

On the spectra of classically periodic systems and their perturbations: Direct and inverse problems

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Abstract

Periodic Hamiltonian systems include: the Kepler system in the region of bounded orbits, geodesic flow on spheres, and a system of harmonic oscillators with commensurable frequencies. It turns out that there are many other examples. In this talk I will survey what is known about the spectral properties of the corresponding quantum systems. I will also consider perturbations of these systems, and describe some recent inverse spectral results on perturbations of the harmonic oscillator in two dimensions. This is joint work with Victor Guillemin and Zuoqin Wang.