数学与系统科学研究院

计算数学所学术报告

报告人：**Prof. Baofeng Feng**

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报告题目：

Integrable discretizations and self-adaptive moving mesh methods for a class of nonlinear wave equations

邀请人：　　胡星标 研究员

报告时间：**2013** 年 **6** 月 **18** 日（周二）

上午 **9:30-10:30**

报告地点：　　科技综合楼三层 **301**

计算数学所小报告厅

Abstract:

Recently, much attention has been paid to a class of nonlinear wave equations, which include the Camassa-Holm equation, the Degasperis-Procesi equation and their short-wave limits (the Hunter-Saxton and the reduced Ostrovsky equations), the short pulse and coupled short equations etc. These equations share some common features: (1) they are connected to some well-known integrable systems such as two-dimensional Toda-lattice via hodograph (reciprocal) transformations; (2) they admit bizarre solutions such as loop, cupon, peakon, or breather solutions.

In the present talk, we will report our recent work on integrable discretizations for this class of soliton equations. By Hirota's bilinear method and appropriate discrete Hodograph transformation, we have successfully constructed integrable discretizations for most of these soliton equations, as well as their multi-soliton solutions. In the _rst part of the talk, we will take a few examples from the list to show how integrable discretizations can be constructed. In the second part of the talk, we will show how these integrable discretizations can be used as a novel numerical scheme: the so-called self-adaptive moving mesh method for the numerical simulation of these nonlinear wave equations. Various numerical experiments including loop, breather and loop-breather interactions will be demonstrated in the presentation.

This is a joint work with Dr. Kenichi Maruno, Dr. Yasuhiro Ohta at Kobe University of Japan.

欢迎大家参加！