

# The Oliver Club

[www.math.cornell.edu/~oliver/](http://www.math.cornell.edu/~oliver/)

## ***Nonlocal Instability for the Planar 3-Body Problem***

*The Restricted Planar Circular 3 Body Problem (RPC3BP) is the simplest nonintegrable 3-body problem. Usually it is viewed as a model for planar either Sun-Jupiter-Asteriod or Sun-Earth-Earth Satellite system. Stability v.s. instability of such a system is one of long-standing problems. We consider the first model. Using Aubry-Mather theory and Mather variational method, we managed to prove existence of rich variety of unstable motions. For example, an Asteriod could have a nearly elliptic orbit of say eccentricity 0.95 in the past and escape to infinity along nearly parabolic orbit of eccentricity more than 1. These motions could be interpreted as Arnold diffusion for this system. Relation to Herman's oldest open question in dynamical systems will be explained.*



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Refreshments will be served at 3:55 PM in the Mathematics Department lounge (532 Malott Hall).

**Thursday, November 30, 2006  
at 4:25 PM in 406 Malott Hall**