

This paper discusses the existence, location, and linear stability of equilibrium points around a rotating dipole in the framework of the circular restricted three-body problem. The rotating dipole system consists of two finite bodies of masses m_1 and m_2 rigidly connected by a massless rod in a constant characteristic distance. The idea is to consider that the bigger primary body is an oblate spheroid and the smaller one is a point mass together with small perturbations in the Coriolis and centrifugal forces of the primaries. Firstly, these equilibria are determined numerically and, depending on the force ratio and mass factor values, their number may be three or five. It is found that the positions of these equilibria depend on all the system parameters except small perturbation in the Coriolis force. The linear stability of each equilibrium point is also examined. A simulation is done by using two typical highly irregular shaped asteroids, 216-Kleopatra and 1620-Geographos, for which it is found that three collinear and two non-collinear equilibria exist for each system. The positions of these equilibria and their stability as well as the zero-velocity curves under variations of the aforementioned perturbations have been determined numerically. It is seen that the positions of the equilibria are affected by the parameters of the problem, since they are shifted from the classical restricted three-body problem on the x – axis and out of the x – axis, respectively. The linear stability of these equilibria is investigated for the asteroid systems, and they are found to be linearly unstable.