数学与系统科学研究院

计算数学所学术报告

报告人：　**Prof. Chi-Tien Lin**

（ ***Department of Financial And Computational Mathematics***

Providence University, Taiwan ）

报告题目：

Asymptotic Behavior of Solutions to Some Hyperbolic Conservation Laws with Nonlinear Terms

邀请人：　石钟慈院士

报告时间：**2011** 年 **9** 月 **16** 日（周五）

上午 **10：00-11：00**

报告地点：　科技综合楼三层 **301**

计算数学所小报告厅

Abstract:

In this talk, we study numerically solution behavior for two hyperbolic conservation laws with nonlinear force terms at large time via central-upwind schemes. The most advantage of central-typed scheme is simplicity because no approximate Riemann solver is needed. Central-upwind scheme employs this advantage with less numerical viscosity so that it can be applied to study solution behavior at large time.

We start with a brief introduction to the semi-discrete central-upwind scheme by Tadmor and Kurganov in 1998. We then use it to simulate an initial-boundary value problem of a 2X2 p-system with nonlinear force term. We confirm that the solution globally exists and converges to its corresponding diffusion wave, or the solution blows up at a finite time under suitable condition. For convergence case, convergence rates are calculated.

We then turn to study solution behavior of an initial-value problem of a 1D Euler-Poisson equation defined on bounded domain. With the help of an improved Kurganov-Tadmor scheme introduced by Kurganov, Noelle and Petrova in 2001, we demonstrate that the solution converges to its corresponding boundary value problem.

We end this talk with a sharp improvement on Kurganov-Noelle-Petrova schemes. Numerical experiments are performed to show its sharpness.

欢迎大家参加！