数学与系统科学研究院

计算数学所学术报告

报告人： **Prof. Yalchin Efendiev**

(Texas A&M University)

报告题目： **Domain decomposition and multiscale methods for high–contrast flow problems**

邀请人： **陈志明研究员**

报告时间： **2009 年 11 月 20 日(周五)**

上午 10:00—11:00

报告地点： **科技综合楼三层 311**

计算数学所报告厅

Abstract： **In this talk, I will discuss coarse spaces for multiscale and domain decomposition methods. The focus will be on problems that have high variations in the media properties. It is known**

that the number of iterations in domain decomposition and many iterative methods are adversely affected by the contrast in the media properties. One way to decrease the number of iterations is to choose? coarse spaces apporpriately.? In the proposed methods, the coarse spaces are constructed based? on a local eigenvalue problem motivated by weighted Poincare inequality. We show that if domain decomposition methods use the proposed coarse spaces then the condition number of preconditioned system is independent of the contrast in media properties. The coarse space can have large dimension. In this talk, we discuss? dimension reduction for the proposed coarse spaces and fast hierarchical computations of multiscale basis functions such that the condition number remains bounded independent of contrast. We will present how the accuracy of coarse–scale solutions using these proposed coarse spaces. Numerical results will be presented. This is a joint work with Juan Galvis.

欢迎大家参加！