Nonlinearly Perturbed Birth-Death-Type Models

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April 2016

Abstract: Asymptotic expansions for stationary and conditional quasi-stationary distributions of nonlinearly perturbed birth-death-type semi-Markov models are presented. Applications to models of population growth, epidemic spread and population genetics are discussed.

Key words: Markov chain, Semi-Markov process, Nonlinear perturbation, Stationary distribution, Expected hitting time, Laurent asymptotic expansion, Population dynamics model, Epidemic model, Population genetics model.

AMS Mathematical Subject Classification 2010. Primary: 60J10, 60J27, 60K15; Secondary: 60J28, 65C40, 92D25.

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