Markov processes with product-form stationary distribution

Krzysztof Burdzy, *University of Washington*
David White, *Belmont University*

Abstract
We consider a continuous time Markov process *(X,L)*, where *X* jumps between a finite number of states and *L* is a piecewise linear process with state space R^d. The process *L* represents an "inert drift" or "reinforcement." We find sufficient and necessary conditions for the process *(X,L)* to have a stationary distribution of the product form, such that the marginal distribution of *L* is Gaussian. We present a number of conjectures for processes with a similar structure but with continuous state spaces.

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