数学与系统科学研究院

计算数学所学术报告

报告人：　**Prof. Weizhu Bao**

（ *National University of Singapore* ）

报告题目：

Computational methods for the dynamics of the nonlinear Schroedinger/Gross-Pitaevskii equations

邀请人：　洪佳林 研究员

报告时间：**2017** 年 **8** 月 **2** 日（周三）

下午 **15:00-16:00**

报告地点：　数学院南楼六层

602 报告厅

Abstract:

In this talk, I begin wtih the nonlinear Schroedinger/Gross-Pitaevskii equations (NLSE/GPE) for modeling Bose-Einstein condensation (BEC), nonlinear optics, quantum physics and chemistry, etc., and review some dynamical properties of NLSE/GPE including conserved quantities, dispersion relation, center-of-mass dynamics, soliton solutions and semiclassical limits. Different numerical methods will be presented including finite different time domain (FDTD) methods and time-splitting spectral method, and their error estimates and comparison will be discussed. Extensions to NLSE/GPE with an angular momentum rotation term and/or non-local dipole-dipole interaction as well as multi-component will be presented. Finally, applications to soliton interactions, collapse and explosion of BEC, quantum transport and quantized vortex interaction will be investigated.

Reference：[1] W. Bao and Y. Cai, Mathematical theory and numerical methods for Bose-Einstein condensation, Kinet. Relat. Mod., 6 (2013), pp. 1-135.

欢迎大家参加！