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Digger Deeper into Jovian-Host Systems with the Extreme Precision Spectrograph: Preliminary Survey Results

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A defining feature of our Solar System is the presence of multiple giant planets beyond the snowline, yet this architecture appears to be uncommon: only ~6% of stars are known to host Jupiter-like planets between 1–10 AU. Moreover, the Jovian analogs we do find are typically closer in and more eccentric than Jupiter or Saturn, raising questions about the long-term survivability of inner planets in such systems. Population-synthesis models offer conflicting predictions for the dominant outcomes of giant-planet formation, underscoring the need for improved observational constraints. In this talk, I will present preliminary results from a radial-velocity survey with the Extreme Precision Spectrograph (EXPRES) at Lowell Observatory, targeting a sample of known Jovian-analog hosts. The instrument's high precision and long-term stability enable sensitivity to lower-mass and longer-period companions than previously achievable. I will show our progress toward reaching a target sensitivity of ~10 Earth masses at 1 AU, made possible in part by the ability of EPRV instruments to resolve stellar signals that would have been treated as white noise in lower-precision datasets. I will also discuss several candidate planetary signals emerging from the survey. This program is particularly timely, as it coincides with complementary RV efforts - such as the 100 Earths and the NEID Earth Twins surveys - which together provide an effective control sample for assessing how giant-planet formation influences the survival of inner planetary systems.

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Session Classification: Cold Jupiters AND inner low-mass planets (individual systems and statistical analyses) - outside-in