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Dynamical analysis of a discrete-time SIS epidemic model on complex networks. (English)

Summary: In this letter, a discrete SIS (susceptible-infected-susceptible) epidemic model on complex networks is presented. Firstly, the non-negativity and the boundedness of solutions are studied. Secondly, the basic reproduction number $R_0$ is calculated. Thirdly, applying the Lyapunov direct method of difference equations, the global asymptotic stability of disease free equilibrium is investigated. Finally, there give some simulations.

MSC:
92D30 Epidemiology
92C42 Systems biology, networks
34D23 Global stability of solutions to ordinary differential equations

Keywords:
discrete SIS model; basic reproduction number; complex networks; Lyapunov function

Full Text: DOI

References:

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