

Speaker: Richard Moeckel

Title: Bifurcations of relative equilibria of the planar (1+3)-body problem.

Abstract: The (1+3)-body problem is a limiting case of the four body problem where three of the four masses tend to zero. The masses can be chosen as  $1, \epsilon\mu_1, \epsilon\mu_2, \epsilon\mu_3$  with  $\epsilon > 0, \mu_i > 0$  and  $\epsilon \rightarrow 0$ . With the help of symbolic computations, we study the bifurcations of the number of relative equilibria as  $\mu_i$  vary. In addition, we show that for masses of this form with  $\epsilon$  sufficiently small, there is a unique convex relative equilibrium of the four-body for each cyclic ordering of the bodies around the convex quadrilateral and the resulting circular periodic orbits are linearly stable. Based on joint work with M. Cordera, J. Cors and J. Llibre.