Stationary patterns in bistable reaction-diffusion cellular automata

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Abstract

We study stationary patterns of bistable reaction-diffusion cellular automata, i.e., models with discrete time, space and state. While stationary k-periodic patterns occur naturally in many situations in large (exponential) numbers, there exist extreme situations for which there are no heterogeneous patterns. Moreover, nonmonotone dependence of the number of stationary patterns on the discrete diffusion parameter is shown to be natural in the fully discrete setting.