The Robo-AO Comprehensive KOI Survey

The Robo-AO Kepler survey has observe every Kepler Object of Interest (KOI) with LGS-AO imaging to search for blended stars, which may be physically associated and/or responsible for transit false positives. Up to now, it has been extremely difficult to obtain adaptive optics images of the thousands of candidates generated by large surveys like Kepler because of the faintness of the targets and the excessive observing time required. Robo-AO’s sub-minute overheads and laser-guide-star AO system allow us to observe hundreds of KOIs per night at 0.15” resolution.

Robotic Laser Adaptive Optics Imaging of 715 Kepler Exoplanet Candidates


How to observe 20,000 targets with laser-guide-star AO: Robo-AO, the First Robotic LGS-AO System

Robo-AO (Baranec et al. 2014 ApJ 790L), the world’s first robotic guide star adaptive optics system, routinely images 20+ targets per hour completely autonomously, with overheads of only around 60 seconds per target. The system operates in the visible, producing 0.1” FWHM images in the 600-900nm range, covering a large fraction of the Kepler passband. Robo-AO operates autonomously, with FAA clearance for laser operations without spotters and a Space Command laser-clearance model that allows pointing almost anywhere in the sky without advanced notice.