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Title: *"Computation of the Centre Manifold of a Solar Sail Periodic Orbit"*
Abstract. A Solar sail is a spacecraft endowed with a large and highly reflecting surface to take advantage of the solar radiation pressure to propel the spacecraft.

In this work we focus on the motion of a solar sail in the Earth-Moon system. The model used is a coherent version of the Bicircular Problem extended to include the effect of the Solar Radiation Pressure on the sail. This model can be regarded as a periodic time-dependent perturbation of the well-known Restricted Three Body Problem. This system can be written in Hamiltonian form as a three and a half degrees of freedom. Thus, the classical Lagrangian points are no longer equilibria but they are replaced by periodic orbits with the same period as the time-dependence. The model has three parameters: one of them describes the performance of the sail and the other two describe its orientation. This leads to a three-parametric family of periodic orbits that raise from each Lagrangian point.

We focus in a periodic orbit near the point L_2. Then we perform a partial normal form process to the Hamiltonian function to obtain a new autonomous Hamiltonian that has uncoupled elliptic and hyperbolic parts. Therefore, we can reduce the study of the motion near the periodic orbit to the study of a two degrees of freedom autonomous Hamiltonian system and, by fixing some section and energy level, to the study of a family of Area Preserving Maps.

Joint work with Ariadna Farrés and Ángel Jorba.