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On the efficiency of adaptive MCMC algorithms

Christophe Andrieu, *University of Bristol*
Yves Atchade, *University of Michigan*

Abstract

We study a class of adaptive Markov Chain Monte Carlo (MCMC) processes which aim at behaving as an ``optimal'' target process via a learning procedure. We show, under appropriate conditions, that the adaptive MCMC chain and the ``optimal'' (nonadaptive) MCMC process share many asymptotic properties. The special case of adaptive MCMC algorithms governed by stochastic approximation is considered in details and we apply our results to the adaptive Metropolis algorithm of [Haario, Saksman, Tamminen].

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