1095-62-205   **James M. Flegal***, 1428 Olmsted Hall, 900 University Ave, Riverside, CA 92521, and **Lei Gong**, 1337 Olmsted Hall, 900 University Ave, Riverside, CA 92521. *Relative fixed-width stopping rules for Markov chain Monte Carlo simulations.*

Markov chain Monte Carlo (MCMC) simulations are commonly employed for estimating features of a target distribution, particularly for Bayesian inference. A fundamental challenge is determining when these simulations should stop. We consider a sequential stopping rule that terminates the simulation when the width of a confidence interval is sufficiently small relative to the size of the target parameter. Specifically, we propose relative magnitude and relative standard deviation stopping rules in the context of MCMC. In each setting, we develop sufficient conditions for asymptotic validity, that is conditions to ensure the simulation will terminate with probability one and the resulting confidence intervals will have the proper coverage probability. Our results are applicable in a wide variety of MCMC estimation settings, such as expectation, quantile, or simultaneous multivariate estimation. Finally, we investigate the finite sample properties through a variety of examples and provide some recommendations to practitioners. (Received September 09, 2013)