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A SEARCH FOR SPATIALLY UNRESOLVED LASER EMISSION IN KECK HIRES SPECTROSCOPY

**Abstract**

We present a search for point source optical laser emission in the vicinity of 6071 stars, many harboring confirmed or expected exoplanets. High resolution ( $R = 60,000$ ) spectra were taken with the Keck 10-meter telescope in the wavelength region between 3640 Å and 7890 Å. We distinguish potential laser candidates by their being monochromatic and coming from an unresolved point in space. Due to the use of an exposure meter to achieve sufficient S/N on the target star, our detection thresholds for laser emission scales with stellar flux in the visible bandpass. Typically, for detection a diffraction-limited laser must have average power over a typical ten minute exposure greater than 100kW, as emitted from a 10-m aperture at 100 light-years. We report no emission from laser lines in any of the 67708 spectra tested. We conclude with an evaluation of SETI searches in general and future prospects, notably the Breakthrough Listen optical spectroscopy program.