APPLIED MATHEMATICS COLLOQUIUM

Convex Optimization of Graph Laplacian Eigenvalues

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Abstract:
We consider the problem of choosing the edge weights of an undirected graph so as to maximize or minimize some function of the eigenvalues of the associated Laplacian matrix, subject to some constraints on the weights, such as nonnegativity, or a given total value. In many interesting cases this problem is convex, i.e., it involves minimizing a convex function (or maximizing a concave function) over a convex set. This allows us to give simple necessary and sufficient optimality conditions, derive interesting dual problems, find analytical solutions in some cases, and efficiently compute numerical solutions in all cases.

(Joint work with Persi Diaconis, Arpita Ghosh, Seung-Jean Kim, Sanjay Lall, Pablo Parrilo, Amin Saberi, Lin Xiao, and Jun Sun)

Monday October 19th 2009
4:30 PM
Building 4, Room 370

Refreshments are available in Building 2, Room 290
(Math Common Room) between 3:30 – 4:30 PM

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