The effects of individual versus community-driven isolation protocols on SIS epidemic persistence

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Abstract

We study theoretically the *contact process with isolation and contact process with vigilance on high degree random graphs. Our main result on the contact process with isolation shows that, like the classical contact process, it exhibits at least stretched exponential survival for all choices of infection spreading rate λ and isolation rate α on these graphs. In contrast, we show that that the contact process with vigilance exhibits a phase transition in λ for every fixed α on graphs satisfying an isoperimetric inequality. From this contrast, we observe that an individual-based versus a community-based response to an epidemic can have a substantially different impact on survival and extinction of an epidemic.*

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