

Periodic Orbits for Stationary Hamiltonian Systems

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Resumo/Abstract:

According to Poincare-Birkhoff Theorem, a periodic twist map of a cylinder has at least two fixed points. V.I. Arnold realized that the correct generalization to higher dimensions concerned the Hamiltonian flows and symplectic maps. Arnold's conjecture in the case of a torus gives a lower bound on the number of periodic orbits of a Hamiltonian system associated with a periodic Hamiltonian function. This conjecture was established by Conley and Zehnder in 1984. A parallel generalization of the classical Poincare-Birkhoff Theorem is to investigate whether it holds in the stochastic setting. In this talk, I discuss a variant of the Poincare-Birkhoff and Conley-Zehnder Theorems for Hamiltonian systems associated with stationary and ergodic Hamiltonian functions.