数学与系统科学研究院

计算数学所学术报告

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报告题目：

Numerical Behavior of GMRES for Singular EP and GP Systems

邀请人： 白中治 研究员

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上午 10:30-11:30

报告地点： 数学院南楼七层

702 教室

Abstract:

In this contribution we study the numerical behavior of the GMRES method for solving singular systems of linear equations. in particular we are interested in the cases when the coefficient matrix is range-symmetric (EP), or its range and null-space are disjoint (GP) and the system is consistent. We show in theory and experiments that the accuracy of GMRES iterates computed in finite precision arithmetic may deteriorate due to the inconsistency of the system; the distance of the initial residual to the null-space of the coefficient matrix; and the extremal principal angles between the range of the coefficient matrix and of its transpose. These factors lead to ill-conditioning of the upper Hessenberg matrix in the Arnoldi process and affect the accuracy of the least squared solution computed in the transformed Hessenberg problem. The behavior of GMRES is also compared to the behavior of the range-restricted GMRES (RR-GMRES).

欢迎大家参加！