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Nonhomogeneous Markov chains and quadratic stochastic processes in biology

Nonlinear mappings appear in many branches of mathematics and its applications. In mathematical biology, so-called quadratic stochastic processes (QSP) are used to describe the evolution of biological systems. We examine the limit behavior of such processes as well as the relationship between the asymptotic properties of nonhomogeneous Markov chain and asymptotic properties of QSP. Moreover, we study the geometric structure of the set of Markov chains with a particular limit bahavior.