

# 数学与系统科学研究院

## 计算数学所学术报告

报告人: **Assistant Prof. Xiaoming He**

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报告题目:

**Decoupling the coupled  
Navier-Stokes and Darcy equations**

邀请人: 龚伟 博士

报告时间: **2015 年 7 月 15 日 (周三)**

**下午 16:00~17:00**

报告地点: 科技综合楼三层

**301 小报告厅**

## **Abstract:**

The Navier-Stokes equation coupled with the Darcy equation through interface conditions has attracted scientists' attention due to its wide range of applications and significant difficulty in the nonlinearity and interface conditions. This presentation discusses a multi-physics domain decomposition method for decoupling the coupled Navier-Stokes-Darcy system with the Beavers-Joseph interface condition. The wellposedness of this system is first showed by using a branch of singular solutions and the existing theoretical results on the Beavers-Joseph interface condition. Then Robin boundary conditions on the interface are constructed based on the physical interface conditions to decouple the Navier-Stokes and Darcy parts of the system. A parallel iterative domain decomposition method is developed according to these Robin boundary conditions and then analyzed for the convergence. Numerical examples are presented to illustrate the features of this method and verify the theoretical results.

**欢迎大家参加！**