

# Contact processes and moment closure on adaptive networks

Anne-Ly Do, Thilo Gross

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Contact processes describe the transmission of distinct properties of nodes via the links of a network. They provide a simple framework for many phenomena, such as epidemic spreading and opinion formation. Combining contact processes with rules for topological evolution yields an adaptive network in which the states of the nodes can interact dynamically with the topological degrees of freedom. By moment-closure approximation it is possible to derive low-dimensional systems of ordinary differential equations that describe the dynamics of the adaptive network on a coarse-grained level. In this chapter we discuss the approximation technique itself as well as its applications to adaptive networks. Thus, it can serve both as a tutorial as well as a review of recent results.

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