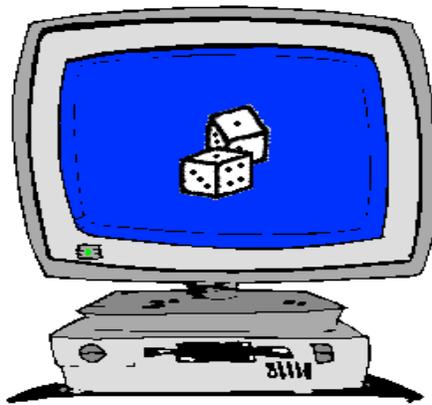# The SUMO Speaker Series for Undergraduates

(Pizza Provided)
Wednesday, October 27th
4:30-5:20, room 380C

The Full Monte Carlo: A Live Performance

Professor Xiao-Li Meng, Harvard Statistics

ABSTRACT:

Markov chain Monte Carlo (MCMC) methods, originating in computational physics more than half a century ago, have seen an enormous range of applications in quantitative scientific investigations. This is mainly due to their ability to simulate very complex distributions needed by all kinds of statistical models, from bioinformatics to financial engineering to astronomy. This talk provides an introductory tutorial on the two most frequently used MCMC algorithms: the Gibbs sampler and the Metropolis-Hastings algorithm. Using simple yet non-trivial examples, we demonstrate, via live performance, the good, bad, and ugly implementations. Along the way, we reveal both the mathematical challenges in establishing their convergence rates and the statistical thinking underlying their designs, including the secret behind the greatest statistical magic ...
(There will be extensive audience participation, but no prior experience is necessary.)

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