

Revisiting the Contact Process

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Introduced by T. Harris more than forty years ago, the classical contact process is a simple stochastic model to describe the propagation of an infection in a population, where the individuals sit on the vertices of a graph, also called sites. It can be thought as a Markov process on the space of subsets of the set of all sites, identifying the state "infected" or "healthy" of each individual. Its description is simple and in the most natural examples the model shows interesting features, like dynamical phase transition and metastability, which have been precisely described. This process can be described through paths in a random space-time graph, also called Harris system. Several variations have been considered recently, including the case where the sites are given by the vertices of a random graph, or the contact process with two types of individuals. In this talk I would like to describe another variation, where one loses the Markov property but for which the investigation of phase transition, thought in terms of percolation properties, remains interesting. This is based on joint work with L.R. Fontes, D. Marchetti, and T. Mountford. If time allows I would like to discuss features of the metastable behavior of a contact process with two types of individuals, and which is work done by my PhD student at UFRJ, Mariela P. Machado.