

Improving MCMC convergence diagnostic: a local version of \hat{R}

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Diagnosing convergence of Markov chain Monte Carlo (MCMC) is crucial in Bayesian analysis. Among the most popular methods, the potential scale reduction factor (commonly named \hat{R}) is an indicator that monitors the convergence of all chains to the stationary distribution, based on a comparison of the between- and within-variances of the chains. Several improvements have been suggested since its introduction by Gelman and Rubin (1992). Here, we analyse some properties of the theoretical value R associated to \hat{R} in the case of a localized version that focuses on quantiles of the distribution. This leads to proposing a new indicator, which is shown to allow both for localizing the MCMC convergence in different quantiles of the distribution, and at the same time for handling some convergence issues not detected by other \hat{R} versions.