

数学与系统科学研究院
计算数学所系列学术报告

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报告题目:

Some Problems in Numerical Linear Algebra

邀请人: 白中治研究员

报告时间: **2011 年 9 月 16 日 (周五)**

上午 9: 00-12: 00

报告地点: **科技综合楼三层 311**

计算数学所报告厅

Abstract:

In this series of lectures there are four “Themes” concerning some recent work on several different problems closely related to eigenvalue problems in numerical linear algebra.

Theme 2: Inexact solves for the shift-invert transformation of large sparse eigenvalue problems and preconditioning

When eigenvalues of large sparse systems are required a common technique is to use the shift- invert transformation with the linear systems solved inexactly (so-called “inner-outer” methods, for example, Golub & Ye, BIT 40 (2000) pp. 671-684). It turns out that in order to solve efficiently the shifted linear systems that arise special preconditioners need to be constructed. We shall discuss the general convergence theory of these inexact methods, and some recent results about the preconditioning techniques. Relevant papers (among many) for these lectures are:

a) Freitag & Spence, “Convergence rates for inexact inverse iteration with application to preconditioned iterative solves”, BIT 47 (2007) pp. 27-44

b) Xue & Elman, “Fast inexact subspace iteration for generalised eigenvalue problems with spectral transformation”, LAA 435 (2011) pp. 601-622

NB There is a large literature in this area

欢迎大家参加!