COLLOQUIUM

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Consistency of Large Dimensional Sample Covariance Matrix Under Weak Dependence

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Refreshments: 10:00 a.m.

Abstract

Estimation of large dimensional covariance matrix has been of interest recently. One model assumes that there are p dimensional independent identically distributed (Gaussian) observations $X_1, \ldots, X_n$ with dispersion matrix Σ_p and p grows much faster than n. Appropriate convergence rate results have been established in the literature for tapered and banded estimators of Σ_p which are based on the sample variance covariance matrix of n observations.

However, the assumption of independence has been questioned in applications. As a first step towards general results for the dependent case, we introduce and investigate one class of dependent models. Our model can accommodate suitable patterned cross covariance matrices. These estimators remain consistent in operator norm with appropriate rates of convergence.

A related problem is the estimation of the matrix parameters of a stationary vector ARMA time series model with increasing dimension where we have one realisation of the process. We shall exhibit some preliminary results in this area.

This work is joint with Monika Bhattarjee.

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