Institute of Mathematics
Academia Sinica

Department of Mathematics
National Taiwan University

Lakeside Lectures

Speaker: Prof. Barbara Prinari

(University of Colorado, Colorado Springs)

Title: Inverse scattering transform for a square matrix nonlinear Schrodinger equation with nonzero boundary conditions.

Abstract:

In this talk we discuss the Inverse Scattering Transform (IST) under nonzero boundary conditions for a square matrix nonlinear Schrodinger equation which was proposed as a model to describe hyperfine spin $F = 1$ spinor Bose- Einstein condensates with either repulsive interatomic interactions and anti-ferromagnetic spin-exchange interactions, or attractive interatomic interactions and ferromagnetic spin-exchange interactions. We formulate the IST in terms of a suitable uniformization variable, which allows to define the direct and inverse problems on the complex plane, instead of a two-sheeted Riemann surface or the cut plane with discontinuities along the cuts. Finally, we discuss the soliton and rogue wave solutions for this system in the ferromagnetic case.

Date: Jan. 8 (Mon), 2018

Time: 14:00-15:00

Venue: Room 202, Astro-Math Building (NTU Campus)

Refreshment: 13:30

Organizers: I-Kun Chen, Volker Elling, Chun-Yen Shen