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Bridging discovery spaces: a multi-technique view on inner and outer worlds

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The growing field of comparative exoplanetology increasingly relies on the synergistic combination of detection techniques with complementary sensitivity domains to fully characterize planetary system architectures. Yet, estimates of exoplanet occurrence rates often remain constrained by the detection capabilities of individual instruments, surveys, or techniques. The resulting heterogeneity can limit our ability to construct a coherent view on exoplanetary demographics or to evaluate formation and evolution models against a uniform observational framework. For example, the frequency of inner low-mass planets in systems with outer giants is debated also because completeness is rarely evaluated in a uniform, cross-technique manner. We present an in-development, multi-technique framework that jointly evaluates detection completeness by integrating radial velocity, transit, proper motion anomaly, and direct imaging sensitivities within a single, self-consistent analysis. We apply this approach to a selected sample of stars hosting outer massive companions and quantify the multi-technique completeness to potential inner companions. In this talk, we will present initial results from this joint completeness analysis and highlight the methodological challenges and scientific implications for planet formation and system evolution.

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