Motion of an Infinitesimal Particle in Binary Stellar Systems: Kepler-34, Kepler-35, Kepler-16, Kepler-413

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Abstract : The present research was motivated by the recent discovery of the binary star systems. In this paper, we use the restricted three-body problem in the binary stellar systems, considering photogravitational effects of both the stars. The aim of this study is to investigate the motion of the infinitesimal mass in the vicinity of the Lagrangian points. The stability and periodic orbits of collinear points and the stability and trajectories of the triangular points are studied in stellar binary systems Kepler-34, Kepler-35, Kepler-413 and Kepler-16 systems. A detailed comparison is made among periodic orbits and trajectories.