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Hamiltonian dynamical systems with infinitely many periodic orbits and beyond

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Abstract

One distinguishing feature of Hamiltonian systems is that such systems tend to have infinitely many periodic orbits. There are, however, simple exceptions such as the standard two-sphere: an irrational rotation of the two-sphere has only two periodic orbits and they are both fixed points – the poles. Yet a celebrated theorem of Franks asserts that once a Hamiltonian diffeomorphism of the two-sphere has more than two fixed points it has infinitely many periodic orbits, and one conjecture inspired by Franks' theorem is that a Hamiltonian diffeomorphism with fixed points that are unnecessary from a homological or geometrical perspective must have infinitely many periodic orbits.

In this talk we will discuss some higher-dimensional results supporting this conjecture and, if time permits, show that in certain instances the presence of one hyperbolic fixed point forces the existence of infinitely many periodic orbits.

Date : Wednesday, June 26, 2013

Time: 11:00

Place: IMBM Seminar Room, Boğaziçi University South Campus