



The University of Chicago
Department of Statistics
Seminar Series

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**Tractable Inference of Probability Densities
and Point Processes with Gaussian Process Priors**

MONDAY, January 24, 2011, at 4:00 PM

133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

The Gaussian process is an appealing prior for Bayesian modeling of functions. Unfortunately, applying the GP to probability densities has been difficult due to the requirement of integrating over an infinite-dimensional random function—a problem that also arises when a GP is used as the prior for a Poisson process, i.e. a Gaussian Cox process. This difficulty is similar to that encountered when attempting to compute the partition function of a Markov random field such as the Ising model. I will discuss my work on developing new GP-based models that help overcome these problems. These new models allow the simulation of exact and infinitely exchangeable data, which makes them amenable to recently-developed methods for inference with doubly-intractable posterior distributions. This new approach enables Markov chain Monte Carlo to be applied to these models without intermediate approximation of intractable integrals.

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