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：

Simplex-averaged finite element methods for H(grad), H(curl) and H(div) convection-diffusion problems

邀请人： 张硕 副研究员

报告时间：2018 年 12 月 7 日（周五）

上午 10:00-11:00

报告地点： 科技综合楼三层

311 报告厅

Abstract：

In this talk, we construct and analyze a finite element approximation for the $H(D)$ convection-diffusion problem where D can be chosen as ${\rm grad}$, ${\rm curl}$ or ${\rm div}$ in 3D case. An essential feature of these constructions is to properly average the PDE coefficients on the sub-simplexes. The schemes are of the class of exponential fitting methods that result in special upwinding schemes when the diffusion coefficient approaches to zero. Their well-posedness are established for sufficiently small mesh size assuming that the convection-diffusion problems are uniquely solvable. Convergence of first order is derived under minimal smoothness of the solution. Some numerical examples are given to demonstrate the robustness and effectiveness for general convection-diffusion problems.

欢迎大家参加！