Robo-AO

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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

Visible bandpass photometry

Identification of transit host in crowded fields

In transit - Out transit = Residual
Early Robo-AO+Kepler results

• Kepler-32
  – $5\sigma \Delta z = 3.5$ at 0.5", $\Delta z = 4.5$ at 1.0"

• KOI-256
Robo-AO imaged ~1050 KOIs in 2012
~52 total hours including overheads

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

We’ll finish the rest this summer!
Robo-AO + TESS

- Analogous high-angular resolution characterization of TESS pixels/apertures
- Majority of targets are mV <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
- 3.0-m IRTF
- 2-m Faulkes North

South
- 1.5-m SMARTS
- 2.5-m du Pont
- 2-m Faulkes South

Credits:
- SMARTS consortium
- UH-IfA
- LCOGT
- Carnegie Observatories
- John Shobbrook