Felix Klein Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: Richard Hind
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Thursday, March 20, 2014
2:00 PM
258 Hurley Hall

Title: Symplectic embeddings and isotopies

Abstract:

A goal of symplectic topology is to determine in which situations symplectomorphisms have properties similar to volume preserving maps, that is, they are very flexible, and in which situations they exhibit rigidity as in Kähler geometry. Flexibility results have been established using versions of the h-principle, while rigidity in symplectic topology is a consequence of the theory of pseudoholomorphic curves.

Basic testing areas for borderlines between rigidity and flexibility are embedding and isotopy problems for domains in the standard symplectic Euclidean space. Given two domains U and V we ask if there exists a symplectic embedding (or a Hamiltonian flow) mapping U into V. Given two embeddings, we can ask whether they are isotopic through symplectic embeddings.

First we will review some results on the embedding problem focusing on the cases when U is an ellipsoid or polydisk and V is a ball. Then we discuss some recent results on the isotopy problem. For both problems a construction known as symplectic folding gives sharp estimates.