

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:

**A mixed multiscale finite element  
method for convex optimal control  
problems with oscillating coefficients**

邀请人: 龚伟 博士

报告时间: 2016 年 7 月 18 日 (周一)

下午 16:00-17:00

报告地点: 科技综合楼三层

311 报告厅

## **Abstract:**

We study numerical approximation of convex optimal control problems governed by elliptic partial differential equations with oscillating coefficients. Since the objective functional contains flux, we approximate the problems using the mixed finite element methods. We first analyze the standard mixed finite element approximation schemes. Then, motivated by the numerical simulation of the primal variable and the flux in highly heterogeneous porous media, we use a multiscale mixed finite element method to solve the state equations. The multiscale finite element bases are constructed by locally solving Neumann boundary value problems. The analysis of the approximate control problems is carried out under the assumption that the oscillating coefficients are locally periodic, which allows us to use homogenization theory to obtain the asymptotic structure of the solutions, although the numerical schemes are designed for the general case.

**欢迎大家参加！**