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：

Efficient Implementation of Finite Element Methods for Spatial Fractional PDEs in Three Dimensions

邀请人：　白中治 研究员

报告时间：**2019** 年 **7** 月 **9** 日（周二）

晚上 **19:00-20:00**

报告地点：　数学院南楼七层

702 教室

Abstract:

This work focuses on the implementation of finite element methods for space fractional problems on three dimensional irregular convex regions. The non-locality of fractional derivative makes the assembly of fractional stiffness matrix much more difficult mainly because of the searching of the integration paths of Gaussian points and the calculation of fractional derivatives of basis functions. To overcome the first difficulty, we develop an path search method by introducing the ray-simplex intersection algorithm. For the second difficulty, we give an analytical calculation formula based on structure of fractional derivative of finite element basis functions. In order to speed up the procedures in MATLAB, some implementation techniques are introduced. We finish with some numerical experiments on steady and transient diffusion problems verifying the efficiency of proposed techniques.

欢迎大家参加！