

Analysis Seminar & a Mini Course on Stochastic Analysis

04/28/2007-04/29/2007

主辦單位：台東大學數學系		
協辦單位：國科會數學研究推動中心		
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4 月 28 日 (六)		
時 間	演 講 者	演 講 主 題
09：30－10：30	高雄大學應數系 李育嘉教授	Stochastic analysis (1)
11：00－12：00	中央大學數學系 洪盟凱教授	Global solutions to the quasilinear wave equations
12：00－13：30	午餐	
13：30－14：30	高雄大學應數系 李育嘉教授	Stochastic analysis (2)
14：50－15：50	靜宜大學數學系 袁淵明教授	Nonlinear water waves: experiments, mathematical models and numerical simulations
16：10－17：10	高雄大學應數系 王偉仲教授	Numerical Solutions for m-coupled Nonlinear Schrödinger Equations
17：10－20：00	討論 & 晚餐	

4 月 29 日 (日)		
時 間	演 講 者	演 講 主 題
09：30－10：30	交通大學應數系 林琦焜教授	Space-time estimates of PDEs: from the point of view of dimensional analysis
11：00－12：00	高雄大學應數系 李育嘉教授	Stochastic analysis (3)
12：00－13：30	討論 & 午餐	
	會議結束	

演講摘要

Speaker : 洪盟凱教授

Title : Global solutions to the quasilinear wave equations

Abstract : In this talk, I will talk about the global existence of the Lipschitz continuous solutions to the Cauchy and Initial-boundary value problems of the quasilinear wave equations. By studying the consistency and stability of the Glimm scheme, we are able to establish the existence results. I will also talk about some open problem in this subject.

Speaker : 袁淵明教授

Title: Nonlinear Water Waves: Experiments, Mathematical Models and Numerical Simulations

Abstract : In recent years, mathematical models have become increasingly popular among scientists and engineers because they can help us understand our problems better and reduce costs for doing a lot of experiments. In this talk, we shall present some of our recent results on the eventual periodicity of the Korteweg-de Vries (KdV) equation on a half-line and a dual-Petrov-Galerkin method for the 5th-order KdV equation.

Speaker : 王偉仲教授

Title : Numerical Solutions for m-coupled Nonlinear Schrödinger Equations

Abstract : We develop numerical schemes to solve the m-coupled discrete nonlinear Schrödinger equations (DNLSE) that are used to model nonlinear optics and multi-component Bose-Einstein condensates. These equations have abundant solution characteristics that are not fully understood due to the complexities of the systems. Our approaches include an iterative method for finding the ground state solution of the one-component DNLSE; and a modified continuation method that overcomes the stable and efficient problems due to the simulation of unbounded solution domain. The methods are analyzed theoretically and then implemented to conduct numerical experiments. Computational results of 3-coupled DNLSE demonstrate the versatility of the numerical solutions and a lower energy non-radially symmetric solution that is tricky to find.

Speaker : 林琦焜教授

Title : Space-time estimates of PDEs: from the point of view of dimensional analysis

Abstract : I will introduce the dimensional analysis to predict the space-time estimates of PDEs. It will cover the Strichartz estimates, decay estimates and Fourier restriction theorem.