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Searches for extra-solar Earths with astro-combs, why and how¹

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Searches for Earth-like extra-solar planets using the precision radial velocity (PRV) technique requires <10 cm/s accuracy on stellar RVs, which is ~ 10 times smaller than the current sensitivity, over several years. Astro-combs, a combination of an octave spanning femtosecond laser and a mode-filtering cavity, provide a promising route to increased accuracy and long-term stability on the astrophysical spectrograph calibration. Here I present several techniques to achieve the required calibration accuracy and our calibration results on the TRES spectrograph for a 1.5-m telescope at the Whipple Observatory.

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