abstract

MEMBERS SEMINAR
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

I will start with a review the basic notions of Hamiltonian/symplectic vector field and of Hamiltonian/symplectic group action, and the classical structure theorems of Kostant, Atiyah, Guillemin-Sternberg and Delzant on Hamiltonian torus actions. Then I will state a structure theorem for general symplectic torus actions, and give an idea of its proof. In the second part of the talk I will introduce new symplectic invariants of completely integrable Hamiltonian systems in low dimensions, and explain how these invariants determine, up to isomorphisms, the so called "semitoric systems". Semitoric systems are Hamiltonian systems which lie somewhere between the more rigid toric systems and the usually complicated general integrable systems. Semitoric systems form a fundamental class of integrable systems, commonly found in simple physical models such as the coupled spin-oscillator, the Lagrange top and the spherical pendulum. I will conclude with some remarks on the spectral theory of quantum integrable systems. Parts of this talk are based on joint work with with Johannes J. Duistermaat and San Vu Ngoc.