

Binary Planets

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More than 50 bound systems have been discovered in the Kuiper Belt. Most are pairs of nearly equal mass objects orbiting a point in space, the barycenter, that lies outside either object. The Pluto/Charon pair was the first such system to be discovered in our solar system. At some point in the future the Earth/Moon barycenter may reside outside the Earth's surface due to the tidal evolution of the system. In some Kuiper Belt binaries photometric uncertainties make it unclear which member of the pair is the larger of the two. For such systems the traditional primary/satellite designation makes no sense, these are clearly binary objects. The prevalence of binaries in the Kuiper Belt suggests that binaries will be common in other planetary systems. Thus an agreed-upon definition of binaries seems to be needed.

A formal definition of a binary planet was suggested at the Prague General Assembly but did not survive to the floor vote. It should be resurrected. However, like other elements of planetary definition based on dynamical status, being a member of a gravitationally bound system is an important modifier, but should not determine the primary status of an object. Planets, dwarf planets, and small solar system bodies may all be single objects, members of a binary or higher multiplicity system, or satellites of significantly larger objects. As with other classification schemes, while the end-members of the binary-satellite spectrum are clear and readily agreed upon, it is at the boundary where difficulties arise and arbitrary distinctions must be made. I will explore some of the difficulties and benefits of possible binary definition schemes in my talk.