

# CHIRON

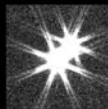
fiber fed high resolution echelle spectrograph



1-m

1.5-m

0.9-m



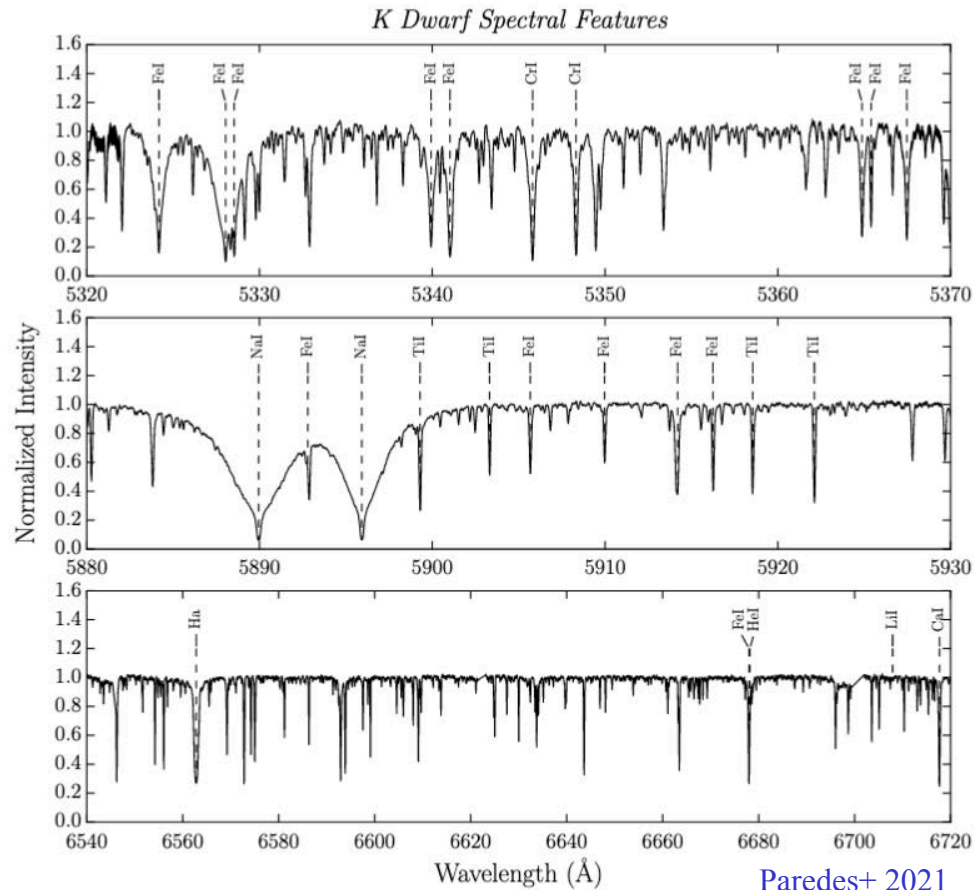
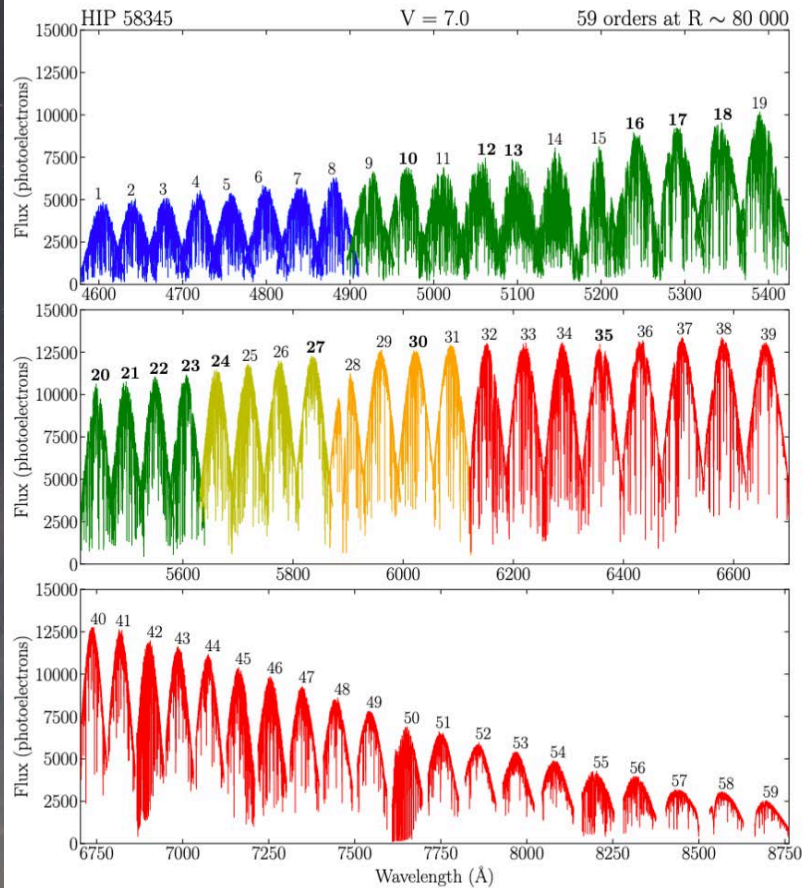
**RECONS**

Research Consortium on Nearby Stars

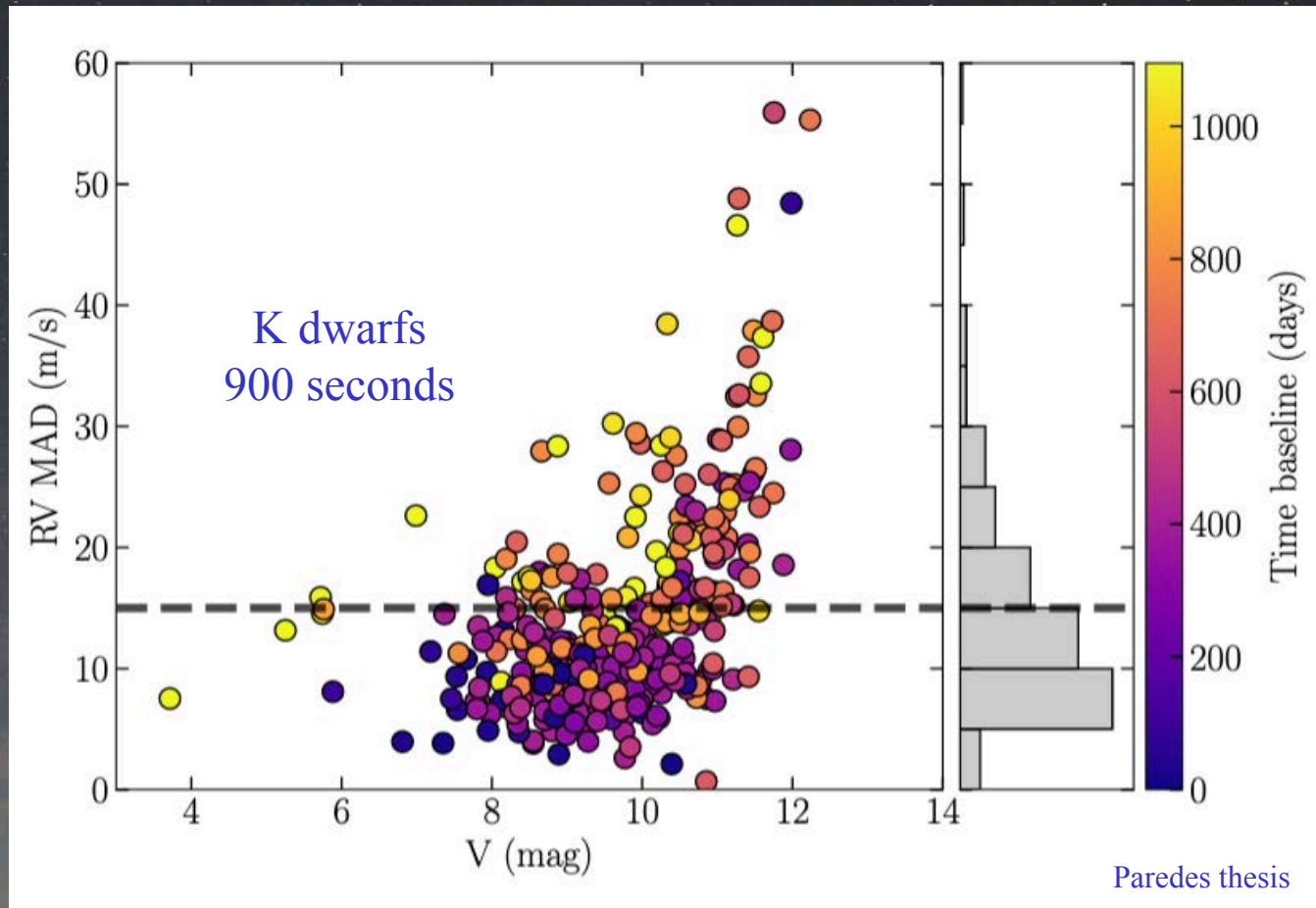
**SMARTS**

Small and Moderate Aperture Research Telescope System

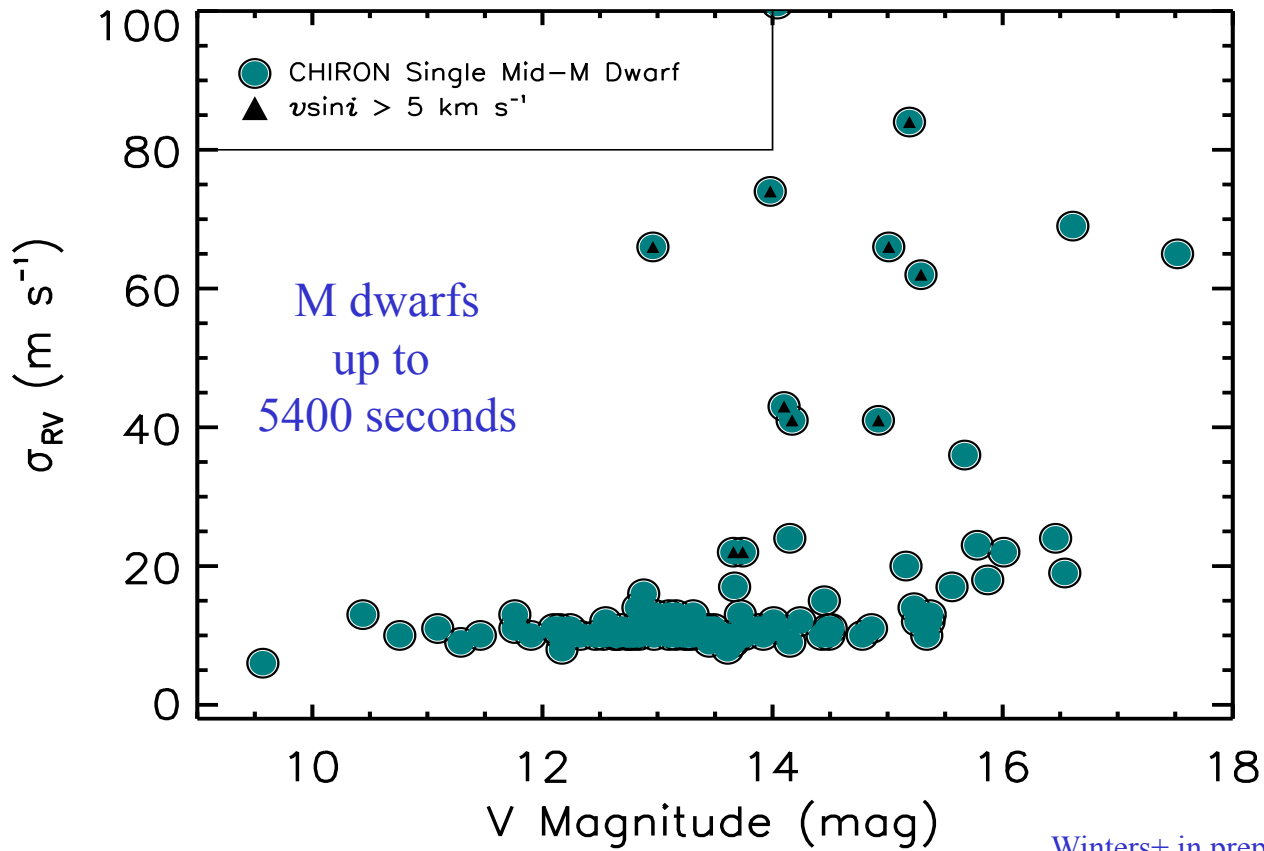
# CHIRON Capabilities



# CHIRON stability – K dwarfs



# CHIRON – M dwarfs



# CHIRON Status

**2017B reopened  
2018A to 2023B**                      **12 semesters**

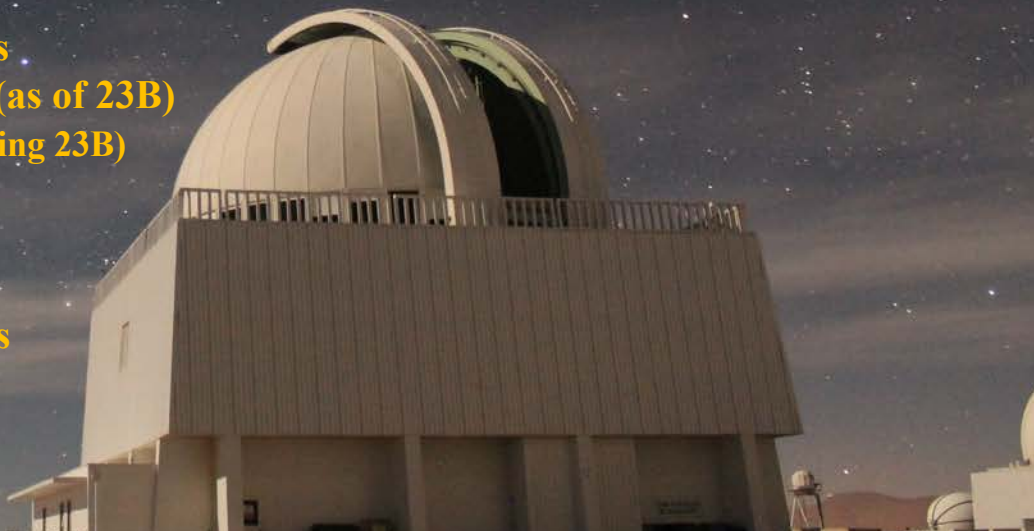
**Papers**                                      **97**

**Dissertations**                              **8**

## NN-EXPLORE

**2019A to 2023B**                      **10 semesters**  
**NASA Time**                              **3367 hours (as of 23B)**  
**Finish rate**                                **96% (excluding 23B)**

**NASA PI Count**                          **29 people**  
**NASA PI Science**                      **72 programs**  
**NASA Papers**                              **34**



# Exoplanets around K dwarfs

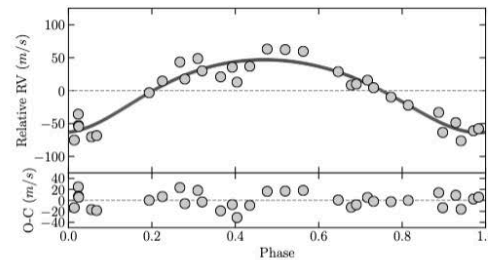
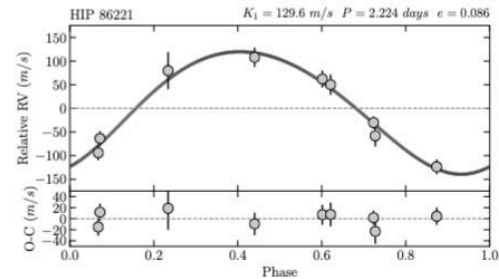
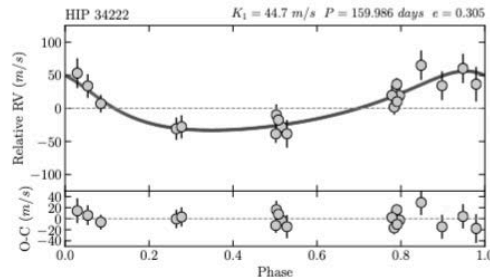
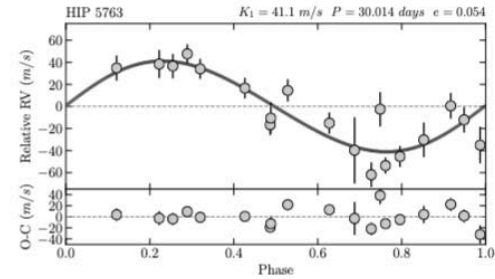
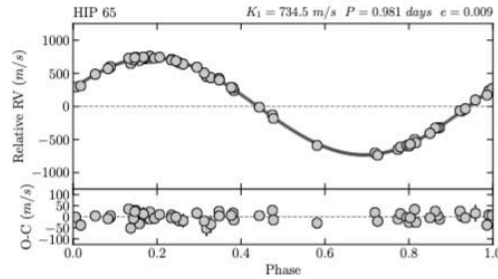
$P_{orb}$  (days)      *Msini* (Jup)

known

2.2	1.17
3.5	0.50
4.1	0.49
10.7	1.09
23.6	0.63

new

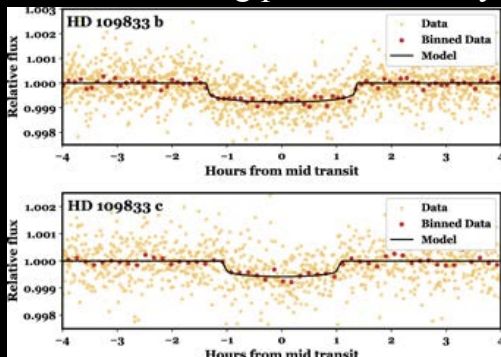
1.0	2.95
2.2	0.71
30.0	0.51
160.0	0.83



Paredes+ 2021

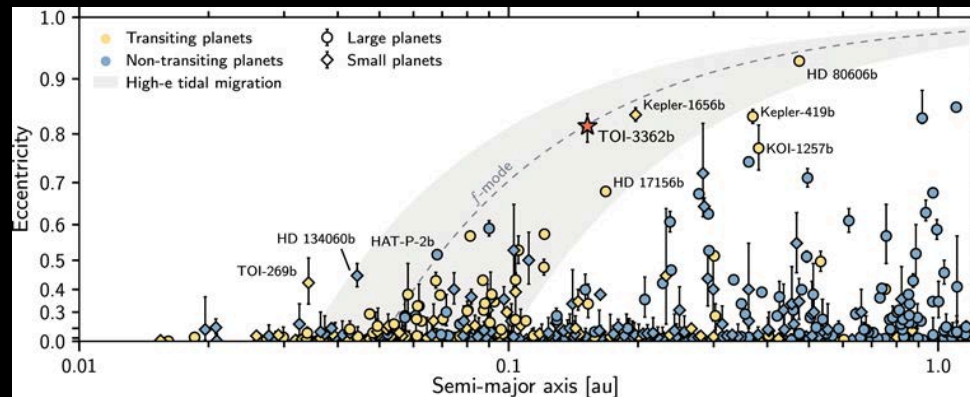
# NN Explore Highlights

Two Transiting planets < 27 Myrs



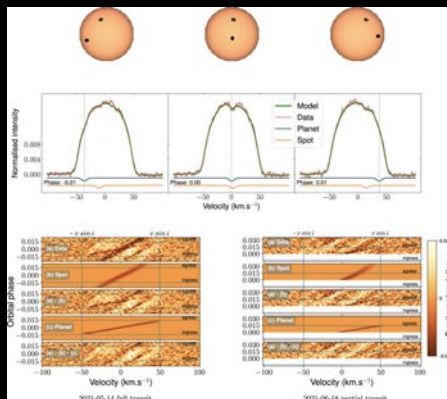
Wood et al (2023) – PI: Quinn

TOI-3362b: High-eccentricity Tidal Migration



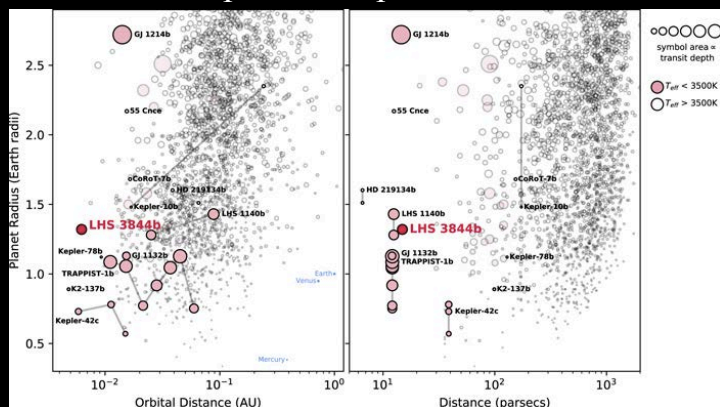
Dong et al (2021) – PI: Dong

Obliquity of a 17 Myrs G dwarf



Heitmann et al (2021) – PI: Zhou

11-hr ultra-short period exoplanet around a M dwarf



Vanderspek et al (2019) – PI: Quinn

## Publications of CTIO 1.5m CHIRON since 2017

(last updated: JUL-10-2023)

### Refereed Publications

#### 2023

Jao et al, 2023, *AJ*, Mind the Gap. I. H $\alpha$  Activity of M Dwarfs Near the Partially/Fully Convective Boundary and a New H $\alpha$  Emission Deficiency Zone on the Main Sequence, , CAT: PUB, PI: Jao, WHO: SMARTS

Pass et al, 2023, *AJ*, Active Stars in the Spectroscopic Survey of Mid-to-late M Dwarfs within 15 pc, [2023AJ....166...16P](#), CAT: PUB, PI: Winters, WHO: SMARTS

Pass et al, 2023, *AJ*, Mid-to-late M Dwarfs Lack Jupiter Analogs, [2023AJ....166...11P](#), CAT: PUB, PI: Winters, WHO: SMARTS

Wang et al, 2023, *AJ*, The Orbital and Physical Properties of Five Southern Be+sdO Binary Systems, [2023AJ....165..203W](#), CAT: PUB, PI: Wang, WHO:NOIRLab

Oddo, et al, 2023, *AJ*, Characterization of a Set of Small Planets with TESS and CHEOPS and an Analysis of Photometric Performance, [2023AJ....165..134O](#), CAT: PUB, PI: Quinn, WHO: NASA

Tey, et al, 2023, *AJ*, TESS Discovery of Twin Planets near 2:1 Resonance around Early M Dwarf TOI 4342, [2023AJ....165..93T](#), CAT: PUB, PI: Quinn+Zhou, WHO: NASA

Strawn et al, 2023, *MNRAS*, The orbital kinematics of  $\eta$  Carinae over three periastra with a possible detection of the elusive secondary's motion, [2023MNRAS.519.5882S](#), CAT: PUB, PI: Richardson, WHO:NOIRlab+SMARTS

Wood et al, 2023, *AJ*, TESS Hunt for Young and Maturing Exoplanets (THYME). IX. A 27 Myr Extended Population of Lower Centaurus Crux with a Transiting Two-planet System, [2023AJ....165..85W](#), CAT: PUB, PI: Quinn, WHO: NASA

Clark, et al, 2023, *AJ*, Spinning up a Daze: TESS Uncovers a Hot Jupiter Orbiting the Rapid Rotator TOI-778, [2023AJ....165..207C](#), CAT: PUB, PI: Davis, WHO: NOIRLab

Yee et al, 2023, *ApJS*, The TESS Grand Unified Hot Jupiter Survey. II. Twenty New Giant Planets, [2023ApJS..265....1Y](#), CAT: PUB, PI: Yee, WHO: NASA

Richardson et al, 2023, *Nature*, A high-mass X-ray binary descended from an ultra-stripped supernova, [2023Natur.614...45R](#), CAT: PUB, PI: Richardson, WHO: NOIRLab+SMARTS

#### 2022

Pujol et al, 2022, *A&A*, Taking a break: Paused accretion in the symbiotic binary RT Cru, [2023A%26A...670A..32P](#), CAT: PUB, PI: Walter, WHO: NOIRlab

Lester et al, 2022, *AJ*, Visual Orbits of Spectroscopic Binaries with the CHARA Array. IV. HD 61859, HD 89822, HD 109510, and HD 191692, [2022AJ....164..228L](#), CAT: PUB, PI: Gies, WHO: SMARTS

Hubbard-James et al, 2022, *AJ*, The Solar Neighborhood L: Spectroscopic Discovery of K Dwarfs Younger Than 1 Gyr and New Binaries within 30 pc, [2022AJ....164..174H](#), CAT: PUB, PI: Henry, WHO: SMARTS

Smith et al, 2022, *ApJ*, Pulse Timing Discovery of a Three-day Companion to the Hot Subdwarf BPM 36430, [2022ApJ...939...57S](#), CAT: PUB, PI: Barlow, WHO: SMARTS

Broz et al, 2022, *A&A*, Towards a consistent model of the hot quadruple system HD 93206 = QZ Carinae. II. N-body model, [2022A%26A...666A..24B](#), CAT: PUB, PI: Barlow, WHO: SMARTS

Mayer et al, 2022, *A&A*, Towards a consistent model of the hot quadruple system HD 93206 = QZ Carinae. I. Observations and their initial analyses, [2022A%26A...666A..23M](#), CAT: PUB, PI: Barlow, WHO: SMARTS

Harmanec et al, 2022, *A&A*, V1294 Aq1 = HD 184279: A bad boy among Be stars or an important clue to the Be phenomenon?, [2022A%26A...666A.136H](#), CAT: PUB, PI: Barlow, WHO: SMARTS

Merc et al, 2022, *MNRAS*, Hen 3-860: new southern eclipsing symbiotic star observed in the outburst, [2022MNRAS.510.1404M](#), CAT: PUB, PI: Barlow, WHO: SMARTS

Yee et al, 2022, *ApJS*, The TESS Grand Unified Hot Jupiter Survey. II. Twenty New Giant Planets, [2022arXiv221015473Y](#), CAT: PUB, PI: Yee, WHO: NASA



# CHIRON

RVs to  $\sim 10$  m/s  
stellar characterization

30 nights of service observations + wavelength calibrated spectra

pay-per-view /streaming service: \$200/hr



Todd Henry / [thenry88@gsu.edu](mailto:thenry88@gsu.edu)

Wei-Chun Jao / [wjao@gsu.edu](mailto:wjao@gsu.edu)

Sebastian Carrazco-Gaxiola

Tim Johns

+ Two observers

