



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

SDPNAL+: A Matlab software package for large scale SDPs with a user-friendly interface

by

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Abstract

SDPNAL+ is a Matlab software package that implements a 2-phase augmented Lagrangian based method for solving large scale semidefinite programming problems with bound constraints. Phase I of the algorithm is based on a convergent symmetric Gauss-Seidel ADMM for multi-block convex composite conic programming. While Phase II of the algorithm is based on semismooth Newton-CG augmented Lagrangian method with implementable stopping conditions. The basic code is written in Matlab, but some computational intensive subroutines written in C language are incorporated via Mex files. We also design a simple interface for users to input their SDP models into the solver. Numerous problems arising from combinatorial optimization and binary integer quadratic programming problems have been tested to evaluate the performance of the solver. Extensive numerical experiments show that the proposed method is quite efficient and robust. In particular, we are able to solve a very large SDP problem with over 12 million constraints and a positive semidefinite matrix variable of dimension over 9200 in about 10 hours on a modest desktop PC.

Date : 14 August, 2017 (Monday)

Time : 2:00p.m. – 3:00p.m.

Venue : TU801, The Hong Kong Polytechnic University

***** ALL ARE WELCOME *****