Weak Convergence of Markov chain Monte Carlo II

Kengo Kamatani (Graduate School of Mathematical Sciences, University of Tokyo)

Abstract

We consider weak convergence property of Markov chain Monte Carlo (MCMC) method for simple (iid) statistical problems as the sample size tends to infinity. We measure the efficiency of MCMC by the property. For regular problem, the Gibbs sampler tends to an AR process with scaling $s \to n^{1/2}$(s-MLE). On the other hand, for some non-regular problem, the Gibbs sampler does not move at all from stating value in the limit. Moreover, with iteration number scaling, it may tend to a diffusion process. Some famous MCMCs have such degeneracy and we propose alternative methods.