

Title: Arnold diffusion in the restricted planar three body problem
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Abstract:

The restricted (elliptic) three body problem considers the motion of a particle with zero mass under the effects of two bodies called primaries, which move in elliptic orbits around their center of mass.

The circular case is a particular case of the elliptic case where the primaries move in circular orbits.

The goal of the talk is to show the existence of global instability in the elliptic case. In this model, we find orbits whose angular momentum changes between two a priori established values.

We show that, for large enough Jacobi constant, there exist transversal intersections between the stable and unstable manifolds of infinity which guarantee the existence of a symbolic dynamics that creates the so called oscillatory orbits.

This provides the main tool, which is the combination of two different scattering maps associated to the normally parabolic manifold of infinity to build trajectories whose angular momentum increases.