Dynamical switching of networks facilitates endemicity in the susceptible-infected-susceptible epidemic model

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Abstract

Various data recorded from humans, animals, and computers suggest that networks underlying epidemic processes are time-varying. Epidemic processes on temporal networks are complicated by complexity of time-varying networks. In particular, how the two timescales, one from that of an epidemic process and the other from the dynamics of network structure, interplay and potentially change the traditional understanding of epidemic processes on networks, which is mostly based on static networks, has to be revealed [1]. In this presentation, we report a theory to understand the susceptible-infected-susceptible epidemic model on arbitrary temporal networks [2]. We show that, under our modelling framework, temporality of networks always lessens the epidemic threshold such that infections persist more easily in temporal networks than in their static counterparts. We also propose a quantity to account for why the epidemic threshold is substantially lowered in some temporal networks than others.

References

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