DEGREE-PENALIZED CONTACT PROCESSES

ZSOLT BARTHA (TU EINDHOVEN)

ABSTRACT. We study degree-penalized contact processes on Galton-Watson trees and the configuration model. In the usual contact process each vertex of a graph is either infected or healthy with the following dynamics: infected vertices heal with rate 1, until which time they infect each of their neighbors with rate λ. We modify this model by replacing λ by a decreasing function of the degrees of the sending and receiving vertices, in order to slow down the spread to and from "superspreaders". We identify several phase transitions in the long-term behavior of the process as the parameters of the model vary.