Seção
Abstracts

Dynamical properties of the Fermi-Ulam model with external perturbation of Van der Pool type

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Resumo

In this work we consider the dynamics of a classical particle of mass m confined within an one-dimensional time dependent billiard. We assume that the time perturbation of the boundary is given by a nonlinear Van der Pool oscillator. The particle is confined to move between the two rigid walls, one of them fixed at a distance L from the first that fluctuates according to the Van der Pol oscillator. We construct the phase space and explore the dynamic properties of the system. The Van der Pol oscillator is a modification of the harmonic oscillator where a dissipative and nonlinear term is introduced. The equation describing the oscillator is $M\,d^2x/dt^2 + b(x^2 - x_0^2)dx/dt + kx = 0$ where b is a dissipative term, M is the mass, and k is the Hook constant.