Oscillatory motions in the restricted circular planar three body problem

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In 1980 J. Llibre and C. Simó [1] proved the existence of oscillatory motions for the restricted planar three body problem, that is of orbits which leave every bounded region but which return infinitely often to some fixed bounded region. To prove their existence, they related them to the symbolic dynamics associated with a transverse homoclinic point. In their work they had to assume that the ratio between the masses of the two primaries was exponentially small with respect to the angular momentum. In the present work, we generalize their work proving the existence of oscillatory motions for any value of the mass ratio.

References

[1] J. Llibre and C. Simó *Oscillatory solutions in the planar restricted three-body problem*, Math. Ann. 248 (1980), no. 2, 153–184.