Generalized Elliptic Restricted Four-Body Problem with Variable Mass[1]

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The elliptic case of restricted four-body problem with variable mass of infinitesimal body is studied here. The three primary bodies which are placed at the vertices of an equilateral triangle and moving in the elliptical orbits around their common center of mass. Out of these primaries we have considered that one massive body is having radiating effect and other two bodies are oblate in shapes. The fourth body which have infinitesimal mass, are varying its mass according to Jeans law. We derive the equations of motion of the infinitesimal body under the generalized sense in the elliptic restricted four-body problem by using the Meshcherskii-space time transformations. Further we numerically study about the equilibrium points, Poincarè surfaces of section, regions of possible motion and basins of the attracting domain by considering the variation of parameters used. Further more we examine the stability of these equilibrium points and found them unstable.

Keywords: elliptical orbit, variable mass, oblate, regions of motion, attracting domain.

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