Newman, Charles M.; **Volchan, Sergio B.**

Persistent survival of one-dimensional contact processes in random environments. (English)

Zbl 0863.60098
Ann. Probab. 24, No. 1, 411-421 (1996).

The authors consider a one-dimensional contact process in a random environment. It is defined as a Markov process with state space $\{0,1\}^{\mathbb{Z}}$ with transitions $1 \to 0$ at site x with rate $\delta(x)$ and $0 \to 1$ at site x with rate $\varepsilon[\eta_t(x-1)+\eta_t(x+1)]$, where η_t is the state of the process. The focus of the article is on the event that the process η_t starting from the point $\eta_0^{(j)}(x) = \begin{cases} 1, & x = j, \\ 0, & x \neq j, \end{cases}$ is not identically zero for every $t > 0$ (i.e. survives). In particular, it is proved that if $u\mathbb{P}(-\log \delta(x) > u)$ tends to $+\infty$ as $u \to +\infty$, then η_t survives for every $\varepsilon > 0$. The discrete and continuous time processes are considered.

Reviewer: A.Khorunzhy (Khar'kov)

MSC:

60K35 Interacting random processes; statistical mechanics type models; percolation theory

82B44 Disordered systems (random Ising models, random Schrödinger operators, etc.) in equilibrium statistical mechanics

Cited in **8** Documents

Keywords:

survival; contact process in a random environment; discrete and continuous time processes

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