DEPARTMENTAL COLLOQUIUM

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IN HUME 321

AT 4PM

UNBIASED MARKOV CHAIN MONTE CARLO WITH COUPLINGS

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Abstract:

Markov chain Monte Carlo methods provide consistent numerical approximations of integrals as the number of iterations goes to infinity. However, these estimators are generally biased after any fixed number of iterations, which complicates parallel computation and the construction of confidence intervals. In this talk I will explain how to remove this burn-in bias by using couplings of Markov chains and a telescopic sum argument, inspired by Glynn & Rhee (2014). The resulting unbiased estimators can be computed independently in parallel, and averaged. I will present coupling constructions for Metropolis-Hastings, Gibbs and Hamiltonian Monte Carlo. The proposed methodology will be illustrated on various examples from the Markov chain Monte Carlo literature.