

On the non-integrability of some N -body problems

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Abstract

A series of non-integrability results for the N -Body Problem in Celestial Mechanics have been obtained. Namely, we give a new, simpler non-integrability proof for the Three Body Problem with arbitrary masses and a further result for $N > 3$ equal masses. The main tools used for such results come from Morales-Ramis theory.

References

- [1] J. J. Morales Ruiz and Jean-Pierre Ramis A note on the Non-Integrability of some Hamiltonian Systems with a Homogeneous Potential. *Methods and Applications of Analysis*. **8** (2001), p. 113-120.
- [2] J. J. Morales Ruiz Differential Galois Theory and Non-Integrability of Hamiltonian Systems. Birkhäuser, Basel 1999.