

On the Transience of Critical Branching Random Walks on the Line

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Keywords: Branching random walk, critical regime, recurrence, transience, minimal and maximal position, random weighted location measure, renewal theory

AMS: 60J80

Abstract

Gantert and Müller [2] recently proved that a critical branching random walk (BRW) on the integer lattice is transient by analyzing this problem within the more general framework of branching Markov chains and making use of Lyapunov functions. The main purpose of this talk based on the recent publication [1] is to explain how the same result can be derived quite elegantly and even extended to the nonlattice case within the theory of weighted branching processes. This is done by an analysis of certain associated random weighted location measures which, upon taking expectations, provides a useful connection to the well established theory of ordinary random walks with i.i.d. increments.

Acknowledgements: This is joint work with Matthias Meiners (Münster).

References

- [1] Alsmeyer, G., Meiners, M. (2008). A note on the transience of critical branching random walks on the line. *Proceedings of the Fifth Colloquium on Mathematics and Computer Science*, 421-436.
- [2] Gantert, N., Müller, S. (2006). The critical branching Markov chain is transient. *Markov Proc. Rel. Fields* **12**, 805-814.