

# Critical point and percolation probability in a long range site percolation model on $Z^d$

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## **Abstract:**

Consider an independent site percolation model with parameter  $p \in (0, 1)$  on  $Z^d$ ,  $d \geq 2$ , where there are only nearest neighbor bonds and long range bonds of length  $k$  parallel to each coordinate axis. We show that the percolation threshold of such a model converges to  $p_c(Z^d)$  when  $k$  goes to infinity, the percolation threshold for ordinary (nearest neighbor) percolation on  $Z^d$ . We also generalize this result for models whose long range bonds have several lengths.

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