MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

COLLOQUIUM

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Asymptotics of Large Autocovariance Matrices

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10:20 AM - 11:10 AM
Refreshments 10:00 AM
C405 Wells Hall

Abstract

In this talk, we consider high-dimensional moving average process and explore the asymptotics for eigenvalues of its sample autocovariance matrices. Under quite weak conditions, we prove, in a unified way, that the limiting spectral distribution (LSD) of any symmetric polynomial in the sample autocovariance matrices, after suitable centering and scaling, exists and is non-degenerate. We use methods from free probability in conjunction with the method of moments to establish our results. In addition, we are able to provide a general description for the limits in terms of some freely independent variables. We also establish asymptotic normality results for the traces of these matrices. We suggest statistical uses of these results in problems such as order determination of high-dimensional MA and AR processes and testing of hypotheses for coefficient matrices of such processes.

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