

HAMILTONIANPDES- Hamiltonian partial differential equations: new connections between dynamical systems and PDEs with small divisors phenomena
REFERENTE prof. Massimiliano Berti, Dip. Matematica e Applicazioni

The aim of this project of 4 years is to create a research group on Hamiltonian Partial Differential Equations (PDEs) after my new arrival in the University Federico II of Naples as Associate Professor in november 2005. I plan to hire 2 post doc fellows and also to organize advanced research Schools and Workshops. I plan to develop a research group on Hamiltonian PDEs mainly studied by the point of view of "Dynamical Systems Philosophy" and of "Calculus of Variations". Indeed the analysis of the main structures of an infinite dimensional phase space such as periodic orbits, embedded invariant tori, center manifolds, etc., is an essential change of paradigm in the study of hyperbolic equations which has been recently very fruitful. In the last years the principal investigator has developed a net of high level international collaborations and, also with some of his PhD and Post doc students, has obtained many important results via a mixed combination of Critical Point Theory, Nash-Moser Implicit Function Theorems, Number Theory, Dynamical Systems techniques and Bifurcation Theory. This has allowed to solve open problems in the fields, opening new perspectives. With the ERC-Starting Grant we plan to hire first class experts in the above fields, and to collaborate for long periods of joint research with leading experts in the world. Keywords: Hamiltonian Partial Differential Equations, Small divisors problem, Nash-Moser Implicit function theory Variational methods.

Coordinator

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

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