

Initial Performance Results from the Keck Planet Finder

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The Keck Planet Finder (KPF) is a new precision radial velocity system for the W. M. Keck Observatory, designed to achieve <50 cm/s measurement precision. The KPF spectrometer spans 445-870 nm in two separate cameras with a resolving power of 95,000, enabled by a novel image slicer assembly. A dedicated fiber injection unit and a highly scrambled optical fiber delivery system efficiently couple light from the 10 m Keck I telescope to the spectrometer. We report initial results from in-situ testing and on-sky commissioning of KPF in the last year, highlighting the achieved optical performance, system throughput, and RV stability using calibration spectra and stellar RV measurements. On-sky Commissioning systematically tested KPF's Doppler performance on quiet stars on timescales of minutes to months. Commissioning time was also devoted to assessing the impact of 'torture tests' where KPF was deliberately operated in non-optimal conditions (at twilight, at high airmass, with a vignetted telescope pupil, through clouds, etc.). Finally, we report on the commissioning results of KPF's Fiber Injection Unit which has three separate focal planes for guiding in J-band, injection into fibers in the main spectrometer's bandpass, and for fiber injection at UV wavelengths for KPF's auxiliary spectrometer that measures stellar activity with the Ca H&K lines.

