

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Yau Shu Wong**

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报告题目:

**Error Correction Method for  
Navier-Stokes Equations at high  
Reynolds numbers**

邀请人: 曹礼群 研究员

报告时间: **2013 年 9 月 21 日 (周六)**

**上午 10:30-11:30**

报告地点: **科技综合楼三层 311**

**计算数学所报告厅**

## **Abstract:**

Developing an efficient solver for Navier-Stokes equations (NSEs) at high Reynolds numbers is a challenging research work. Since the NSEs are nonlinear, a typical numerical solution procedure will involve two steps: spatial discretization and solving the discretized nonlinear system iteratively. In this talk, we consider a new iterative approach for solving the stationary NSEs at high Reynolds numbers. The method consists of first solving the NSEs by the standard Oseen iterative scheme and then an error correction strategy is implemented to control the error arising from the linearization of the nonlinear NSEs. The new method retains the advantage of the classical Oseen scheme, but it leads to a more rapid rate of convergence and also enhances the capability for solving problems at higher Reynolds numbers. It will be shown that, under the uniqueness condition, the proposed method accelerates up to a factor of three in the convergence rate. The stability analysis and error estimate are presented. Furthermore, numerical simulations using the new method and other classical schemes are reported to verify the superior performance of the proposed method.

Joint work with Kun Wang (University of Alberta & Chongqing University)

欢迎大家参加!