# 数学与系统科学研究院

## 计算数学所学术报告

**报告人：** 王增琦 副教授

（ *上海交通大学数学系* ）

**报告题目：**

**Chebyshev Accelerated Preconditioned MHSS Iteration Methods for a Class of Block Two-by-Two Linear Systems of Skew-Hamiltonian Coefficient Matrices**

**邀请人：** 白中治 研究员

**报告时间：2017 年 2 月 16 日（周四）**

**晚上 19:30-20:30**

**报告地点：** 数学院南楼七层

**702 教室**

# Abstract：

In this talk, the Chebyshev accelerated preconditioned modified Hermitian and skew-Hermitian splitting (CAPMHSS) iteration method is presented for solving the linear systems of equations which have certain skew-Hamiltonian coefficient matrices. The new method is proved to be convergent as long as the eigenvalues bounds are not underestimated. The error bound is displayed also. Even when the spectral information is lack, CAPMHSS iteration method could be considered as an exponentially convergent scheme by fixing the parameters certain values. In this case, the convergent rate is independent on the problem. Besides, the linear subsystems in each iteration are allowed to be solved inexactly, which leads to the practical CAPMHSS iteration method.

The error bound of the practical method is derived, too. We discuss the implementation of CAPMHSS for solving two models arising from the Galerkin finite-element discretizations of distributed control problems and complex symmetric linear systems in detail. The numerical results show the robustness and efficiency of the new methods. It is shown that CAPMHSS iteration methods are competitive with the PMHSS preconditioned Krylov subspace methods.

## 欢迎大家参加！