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：

Recent Advance on Immersed Finite Element Methods for Interface Problems

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报告时间：**2015** 年 **8** 月 **19** 日（周三）

上午 **10:30~11:30**

报告地点：　数学院南楼七层

702 会议室

Abstract:

Many simulations in science and engineering involve multiple materials. If partial differential equations are used to model these simulations, it usually leads to the so‐called interface problems. Classic finite elements methods can solve interface problems satisfactorily if meshes are aligned with interfaces; otherwise the convergence cannot be guaranteed. Immersed finite element (IFE) methods, on the other hand, allow interface to be immersed in elements so that their solution mesh is independent of material interface.

Classic IFE methods are usually less accurate around the interface than the rest of simulation domain due to the discontinuity of IFE functions across element boundaries. In this talk, we will introduce two approaches to improve the accuracy in the vicinity of interface. The first one is to modify classic linear/bilinear IFE methods by adding some correction terms at interface edges/faces. The second approach is to design new IFE spaces based on nonconforming finite element functions. Our numerical results demonstrate the effectiveness of these new methods.

If time permits, we will briefly talk about the application of these IFE methods to more complicated interface models such as elasticity system, and time dependent PDEs with moving interfaces.

欢迎大家参加！