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Large deviations for occupation time profiles of random interlacements. (English)

Zbl 1314.60078

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Authors' abstract: We derive a large deviation principle for the density profile of occupation times of random interlacements at a fixed level in a large box of \mathbb{Z}^d , $d \geq 3$. As an application, we analyze the asymptotic behavior of the probability that atypically high values of the density profile insulate a macroscopic body in a large box. As a step in this program, we obtain a similar large deviation principle for the occupation-time measure of Brownian interlacements at a fixed level in a large box of \mathbb{R}^d , and we derive a new identity for the Laplace transform of the occupation-time measure, which is based on the analysis of certain Schrödinger semigroups.

Reviewer: Neville Weber (Sydney)

MSC:

60F10 Large deviations

60G60 Random fields

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

60J45 Probabilistic potential theory

Cited in 1 Review
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Keywords:

large deviation principle; random interlacements; occupation time; Schrödinger semigroups

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