Asymptotic profiles of the endemic equilibrium of a diffusive SIS epidemic system with saturated incidence rate and spontaneous infection

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May 5, 2020

Abstract

An SIS epidemic reaction-diffusion model with saturated incidence rate and spontaneous infection is considered. We establish the existence of endemic equilibrium by using a fixed point theorem. We mainly investigate the effects of diffusion and saturation on asymptotic profiles of the endemic equilibrium. Our analysis shows that the spontaneous infection can enhance persistence of infectious disease.

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