

Spatial collinear restricted four-body problem with repulsive Manev potential

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Abstract We outline some aspects of the dynamics of an infinitesimal mass under the Newtonian attraction of three point masses in a symmetric collinear relative equilibria configuration when a repulsive Manev potential $(-1/r + e/r^2)$, $e > 0$, is applied to the central mass. We investigate the relative equilibria of the infinitesimal mass and their linear stability as a function of the mass parameter β , the ratio of mass of the central body to the mass of one of two remaining bodies, and e . We also prove the nonexistence of binary collisions between the central body and the infinitesimal mass.

Keywords Restricted four-body problem · Repulsive Manev potential · Equilibrium points · Stability

Mathematics Subject Classification 70F10 · 70F15 · 70H12

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