

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: Mathematical Analysis
and Numerical Simulation of Bose-
Einstein Condensate

邀请人: 陈志明研究员

报告时间: 2007年6月11日(周一)
上午10:00—11:00

报告地点: 科技综合楼三层311
计算数学所报告厅

Abstract:

In this talk, I review the mathematical results of the dynamcis of Bose-Einstein condensate (BEC) and

present some efficient and stable numerical methods to compute ground states and dynamics of BEC. As preparatory steps, we take the 3D Gross-Pitaevskii equation (GPE) with an angular momentum rotation, scale it to obtain a four-parameter model and show how to reduce it to 2D GPE in certain limiting regimes. Then we study numerically and asymptotically the ground states, excited states and quantized vortex states as well as their energy and chemical potential diagram in rotating BEC. Some very interesting numerical results are observed. Finally, we study numerically stability and interaction of quantized vortices in rotating BEC. Some interesting interaction patterns will be reported.

This talk is based on joint work with I-Liang Chern, Qiang Du, Fong Yin Lim, Peter Markowich, Hanquan Wang and Yanzhi Zhang.

欢迎大家参加！