

Recurrent Graphs where Two Independent Random Walks Collide Finitely Often

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Abstract

We present a class of graphs where simple random walk is recurrent, yet two independent walkers meet only finitely many times almost surely. In particular, the comb lattice, obtained from \mathbb{Z}^2 by removing all horizontal edges off the x -axis, has this property. We also conjecture that the same property holds for some other graphs, including the incipient infinite cluster for critical percolation in \mathbb{Z}^2 .

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