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Computer assisted proof of Arnold diffusion in the planar elliptic restricted three-body problem

We consider the planar elliptic restricted three-body problem as a model for Arnold diffusion, with the eccentricity of the elliptical orbits viewed as a perturbation parameter. We show that, for each sufficiently small value of the perturbation, there exist trajectories for which the energy changes by some constant independent of the size of the perturbation. We also show that there are trajectories for which the energy changes chaotically, undergoing symbolic dynamics. These results are obtained via a rigorous computer assisted proof. We provide explicit estimates on the range of perturbation values, and on the diffusion time. This is joint work with Maciej Capinski.