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# 国台学术报告 NAOC COLLOQUIUM

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**Time: Wed. 2:30 PM, June 15**      **Location: A601, NAOC**

## The Dharma Planet Survey of Rocky Planets around Nearby Solar Type Stars

**Prof. Jian Ge**

**Department of Astronomy, University of Florida, USA**



Dr. Jian Ge is a professor of astronomy at University of Florida. He is the Principal Investigator of the Dharma Planet Survey. He was the PI for the MARVELS survey of the SDSS-III program in 2008-2014, the PI for the TOU (formerly EXPERT-III), EXPERT and LiJET optical Doppler instruments and also FIRST near IR Doppler instrument. He led the development of the first silicon grisms and large format silicon immersion gratings. He also led the development of the advanced image slicer integral field optics, and new generation coronagraphic image and pupil masks for TPF. His team discovered two new planets, confirmed two

transiting planets, 18 brown dwarfs and over 400 new binaries, over 600 high redshift quasar 2175 Å dust absorbers and molecular hydrogen in four high-redshift damped Lyman alpha quasar absorbers, and measured high redshift Cosmic Microwave Background Radiation temperatures. The 8<sup>th</sup> order image mask concept proposed by his collaborators and him is one of the leading concepts for the NASA TPF-C mission.

### **Abstract**

The Dharma Planet Survey (DPS) is designed to detect and characterize close-in low-mass planets at the orbital region amenable to future space-imaging missions. The ultimate survey goal is to detect potentially habitable super-Earth planet candidates to independently measure its occurrence rate and provide high priority targets for future space imaging missions (such as *WFIRST-AFTA* and *LUVOIR surveyor*) to identify possible biomarkers supporting life. DPS is to monitor ~100 nearby very bright FGK dwarfs ( $V \leq 7$ ) with high cadence (~100 measurements over 450 days) and high precision (~1 m/s) starting in the fall of 2016 using the TOU optical very high resolution spectrograph ( $R \sim 100,000$ ) at a dedicated 50-inch automatic Telescope on Mt. Lemmon. A pilot survey of 12 FGK dwarfs was carried out in 2015 with a Doppler precision of 0.7-1.8 m/s (RMS) achieved for all of RV stable stars ( $V = 3-6.5$ ). Both RMS of 0.7 m/s achieved with Tau Ceti and the long-term instrument RV stability of ~0.7 m/s are better than that achieved by the current state-of-the-art HARPS instruments. Two strong planet candidates with Neptune and Saturn masses, respectively, have been identified among five new-search stars. The survey plan and early science results will be presented.

*All are welcome! Tea, coffee, biscuits will be served at 2:15 PM.*