

1164-34-215

Maciej J. Capinski* (mcapinsk@agh.edu.pl), AGH University of Science and Technology, Krakow, Poland. *Oscillatory Motions and Parabolic Manifolds at Infinity in the Planar Circular Restricted Three Body Problem.*

We present a geometric method for establishing stable and unstable manifolds for parabolic invariant manifolds, which is applicable for computer assisted proofs. We use it to obtain bounds for the stable and unstable manifolds of the manifold at infinity in the Jupiter-Sun Planar Circular Restricted Three Body Problem (PCR3BP). We establish intersections of stable/unstable manifolds, which lead to oscillatory motions in the PCR3BP; that is, trajectories that travel arbitrarily far from the Jupiter and the Sun and return back to their vicinity. Existence of oscillatory motions in the PCR3BP was already proven in the literature. The novelty in our approach is that with our method we can obtain oscillatory motions for specific values of the Jacobi constant, which are far from where analytic tools can be applied. (Received January 19, 2021)