

Effective computation of the dynamics around a two-dimensional torus of a Hamiltonian system*

Frederic Gabern

Àngel Jorba

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Abstract

The purpose of this talk is to give an explicit analysis of the nonlinear dynamics around a two-dimensional invariant torus of an analytic Hamiltonian system. The study is based on high order normal form techniques and the computation of an approximated first integral around the torus. One of the main novel aspects of the current work is the implementation of the symplectic reducibility of the quasi-periodic time-dependent variational equations of the torus. We illustrate the techniques in a particular example that is a quasi-periodic perturbation of the well-known Restricted Three Body Problem. The results are useful to describe the neighbourhood of the triangular points of the Sun-Jupiter system.

*oral communication.