

## **Planetary dynamics and the orbital architectures of Kepler's Multis**

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One of the major discoveries of the Kepler telescope is the prevalence of compact multi-transiting planetary systems consisting predominantly of super-Earth and sub-Neptune planets. The distributions of their orbital properties and various trends have been exploited to constrain possible formation channels. Although, initially it was believed that the orbits of the multi-transiting systems may not have been significantly modified via past planetary dynamics, it has been recently argued that the orbital separations likely indicate that they were.

I will talk about our recent study which clearly shows, without any specific fine-tuned input from formation scenarios, generic sets of multiplanet systems can naturally evolve to resemble the multi-transiting systems observed by Kepler via dynamical instabilities. Moreover, when the model ensembles are dynamically consistent with the observed, most observed trends, often attributed to formation physics, naturally manifests solely as a result of planetary dynamics. Given that significant dynamical morphing may have taken place in the multis, I will discuss why it is important to treat planetary collisions better than the commonly used sticky-sphere approach.