

Kathryn V. Lester

NASA Ames Research Center

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Research Interests: Spectroscopic binary stars, radial velocity analysis, visual binary stars, eclipsing binary stars, light curve modeling, fundamental stellar parameters, high resolution spectroscopy, interferometric observations, Kepler photometry, exoplanet hosts stars, massive stars, stellar evolution.

Education

Ph.D in Astronomy. Georgia State University May 2020
M.S. in Physics. Georgia State University December 2017
B.S. in Astrophysics. Lehigh University May 2014

Research Positions

NASA Postdoctoral Fellow 2020 - present

Ames Research Center, with Dr. Steve Howell

- Searching for companions around and determining visual orbits of TESS exoplanet host binaries using high resolution imaging.

Graduate Research Assistant 2014 - 2020

Georgia State University, with Dr. Douglas Gies

- Determined visual and spectroscopic orbits of A- and F-type binary stars using the CHARA Array.
- Completed photometric, spectroscopic, and apsidal motion analyses of the K2 eclipsing binary, BW Aquarii.

Undergraduate Research Assistant 2013 - 2014

Lehigh University, with Dr. Ginny McSwain

- Fit model spectra to three binary stars in the Cyg OB2 association to determine atmospheric parameters.

Undergraduate Research Assistant 2013

University of Wyoming, with Dr. Chip Kobulnicky

- Measured and analyzed the radial velocity shifts of WIRO spectra in search of massive binary stars as part of the Cygnus OB2 Radial Velocity Survey

First Author Publications

To see my publication record on ADS, click [here](#).

6. "Speckle Observations of TESS Exoplanet Host Stars. II. Stellar Companions at 1-1000 au and Implications for Small Planet Detection".
K. V. Lester, R. A. Matson, S. B. Howell, et al. 2021, AJ, 162, 75
5. "Visual Orbits of Spectroscopic Binaries with the CHARA Array. III. HD 8374 and HD 24546".
K. V. Lester, F. Fekel, M. Muterspaugh, et al. 2020, AJ, 160, 58
4. "Visual Orbits of Spectroscopic Binaries with the CHARA Array. II. the eclipsing binary HD 185912".
K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, AJ, 158, 6
3. "Visual Orbits of Spectroscopic Binaries with the CHARA Array. I. HD 224355".
K. V. Lester, D. R. Gies, G. Schaefer, C. Farrington, et al. 2019, AJ, 157, 140L
2. "A Photometric, Spectroscopic, and Apsidal Motion Analysis of Eclipsing Binary BW Aquarii".
K. V. Lester & D. R. Gies. 2018, AJ, 156, 8.

1. "A Young Eclipsing Binary and its Luminous Neighbors in Sh 2-252E".
K. V. Lester, D. R. Gies, & Z. Guo. 2016, *AJ*, 152, 194.

Contributed Publications

9. Howell, S. B., Scott, N. J., Matson, R. A., et al. 2021, *Frontiers in Astronomy and Space Sciences*, 8, 10
8. D. G. Whelan, S. D. Chojnowski, J. Labadie-Bartz, et al. 2021, *AJ*, 161, 67
7. D. R. Gies, **K. V. Lester**, L. Wang, et al. 2020, *ApJ*, *in press*
6. K. Shepard, D. R. Gies, **K. V. Lester**, et al. 2020, *ApJ*, 888, 82
5. L. Wang, D. R. Gies, **K. V. Lester**, et al. 2020, *AJ*, 159, 4
4. S. D. Chojnowski, J. Labadie-Bartz, T. Rivinius, et al. 2018, *ApJ*, 865, 76.
3. M. C. Bentz, M. Batiste, J. Seals, et al. 2016, *ApJ*, 831, 2
2. D. R. Gies, R. A. Matson, Z. Guo, **K. V. Lester**, et al. 2015, *AJ*, 150, 178
1. H. A. Kobulnicky, D. C. Kiminki, M. J. Lundquist, et al. 2014, *ApJS*, 213, 34

Observing Experience

Gemini Observatory 8.1m telescope - 76 nights Speckle interferometry of binary stars and exoplanet host stars	HI, USA & Chile 2020 - present
The CHARA Array Six 1.0m telescopes - 73 nights Interferometric observations of binary stars using CLIMB	Mt. Wilson, CA 2017 - 2020
Apache Point Observatory 3.5m telescope - 49 nights Echelle spectroscopy of binary stars using ARCES	Sunspot, NM 2016 - 2020
Hard Labor Creek Observatory 0.6m telescope - 7 nights Relative photometry of eclipsing binaries and AGN	Rutlege, GA 2015
Wyoming Infrared Observatory 2.3m telescope - 15 nights Longslit spectroscopy of binary star candidates	Mt. Jelm, WY 2014

Telescope Time Awarded

Gemini Observatory Speckle imaging of exoplanet host binary stars using 'Alopeke & Zorro (9.3 hours)	2021B
Speckle imaging of binary stars using 'Alopeke (2 hours)	2018B

Invited Talks

AAS Splinter Session: Stars and the ISM with Gemini's Fast Turnaround Observations Talk: "Speckle & Long Baseline Interferometry of Binary Stars".	2022
CHARA & VLT Science Meeting Talk: "Review of Binary Star Science Using Interferometry".	2020 (postponed due to COVID-19)

NSF virtual site visit at the CHARA Array 2020
Talk: "Visual Orbits of Spectroscopic Binaries".

Agnes Scott College 2019
Colloquium: "Visual & Spectroscopic Orbits of Binary Stars".

Contributed Talks

Bay Area Exoplanet Meeting 2021
"Close Companions of TESS Exoplanet Host Stars".

235th AAS Meeting 2020
Dissertation Talk: "Visual Orbits of Spectroscopic Binaries with the CHARA Array".

CHARA Science Meeting 2019
"Visual Orbits of Spectroscopic Binaries".

233rd AAS Meeting 2019
"Visual Orbit and Physical Parameters of the Spectroscopic Binary HD 224355".

Georgia Regional Astronomers Conference 2018
"Visual Orbits of Spectroscopic Binary Stars: HD 224355".

GSU Women In STEM Conference 2018
"Visual & Spectroscopic Orbits of Binary Stars".

Lehigh Senior Thesis Fair 2014
"Stellar Parameters of Three Massive Stars in Cygnus OB2".

Leadership & Teaching Experience

Astronomy Peer Advising Leaders (AstroPALs) 2016 - 2020
President & Mentor

- Proposed for and maintained the club budget, lead monthly mentor meetings and events, and organized orientation for incoming graduate students.
- Provided advice and support during monthly one-on-one meetings with junior graduate student mentee.
- Organized group professional development meetings for all mentees.

GSU Lab Instructor 2014 - 2017
Taught and graded weekly labs for introductory stellar and extragalactic astronomy courses.

Grading Assistant 2014
Graded online homework and exams for introductory stellar astronomy course.

Lehigh Astronomy Club Secretary 2013 - 2014
Arranged and took notes during meetings and managed promotion of club events.

Private Tutor 2013 - 2014
Lead weekly tutoring sessions for calculus and French to other undergraduate students.

Outreach Experience

Podcast Guest 2021
Spoke about my research on the 365 Days of Astronomy podcast.

Journal Referee Reviewed submitted manuscripts for JAAVSO and ApJS.	2019, 2021
Grant Proposal Reviewer Provided science review and grading for NASA FINESST grant proposals.	2021
Panel Member Participated in panel discussions about graduate school and possible career paths for undergraduate physics students.	2019, 2021
Hard Labor Creek Observatory Volunteer Operated telescopes and answered questions from the public during monthly open houses.	2014 - 2020
Solar Eclipse Event Operated solar telescopes and engaged with the public during a solar eclipse viewing party hosted by GSU and Rabun County Tourism Authority.	2017
Urban Life Observatory Volunteer Operated telescopes during observing night for astronomy lab students on-campus.	2014 - 2017
Girl Scout Workshop Volunteer Assisted with workshop activities, including building pinhole cameras and filter wheels.	2014 - 2017
GSU Astronomy Night in Grant Park Operated telescopes during a star party for over 100 elementary school families.	2016
Workshop Volunteer Assisted with workshop for local high school students building cereal box spectrographs during IAU Symposium 314.	2015

Skills & Tools

Observations	Longslit & echelle spectroscopy, long-baseline & speckle interferometry, relative photometry
Data Analysis	Radial velocities, interferometric visibilities, binary orbit fitting, light curve modeling
Programming	IDL, IRAF, Python, HTML/CSS (basic)
Software	L ^A T _E X, Microsoft Office, MESA, DS9, ELC, Period04, PyKE, Photoshop (basic)
Operating Systems	Mac, Linux, Windows
Foreign Languages	French (intermediate)

Honors & Awards

Georgia State University	Outstanding Advanced Graduate Student Award Outstanding Second Year Graduate Student Sigma Pi Sigma
Lehigh University	Phi Beta Kappa Physics Departmental Honors Eckardt Scholar