SPEED OF CONVERGENCE OF CERTAIN MARKOV PROCESSES TO EQUILIBRIUM

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Abstract: We consider several classes of Markov processes-irreducible as well as non-irreducible, and their approach to equilibrium. A *splitting condition*, generalizing a notion of Dubins and Freedman (1966) , yields speeds of convergence in appropriate metrics for *monotone Markov chains* which are, in general, not irreducible. Examples include iterations of random quadratic maps, non-linear autoregressive models, and the Popp-Wilson algorithm for the Gibbs measure of the Ising model on a finite lattice. Conditions for exponential and polynmial rates of convergence to a steady state are derived for the *Lindley process* which is also monotone, but for which splitting does not occur. *Multi-dimensional diffusions* are another important class of Markov processes for which we explore new criteria for convergence to equilibrium at *polynomial rates*.