



The University of Chicago
Department of Statistics

Seminar Series

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Dynamic Factor Models, Sparse PCA and Geometric Optimization

MONDAY, November 3, 2008 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

The large data volumes now occurring in econometrics, finance and other areas have shown up inadequacies in traditional modeling and analysis methods. VAR models have too many parameters; traditional asymptotics is unreliable since one wants not only the $\#$ observations \rightarrow infinity but also the $\#$ variables to \rightarrow infinity; and finally model selection methods fail.

There has thus recently been renewed interest in traditional dimension reduction methods such as factor analysis, PCA and more recently sparse modeling methods. There has also been some development of dynamic versions of some of these procedures. In this talk we give some asymptotic results on state space models with high-dimensional data; discuss the proper asymptotic regime; and develop a method of automatically zeroing out (large numbers of) whole variables in PCA by non-smooth penalized optimization. The orthogonality constraints in PCA force the optimization to be on a Stiefel manifold and we discuss a geodesic steepest descent method for carrying this out.

Please send email to Mathias Drton (drton@galton.uchicago.edu) for further information. Information about building access for persons with disabilities may be obtained in advance by calling Kelly Macias (773.702.8333) or by email (kmacias@galton.uchicago.edu).