High-dimensional Vector Autoregressive Processes: Modeling, Estimation and Applications

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Vector Autoregressive processes represent a popular class of time series models that aim to capture temporal interconnections between a number of time series. They have been widely used in economics and finance and more recently in biomedical applications. In this talk, we discuss modeling and estimation issues in the high-dimensional setting under different constraints on the transition matrices - sparsity, low rankness, etc. We discuss optimization and inference issues and illustrate the results with applications to financial stability and biological regulation.