Four dipole problem stability of equilibrium points

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Abstract

We have extended Strormer's problem considering four magnetic dipoles in motion. The three of them (D_1, D_2, D_3) move in circles according to the equilateral solution of Lagrange and the fourth dipole (D_4) has symmetrical location to the third dipole (D_3) with respect to Ox axis. In this three dimensional unstable environment, where a charged particle moves under the influence of the electromagnetic field due to Lorentz force, co-acting with the gravity field, we study the stability of planar and three dimensional equilibrium points using the method of characteristic exponents.

Keywords : *Magnetic dipoles, stability parameters, equilibrium points.*

1. Introduction