

Séminaire de mathématiques et leurs applications

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Elena Zhizhina

Russian Academy of Sciences, Moscow.

Title: Large time behaviour of symmetric random walk in high-contrast periodic environment.

Abstract: Asymptotic properties of a symmetric random walk in a high contrast periodic medium on the lattice are considered. We show that under proper diffusive scaling the random walk exhibits a non-standard limit behaviour. In addition to the coordinate of the random walk in \mathbb{Z}^d we introduce an extra variable that characterizes the position of the random walk in the period and show that this two-component process converges in law to a limit Markov process. The components of the limit process are mutually coupled, thus we cannot expect that the limit behaviour of the coordinate process is Markov.