Asymptotic Validity of Batch Means Steady-State Confidence Intervals

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Themethod of batch means is a widely applied procedure for constructing steady-state confidence intervals. The traditional theoretical support for the method of batch means has rested on the assumption of a functional central limit theorem for the underlying process. We establish here that the method of batch means is valid for Harris recurrent Markov processes whenever the associated process satisfies a simple (non–functional) central limit theorem. This weaker condition for validity of the method of batch means is also shown to hold in the setting of one-dependent regenerative processes.