

数学与系统科学研究院
计算数学所网络学术报告

报告人: 刘勇 博士

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报告题目:

**An essentially oscillation-free
discontinuous Galerkin method for
hyperbolic conservation laws**

邀请人: 周爱辉 研究员

报告时间: 2021 年 11 月 8 日 (周一)

下午 14:30-15:30

报告工具: 腾讯会议 (ID: 835 248 507)

Abstract:

In this talk, I will propose a novel discontinuous Galerkin (DG) method to control the spurious oscillations when solving the hyperbolic conservation laws. Usually, the high order linear numerical schemes would generate spurious oscillations when the solution of the hyperbolic conservation laws contains discontinuities. To overcome this difficulty, we introduce a numerical damping term to control spurious oscillations based on the classic DG formulation. Comparing to the classic DG method, the proposed DG method still maintains many good properties, such as the extremely local data structure, conservation, L2-boundedness, optimal error estimates and superconvergence. We use both the classical Runge-Kutta method and the modified exponential Runge-Kutta method in time discretization. Particularly, the latter one could avoid additional restrictions of time step size due to the numerical damping. Extensive numerical experiments are shown to demonstrate our algorithm is robust and effective.

欢迎大家参加！