数学与系统科学研究院

计算数学所学术报告

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报告题目：

On Stokes-Ritz projection and multi-step backward differentiation schemes in decoupling the Stokes-Darcy model

邀请人： 毛士鹏 研究员

报告时间：2019 年 5 月 26 日（周日）

下午 16:00-17:00

报告地点： 科技综合楼三层

311 报告厅

Abstract：

We analyze a parallel, non-iterative, multi-physics domain decomposition method for decoupling the Stokes-Darcy model with multi-step backward differentiation schemes for the time discretization and finite elements for the spatial discretization. Based on a rigorous analysis of the Ritz projection error shown in this article, we prove almost optimal L^2 convergence of the numerical solution. In order to estimate the Ritz projection error on the interface, which plays a key role in the error analysis of the Stokes-Darcy problem, we derive L^∞ error estimate of the Stokes-Ritz projection under the stress boundary condition for the first time in the literature. The k-step backward differentiation schemes, which are important to improve the accuracy in time discretization with unconditional stability, are analyzed in a general framework for any $k\le 5$. The unconditional stability and high accuracy of these schemes can allow relatively larger time step sizes for given accuracy requirements, hence save a significant amount of computational cost.

欢迎大家参加！