数学与系统科学研究院

计算数学所学术报告

报告人：　　**Prof. Shengtai Li**

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报告题目：

Higher-order divergence-free methods for MHD flows on overlapping grid

邀请人：　　袁礼研究员

报告时间：**2010** 年 **12** 月 **1** 日（周三）

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:

Magnetic fields have an intrinsic divergence-free property. It is essential to preserve this property in numerical simulations for magneto-hydrodynamics (MHD) simulations. However, it is difficult to achieve higher than second-order accuracy for conventional divergence-free finite-volume methods. In this talk I will present a higher-order (>=3) divergence-free method for MHD flows on overlapping grid. Our method uses the central scheme on an overlapping grid. It uses the solutions on a dual mesh, whose vertexes consist of the centroids of the primal mesh. By solving the solutions on the dual/primal mesh simultaneously, we derive a divergence-free numerical method for MHD of any high order. We also use the dual-mesh information to develop a more compact scheme that has better resolution and accuracy than using only the primal mesh. I will also present an efficient method to preserve the divergence-free condition on an adaptive mesh refinement grid.

欢迎大家参加！