

Phase Transition and Critical Phenomena in Random Walks:

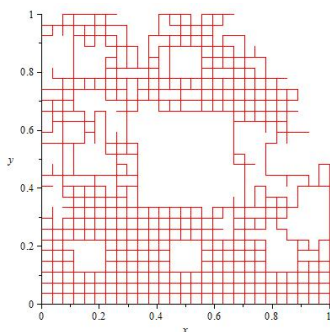
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1 Project Description

It is well known that the mean root square displacement of random walks defined on integer lattice Z^d follows the power law $Cn^{1/2}$ in all dimensions. Moreover such random walks are recurrent in $d = 1, 2$ and transient in $d \geq 3$. In this project we investigate the behavior of random walks defined on other graphs. More specifically we determine the mean root square displacement of random walks defined on $Z_2 \times Z_2$, the Sierpinski carpet, and generalized comb lattice as well as their recurrence/transience behavior. We will also study long jump random walks defined on the integer lattice. Analytical and simulation results will be presented.



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