

Speed of a random walk in a random environment with asymptotically decaying drift

Gunter Schütz - Forschungszentrum Jülich, Germany

We study the random walk on $Z^+ = \{0, 1, 2, \dots\}$ in a random environment with a deterministic drift that decays asymptotically as b/n^α . Here n is the distance from the reflecting origin and we consider the transient case $b < 0$, $0 < \alpha < 1/2$. We give sharp almost sure results on how far the random walk has moved away from the origin at time t . The key ingredient in our approach is the proof that the random walk trap gets trapped in the random environment in a sufficiently deep well of order $\log t$ at a distance $(C \log(t)/\log \log(t))^{1/\alpha}$, with a known constant C .

Joint work with S. Popov and C. Gallesco.