数学与系统科学研究院

计算数学所系列学术报告

报告人： Prof. Florian Jarre

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报告题目：

Special topics on conic optimization

邀请人： 戴彧虹 研究员

报告时间：

2017 年 6 月 27 日（周二）~2017 年 6 月 30 日（周五）
上午 8:30-11:30

报告地点： 科技综合楼三层

311 报告厅

Abstract：

1. Introduction, linear and semidefinite Programming:

Linear programs:

Primal-dual interior-point methods for linear programs will be introduced briefly along with a theoretical analysis and issues of a practical implementiation.

Semidefinite programs:

Duality, interior point methods, and search directions will be contrasted to the case of linear programs. Sparsity issues and the linear systems associated with the NT search direction will be addressed. A recent application to derivative-free optimization will be given.

2. Nonlinear semidefinite programs:

Nonlinear programs:

First order optimality conditions and possible forms of degeneracy will be discussed for standard nonlinear programs. Second order conditions will be given.

Nonlinear semidefinite programs:

Differences in first and second order conditions will be presented with a short proof and some examples and an application of nonlinear semidefinite programs in circuit design.

3. Convex conic programs:

A barrier approach and the concept of self-concordance will be introduced,highlighting the main issue, namely affine invariance.Some application in robust optimization and the existence of a universal barrier function will be discussed.As an application of the universal barrier function,completely positive programs and Burer's result on quadratic programs with binary variables will be presented.

4. Applications to combinatorial optimization:

A brief introduction to polyhedra and projections of polyhedra will be given.The max-cut-problem and the max-cut-polytope will be discussed with the approximation result by Goemans and Williamson. Representations of the max-cut-polytope and binary linear equations will be presented.Further applications of semidefinite programs will be addressed.

欢迎大家参加！