



Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

Dienstag, 20. November 2018

17 Uhr s.t., Geom H4

Prof. Dr. Viktor Ginzburg
(UC Santa Cruz)

Periodic orbits of Hamiltonian systems: the Conley conjecture and pseudo-rotations

Abstract:

One distinguishing feature of Hamiltonian dynamical systems is that such systems, with very few exceptions, tend to have numerous fixed and periodic points. In 1984 Conley conjectured that a Hamiltonian diffeomorphism (i.e., the time-one map of a Hamiltonian flow) of a torus has infinitely many periodic points. This conjecture was proved by Hingston some twenty years later, in 2004. Similar results for Hamiltonian diffeomorphisms of surfaces of positive genus were also established by Franks and Handel. Of course, one can expect the Conley conjecture to hold for a much broader class of closed symplectic manifolds, i.e., phase spaces, and this is indeed the case as has been proved by Gurel, Hein and the speaker. However, the conjecture is known to fail for some, even very simple, phase spaces such as the sphere. These spaces admit Hamiltonian diffeomorphisms with finitely many periodic orbits -- the so-called pseudo-rotations -- which are of particular interest in dynamics.

In this talk, mainly based on the results of Gurel and the speaker, we will examine underlying reasons for the existence of periodic orbits for Hamiltonian diffeomorphisms and discuss the situations where the Conley conjecture does not hold.

Vor dem Vortrag (ab 16.30 Uhr) stehen im Raum 327 Kaffee und Tee bereit.