

The HAT-South Survey for Transiting Exoplanets Planets

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ANU

17 Feb, 2012 Australian Exoplanet Workshop

Macquarie University, Sydney

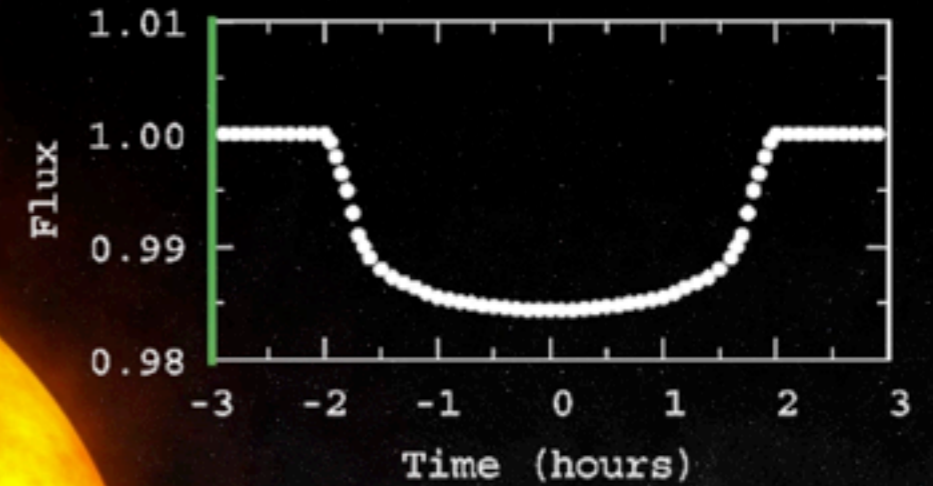


I. Transiting Planets

A path to detecting and characterising other worlds

- Transits used to determine:

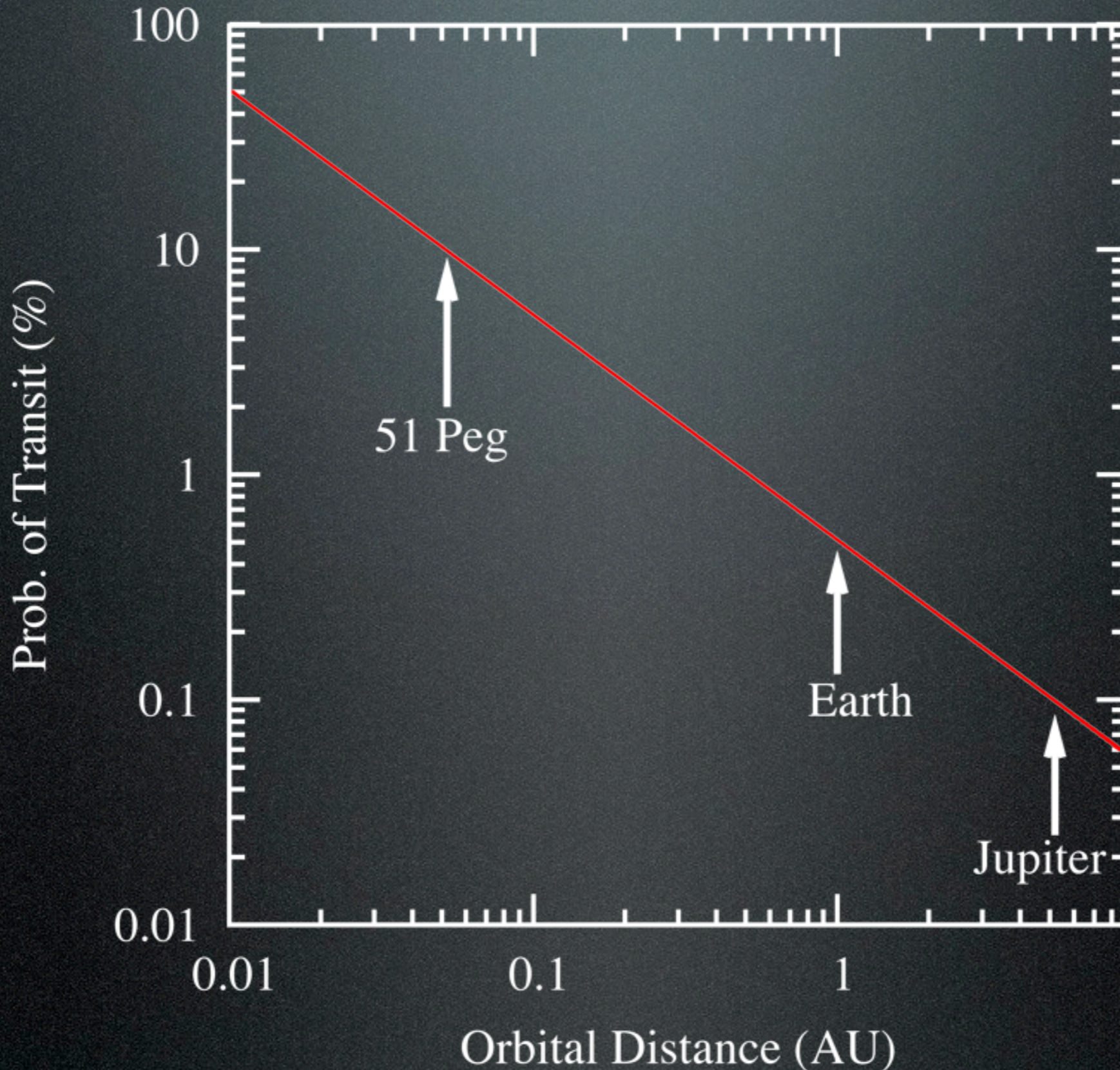
- Radius
- Inclination
- Mass (with RV)
- Atmospheric composition
- Temperature of atmosphere
- Spin-orbit alignment
- Albedo
- Rings or moons



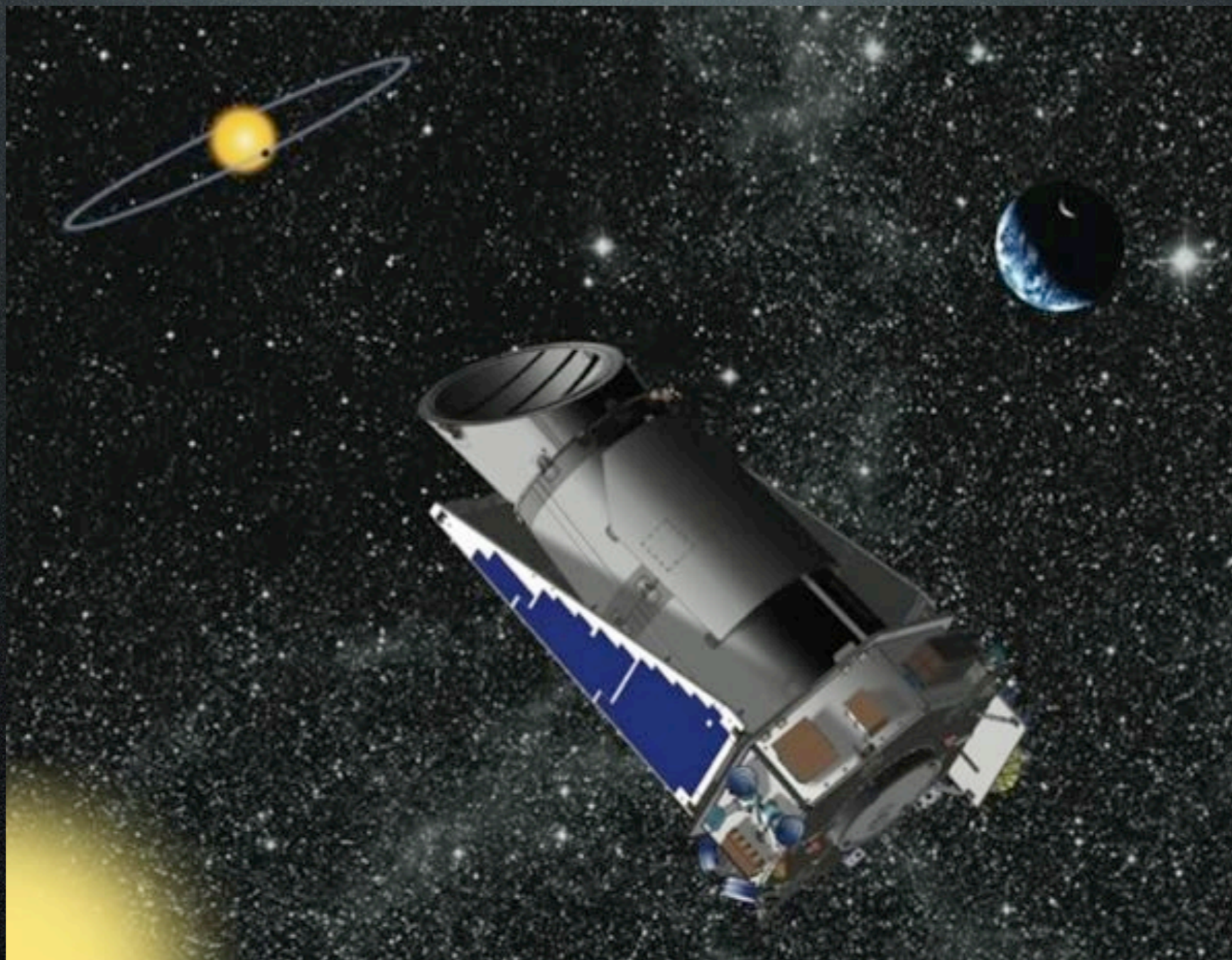
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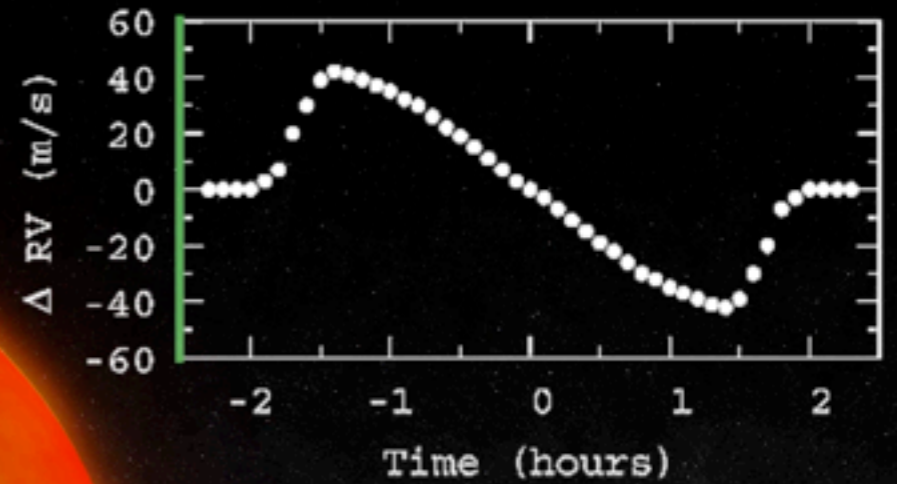
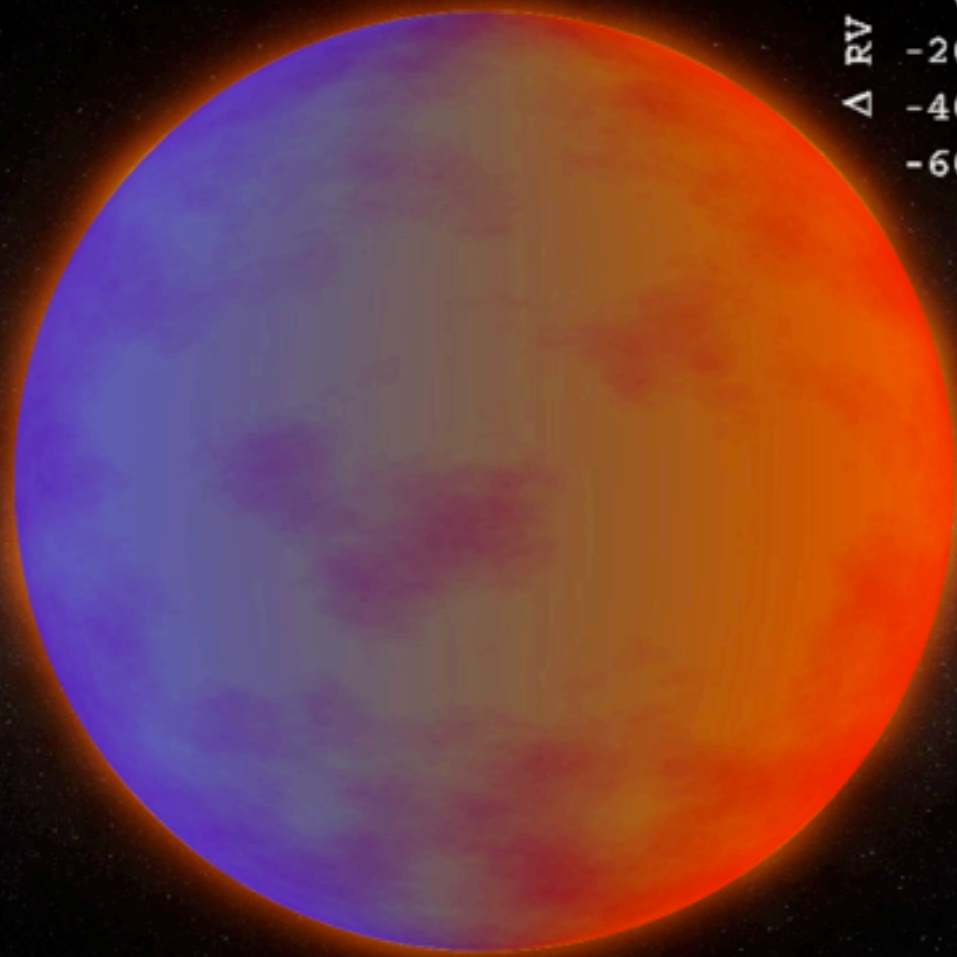
Geometric Probability of Transit



Kepler - Statistics



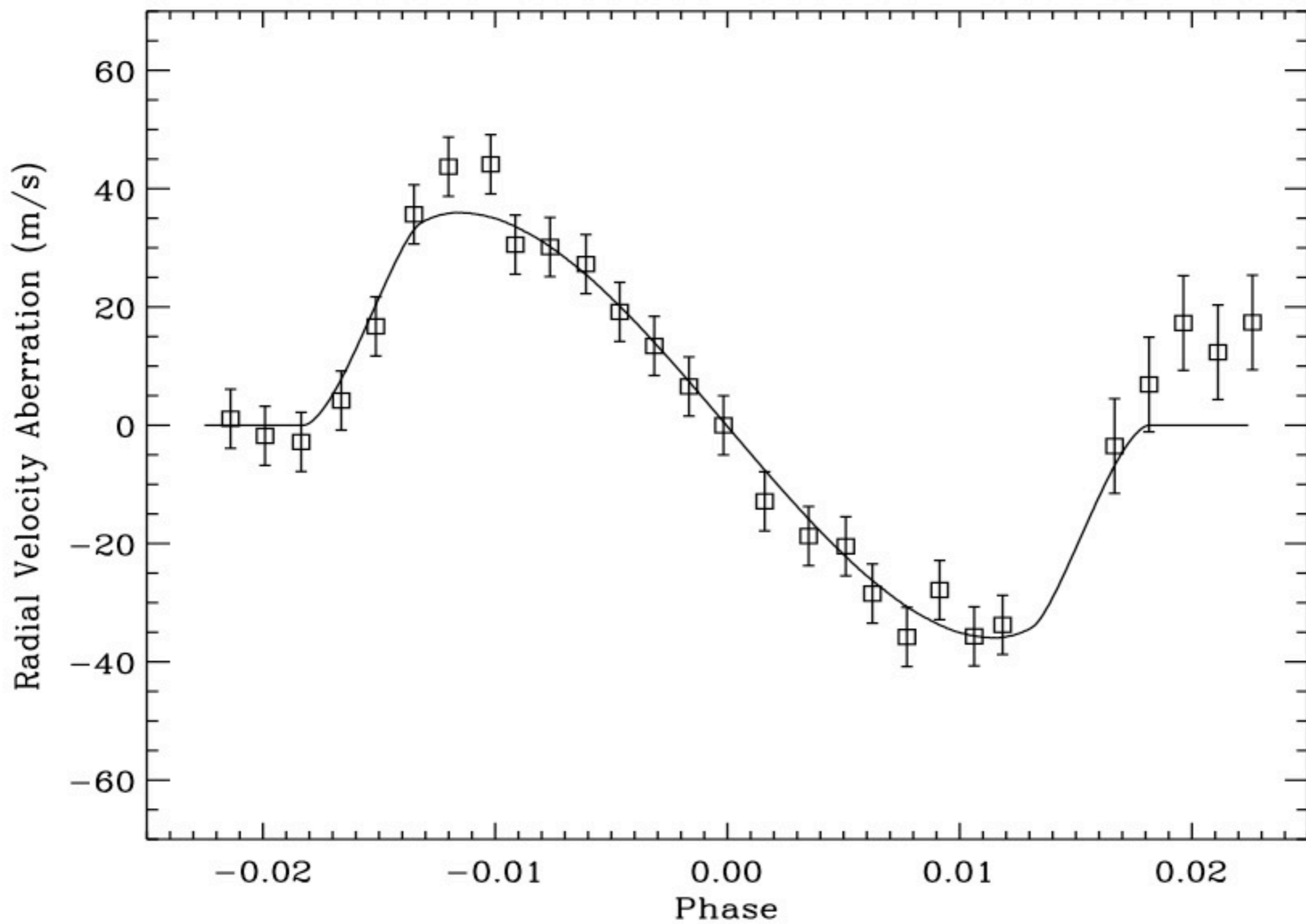
Rossiter-McLaughlin Effect



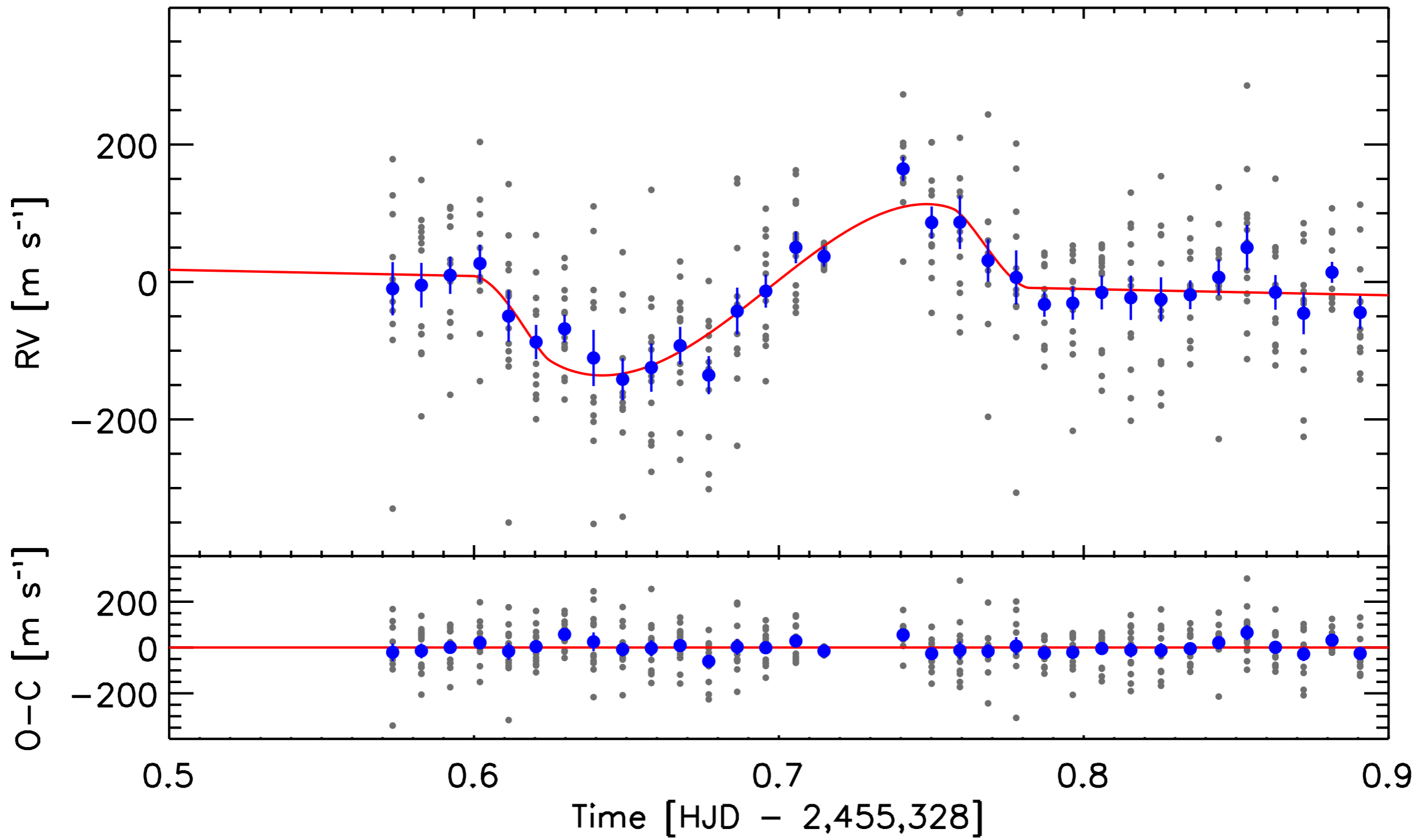
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Rossiter Effect in HD209458



Snellan, 2005

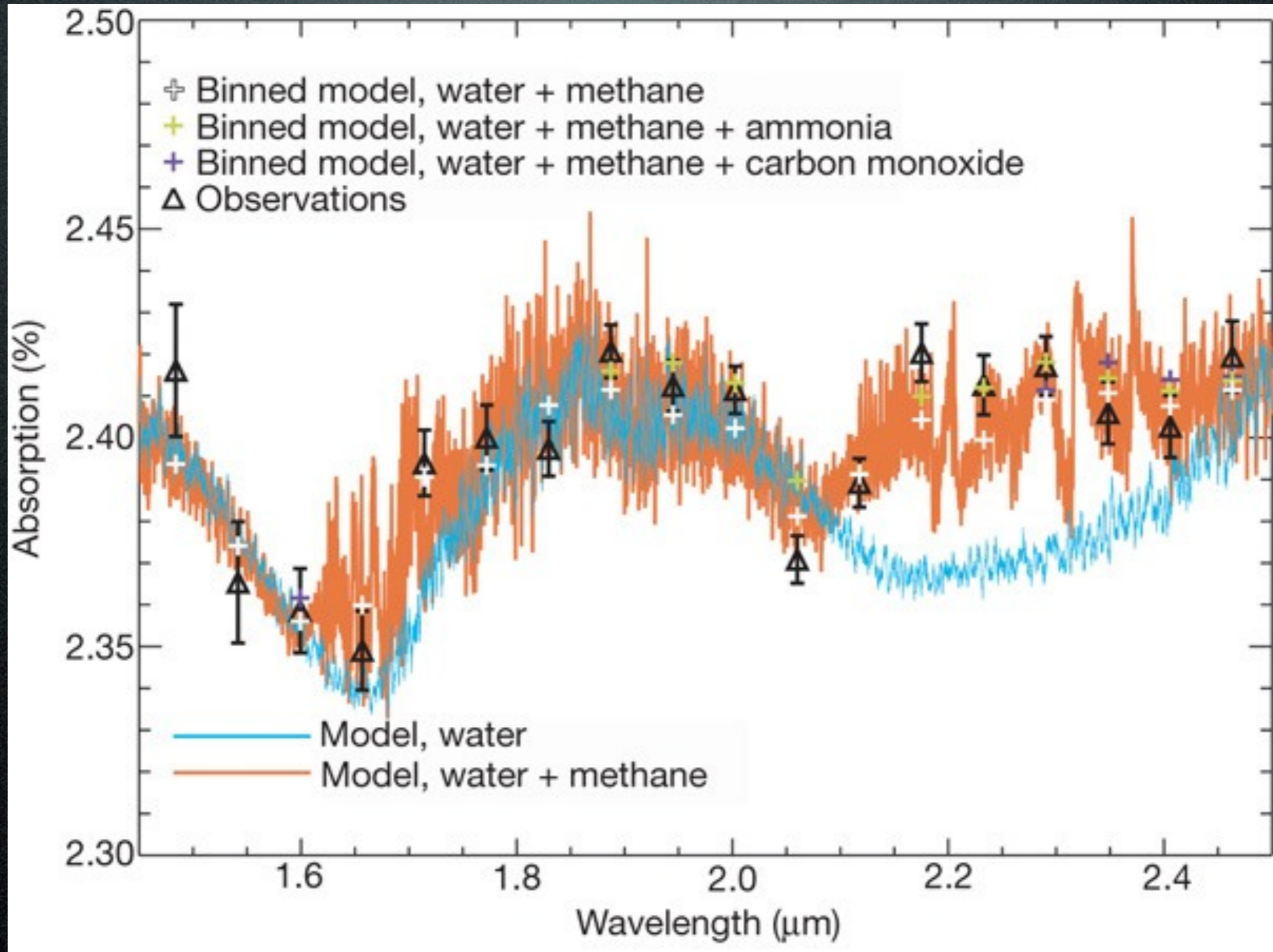


WASP-17

Bayliss et al., 2010

Transmission Spectroscopy

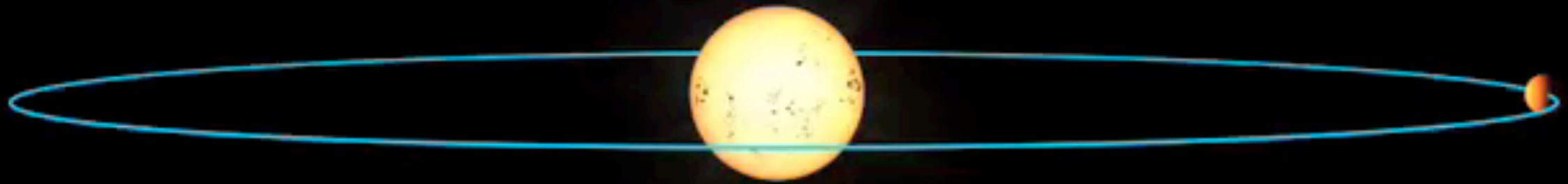




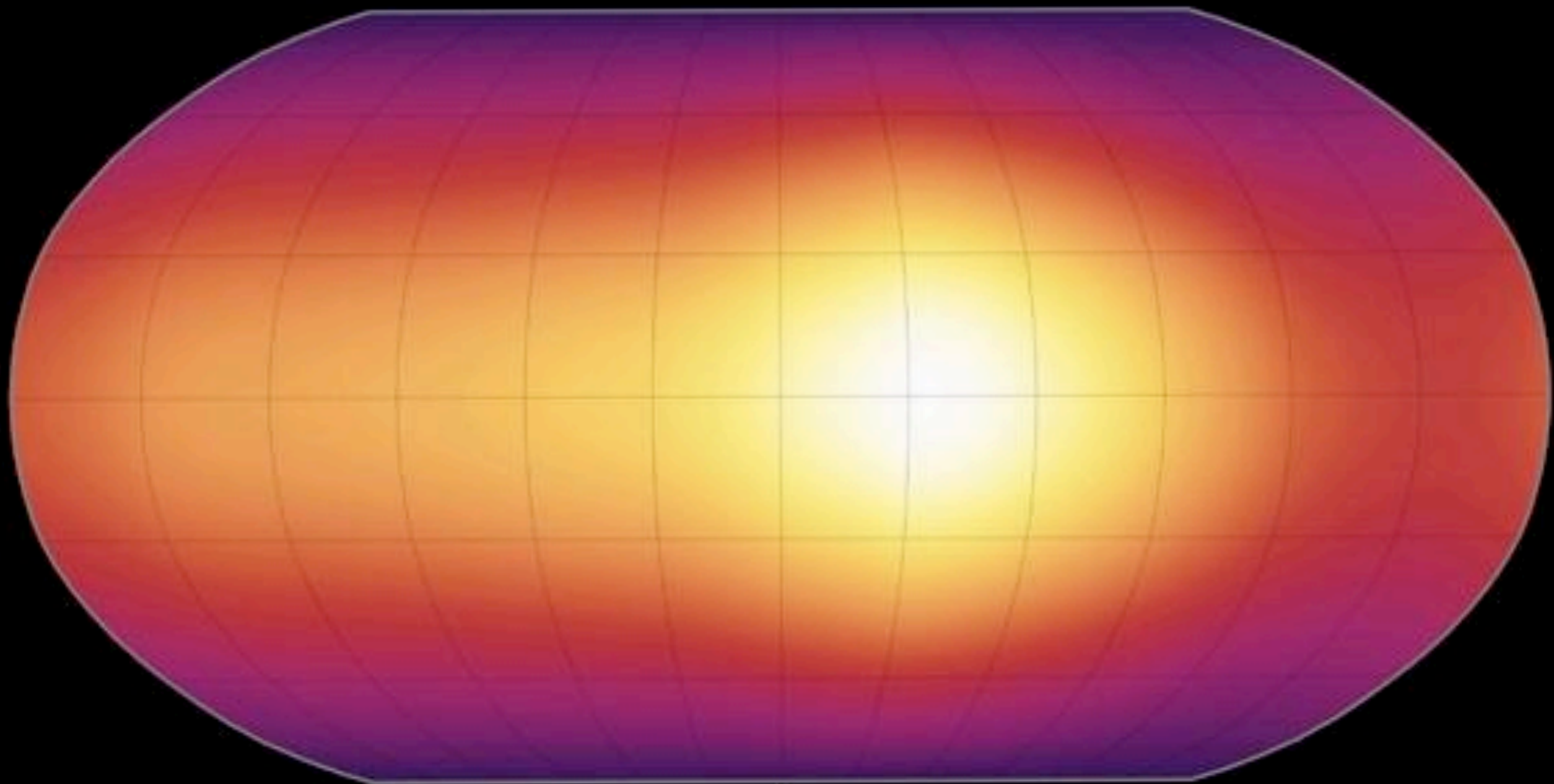
NICMOS data for HD189773b

Swain et al., 2008

IR Imaging



Sara Seager



Sun-Facing Longitude

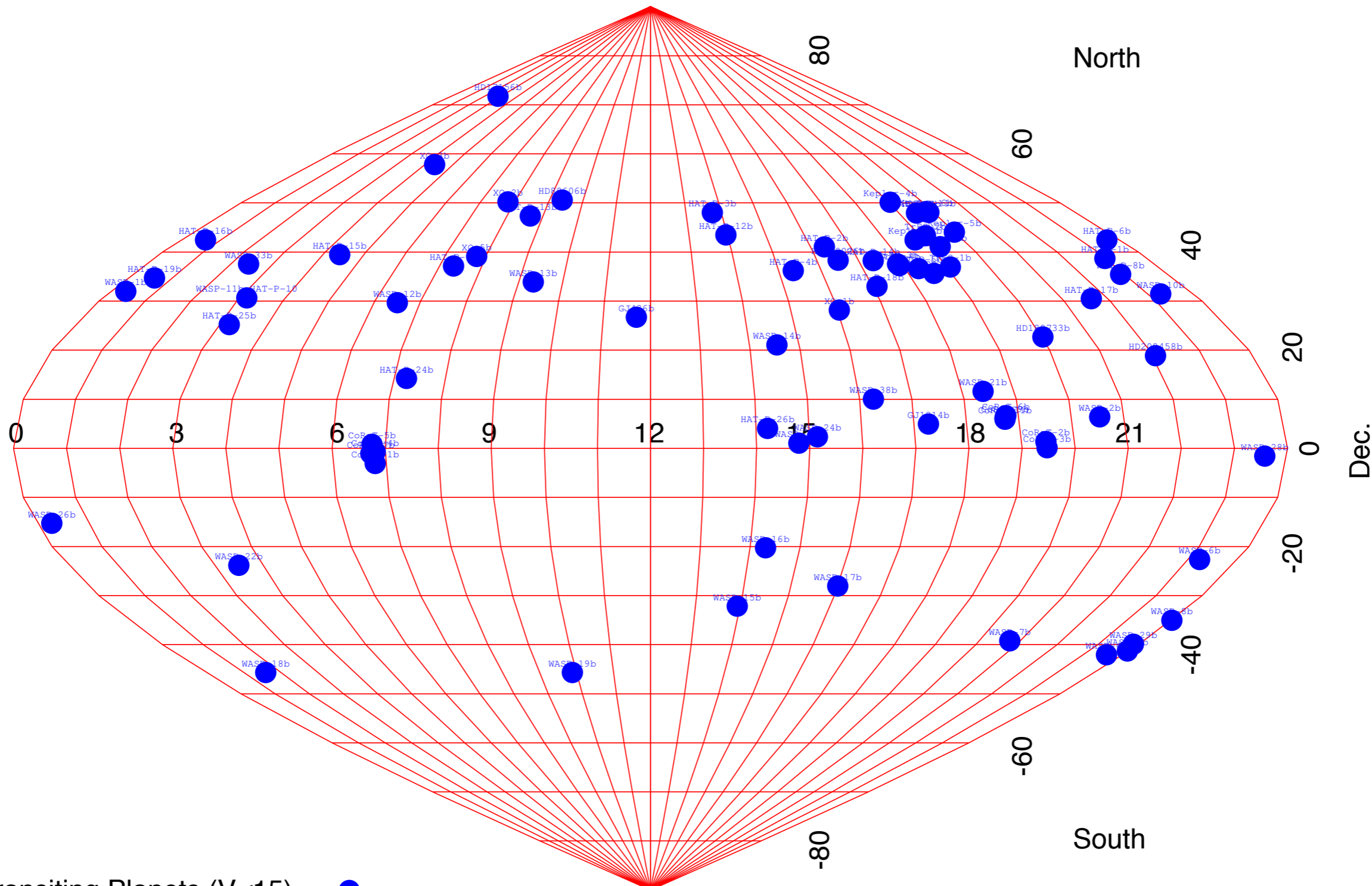
(Grid Spacing: 30°)

Spitzer data - HD189773

Knutson et al., 2007

II. HAT-South

A search for transiting planets in
the Southern Hemisphere



Transiting Planets ($V < 15$) ●

R.A.

The HAT-South Project

Goal - To find transiting extrasolar planets around bright southern stars.

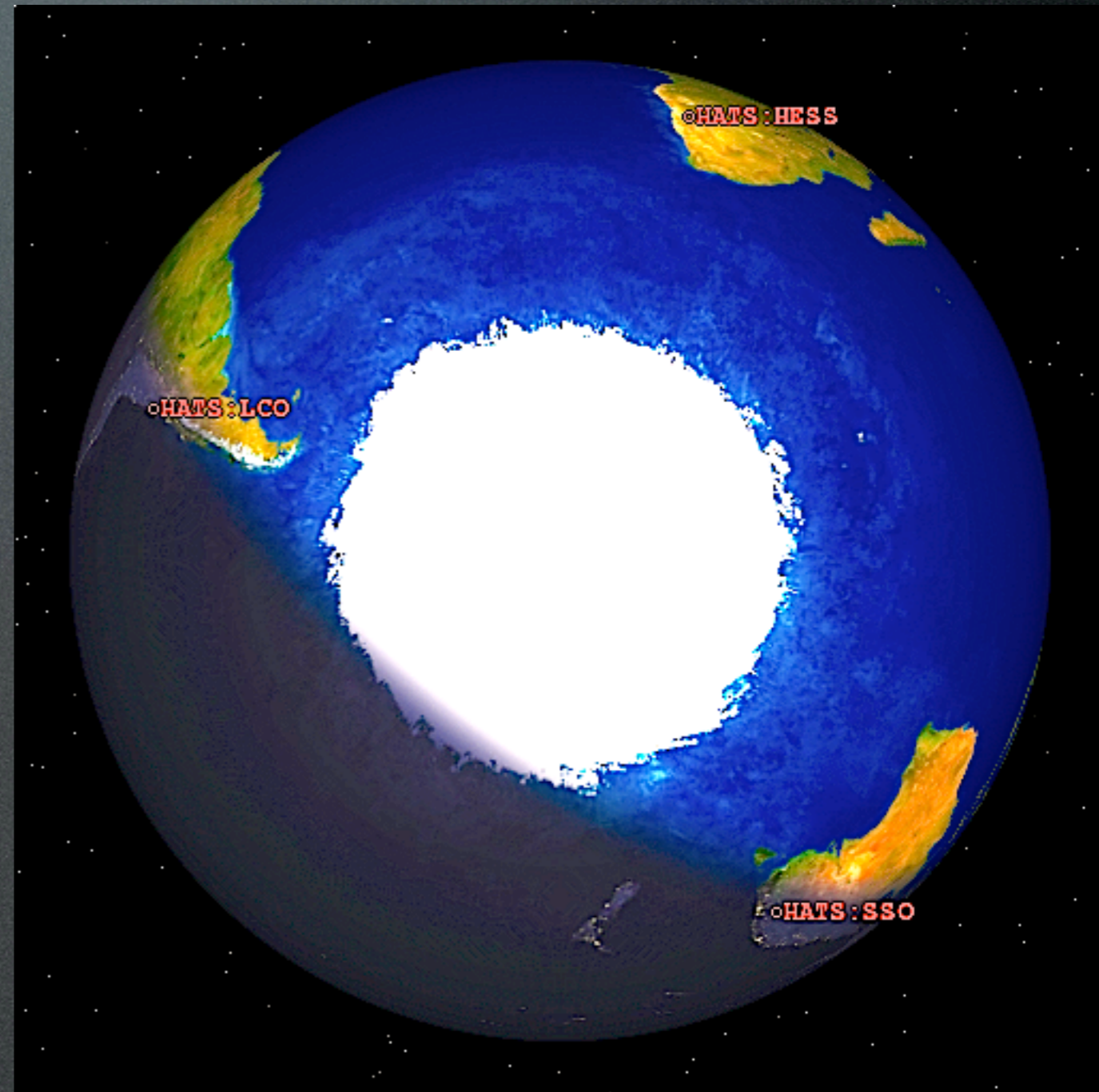
Collaboration between ANU, CfA and MPIA.

Gaspar Bakos, Christina Afonso, Thomas Henning, Andres Jordán, Matt Holman, R. W. Noyes, Penny Sackett, Brian Schmidt, **Daniel Bayliss**, **Peter Conroy**, **Bence Beky**, D. Sasselov, G. Kovács, Kai Ueltzhöffer, **Zoltan Csubry**, A. Pal, J. Lazar, **Pál Sari**, Istvan Papp, B. Csak, V. Suc, **Ferenc Rozsa**, Brian Schmidt, George Zhou

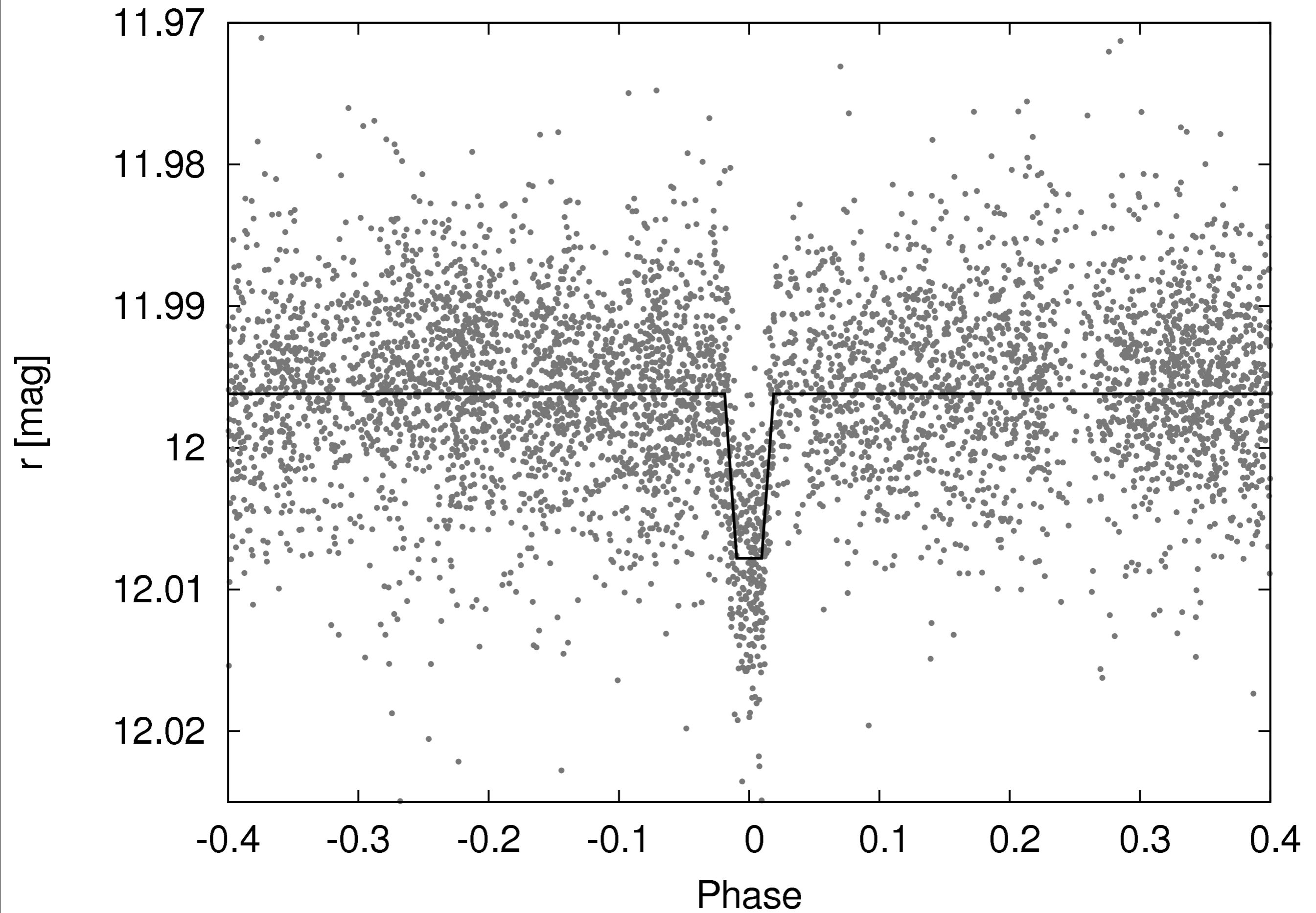


The HAT-South Network

- ◆ Network of telescopes in Australia, Chile, and Namibia.
- ◆ Each site has an identical set up of telescopes, cameras, and computers.

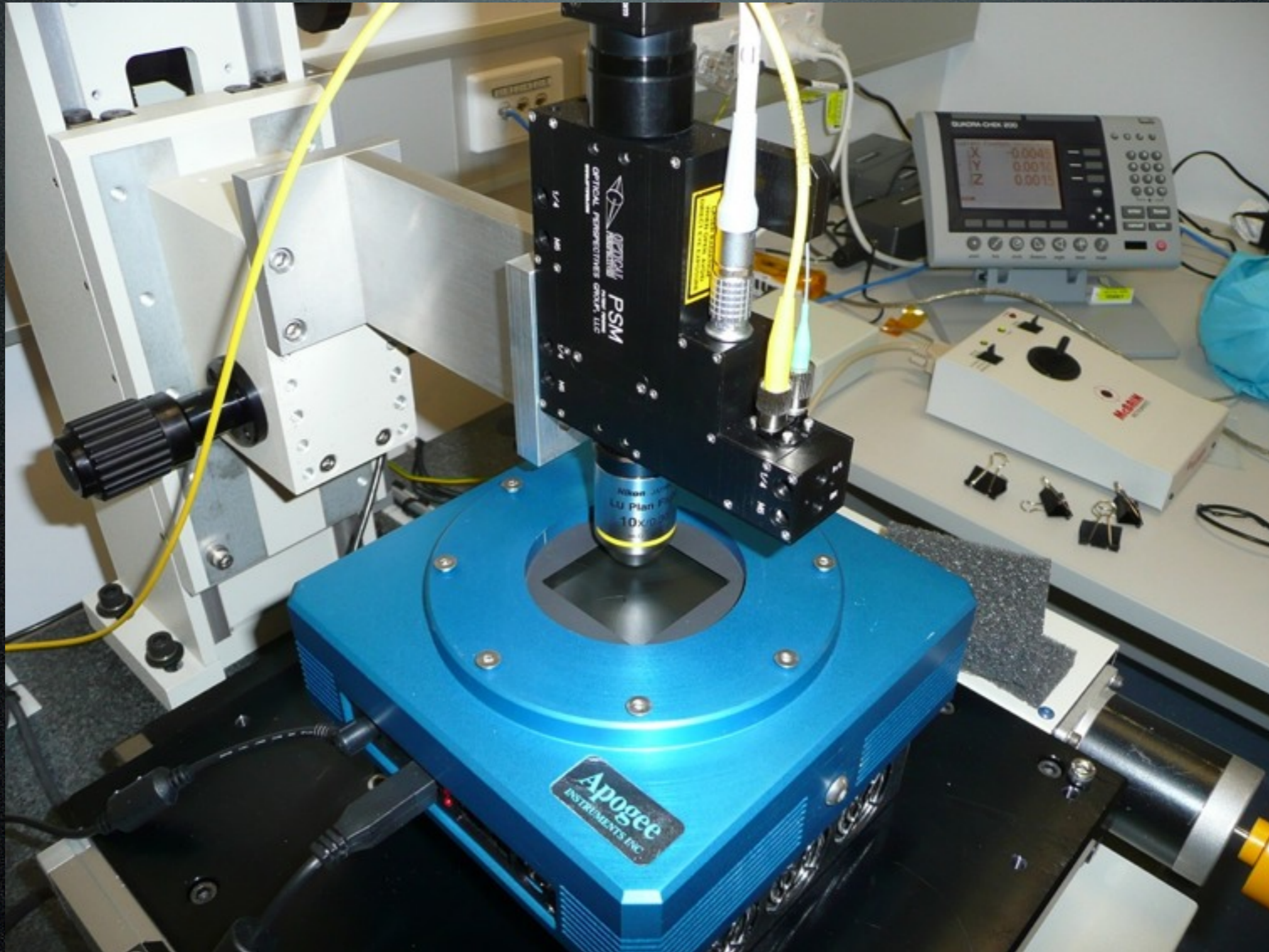






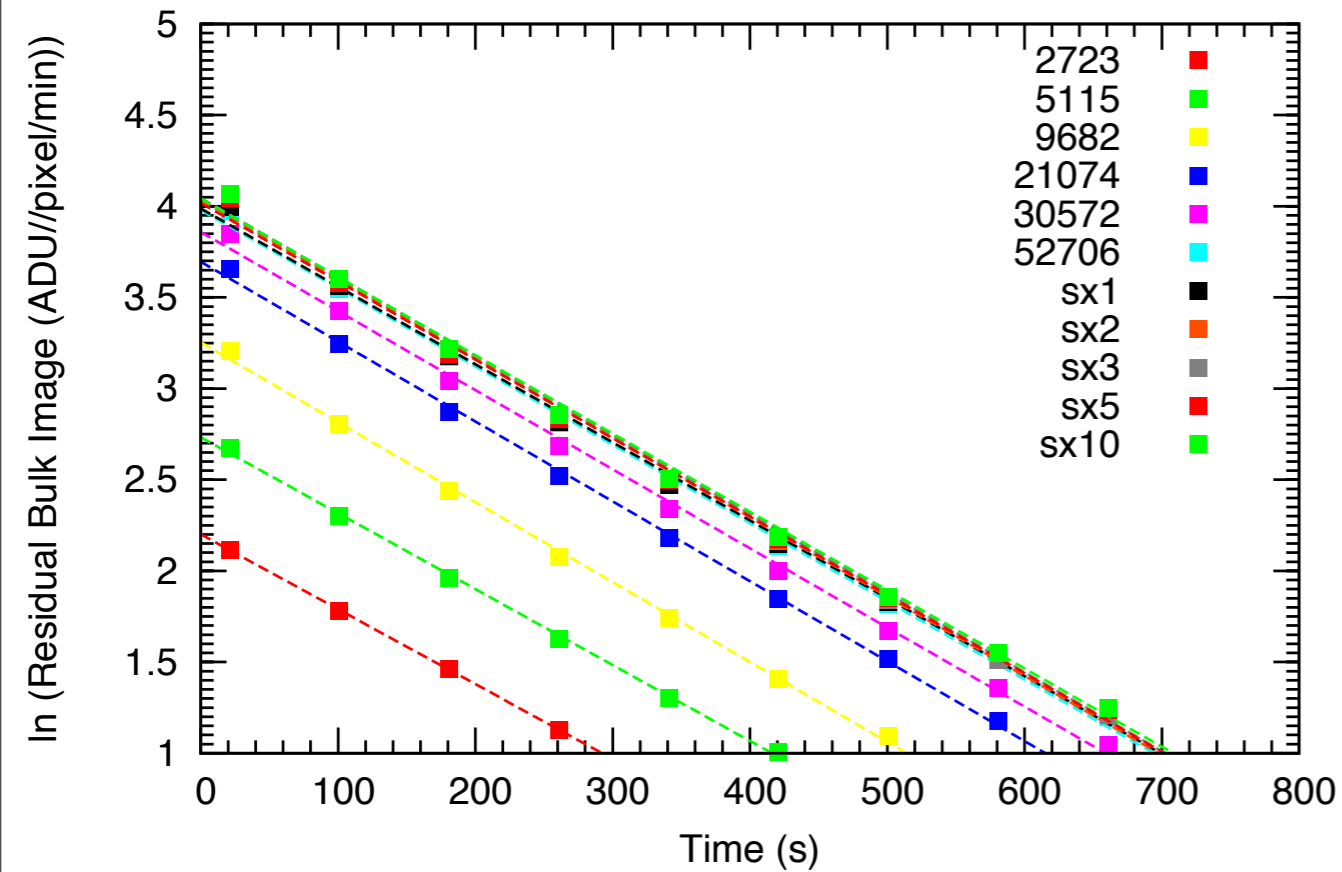
CCD characterisation

- Thanks to Gabe Bloxham (ANU)

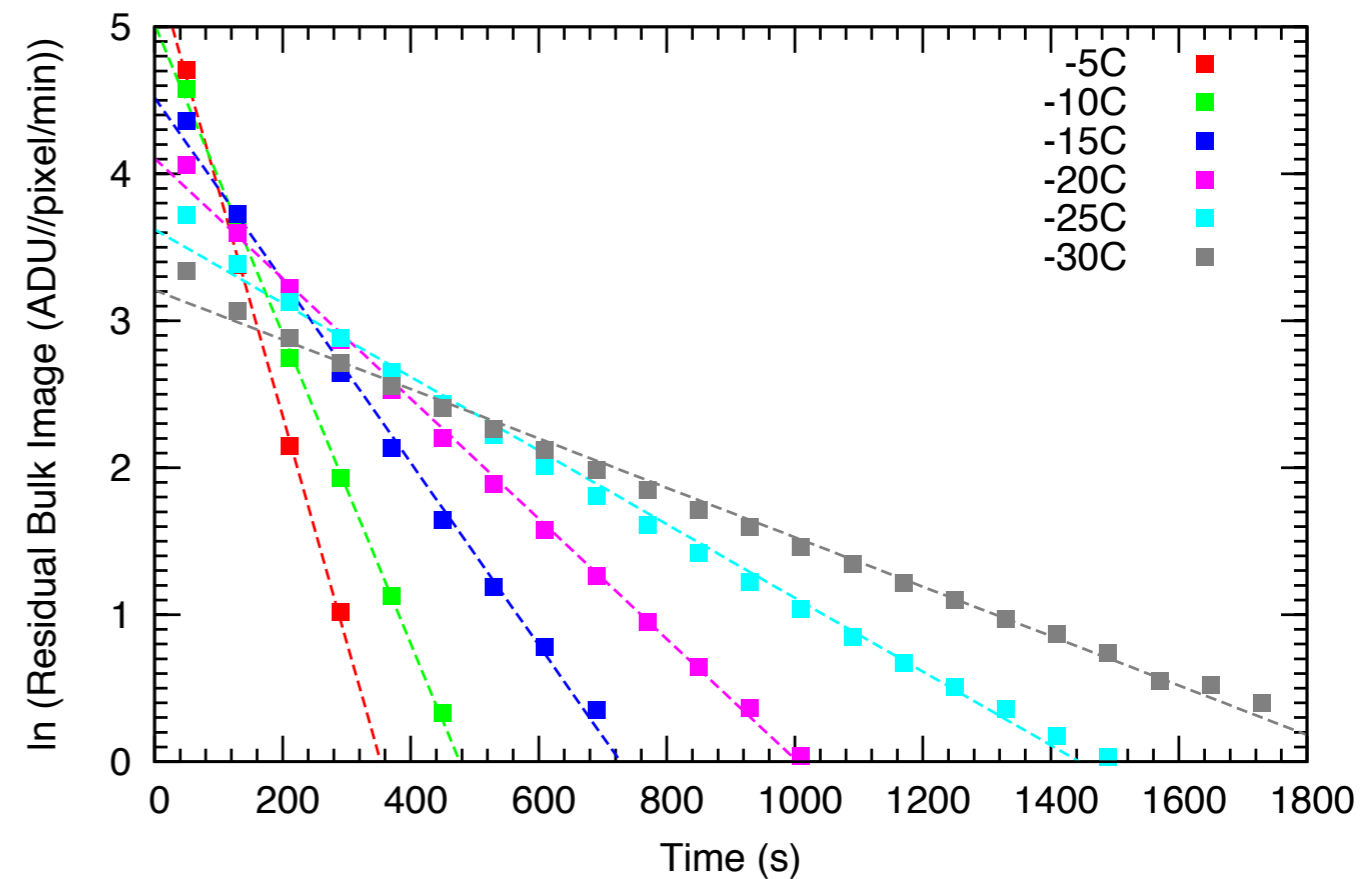


Residual Image

Intensity Dependence for Residual Bulk Image in r-band



Temperature Dependence for Residual Bulk Image in r-band

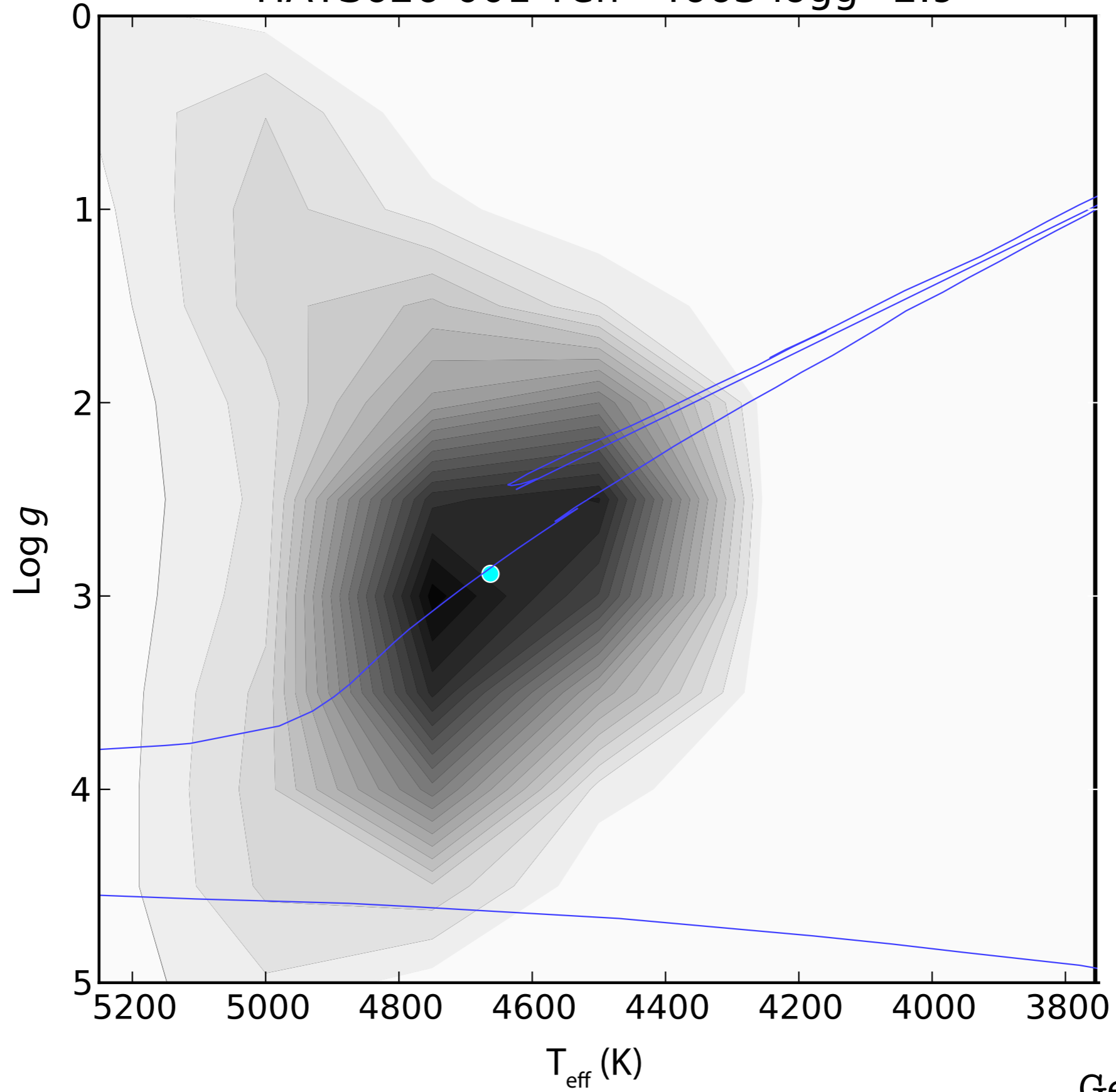


WIFES on ANU 2.3m

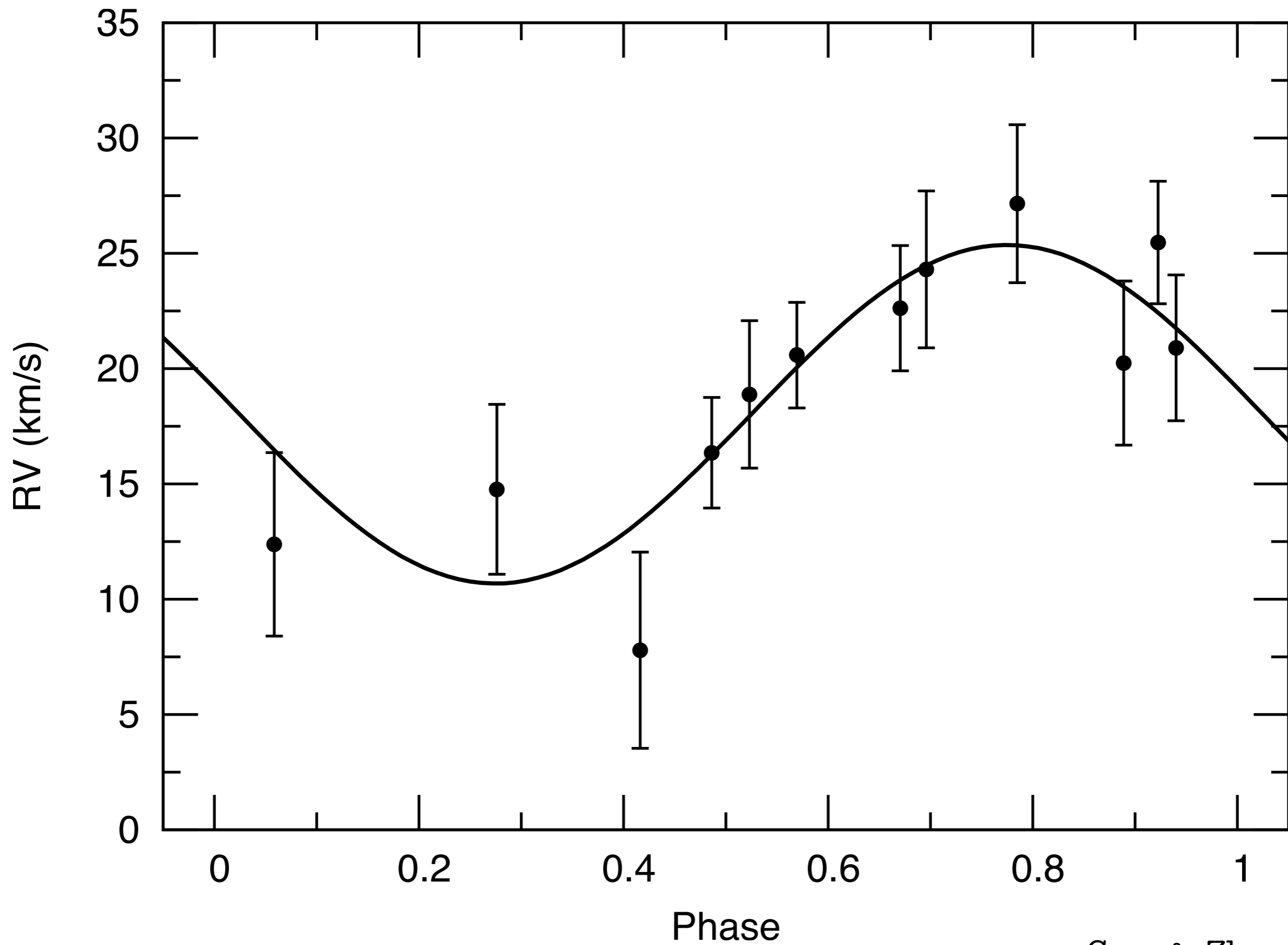
- George Zhou - Honours project



HATS626-001 $T_{\text{eff}}=4663$ $\log g=2.9$



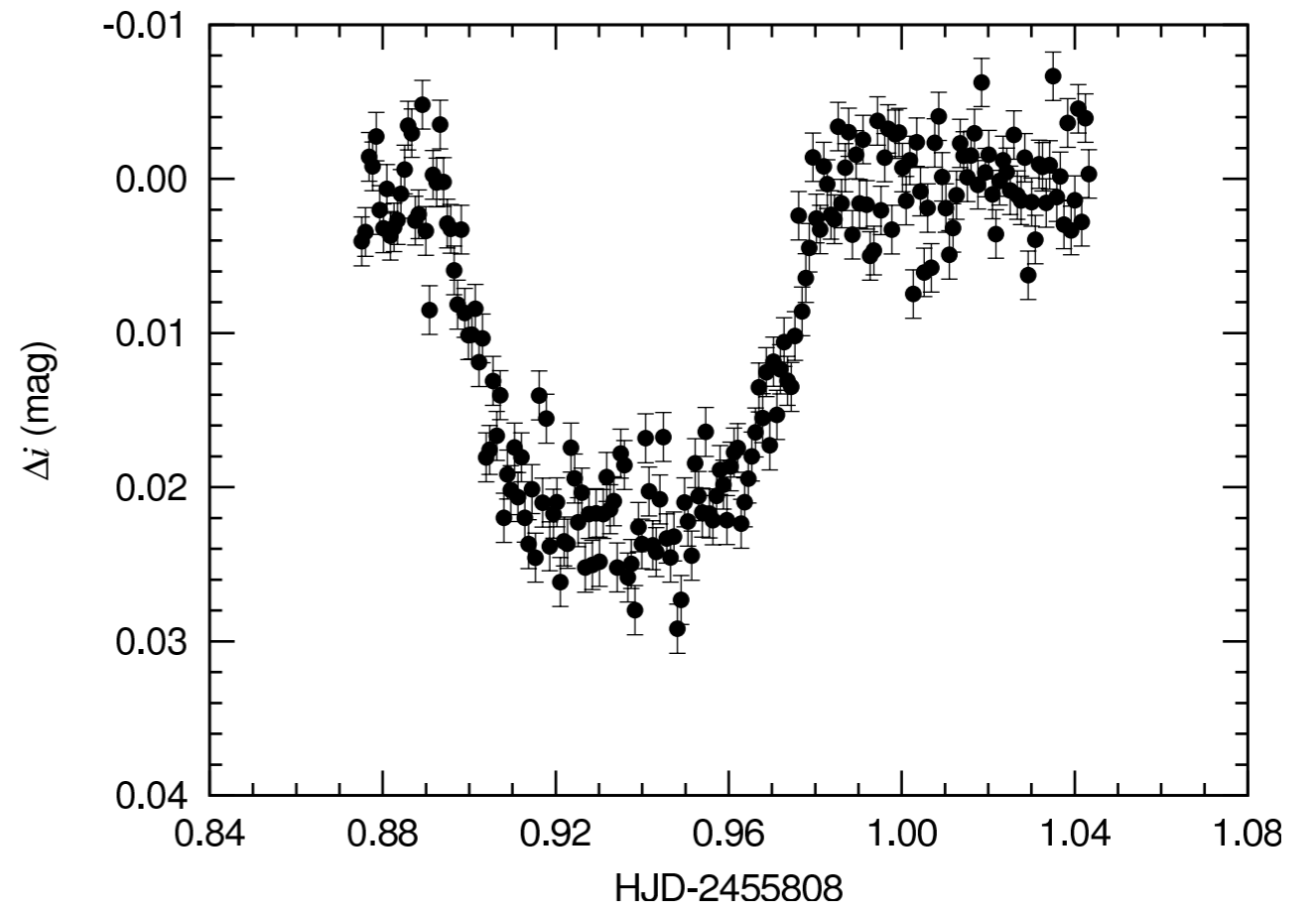
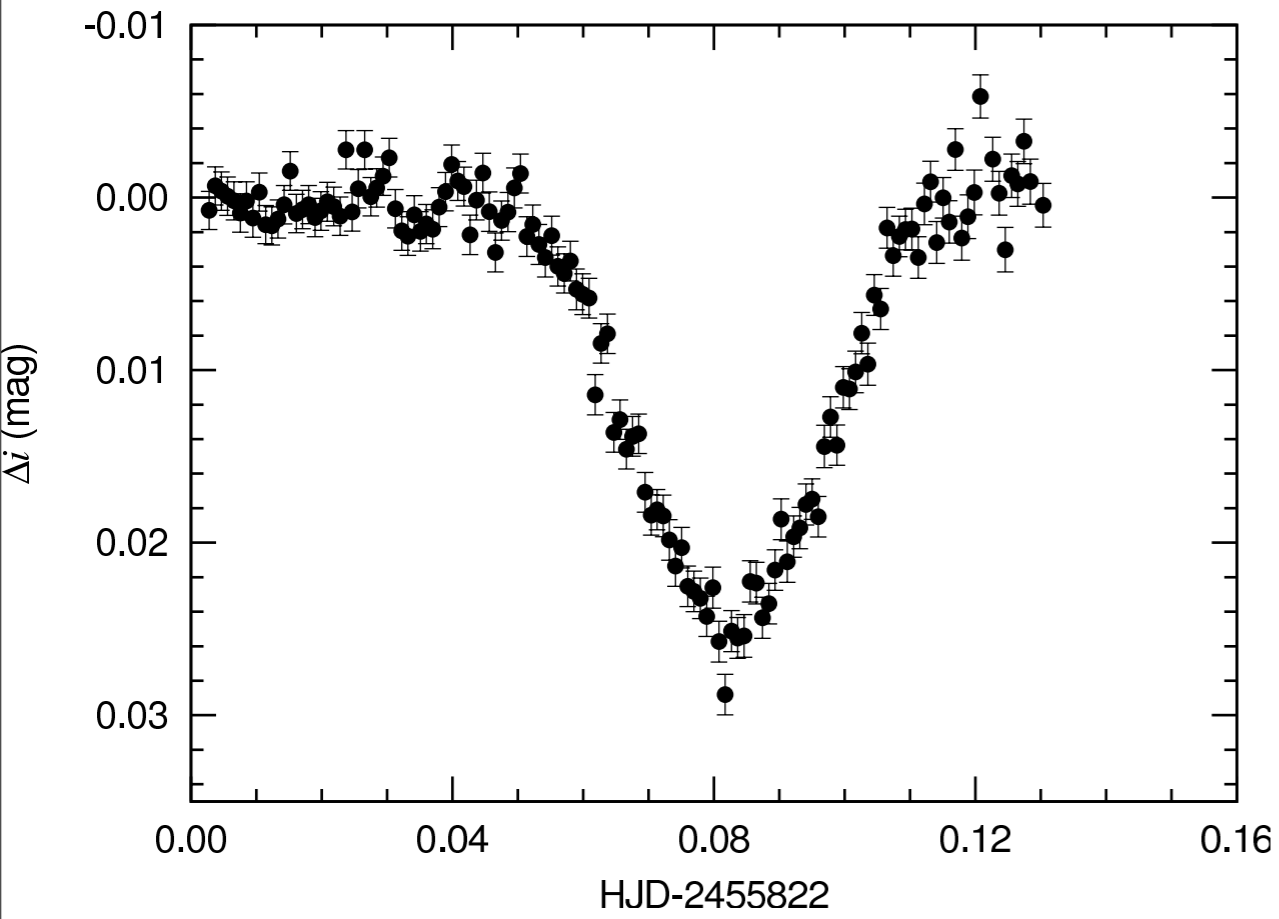
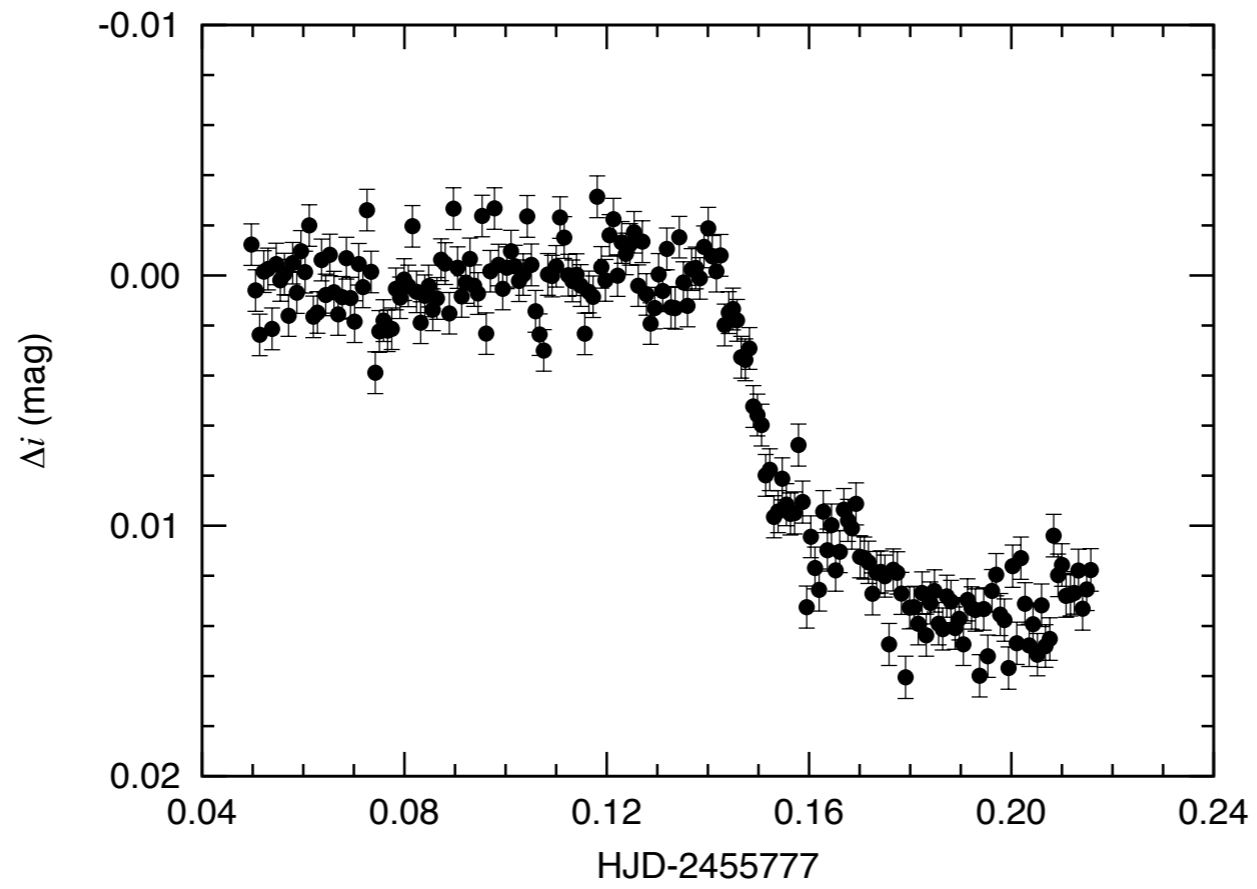
George Zhou



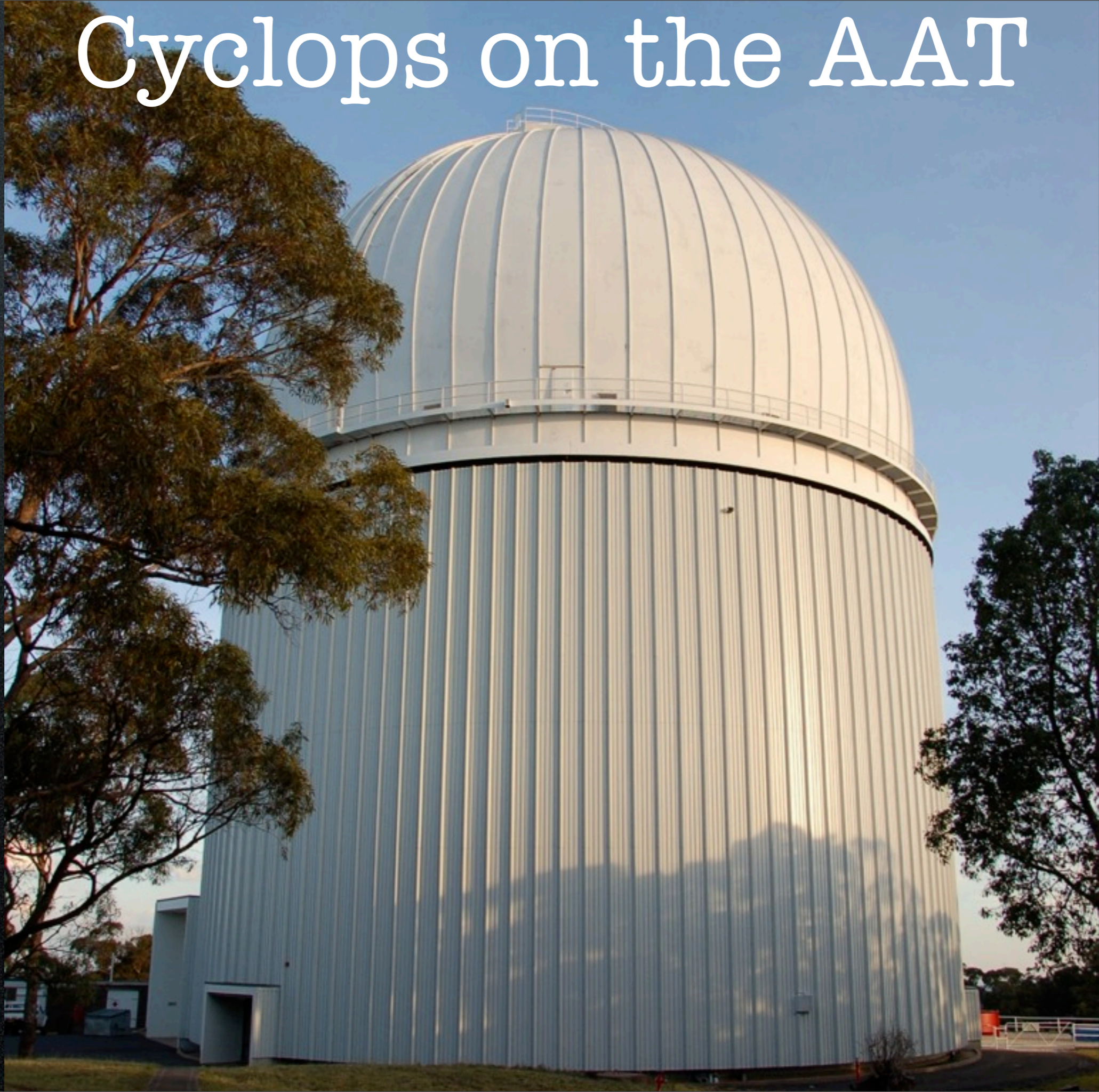
George Zhou

Faulkes South





Cyclops on the AAT



Thanks!

