

Global continuation of symmetric orbits in the Sitnikov problem.

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Abstract

In [1] Llibre and Ortega studied analytically making use of the global continuation theorem the families of symmetric periodic orbits of the elliptic Sitnikov problem for non necessarily small values of the eccentricity e , and showed that some periodic orbits for $e = 0$ can be continued to all values of e in $[0, 1)$. In [2] Ortega and Rivera analyzed the bifurcation of solution from the center of mass which is an equilibrium of the problem. There are also numerical studies by Belbruno et al [3] and Jiménez-Lara and Escalona Buendía [4] describing the families of periodic orbits for almost all values of the eccentricity.

In this work we concentrate on the **stability** and **bifurcation** behavior of the families of symmetric periodic orbits that are born at the circular problem or emanate from the equilibrium solution and provide complementary information to the existing results. We present a combination of analytical estimates of the eccentricity intervals of ellipticity and numerical results based on a continuation technique [5,6].

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