THE UNIVERSITY OF CHICAGO | THE COMMITTEE ON COMPUTATIONAL AND APPLIED MATHEMATICS

COLLOQUIUM

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Algorithms for Semidefinite Programming

TUESDAY, May 30th at 9:30 AM
Jones 303, 5747 S. Ellis Ave. Chicago, IL 60637

ABSTRACT

Semidefinite programming (SDP) and its generalizations have been widely used to model problems in applications such as combinatorial and polynomial optimization, covariance matrix estimation, matrix completion and Euclidean metric embedding. The first part of the talk will describe the primal-dual interior-point methods (IPMs) implemented in SDPT3 for solving medium scale SDP, followed by inexact IPMs (with linear systems solved by iterative solvers) for large scale SDP and discussions on the inherent limitations. The second part will present algorithmic advances for solving large scale SDP based on the proximal-point or augmented Lagrangian framework. In particular, we describe the design and implementation of an augmented Lagrangian based method (called SDPNAL+) for solving SDP problems with large number of linear constraints. The last part of the talk will touch on the development and implementation of a smoothing Newton method to solve SDP problems based on the KKT residual mapping.

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