

**Viktor Ginzburg**

*Title: Periodic orbits of Hamiltonian systems: from the Conley conjecture to pseudo-rotations*

Abstract:

One distinguishing feature of Hamiltonian dynamical systems is that such systems, with few notable exceptions, tend to have numerous periodic orbits. For instance, for many symplectic manifolds, every Hamiltonian diffeomorphism has infinitely many periodic orbits unconditionally. This fact, usually referred to as the Conley conjecture, has by now been established for a broad class of manifolds. However, the Conley conjecture obviously fails for some, even very simple, manifolds such as the two-sphere. These spaces admit Hamiltonian diffeomorphisms with few periodic orbits -- the so-called pseudo-rotations -- which are of particular interest and occupy a very special place in dynamics. Symplectic topological methods and, in particular, Floer theory turn out to be the right tools to study pseudo-rotations in all dimensions. We will start with the background results on the Conley conjecture and then focus on the dynamics of Hamiltonian pseudo-rotations.