

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Shangyou Zhang**

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报告题目:

**Stable  $Q_k/Q_{k-1}$  mixed finite elements**

邀请人: 张硕 博士

报告时间: **2016 年 1 月 14 日 (周四)**

**上午 11:00~12:00**

报告地点: 科技综合楼三层

**311 报告厅**

## **Abstract:**

The natural, oldest and the mostly used mixed finite element for solving Stokes and Navier-Stokes equation is the  $Q_1/Q_0$  element, where the velocity is approximated by continuous polynomials of separated degree one (or  $k$ ) and the pressure is approximated by discontinuous polynomials of separated degree 0 (or  $k-1$ .) However, this finite element is not stable. In addition, it is proved by Brezzi and Falk that no matter how high the polynomial degree is, the  $Q_k/Q_{k-1}$  mixed finite element is not stable. Three methods are proposed where the pressure space is slightly limited while retaining the optimal order approximation. The stability analysis is presented. Many numerical tests are provided. This is joint work with Mo Mu of Hong Kong University of Science and Technology.

**欢迎大家参加！**