

Mixing time and cutoff for one dimensional systems

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A fundamental result in the theory of Markov chains states that for any initial condition, the distribution at time t of an irreducible continuous Markov chain on a finite state converges to the unique invariant measure when t tends to infinity. The study of mixing time for Markov chains explores some quantitative aspects of this convergence. In particular a substantial amount of work has been dedicated to the study of the cutoff phenomenon: an abrupt convergence to equilibrium. In our talk we will survey recent results concerning the total-variation mixing time of the simple exclusion process on the segment (symmetric and asymmetric) and a continuum analog, the simple random walk on the simplex. We will put an emphasis on cutoff results.