

Gaia prospects for binary and multiple asteroids

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The Gaia mission, launched in December 2013, will provide a huge harvest on Solar System Objects science, with high precision astrometric and photometric measurements on several 100,000s of small bodies [1]. It will also observe several binary and multiple systems. Binaries — which are common in the Solar System from its inner to its outer regions — are also objects of high interest because they provide fundamental physical parameters such as mass and density, and hence clues on the early Solar System, or other processes that are affecting asteroids over time.

We will present our current project on the analysis of such systems based on the Gaia mission. This encompasses orbital characterizations for both astrometric and resolved binaries, as well as unbound orbits, derivation of masses and densities, and general statistical analysis of the physical and orbital properties of asteroid binaries.

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References: [1] Mignard F., Cellino A., Muinonen K. et al. 2007. The Gaia Mission: Expected Applications to Asteroid Science. *EM&P* 1001, 97–125.