0           | 0.10619          | 0.00485         | 0.09036          | 0.00228         | 0.68204     | 0.01734          | 0.626       | 0.033            |
| GJ0393                         | 3216.7           | 10.2            | 3100.0           | 100.0           | 0.00676          | 0.00018         | 0.00665          | 0.00013         | 0.26482     | 0.00404          | 0.283       | 0.018            |
| GJ0402                         | 3521.8           | 49.3            | 3500.0           | 100.0           | 0.02697          | 0.00062         | 0.02529          | 0.00058         | 0.44114     | 0.01336          | 0.432       | 0.025            |
| GJ0406                         | 3166.1           | 22.7            | 3200.0           | 100.0           | 0.00757          | 0.00021         | 0.00785          | 0.00023         | 0.28919     | 0.00590          | 0.288       | 0.019            |
| GJ0447                         | 2636.1           | 34.9            | 2700.0           | 100.0           | 0.00102          | 2.46405e-05     | 0.00101          | 1.63047e-05     | 0.15371     | 0.00447          | 0.145       | 0.011            |
| GJ0436                         | 3084.7           | 37.3            | 3200.0           | 100.0           | 0.00375          | 7.38405e-05     | 0.00371          | 0.00011         | 0.21441     | 0.00560          | 0.198       | 0.013            |
| Rabus et al. (2019) (11 Stars) |                  |                 |                  |                 |                  |                 |                  |                 |             |                  |             |                  |
| GJ0001                         | 3635.8           | 118.2           | 3616.0           | 14.0            | 0.02329          | 0.00056         | 0.0220           | 0.0004          | 0.38466     | 0.02544          | 0.379       | 0.002            |
| GJ0273                         | 3169.5           | 54.3            | 3253.0           | 39.0            | 0.01065          | 0.00025         | 0.0103           | 0.0005          | 0.34239     | 0.01242          | 0.320       | 0.005            |
| GJ0406                         | 2636.1           | 34.9            | 2657.0           | 20.0            | 0.00102          | 2.46405e-05     | 0.0011           | 0.0001          | 0.15371     | 0.00447          | 0.159       | 0.006            |
| GJ0447                         | 3084.7           | 37.3            | 3264.0           | 24.0            | 0.00375          | 7.38405e-05     | 0.0039           | 0.0003          | 0.21441     | 0.00560          | 0.196       | 0.010            |
| GJ0581                         | 3360.6           | 28.8            | 3366.0           | 28.0            | 0.01197          | 0.00024         | 0.0119           | 0.0005          | 0.32280     | 0.00642          | 0.322       | 0.005            |
| GJ0628                         | 3173.1           | 51.6            | 3372.0           | 12.0            | 0.01104          | 0.00023         | 0.0109           | 0.0004          | 0.34773     | 0.01189          | 0.306       | 0.007            |
| GJ0674                         | 3396.8           | 67.0            | 3409.0           | 25.0            | 0.01654          | 0.00033         | 0.0157           | 0.0015          | 0.37140     | 0.01513          | 0.360       | 0.018            |
| GJ0729                         | 3190.3           | 41.2            | 3162.0           | 30.0            | 0.00403          | 7.94117e-05     | 0.0038           | 0.0003          | 0.20797     | 0.00574          | 0.205       | 0.006            |
| GJ0832                         | 3564.0           | 103.8           | 3512.0           | 23.0            | 0.02932          | 0.001782        | 0.0258           | 0.0009          | 0.44929     | 0.02953          | 0.435       | 0.005            |
| GJ0876                         | 3182.0           | 51.8            | 3275.0           | 18.0            | 0.013409         | 0.00030         | 0.0129           | 0.0004          | 0.38111     | 0.013146         | 0.354       | 0.005            |
| PROXIMACEN                     | 2805.0           | 45.6            | 2901.0           | 56.0            | 0.00166          | 4.33723e-05     | 0.0015           | 0.0001          | 0.17302     | 0.00606          | 0.154       | 0.001            |

a Casagrande et al. (2008) angular diameters (") are listed instead of radii, which they do not report.

b Our listed "Mann et al. (2015) luminosities" are calculated using their bolometric fluxes and our parallaxes.

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