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DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE  
THE UNIVERSITY OF HONG KONG

Departmental Seminar

**Dr. Di WANG**

Booth School of Business  
University of Chicago

will give a talk

entitled

**ROBUST ESTIMATION OF HIGH-DIMENSIONAL VECTOR  
AUTOREGRESSIVE MODELS**

**Abstract**

High-dimensional time series data appear in many scientific fields in the current data-rich environment. Analysis of such data posts new challenges to data analysts because of not only the complicated dynamic dependence between the series, but also the existence of aberrant observations, such as missing values, contaminated observations, and heavy-tailed distributions. In this talk, I will introduce a new robust estimation procedure for high-dimensional vector autoregressive models against model misspecification, heavy-tailed noise contamination and conditional heteroscedasticity. The proposed methodology enjoys both statistical optimality and computational efficiency, and can handle many popular high-dimensional models, such as sparse, reduced-rank, banded and network-structured vector autoregressive models. With proper regularization and data truncation, the estimation convergence rates are shown to be nearly optimal under finite fourth moment condition. A linearized ADMM algorithm is developed for the general problem, and some special cases can be recast to semidefinite programming problems. The efficacy of the proposed estimation methods is demonstrated by simulation and real examples. This is a joint work with Ruey S. Tsay.

on

**Wednesday, March 10, 2021**

**2:30 p.m. – 3:30 p.m.**

**via Zoom**

<https://hku.zoom.us/j/94242742771?pwd=ZXNIWVArQUNJMFZhZmZ4MCtXaXgxUT09>

All interested are welcome