



THE UNIVERSITY OF
CHICAGO

Department of Statistics

BAHADUR MEMORIAL LECTURES

PETER J. GREEN

University of Bristol, UK, and University of Technology, Sydney

Bayesian Graphical Model Determination

THURSDAY, April 18, 2013 at 4:00 PM

133 Eckhart Hall, 5734 S. University Avenue

Refreshments before the seminar at 3:30 PM, in Eckhart 110

ABSTRACT

The structure in a multivariate distribution is largely captured by the conditional independence relationships that hold among the variables, often represented graphically, and inferring these from data is an important step in understanding a complex stochastic system. Simultaneous inference about the conditional independence graph and parameters of the model is known as joint structural and quantitative learning in the machine learning literature: it is appealing to conduct this in Bayesian paradigm, but this can pose computational challenges, because of the huge size of the model space that is involved, unless there are very few variables.

After setting the scene, I will present some recent joint work with Alun Thomas (Utah), that exploits new results on perturbations to graphs that maintain decomposability and on enumeration of junction trees to construct a Markov chain sampler on junction trees that can be used to compute joint inference about structure and parameters in graphical models on quite a large scale. I will discuss some implications for inference about genetic networks.