

Solar System transport in a chain of bicircular models

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The bicircular problem (BCP) is a simplified model for the four body problem. In this model, we assume that the Sun and Jupiter are revolving in circular orbits around their center of mass, and a planet moves in a circular orbit around their barycenter. This is not a coherent model in the sense that the trajectories of the Sun, Jupiter and the planet do not satisfy Newton's equations. In a first step, our aim is to consider the Solar System as a set of coupled bicircular models. This is done in order to obtain a first insight of transport in the Solar System that may be explained using the *separated* bicircular problems. The invariant manifolds of convenient periodic orbits of each particular bicircular problem are considered in order to find connections between two consecutive problems. These connections allow to obtain a mechanism to explain transport of infinitesimal particles towards the inner Solar System. Finally the results obtained are validated using the complete Solar System.