Contribution ID: **28** Type: **Oral contribution**

JAS: a Jovian Architectures Survey to uncover the links between outer giant planets and their inner systems

Thursday 26 March 2026 14:30 (20 minutes)

It is believed that Jupiter played a significant role in the history of the Solar System's terrestrial planets, likely affecting their mass, volatile budget and orbits. The detection of complete Solar System analogs around other stars is not currently within reach, yet we can still learn about the history of both ours and other systems' architecture by investigating the "outer giant planet - low-mass inner planet" connection statistically in an ensemble of exoplanetary systems. I will introduce an ongoing RV survey using Keck-KPF and EXPRES to determine the multiplicity, mass and orbital separation of inner low-mass planets in systems with a known Jovian planet in a wide orbit. I will describe the objectives, sample selection and the "outside-in"observing strategy of JAS. In conjunction with the survey, we have also undertaken a study of dynamical stability in the systems in our sample, particularly in regions of parameter space that have not yet been ruled out by existing RVs. I will present the dynamical constraints derived from these simulations, with a focus on ice giants at orbital separations between ~0.3 and 1 AU, still inner to the Jovian but outside the typical orbits probed by transit surveys. An absence of ice giants in this region further bolsters the "peas-in-a-pod" hypothesis for the inner system, as suggested by studies of the Kepler multis. On the other hand, their presence would have direct implications for the ordering and orbital architecture of planets in the system, and indirect implications for volatile sequestration and delivery throughout the inner system. We also explore the mutual inclination evolution of inner planets relative to the outer giant. Thus, in addition to informing our observing strategy and detection sensitivity, the results of these simulations provide independent constraints on the types of planets that are dynamically stable (or not) in the inner system.

Presenter: Dr DRAGOMIR, Diana (University of New Mexico, Mexico)

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