

数学与系统科学研究院
计算数学所定期学术报告

报告人: **Prof. Shufang Xu**

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报告题目:

**A Structure-Preserving Doubling
Algorithm for Nonsymmetric
Algebraic Riccati Equation**

邀请人: 胡星标研究员

报告时间: **2010 年 10 月 28 日(周四)**

下午 16: 00~17: 00

报告地点: **科技综合楼三层 311**

计算数学所报告厅

Abstract:

In this talk, the speaker plans to present a structure-preserving doubling algorithm (SDA) for the computation of the minimal nonnegative solution to the nonsymmetric algebraic Riccati equation (NARE), based on the techniques developed for the symmetric cases. This method allows the simultaneous approximation to the minimal nonnegative solutions of the NARE and its dual equation, requiring only the solutions to two linear systems and several matrix multiplications per iteration. Similar to Newton's method and the fixed-point iteration methods for solving NAREs, the global convergence for SDA under suitable conditions is established by using only elementary matrix theory. The sequences of matrices generated by SDA are monotonically increasing and quadratically convergent to the minimal nonnegative solutions of the NARE and its dual equation. Several Numerical experiments are present, which show that the SDA algorithm is feasible and effective, and outperforms Newton's iteration and the fixed-point iteration methods.

欢迎大家参加!