Motion of a Dust Grain Type Particle in Binary Stellar Systems

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Abstract : In this present paper, we use the photogravitational version of the restricted three body problem (RTBP) in binary systems. In the photogravitational RTBP, an infinitesimal particle (dust grain) is moving under the gravitational attraction and radiation pressure from the two bigger primaries. The third particle does not affect the motion of two bigger primaries. The zero-velocity curves, zero-velocity surfaces and their projections on the plane are studied. We have used existing analytical method to solve the equations of motion. We have obtained the Lagrangian points in some binary stellar systems. It is found that mass reduction factor affects the Lagrangian points. The linear stability of Lagrangian points is studied and found that these points are unstable. Moreover, trajectories of the infinitesimal particle at the triangular points are studied.