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Dynamical Behavior of an Epidemic Model  
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### Abstract

It is known that natural systems are undeniably subject to random fluctuations, arising from either environmental variability or internal effects. In this paper, a spatial version of an epidemic model which contains some important factors, such as noise on the infective and diffusion processes on both the susceptible and infective, is investigated. From the numerical results, we know that noise can induce instability and enhance the oscillation of the species density and the cooperation between noise and diffusion gives rise to the appearance of a rich transport phenomenology. Our results show that noise can play a prominent role in the spatial epidemic model.

### Keywords

Spatial epidemic model, Noise, Pattern formation.

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