

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Sou-Cheng (Terrya) Choi**

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报告题目:

**Krylov and Saunders Subspace
Methods**

邀请人: 白中治 研究员

报告时间: **2014 年 6 月 20 日 (周五)**

上午 10:30-11:30

报告地点: 科技综合楼三层 **311**

计算数学所报告厅

Abstract:

Large-scale linear systems, linear least-squares problems, and eigenvalue problems are pervasive in science and engineering applications. For high-performance computing, we establish a suite of Krylov and Saunders subspace methods, MINRES-QLP and GMRES-URV, for solving these problems that neither suffer hard breakdowns nor evade singular square matrices or linear operators. For linear systems and least-squares problems, by leveraging rank-revealing matrix factorizations, our methods minimize both solution and residual norms of a sequence of subproblems whose solutions lie in expanding nested subspaces. Our methods exhibit better stability and higher accuracy than the most well known (quasi) minimal residual methods such as MINRES, GMRES, and QMR. By taking advantage of the underlying frameworks of our algorithms, extreme eigenvalues of a square matrix or linear operator can be estimated at a higher accuracy than traditional iterative methods.

欢迎大家参加!