

Robo-AO

Christoph Baranec, PI
Caltech → UH-IfA

Reed Riddle,

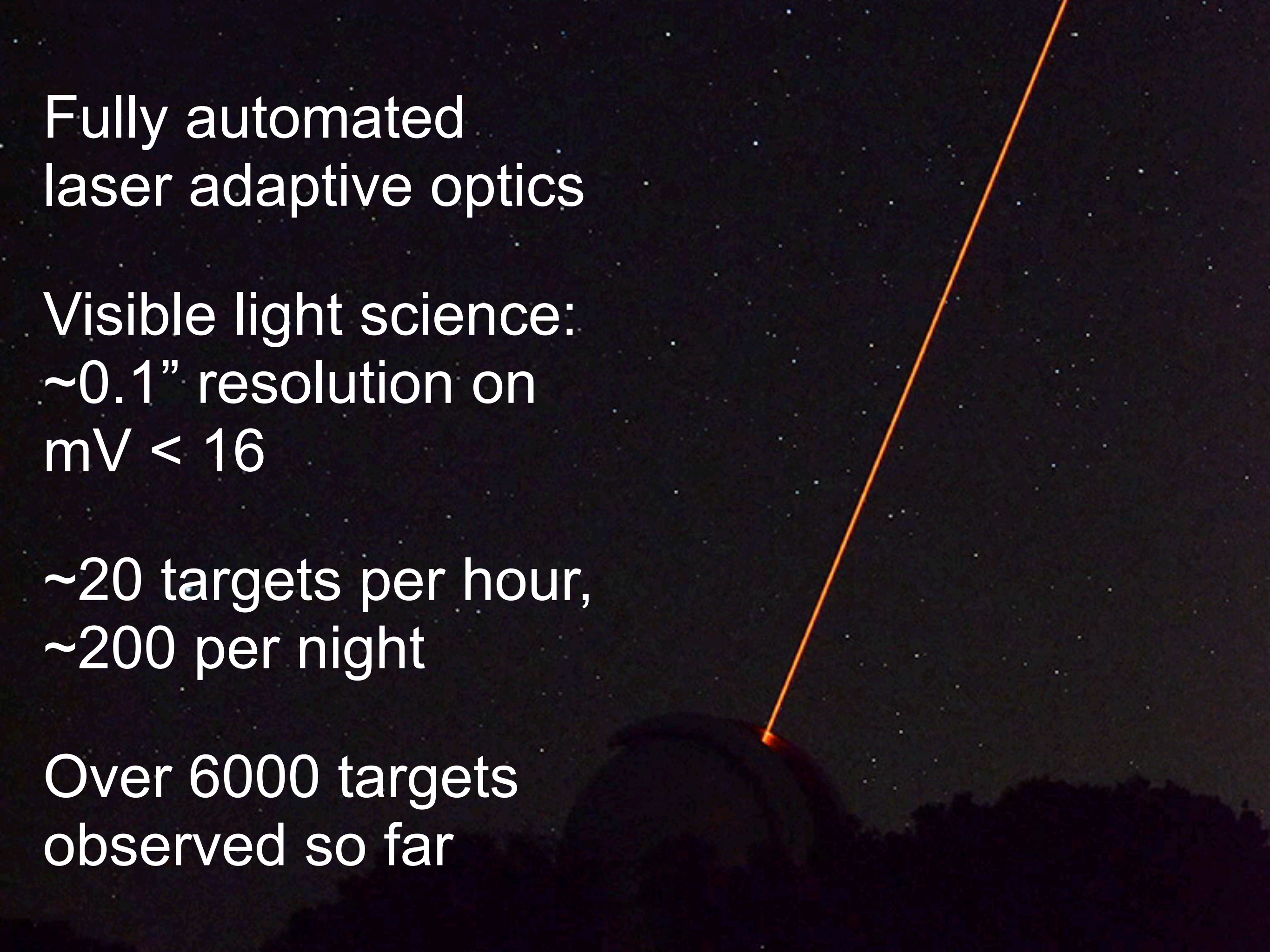


Nick Law, et al.



on behalf of the Robo-AO collaboration partners at the Inter-University Centre for Astronomy and Astrophysics and the California Institute of Technology





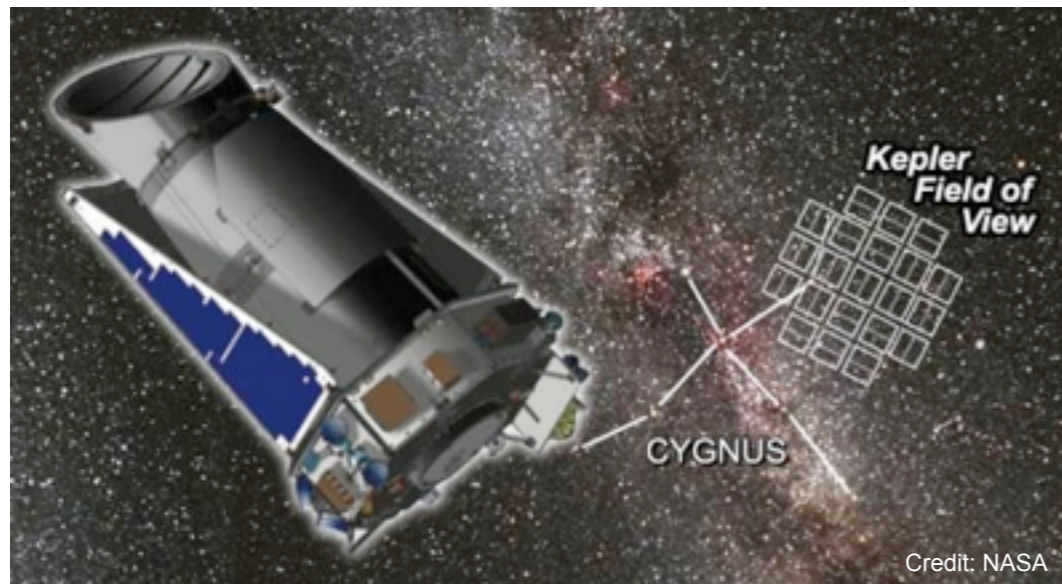
Fully automated
laser adaptive optics

Visible light science:
~0.1" resolution on
 $mV < 16$

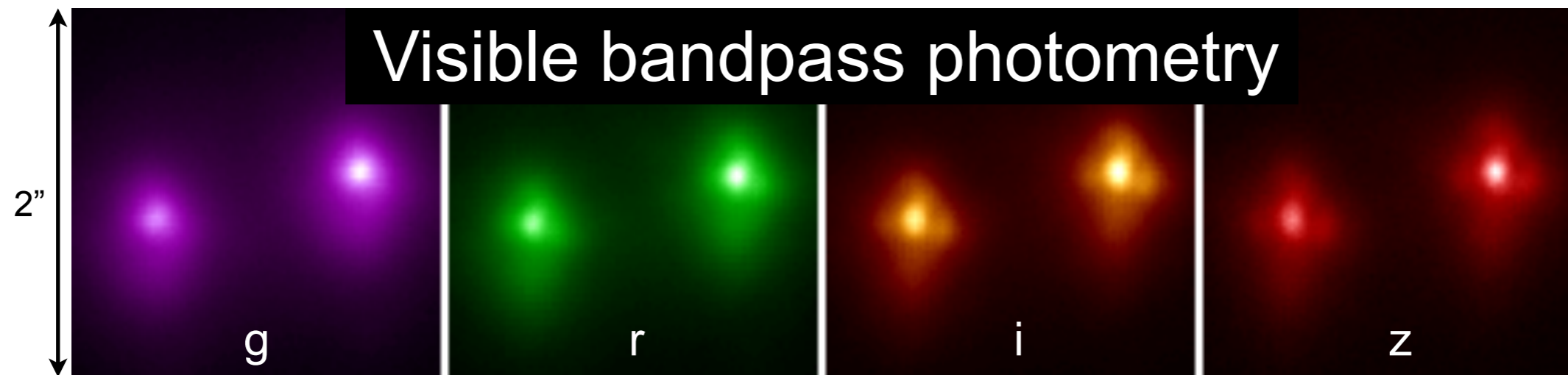
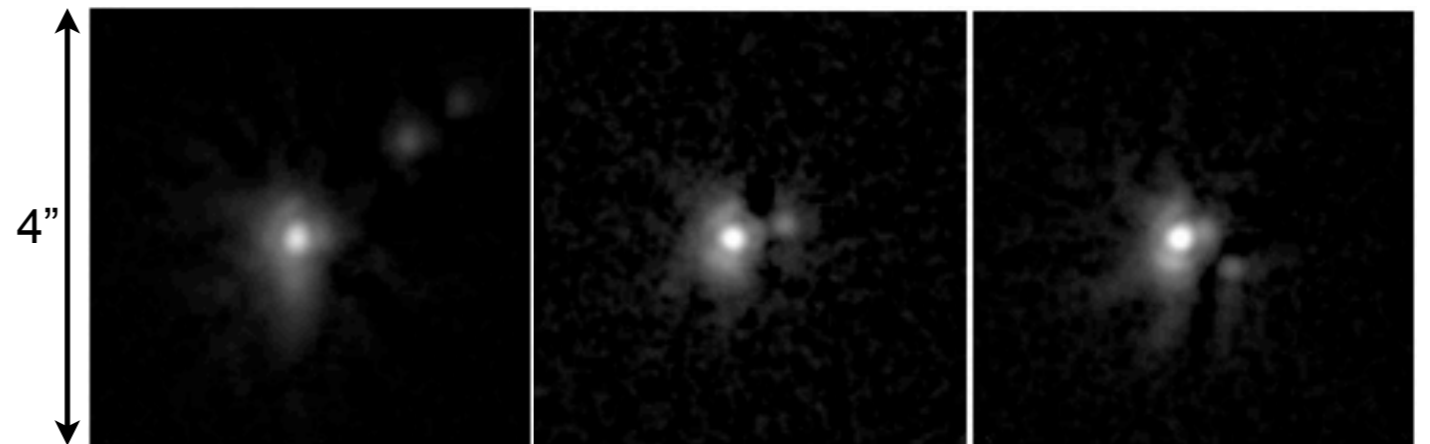
~20 targets per hour,
~200 per night

Over 6000 targets
observed so far

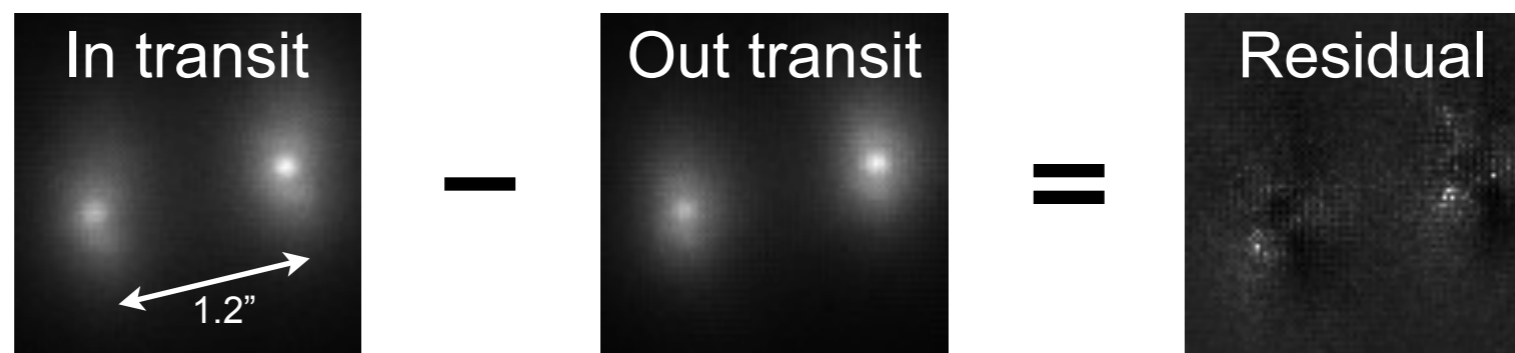
Robo-AO imaging of Kepler KOIs



Identification of multiple stars in Kepler pixels



Identification of transit host in crowded fields



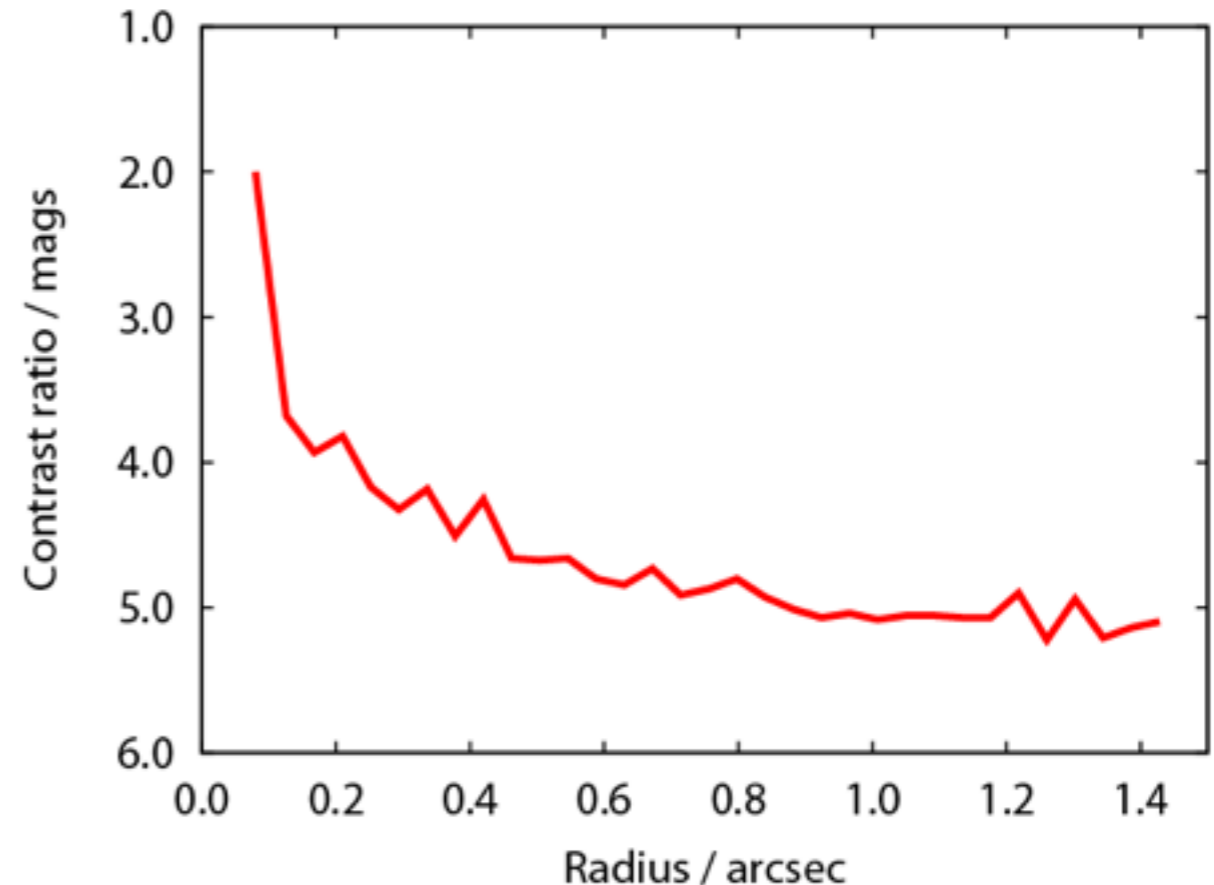
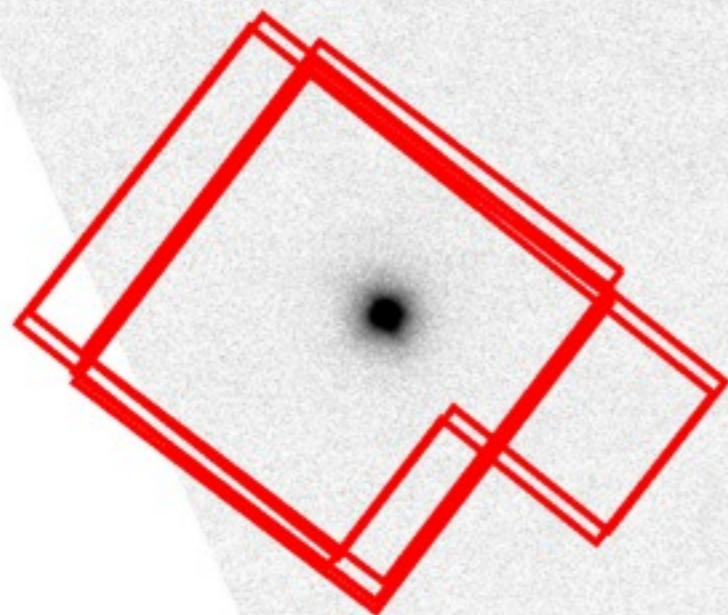
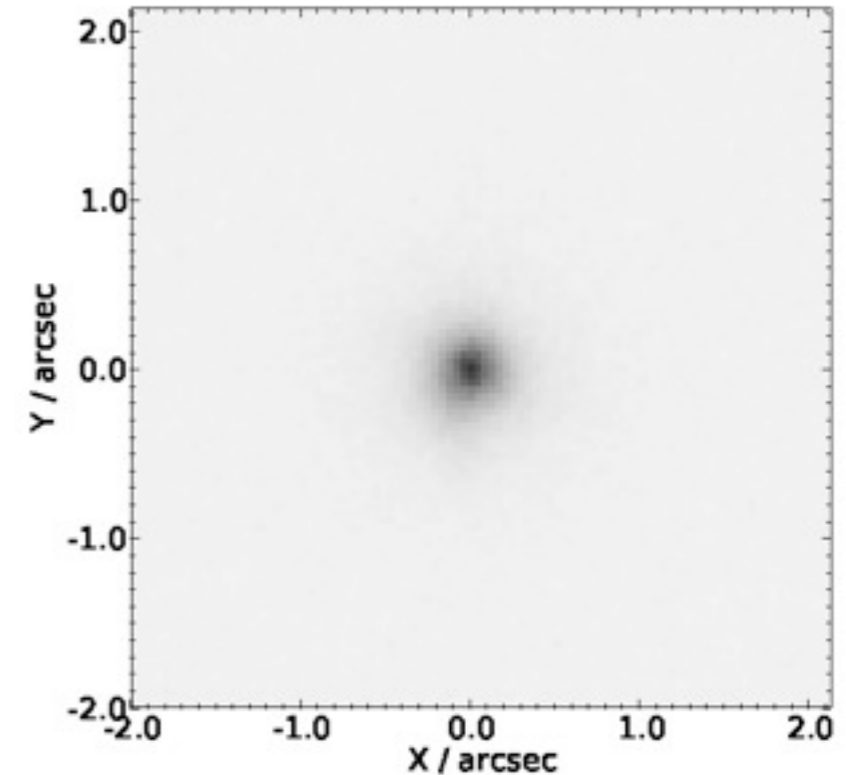
Early Robo-AO+Kepler results

- **Kepler-32**

- Swift et al. ApJ 764, (2013).
- 5σ $\Delta z = 3.5$ at $0.5''$, $\Delta z = 4.5$ at $1.0''$

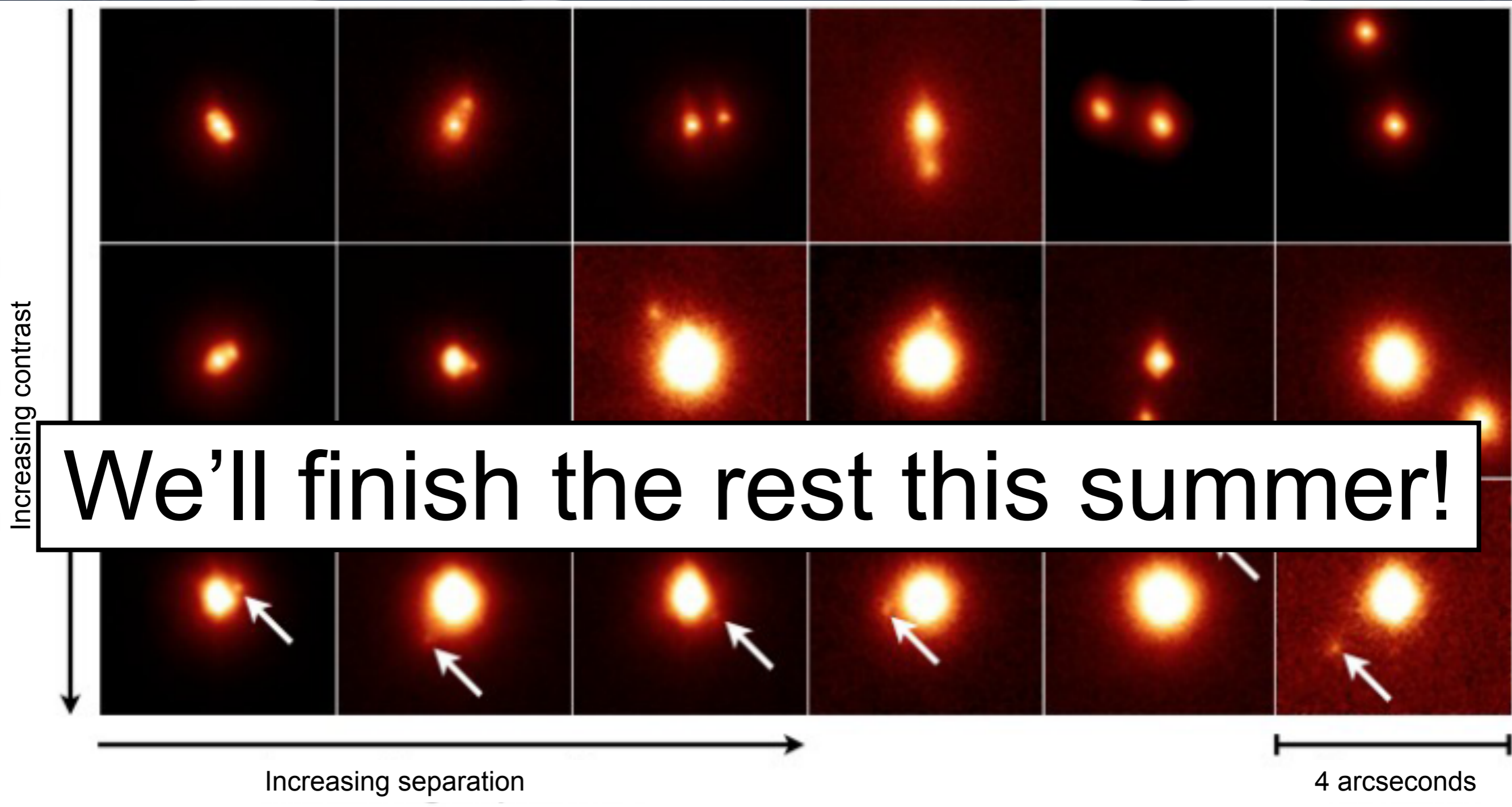
- **KOI-256**

- Muirhead et al. ApJ 767 (2013).



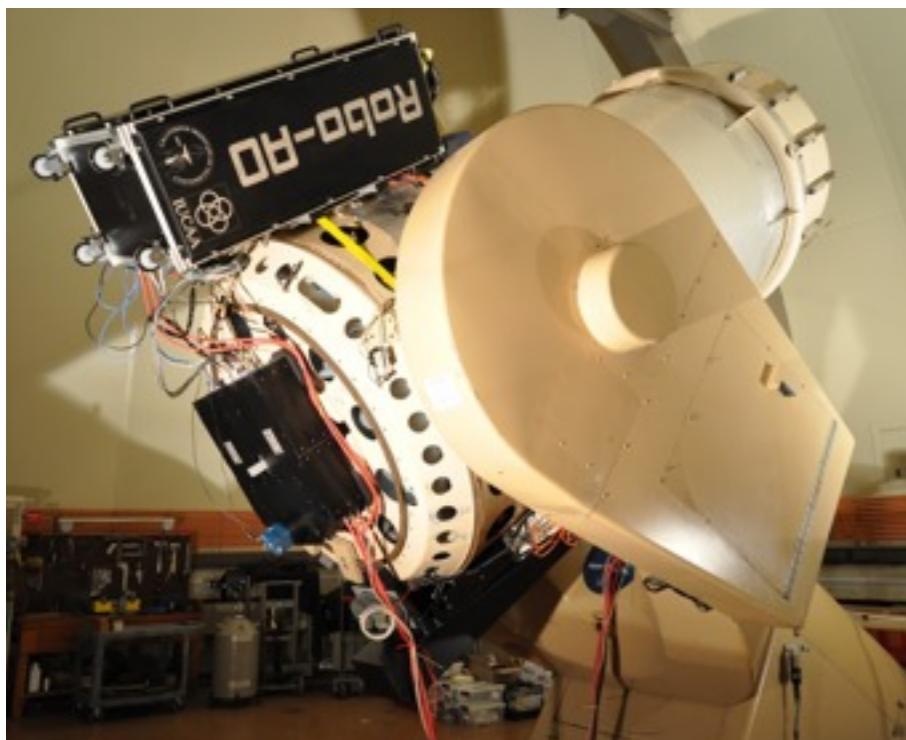
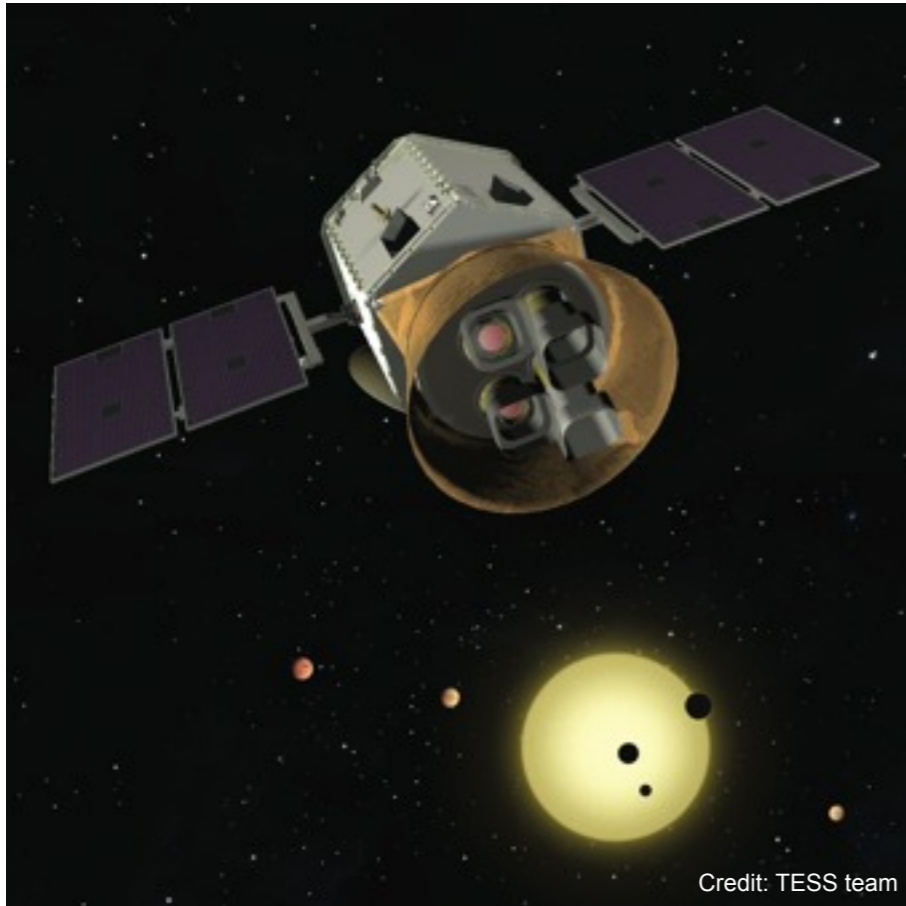
Robo-AO imaged ~1050 KOIs in 2012

~52 total hours including overheads



Law, Baranec, Riddle, Morton, Johnson, et al. *in prep*

Robo-AO + TESS



- Analogous high-angular resolution characterization of TESS pixels/apertures
- Majority of targets are $m_V < 16$
- Even tens of thousands of objects are no problem (~hundred or so nights)
- Robo-AO replication at ~\$1M

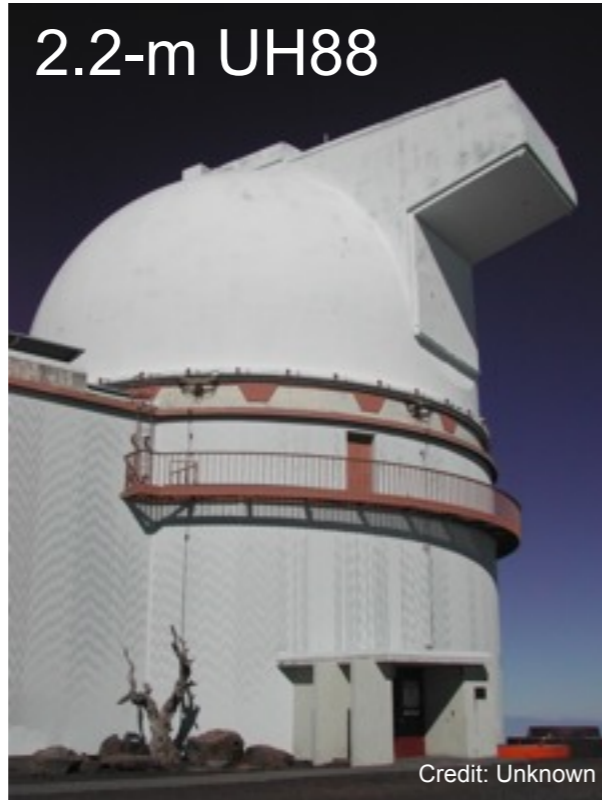
Deployment of Robo-AO network

North

1.5-m P60

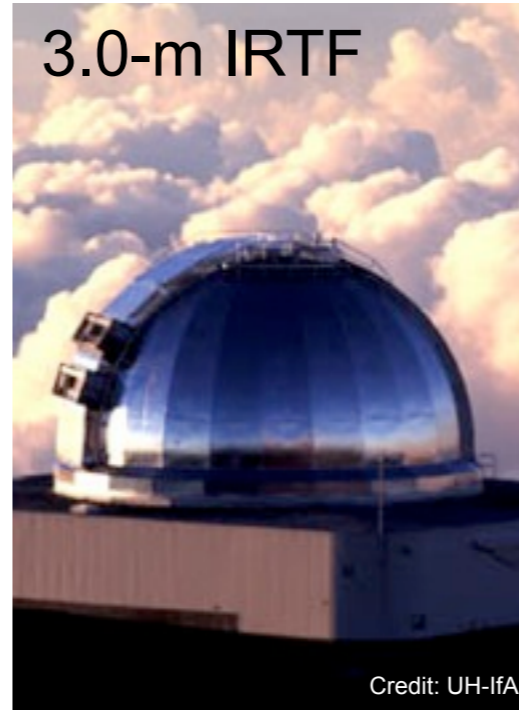


2.2-m UH88



Credit: Unknown

3.0-m IRTF



Credit: UH-IfA

2-m Faulkes North



Credit: LCOGT

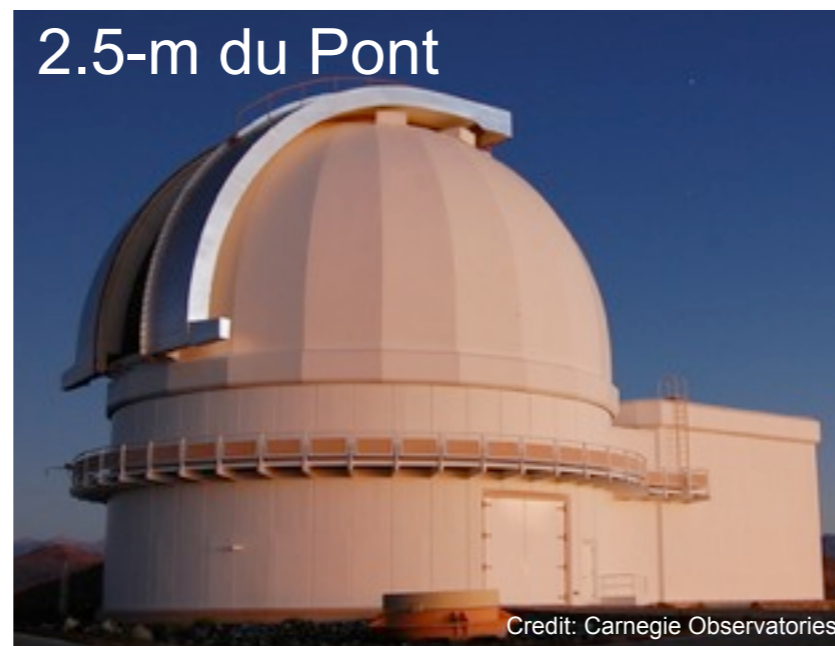
South

1.5-m SMARTS



Credit: SMARTS consortium

2.5-m du Pont



Credit: Carnegie Observatories

2-m Faulkes South



Credit: John Shobbrook

<http://robo-ao.org>

