

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Long Chen**

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报告题目:

**Multigrid Methods for Saddle Point
Systems of Mixed Finite Element
Methods**

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报告时间: 2015 年 11 月 4 日 (周三)

下午 14:00-15:00

报告地点: 科技综合楼三层

311 报告厅

Abstract:

The first order condition of the constrained minimization problem leads to a saddle point problem. A multigrid method using a multiplicative Schwarz smoother for saddle point problems can thus be interpreted as a successive subspace optimization method based on a multilevel decomposition of the constraint space. Convergence theory is developed for successive subspace optimization methods based on two assumptions on the space decomposition: stable decomposition and strengthened Cauchy-Schwarz inequality, and successfully applied to the saddle point systems arising from mixed finite element methods for Poisson, Stokes equations, and plate bending problems. Uniform convergence is obtained without the full regularity assumption of the underlying partial differential equations.

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