

## Factor model for high dimensional matrix valued time series

Rong Chen

Department of Statistics

Rutgers University

### Abstract:

In finance, economics and many other field, observations in a matrix form are often observed over time. For example, many economic indicators are obtained in different countries over time. Various financial characteristics of many companies over time. Although it is natural to turn the matrix observations into a long vector then use standard vector time series models or factor analysis, it is often the case that the columns and rows of a matrix represent different sets of information that are closely interplayed. We propose a novel factor model that maintains and utilizes the matrix structure to achieve greater dimensional reduction as well as easier interpretable factor structure. Estimation procedure and its theoretical properties and model validation procedures are investigated and demonstrated with simulated and real examples.

Joint work with Dong Wang (Rutgers University) and Xialu Liu (San Diego State University)