

Institut für Optimierung und Diskrete Mathematik

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Random Walks on critical Percolation-Trees

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Bounds for the expected return probability of the delayed random walk on finite clusters of an invariant percolation on transitive unimodular graphs are derived. They are particularly suited for the case of critical Bernoulli percolation and the associated heavy-tailed cluster size distributions. The upper bound relies on the fact that cartesian products of finite graphs with cycles of a certain minimal size are Hamiltonian. For critical Bernoulli bond percolation on the homogeneous tree this bound is sharp. The asymptotic type of the expected return probability for large times t in this case is of order of the $3/4$ 'th power of $1/t$.

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