

# Random walks on two dimensional continuum percolation clusters

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We consider random graphs defined by a continuum percolation. The vertex set is given by the Poisson points in  $\mathbb{R}^d$ , and the edge set is determined by the random radii of the spheres centered at each points. Here, the radii of the spheres may not be bounded. When a connected subgraph with infinite size exists, we consider the simple random walk on it. For  $d = 2$ , under some conditions on the moment of the radii, we have the recurrence of the random walk.