

数学与系统科学研究院

计算数学所学术报告

(定期学术报告)

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报告题目:

On Preconditioned Iterative

Methods for Burgers Equations

报告时间: 2008年10月9日(周四)
下午4:00—5:00

报告地点: 科技综合楼三层311
计算数学所报告厅

Abstract:

We study the Newton method and a fixed–point method for solving the system of nonlinear equations arising from the Sinc–Galerkin discretization of the Burgers equations. In each step of the Newton method or the fixed–point method, a structured sub–system of linear equations is obtained and needs to be solved numerically. In this work, preconditioning techniques are applied to solve such linear sub–systems. Tight bounds for eigenvalues of the preconditioned matrices are derived and numerical examples are given to illustrate the effectiveness of the proposed methods. We also find that a combination of the Newton/fixed–point iteration with the preconditioned GMRES method is quite efficient for the Sinc–Galerkin discretization of the Burgers equations.

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