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Some results on regularity and monotonicity of the speed for excited random walks in low dimensions. (English) Zbl 1478.60138


Summary: Using renewal times and Girsanov’s transform, we prove that the speed of the excited random walk is infinitely differentiable with respect to the bias parameter in $(0, 1)$ in dimension $d \geq 2$. At the critical point 0, using a special method, we also prove that the speed is differentiable and the derivative is positive for every dimension $2 \leq d \neq 3$. However, this is not enough to imply that the speed is increasing in a neighborhood of 0. It still remains to prove that the derivative is continuous at 0. Moreover, this paper gives some results of monotonicity for $m$-excited random walk when $m$ is large enough.

MSC:

60G50 Sums of independent random variables; random walks
60K05 Renewal theory
60K37 Processes in random environments

Keywords:

Girsanov’s transform; excited random walks

Full Text: DOI

References:


[23] Pham, C.-D., Monotonicity and regularity of the speed for excited random walks in higher dimensions, Electron. J. Probab., 20, (2015) · Zbl 1326.60096


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