Zhuravlëv, S. F.

The asymptotic stability of the relative equilibria of point masses in a weakly resistive medium in the gravitational field of a rotating ellipsoid. (English. Russian original)

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Summary: The motion of a point mass in the gravitational field of a rotating triaxial ellipsoid that is homogeneous or inhomogeneous but with ellipsoidal layers of equal density is considered. In addition to the gravitational and centrifugal forces, the force of the weakly resistive medium acts on the point mass. It is shown that the libration points in this extended problem turn out to be displaced with respect to the position of the libration points of the classical problem by small amounts in the direction of rotation of the ellipsoid. Moreover, it is proved that, if dissipative forces (resistances) act on the motion of the point mass in an absolute system of coordinates, the displaced points, which are stable in the first approximation, become asymptotically stable.

MSC:

70F05 Two-body problems
70K20 Stability for nonlinear problems in mechanics

Full Text: DOI

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