
Invariant manifolds and chaos in the planar Earth-Moon system

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Abstract

The restricted three-body problem in celestial mechanics concerns the dynamics of a test particle on a gravitational field generated by a two-body system. It can be used to model the dynamics of small objects in the Earth-Moon system, such as satellites, spacecrafts and asteroids. In this scenario, there exist an interval of Jacobi constant values where the dynamics are highly dictated by the Lyapunov orbits. In this work, we use numerical techniques to calculate unstable periodic orbits and to trace the invariant manifolds associated with these orbits in order to deepen the knowledge on the chaotic scenario around the Moon.

Keywords: Earth Moon system, Chaos, Invariant Manifolds

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