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Connectivity Threshold of Random Geometric Graphs with Cantor Distributed Vertices

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For connectivity of \emph{random geometric graphs}, where there is no density for underlying distribution of the vertices, we consider $n\$ i.i.d. \emph{Cantor} distributed points on [0,1]. We show that for this random geometric graph, the connectivity threshold R_{n} , converges almost surely to a constant $1-2\pi$ where 0 < phi < 1/2, which for standard Cantor distribution is 1/3. We also show that $|R_n - (1 - 2 phi)|_1 \le 2$, C(phi), $n^{-1/d_{phi}}$ where C(phi) > 0 is a constant and $d_{phi} := - \{\log 2\}/\{\log phi\}\)$ is a the \emph{Hausdorff dimension} of the generalized Cantor set with parameter phi.

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