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.