

Abstract Submitted
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Atomic Spectroscopy and Gaussian Processes to Enable Earth-like Exoplanet Detection NICHOLAS LANGELLIER, TIMOTHY MILBOURNE, AAKASH RAVI, CHRISTIAN DOLLIFF, Harvard Physics, DAVID PHILLIPS, Harvard Smithsonian Center for Astrophysics, RONALD WALSWORTH, Harvard Smithsonian Center for Astrophysics, Harvard Physics — Precision radial velocity (PRV) exoplanet astronomy has reached a critical sensitivity barrier in the detection of Earth-like planets. We describe techniques to overcome this barrier. We have developed a small solar telescope located in the Canary Islands, which we use to observe the Sun as a point source of light, i.e., as if it was a distant star. We are employing methods from atomic spectroscopy and Gaussian processes to analyze the Sun-as-a-star data, and thereby to understand systematic effects on PRV signals arising from “stellar jitter” (oscillations, sunspots, etc.).

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