数学与系统科学研究院

计算数学所学术报告

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报告题目：

Complex short pulse and coupled complex short pulse equations

邀请人：　胡星标 研究员

报告时间：**2014** 年 **6** 月 **27** 日（周五）

晚上 **20:00-21:00**

报告地点：　数学院南楼七层

702 会议室

Abstract:

In this talk, a complex short pulse equation (CSP) and a coupled complex short equation (CCSP) are proposed to describe ultra-short pulse propagation in optical fibers. Firstly, starting from Maxwell equation, we derive the CSP and CCSP equations. By nding the Lax pair and in nite number of conservation laws, we show that the CSP equation is always integrable but the CCSP equation is only integrable under one particular case. Furthermore, we nd their multi-soliton solutions in terms of pfaffians by virtue of Hirota's bilinear method. One- and two-soliton solutions are investigated in details, showing favorable properties in modeling ulta-short pulses with a few optical cycles. Especially, same as the coupled nonlinear Schr odinger equation, interactions between two solitons are basically inelastic with energy redistribution. If time permits, we will show how to construct the integrable dicretizations of the CSP and CCSP equations and apply them as self-adaptive moving mesh methods for numerical simulations.

欢迎大家参加！