



STATISTICS DEPARTMENT COLLOQUIUM

MONDAY, APRIL 13, 2009

Talk: 4:00 PM – *Science Center 309*

Reception: 5:15 PM – *Science Center, 7th Floor*

“To Bayes or Not to Bayes in Modern Genetic Epidemiology?”

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ABSTRACT

In analyzing data from case-control genetic association studies, plausible constraints on the exposure distribution like gene-environment independence, Hardy-Weinberg equilibrium are being exploited to yield efficient estimation strategies based on the retrospective likelihood. However, these modern retrospective methods may incur bias under departures from the assumed constraints. The Bayesian paradigm is a natural alternative to build uncertainty around the assumed constraints, but comes with computational challenges, especially for large-scale association studies. In this talk I will present several problems in genetic epidemiology where Bayesian approaches provide sensible solutions to the bias versus efficiency trade-off. The use of Bayesian pre-posterior computations for designing new studies will also be presented. Much of the work is in collaboration with Nilanjan Chatterjee, The National Cancer Institute.