

STATISTICS COLLOQUIUM

MONDAY, NOVEMBER 5, 2007

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Adaptive MCMC: Challenges and Opportunities”

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ABSTRACT

Markov chain Monte Carlo (MCMC) algorithms are a very popular method of approximately sampling from complicated probability distributions. A wide variety of MCMC schemes and tunings are available, and it can be difficult to choose among them. One possibility is to have the computer automatically "adapt" the algorithm while it runs, to improve and tune on the fly. However, natural-seeming adaptive schemes can destroy the ergodicity properties necessary for MCMC algorithms to be valid. In this talk, we review adaptive MCMC, and explain how it can fail using a very simple graphical example (<http://probability.ca/jeff/java/adapt.html>). We present a theorem which gives simple conditions that ensure ergodicity. We then consider several high-dimensional adaptive Metropolis and Metropolis-within-Gibbs examples. Finally, we briefly discuss a preliminary general-purpose adaptive MCMC software package (probability.ca/amcmc). Much of this work is joint with G.O. Roberts.

<http://probability.ca/jeff/>