

Quenched exit estimates and ballisticity conditions for higher-dimensional RWRE

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Abstract:

We consider RWRE in dimensions larger than or equal to 4. The main results of this talk are twofold: First we deal with a certain class of ballisticity conditions introduced by Sznitman and denoted $(T)_\gamma$. It is known that they imply a ballistic behaviour of the RWRE and are equivalent for parameters in $(\gamma_d, 1)$, where γ_d is a constant depending on the dimension and taking values in the interval $(0.366, 0.388)$. Here we show that the conditions are in fact equivalent for all parameters $\gamma \in (0, 1)$.

As a second main result, we answer affirmatively a strengthened version of a conjecture by Sznitman concerning quenched exit estimates. In particular, the proof of our first result takes advantage of these estimates.

Both results are based on techniques developed in a paper on slowdowns of RWRE by Noam Berger.

(joint work with Alejandro Ramírez)