

Analysis/Dynamical systems Seminar

Thursday, March 10, 2016

4:00-4:50 pm in Hume 331

Dynamics on contact manifolds

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A Hamiltonian system is a special system of differential equations, coming from a physical system with conservation of total energy. A key but surprising fact is that the geometry of the level set of the total energy is all that matters in determining qualitative properties of trajectories of the system.

In '78, Rabinowitz and Weinstein independently proved that a convex hypersurface in \mathbb{R}^{2n} always has a periodic orbit. Weinstein conjectured that this result held for a large class of manifolds called *contact manifolds*. Since then, the Weinstein conjecture has been proved in dimension 3, but remains a stubborn problem in higher dimensions.

I will explain how this question is closely related to a topological problem, and will discuss some partial results towards the Weinstein conjecture.