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Carles Simó is a Professor at the Universitat de Barcelona. He is the founder of the Spanish group on Dynamical Systems. Simó is a fellow of the Academies of Sciences of Barcelona and Madrid, and has recently be awarded the Premi Nacional de Recerca 2012 (Fundació Catalana per a la Recercai la Innovació). His current research topics are Hamiltonian systems, Celestial mechanics, Numerical indicators of dynamics, and Computer assisted studies in dynamical systems.

Measuring the total amount of chaos in some Hamiltonian Systems

Abstract
We consider some simple Hamiltonian systems, variants or generalizations of the Hénon-Heiles system, in two and three degrees of freedom, around a positive definite elliptic point, in resonant and non-resonant cases. After reviewing some theoretical background, we determine a measure of the domain of chaoticity by looking at the frequency of positive Lyapunov exponents in a sample of initial conditions. The question we study is how this measure depends on the energy and parameters and which are the dynamical objects responsible for the observed behaviour.