Symplectic dynamics: methods and results

Umberto L. Hryniewicz
Universidade Federal do Rio de Janeiro (Brazil)
Ruhr-Universität Bochum (Germany)
umberto@labma.ufrj.br umberto.hryniewicz@rub.de

Abstract

Methods coming from symplectic topology and geometry have been recently causing a big impact in the study of Hamiltonian dynamical systems. Many of the results obtained are applications of Floer theory, Gromov-Witten theory, Symplectic Field theory etc, and these theories rely on careful study of solution sets of certain elliptic PDEs. In this talk I will present some of these modern tools, and explain how they are intimately related to Hamiltonian dynamics. Concrete examples of applications are certain types of forcing phenomena for Reeb flows, which I obtained in collaboration with Pedro A. S. Salomão (USP) and Al Momin.