

Nonintegrability of a perturbed Hamiltonian system of two degrees of freedom with two resonances

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ABSTRACT

The purpose of this work is to study a perturbed Hamiltonian Dynamical system [2,4] of two degrees of freedom with an integrable unperturbed part and where the perturbation consists of two resonances in order to prove its nonintegrability. We use Poincaré's theorem [1] on non integrability and a criterion for nonintegrability based on it [3]. We perform a sequence of Lie series and the Hamiltonian is expanded in powers of ε . We focus in order ε where there appear infinite resonances which form a dense set in phase space. Due to this fact, Poincaré's theorem on nonintegrability proves that the system is non integrable.

References

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