数学与系统科学研究院

计算数学所学术报告

报告人： Prof. Pengtao Sun

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报告题目：

Monolithic Arbitrary Lagrangian-Eulerian Finite Element Method for Unsteady Interface Problems

邀请人： 张硕 副研究员

报告时间：2018 年 6 月 13 日（周三）

下午 15:00-16:00

报告地点： 科技综合楼三层

311 报告厅

Abstract:

In this talk, I will present our recent numerical studies for the arbitrary LagrangianEulerian (ALE) finite element method for unsteady moving interface problems and applications to dynamic fluid-structure interaction (FSI) problems. A fully coupled (monolithic) mixed finite element approximation is developed for ALE method to unconditionally stabilize numerical computations for unsteady interface/FSI problems. In particular, I will present a new type of monolithic ALE-FEM for the parabolic/mixed parabolic interface problem, which is going to be applied to the dynamic fluid-poroelastic-structure interaction (FPSI) problem—an important model of hemodynamic problem. Corresponding stability and optimal convergence analyses are carried out for the newly developed ALE-FEM in semi- and fully discrete scheme. Both ALE (affine) mapping and Piola mapping play crucial roles in the development of this new method for a unsteady interface problem in which a H(div)-type mixed problem is involved. All theoretical results are validated by numerical experiments as well.

欢迎大家参加！