

Random Walks on the finite components of random Partial Graphs of Transitive Graphs

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The expected n -step return-probability of a random walk with symmetric transition probabilities on a random partial graph of a regular graph G of degree d with transitive automorphism group $\text{Aut}(G)$ is considered. The law of the random edge-set is assumed to be stationary with respect to some transitive subgroup of $\text{Aut}(G)$. By the spectral theory of finite random walks, bounds in terms of the expected number of open clusters per vertex and moments of the cluster size are obtained. The result shows that the return probability has an upper bound converging at the same rate as the random walk conditioned on families of finite clusters $|C|$ with mixing time of the order of $|C|^y$, where $y \leq 2 - 2/(d+2)$.