

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Departmental Seminar

Dr. Xiao HAN

Marshall School of Business
University of Southern California
USA

will give a talk
entitled

**A UNIFIED MATRIX MODEL:
THE LARGEST EIGENVALUE AND ITS APPLICATIONS**

Abstract

We consider a general matrix model $\Omega = (\mathbf{Z}\mathbf{U}_2\mathbf{U}_2^T\mathbf{Z}^T)^{-1}\mathbf{Z}\mathbf{U}_1\mathbf{U}_1^T\mathbf{Z}^T$, where \mathbf{U}_1 and \mathbf{U}_2 are two orthogonal isometries and \mathbf{Z} is the matrix of observed data. We establish the asymptotic Tracy-Widom distribution for the largest eigenvalue of Ω under moment assumptions on the data \mathbf{Z} . This result has wide applications in practice. For example, by appropriately choosing \mathbf{U}_1 and \mathbf{U}_2 , our results can be used in deriving the asymptotic distribution of the maximum eigenvalues of the matrices used in canonical correlation analysis (CCA) and of F matrices (including centered and non-centered versions). Moreover, via appropriate matrices \mathbf{U}_1 and \mathbf{U}_2 , our result on Ω can be applied to some multivariate testing problems that cannot be done by both types of matrices. To see this, we consider two specific examples. One is in the multivariate analysis of variance (MANOVA) approach for testing the equivalence of several high-dimensional mean vectors, where \mathbf{U}_1 and \mathbf{U}_2 are chosen to be two nonrandom matrices. The other one is in the multivariate linear model for testing the unknown parameter matrix, where \mathbf{U}_1 and \mathbf{U}_2 are random. Extensive simulation studies strongly support the theoretical results.

on

Thursday, March 8, 2018

(Refreshments will be served from 10:15 a.m. outside Room 301 Run Run Shaw Building)

10:30 a.m. – 11:30 a.m.

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

All interested are welcome