
Early stages of the evolution of planetary systems

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Abstract

The substantial increase in number of known multi-planet systems, thanks to the space missions like COROT, Kepler/K2 or TESS and ground-based facilities like HARPS or WASP, just to name some, gives a unique opportunity to study the processes responsible for the formation and evolution of planets, which are the most plausible places for existence and development of life. The aim of this contribution is to present the most recent advances in establishing plausible planetary system architectures determined by the gravitational tidal interactions between the planets and the disc in which they are embedded during the early epoch of planetary system formation. We concentrate on a very well defined and intensively studied process of the disc-planet interaction leading to the planet migration. We focus on the dynamics of the systems in which low-mass planets are present. Particular attention is devoted to investigation of the role of resonant configurations, because they carry important information about the history of the planetary systems. These studies, apart from being complementary to the fast progress occurring just now in observing the whole variety of planetary systems, uncovering their structure and origin and determining the planet habitability, can also constitute a valuable contribution in supporting the missions planned to enhance the number of detected multiple systems and to learn more about the properties of their planets: CHEOPS, JWST, PLATO and ARIEL .

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