

Dynamical behaviors of the stochastic multimolecule oscillatory reaction model with Poisson jumps

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Abstract

This paper reveals long time dynamics in the stochastic multimolecule oscillatory reaction model with Poisson jumps. First, this system is proved to have a unique global positive solution via the Lyapunov technique. Second, the existence and uniqueness of general random attractors for its stochastic homeomorphism flow is proved by the comparison theorem, and meanwhile, a criterion for the existence of singleton sets is obtained. Finally, numerical simulations are used to illustrate the predicted random attractors.

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