

THE UNIVERSITY



OF HONG KONG

Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

A Riemannian Nonlinear Conjugate Gradient Method for Stochastic Inverse Eigenvalue Problems

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on Thursday, May 28, 2015 at 4:00pm
in Room 210, Run Run Shaw Building, HKU

Abstract

In this talk, we focus on the stochastic inverse eigenvalue problem of reconstructing a stochastic matrix from the prescribed spectrum. We directly reformulate the stochastic inverse eigenvalue problem as a constrained optimization problem over several matrix manifolds to minimize the distance between isospectral matrices and stochastic matrices. Then we propose a geometric Polak-Ribière-Polyak-based nonlinear conjugate gradient method for solving the constrained optimization problem. The global convergence of the proposed method is established. Our method can also be extended to the stochastic inverse eigenvalue problem with prescribed entries. An extra advantage is that our models yield new isospectral flow methods. Finally, we report some numerical tests to illustrate the efficiency of the proposed method for solving the stochastic inverse eigenvalue problem.

All are welcome
