



The University of Chicago
Department of Statistics

PHD DISSERTATION PROPOSAL PRESENTATION

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Non-Stationary Models for Space-Time Processes

FRIDAY, November 19, 2010, at 9:00 AM

110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

The spectral analysis of stationary time series has proven to be valuable in many applications. However, it is clear that the assumption of stationarity is commonly badly violated. In this work, we extend some of the techniques used for analyzing stationary time series to the non-stationary case. Of particular importance is the remarkable fact that the fourier transform is an approximate transformation to independence for stationary time series. We use a non-stationary generalization of the fourier transform to induce a similar transformation to independence based on an estimate of the time-varying spectrum. Computational costs are considered, and we propose models for which the fast fourier transform can reduce computation time. We apply our methods to the analysis of high-frequency temperature data and discuss possible extensions to space-time processes.

Information about building access for persons with disabilities may be obtained in advance by calling Sandra Romero at 773.702-0541 or by email (sandra@galton.uchicago.edu).