

Control Strategies for Solar Sails

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Mots-clés :

Abstract : Dynamical systems have proven to be a useful tool for the design of space mission. For instance, the use of invariant manifolds is now common in the design of transfer strategies. In this talk we will focus on the station keeping of a Solar Sail around equilibria.

We consider the dynamics of a solar sail in the Earth-Sun system, taking the RTBP plus the Solar radiation pressure as a model. We will describe dynamics of the system around equilibria, finding families of periodic orbits and invariant tori.

We will discuss how to use the dynamical information of the system to derive control strategies. The main idea relies on understanding the dependence of the geometry of the phase space on the orientation of the sail, and then to use the sail to shift between different phase space geometries and to control the spacecraft.