

数学与系统科学研究院
计算数学所博士后定期学术报告

报告人: **Dr. Shujun Bi**

(*Institute of Computational Mathematics and Scientific/Engineering
Computing, CAS*)

报告题目:

**Multi-stage convex relaxation
approach to structured rank
minimization problems**

报告时间: **2015 年 11 月 18 日 (周三)**

下午 16:00-17:00

报告地点: **科技综合楼三层**

311 报告厅

Abstract:

This paper is concerned about structured rank minimization problems. For this class of NP-hard problems, we reformulate it as an MPGCC (mathematical program with a generalized complementarity constraint), and show that the penalty version of this MPGCC, yielded by moving the generalized complementarity constraint to the objective, is exact in the sense that it has the same global optimal solution set as the MPGCC does when the penalty parameter is over a threshold. By solving this exact penalty problem in an alternating way, we propose a multi-stage convex relaxation approach to structured rank minimization problems, which involves a semi-nuclear norm minimization at each iteration. For the proposed multi-stage convex relaxation approach, under a restricted eigenvalue condition, we establish an error bound on the Frobenius norm for the optimal solution of the k th subproblem, and then quantify the reduction of the bounds yielded by the i th stage convex relaxation (which is exactly the nuclear norm convex relaxation) in the subsequent stages. In particular, we also establish the geometric convergence of the multi-stage convex relaxation approach. Finally, numerical results are reported for several classes of structured low-rank matrix recovery problems to confirm the theoretical results.

欢迎大家参加！