



The University of Chicago
Department of Statistics
Mini-Seminar for First Year Students

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“Geometric Bounds for Eigenvalues of Markov Chains”

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ABSTRACT

For an ergodic Markov chain, the distribution of the n th state converges to the unique stationary distribution. The convergence rate is controlled by the spectral gap. P. Diaconis & D. Stroock (1991) developed bounds for the second largest eigenvalues and spectral gap of a reversible Markov chain. The bounds depend on geometric quantities such as the maximum degree, diameter and covering number of associated graphs. The bounds compares well with exact answers for a variety of simple chains, for example, Ehrenfest random walk, as we will mainly focus on in this talk.