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**James Allen Fill\*** (jimfill@jhu.edu), The Johns Hopkins University, Dept. of Applied Mathematics and Statistics, 3400 N. Charles St., Baltimore, MD 21218-2682. *Hitting-time Distributions for Markov Chains*. Preliminary report.

I will discuss several representations of hitting-time distributions for (finite-state, ergodic, time-reversible, continuous-time) Markov chains and stochastic constructions corresponding to these representations. Examples of representations of distributions considered, each of which has a link to published work of Mark Brown, are those of

- (i) the hitting time from state 0 of any given state for a birth-and-death chain on the nonnegative integers, as a convolution of exponential distributions;
- (ii) the hitting time from stationarity of any given state, as a mixture of  $N$ -fold convolution powers of a certain distribution, with  $N$  geometrically distributed; and
- (iii) the hitting time from stationarity of any given set of states, as a convolution of certain modified-exponential distributions that relate to the interlacing eigenvalue theorem for bordered symmetric matrices.

Intertwinings of Markov semigroups (I'll explain what these are) play a key role in the stochastic constructions. (Received September 22, 2009)