

# Algebra Methods for linearization of the normal form Birghoff

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We consider the Newtonian restricted eight bodies problem with incomplete symmetry. We investigate the linear stability of this configuration. To investigate stability of an equilibrium position we have to expand the Hamiltonian function in power series in term of coordinates and momentums in the neighborhood of the the equilibrium solutions. Doing relevant symbolic computation, we reduce the Hamiltonian function to the Birghoff normal form and analyse stability of the equilibrium solutions by applying the Arnold-Moser theorem. All relevant symbolic and numerical calculation are done with the computer algebra system Mathematica.

## REFERENCES

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