



The contact process on random graphs

Daniel Valesin

Abstract. The contact process, introduced by Ted Harris in 1974, is a class of interacting particle systems which can be taken as a model for the spread of epidemics in a population modelled by a graph. Although the process was introduced and first studied in lattices, in the last two decades there has been significant interest and progress on its behavior on random graphs that capture aspects of real-world populations. The aim of these notes is to illustrate this with some of the recent advances, as well as to provide a point of entry into the topic. After giving a crash course on the contact process and related tools, we focus on two subjects: metastability results that hold independently of the geometry of the underlying graph, and the behavior on Bienaymé–Galton–Watson trees.

Keywords. interacting particle systems, contact process, metastability.