## Mathematics > Probability

## 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. lemph\{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 $\$ 1-2 \backslash p h i \$$ where $\$ 0<\backslash$ phi $<1 / 2 \$$, which for standard Cantor distribution is $1 / 3$. We also show that $\$ \backslash \mathrm{R} \_\mathrm{n}-(1-2 \backslash p h i) \backslash \_1$ \sim $2 \backslash$, C(\phi) ${ }^{n} \mathrm{n}^{\wedge}\left\{-1 / \mathrm{d} \_\{\text {|phi\}\}\$ where } \$ \mathrm{C}(\backslash \text { phi) > } 0 \$ \text { is a constant and \$d_\{|phi\} :=- }\right.$ $\{\backslash \log 2\} /\{\backslash \log \backslash p h i\} \$$ is a the $\backslash e m p h\{H a u s d o r f f$ dimension\} of the generalized Cantor set with parameter \$1phi\$.

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