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Some Exotic Behavior of Random Walks on Wreath Products

ABSTRACT

In his 1958 paper, "Mathematical Significance of Consistency Proofs", G. Kreisel asked whether model-theoretic independence proofs for arithm groups. The behavior of random walks on amenable groups of exponential growth is relatively poorly understood, partly because there are many different behaviors which are possible. The first known examples of many of these sorts of behaviors have been wreath products. Wreath products give a number of examples for which the return probability decays at rates that do not occur on Lie groups. They have also been used to disprove conjectures about the behavior of harmonic functions on groups of exponential growth as well give examples of groups on which inward biased walks can escape from the origin more quickly than unbiased walks.

We will present a number of these surprising examples and discuss their place in the general theory of random walks on groups.