



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

STATISTICS COLLOQUIUM

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Parameter Estimation for Linear Gaussian Covariance Models

MONDAY, February 22, 2016, at 4:00 PM

Eckhart 133, 5734 S. University Avenue

*Refreshments following the seminar in Eckhart 110.*

#### ABSTRACT

Linear Gaussian covariance models are Gaussian models with linear constraints on the covariance matrix. Such models arise in many applications, such as stochastic processes from repeated time series data, Brownian motion tree models used for phylogenetic analyses, and network tomography models used for analyzing the connections in the Internet. Maximum likelihood estimation in this model class leads to a non-convex optimization problem that typically has many local maxima. However, I will explain that the log-likelihood function is concave over a large region of the positive definite cone. Furthermore, using recent results on the asymptotic distribution of extreme eigenvalues of the Wishart distribution we will prove that the MLE and the least squares estimator lie in this region and hence starting any hill-climbing method in the least squares estimator leads to the MLE with high probability.