Conley conjecture and beyond: infinitely many periodic points of Hamiltonian dynamical systems

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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 of a torus has infinitely many periodic points. This fact 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 to hold for a much broader class of closed manifolds and this is indeed the case. For instance, by now, the conjecture has been proved by using Floer theoretic techniques for all closed, symplectically aspherical manifolds, Calabi-Yau manifolds and recently for negative monotone manifolds.
In this talk, mainly based on a work of Gurel and the speaker, we will discuss the Conley conjecture in detail and outline its proof focusing for the case of negative monotone manifolds.