Hellinger distance as a convergence diagnostic for Metropolis Hastings MCMC

The Metropolis–Hastings algorithm is a Markov chain Monte Carlo (MCMC) technique for sampling a probability distribution. MCMC methods sample from a poster distribution and are used to make inferences regarding the true posterior distribution of interest. Theory guarantees this condition as the number of iterations approaches infinity. However, there is no clear method of determining the number of iterations required to ensure a reasonable approximation of the true posterior density. One metric used to determine the distance between distributions based on sampling is the Hellinger distance. This paper examines the use of the Hellinger distance as a convergence diagonostic for a Metropolis-Hastings MCMC.