LARGE DEVIATION OF EMPIRICAL DISTRIBUTION OF BRANCHING RANDOM WALK (I): SCHRÖDER CASE

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Abstract: Given a super-critical branching random walk on $\mathbb{R}$ started from the origin, let $Z_n(\cdot)$ be the counting measure which counts the number of individuals at the n-th generation located in a given set. Under some mild conditions, it is known in [1] that for any interval $A \subset \mathbb{R}$, $\frac{Z_n(\sqrt{n}A)}{Z_n(\mathbb{R})}$ converges a.s. to $\nu(A)$, where ν is the standard Gaussian measure. In this work, we investigate the convergence rates of

$$\mathbb{P}\left(\frac{Z_n(\sqrt{n}A)}{Z_n(\mathbb{R})} - \nu(A) > \Delta\right),$$

for $\Delta \in (0, 1 - \nu(A))$, in Schröder case.

References

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