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Out-of-Plane Equilibrium Points and Regions of Motion in Photogravitational R3BP when the Primaries are Heterogeneous Spheroid with Three Layers

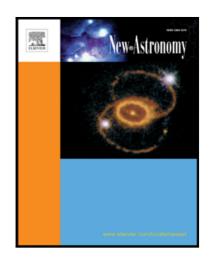
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Out-of-Plane Equilibrium Points and Regions of Motion in Photogravitational R3BP when the Primaries are Heterogeneous Spheroid with Three Layers

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Abstract The present paper deals with the regions of motion and the out-of-plane equilibrium points in the planar restricted three-body problem when both the primaries are heterogeneous oblate spheroids with three layers of different densities and sources of radiation. We have derived the equations of motion and examined the combine effects of radiation and the effect due to the different layers of primaries on the out-of-plane equilibrium points and regions of motion. It is further observed that the energy constant, the radiation parameter and the effect due to the different layers of primaries have substantial impact on the locations of the out-of-plane equilibrium points and on the regions of motion. Furthermore, we have observed that the out-of-plane equilibrium points are unstable for all mass ratios and other parameters, whereas the infinitesimal mass can move freely around the primaries for smaller values of Jacobi constant. But, when we increase the radiation parameter due to either of the primaries, the forbidden regions increase, where the motion is not possible. Moreover, we have discussed the Newton-Raphson basins of attraction to observe the effect of various perturbation on the topology of basins of convergency on configuration plane.

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