

Name: Kevin Schlaufman
Email: kschlauf@mit.edu
Institution: Massachusetts Institute of Technology
Title: Planet Formation in Kepler Multiplanet Systems
Type: Contributed Talk
Session: Planet Formation and Migration Theories

Abstract: Kepler has identified over 500 multiplanet systems, many of which have several planets with orbital distances smaller than that of Mercury -- quite different from the Solar System. Because these systems may be difficult to explain within the paradigm of core accretion and disk migration, it has been suggested that they formed "in situ" within a massive disk with a high surface density of solids. If so, then they should also frequently occur in high-metallicity environments. Here I show that the Kepler multiplanet systems orbiting Sun-like stars are not preferentially found around metal-rich stars. Consequently, these systems may not need metal-rich or especially massive disks for their formation. The lack of metal-enhancement of the host stars of multiple systems also precludes the frequent existence of as-of-yet unobserved giant planets in these systems. As a result, I suggest that these systems may be comprised of the failed cores of giant planets.