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One dimensional nearest neighbor exclusion processes in inhomogeneous and random environments. (English) Zbl 1141.82015

J. Stat. Phys. 129, No. 2, 193-203 (2007).

The authors discuss the existence problem of reversible and nonreversible stationary distributions for the exclusion processes in inhomogeneous and random environments. They prove that for an exclusion process with i.i.d. p_i 's, if there is a $\varepsilon > 0$ such that $P(p_0 \geq \frac{1}{2} - \varepsilon) > 0$ and $P(p_0 \leq \frac{1}{2} + \varepsilon) > 0$, then all stationary distributions are reversible; if for some $\varepsilon > 0$ such that $P(p_0 < \frac{1}{2} - \varepsilon) = 1$ or $P(p_0 > \frac{1}{2} + \varepsilon) = 1$, then there exists a nonreversible stationary distribution. In the cases of an i.i.d. environment, they got a necessary and sufficient condition for the existence of nonreversible stationary distributions.

Reviewer: Gen Qi Xu (Tianjin)

MSC:

[82C70](#) Transport processes in time-dependent statistical mechanics

[82C22](#) Interacting particle systems in time-dependent statistical mechanics

Cited in **5** Documents

Keywords:

[exclusion processes](#); [nonreversible stationary distributions](#)

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