2013
NCTS/CMMSC Joint Analysis Seminar

交通大學數學建模與科學計算研究中心
Center of Mathematical Modeling and Scientific Computing, NCTU

短 期 課 程

Lecturer Prof. Shiao-Hsiung Lin 林紹雄
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Time PM 13:30~15:20, Wednesday
November 13 & 20 & 27, 2013

Venue Room 307, Science Building 1,
National Chiao Tung University (交通大學科學一館307室)

Title KAM Tori in some nom-linear Schrodinger Equations

Content

11/13	11/20	11/27
Review on classical KAM theory. The weak KAM theorem and the Hamilton-Jacobi equations.	Nearly integrable non-linear Schrodinger equations with periodic BC. The first and second Melnikov conditions. Improved Nash-Moser implicit function theorem .	The non-compact case. The small divisor problems. Persistence of complete integrability in 1-d.

Abstract

KAM theory for nearly integrable Hamiltonian systems has a long 60 more years of history. Its influence on the general understanding of Classical Mechanics is tremendous. Its extensions to small perturbations of integrable soliton equatios have been done in many cases by Kuksin, Bourgain,Wayne, Deift, etc.. This talk will present some of their results in the special cases of non-linear Schrodinger equations. We will try to present the flow of ideas showing the existence of quasi-periodic solutions in these equations, pointing out the key conditions and the key computations or estimates. All the complcated details will be left out.