

Name: Matthew J. Payne
Email: matthewjohnpayne@gmail.com
Institution: Harvard-Smithsonian Center for Astrophysics
Title: Satellite Stability in Multi-Planet Systems
Type: Poster
Session: Multiple Planets and Multiple Star Systems

Abstract: We have conducted numerical investigations of the possibility for stable satellite orbits to exist around Systems of Tightly packed Inner Planets (STIPs). We find that in general, the presence of a close perturbing planet (with planetary period ratios $\sim 1.1 - 1.3$) acts to slightly decrease the outer stability boundary for stable satellites. The outer stability boundary at ~ 0.5 Hill radii in the case of circular satellites around a single planet is moved inwards to $\sim 0.4 - 0.45$ Hill radii when a close (but stable) planetary perturber is present. This very small decrease in the stable parameter space seen in our results suggests that the STIPs in the Kepler data, which are more widely spaced than the incredibly close systems we investigate, will generally be able to provide a dynamically stable environment for exomoons, and thus constitute viable observational targets.