Stochastic SIR Models

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Abstract: We present a joint work with Dieu, Nguyen, and Du on a stochastic SIR epidemic model represented by a system of stochastic differential equations with a degenerate diffusion. We focus on asymptotic behavior of the system, provide sufficient conditions that are very close to necessary for the permanence, and develop ergodicity of the underlying system. It is proved that the transition probabilities converge in total variation norm to the invariant measure. Rates of convergence are also ascertained.

References

[1] N.T. Dieu, D.H. Nguyen, N.H. Du, and G. Yin (2016). Classification of asymptotic behavior in a stochastic SIR model, *SIAM Journal on Applied Dynamic Systems*, **15**, 1062–1084.