Intervals of linear stability of geometrical parameters in the restricted eight bodies problem with incomplete symmetry

Elena Cebotaru

Technical University of Moldova, Chişinău, Republic of Moldova
e-mail: `elena.cebotaru@mate.utm.md`

We consider the Newtonian restricted eight bodies problem with incomplete symmetry. We investigate the linear stability of this configuration by some numerical methods. For geometric parameter intervals of stability and instability are found, the corresponding theorem are formulated and proved. All relevant and numerical calculation are done with the computer algebra system Mathematica.
Keywords: Newtonian problem; differential equation of motion; configuration; particular solutions; equilibrium points; linear stability.

Bibliography

[1] E. A. Grebenikov, *On a mathematical problems of homographic dynamics*, Moscow: MAKS Press, 2010, 253 p. (in Russian)

[2] E. A. Grebenikov, D. Kozak-Skovorodkina, M. Yakubyak, *Computer algebra methods in the many-body problem*, Second edition, revised and supplemented, Moscow: The Peoples' Friendship University of Russia, 2002, 211 p. ISBN: 5-209-01451-7. (in Russian)

[3] A. Wintner, *The Analytical Foundations of Celestial Mechanics,* Princeton, NJ,USA: Princeton University Press, 1941, 448 p.

[4] S. Wolfram, *The Mathematica Book,* Cambridge: University Press, 1996.