Matrix perturbation theory in statistics

immediate

Wednesday 6th June, 2018

1 Introduction

Weyl's inequality; Wielandt-Hoffman inequality.

Books:

- Matrix Perturbation Theory, G. W. Stewart and Ji-guang Sun 1990;

- Perturbation Bounds for Matrix Eigenvalues, Rajendra Bhatia 2007;

- Perturbation Theory for Linear Operators, Kato 1980;

Papers:

- Low-Rank Matrix Approximations Do Not Need a Singular Value Gap

- Distributed Estimation of Principal Eigenspaces

- Asymptotics and concentration bounds for bilinear forms of spectral projectors of sample covariance

- A useful variant of the Davis–Kahan theorem for statisticians

- Second order accurate distributed eigenvector computation for extremely large matrices

- Optimal estimation and rank detection for sparse spiked covariance matrices

- Rate-optimal perturbation bounds for singular subspaces with applications to high-dimensional statistics