"Inverse spectral theory and the Minkowski problem for the surface of revolution" and "Coisotropic Submanifolds of Symplectic Manifolds, Leafwise Fixed Points, and a Discontinuous Capacity"

TIME:
5 Jun 2013, 16:00 - 18:30

LOCATION:
Humboldt-Universität zu Berlin
Institut für Mathematik
Raum 1.013
Rudower Chaussee 25
12489 Berlin

PROGRAM:

16:00 - 17:00 **Prof. Dr. Evgeny Korotyaev**

"Inverse spectral theory and the Minkowski problem for the surface of revolution"
We solve the inverse spectral problem for rotationally symmetric manifolds, which include the class of surfaces of revolution, by giving an analytic isomorphism from the space of spectral data onto the space of functions describing the radius of rotation. An analogue of the Minkowski problem is also solved.

17:00 - 17:30 Break

17:30 - 18:30 **Prof. Dr. Fabian Ziltener**

"Coisotropic Submanifolds of Symplectic Manifolds, Leafwise Fixed Points, and a Discontinuous Capacity"

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Consider a symplectic manifold (M; !), a coisotropic submanifold N of M, and a selfmap □ of M. A leafwise □xed point of □ is a point in N, which under □ is mapped to the isotropic leaf through itself.
Symplectic manifolds naturally generalize phase space of classical mechanics. In this setting coiso-tropic submanifolds arise as energy level sets. Let □ be the time-one ow of a time-dependent perturbation of a given Hamiltonian function on M. Then a leafwise xed point of □ is a point on a given energy level set whose trajectory is changed only by a phase shift, under the perturbation.
The main result presented in this talk is that the number of leafwise xed points is bounded below by the sum of the Betti numbers of N, provided
that □ is not too far from the identity in the Hofer sense and some other conditions are satis□ed. As an application, one obtains a symplectic capacity by considering the minimal actions of regular closed coisotropic submanifolds of a given symplectic manifold. A version of the capacity which is based on spheres, turns out to be discontinuous in dimension four. This answers a question by K. Cieliebak, H. Hofer, J. Latschev, and F. Schlenk.

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