Title:	Markov chain Monte Carlo Methods and Applications
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Abstract:	Markov Chain Monte Carlo (MCMC) Methods are used extensively in various problems across physics, engineering and applied mathematics. In this thesis, we study the con- vergence results as well as the two standard but very important Markov Chain Monte Carlo algorithms, namely, the Gibbs Sampler and the Metropolis algorithm. The theory of Markov chain convergence is vast and a lot of work has been done recently on mixing times of Markov chains. A large part of thesis focuses on the conditions required for uniform as well as geometric ergodicity of Markov chains and thus providing quantitative bounds to the convergence of the Markov chain to stationarity. A brief idea of how MCMC algo- rithms work is also presented. Finally, we consider an application of MCMC to covariance realization problem for a discrete random process.
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