Elastic Cable-connected Satellites System Under Several Influences: Equilibrium Positions of Motion of the System in Circular Orbit of Centre of Mass of the System

Sangam Kumar[1*], Joydip Ghosh[2], Jeeb Dyuti Prasad[3]

[1]P. G., Department of Physics, L. S. College, B. R. A. Bihar University, Muzaffarpur-842001
[2]P. G., Department of Physics, R. D. S. College, B. R. A. Bihar University, Muzaffarpur-842002
[3]Department of Physics, L. N. College, Bhagwanpur, Vaishali

[*]Corresponding Author

ABSTRACT

The research work aims to study libration points or Lagrangian points or equilibrium positions of two inter-connected satellites under different perturbations with time dependent bilateral constraint. The perturbations are geomagnetic field, radiation pressure, earth shadow, earth oblateness and modulus of elasticity of the cable. The cable is supposed to be non-conducting and light. It is flexible as well. We are interested in zero eccentric orbit of centre of mass of the system. Equations of the system are obtained in differential form. It is not possible to obtain general solutions of the equations. It is noticed that general solutions are not significant for our problem. Obtaining Jacobian integral for the system, equilibrium positions are found out.

Keywords: Elasticity, Two inter-connected Satellites, Zero eccentric Orbit, Equilibrium Positions.

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