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Laboratory Demonstration of a Green Astro-comb CHIH-HAO LI, ALEX GLENDAY, DAVID F. PHILLIPS, SYLVAIN KORZENNIK, Harvard-Smithsonian Center for Astrophysics, GUOQING NOAH CHANG, ANDREW BENEDICK, LI-JIN CHEN, FRANZ X. KAERTNER, MIT, DIMITAR SASSELOV, ANDREW SZENTGYORGYI, RONALD WALSWORTH, Harvard-Smithsonian Center for Astrophysics — Searches for extrasolar planets using the periodic Doppler shift of stellar lines are approaching Earth-like planet sensitivity. Astro-combs, a combination of an octave spanning femtosecond laser and a mode-filtering cavity provide a likely route to increased calibration precision and accuracy. Initial astro-comb demonstrations have been performed in the near infrared where broadband lasers are available. Here we present initial laboratory results on a "green" astro-comb providing approximately 50 nm of stable astro-comb light centered near 550 nm. Light from a 1 GHz, octave-spanning Ti:Sapphire laser is broadened in a photonic crystal fiber optimized to produce light in the green. This 1 GHz spaced green light is then filtered to roughly 30 GHz mode spacing via a Fabry-Perot cavity with ultra-low dispersion mirrors. Current progress on the characterization of this green astro-comb will be presented.

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