

# 数学与系统科学研究院

## 计算数学所学术报告

报告人: 潘建瑜 副教授

( 华东师范大学数学系 )

报告题目:

**Approximate Inverse Preconditioner  
for the Toeplitz-Plus-Diagonal  
Matrix**

邀请人: 白中治 研究员

报告时间: 2015 年 2 月 2 日 (周一)

下午 17:00-18:00

报告地点: 数学院南楼七层 702  
会议室

## **Abstract:**

**In this talk, we consider the solution of Hermitian positive definite Toeplitz-plus-diagonal system. Unlike the case of Toeplitz systems, no fast direct solvers have been developed for solving such system of linear equations. Hence, we employ the preconditioned conjugate gradient method with approximate inverse preconditioner to solving such system. The proposed preconditioner can be constructed and implemented efficiently by using fast Fourier transforms. We show that if the entries of the Toeplitz matrix decay exponentially away from the main diagonals, the preconditioned CG method converges very quickly. Some applications are given to illustrate the effectiveness of the proposed preconditioner.**

**欢迎大家参加！**