

1116-VP-2150 **Mathew Titus*** (titusm@math.oregonstate.edu), 258 Kidder Hall, Oregon State University, Corvallis, OR 97330. *Mixing Times for Markov Chains on Lattices via Weak Limits*. Preliminary report.

Mixing times for discrete time and space Markov chains describe how the system size affects the time required for the chain to approach its stationary distribution. Path coupling methods have been very effective for systems with rapid mixing, but for chains with $t_{mix} = O(n^\rho \log n)$ for $\rho > 1$ path coupling is no longer applicable. In this paper we use the weak limit of the Markov chain under a rescaling of the lattice to give a lower bound on the mixing time. Using a local limit law, we demonstrate that under certain conditions this result may be strengthened to prove convergence in total variation distance, proving the mixing time asymptotics. Applications to mean-field spin systems are given. (Received September 21, 2015)