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Nathan F. Ross* (ross@stat.berkeley.edu), University of California, 367 Evans Hall #3860, Berkeley, CA 94720. *Using Reversible Markov Chains for Distributional Approximation*. Preliminary report.

Stein's method of exchangeable pairs is a well established tool for obtaining an error in the approximation of a probability distribution of interest by a well understood distribution (e.g. the normal or Poisson distribution). The usual way to apply the method is to construct a reversible Markov chain with a few key properties, the most important being that its stationary distribution is the measure of interest. From this point, the error in the approximation (which depends on the approximating distribution and the metric being used) can be obtained from some moment information related to the chain. We will briefly discuss the method in the context of normal approximation and then explain how it can be modified to obtain approximations to a discrete analog of the normal distribution in settings where a central limit theorem holds. (Received September 21, 2009)