

# CHIRON Capabilities - Summary (2017.0524)

## Specifications

- Fiber-fed Echelle spectrograph
- 411 nm to 877 nm
- $R \sim 28\,000$  to  $136\,000$
- Wavelength calibration via ThAr lamp or Iodine cell
  
- Four modes
  - Fiber: Highest throughput, lowest resolution
  - Slicer: High throughput, mid-high resolution
  - Slit: Low throughput, high resolution
  - Narrow: Lowest throughput, highest resolution
- Fiber size 2.7"
- Echelle grating and prism cross-disperser
- Temperature and pressure stabilized

## Upgrades

- Old Echelle grating replaced with a R2 Richardson grating and mounted in a vacuum enclosure (Jan-Feb 2012).
- Round fiber to octagonal fiber (Jan-Feb 2012).
- Anti-reflection coating applied to cross-disperser prism (Jan-Feb 2012).
- CCD controller to NOAO Torrent controller (Jan-Feb 2012).
- Exposure meter added (Jan-Feb 2012).
- Stability of the temperature control is improved (Jan-Feb 2012).

## Performance

- Optimized for Iodine wavelength calibration.
- At its best, RV precisions  $\sim 1$  m/s (Schwab et al. 2012).
- Overall efficiency is about 6% (Tokovinin et al. 2013; Schwab et al. 2012)
  
- Dominant limitation is coupling losses into the fiber due to poor guiding (Schwab et al. 2012).
  - (LP: before the upgrade? does tip-tilt guiding solves the problem?)

## Technical publications and documentation

- Tokovinin et al. 2013
- Schwab et al. 2012
- Brewer et al. 2014

## Websites

- CHIRON at Yale
  - <http://chiron.astro.yale.edu/>
  - <https://sites.google.com/site/yalechiron/>
- CHIRON at CTIO (Andrei Tokovinin)
  - <http://www.ctio.noao.edu/~atokovin/echelle/>
  - <http://www.ctio.noao.edu/noao/content/chiron>