

Spread of activation on random graphs

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We consider the spread of activation in the Erdős-Rényi random graph $G_{n,p}$ from a fixed set of activated vertices $A_n(0)$ with $|A_n(0)|$ depending on n . Any vertex which is linked to at least 2 activated vertices becomes activated. We describe and analyse the process of activation. In particular, when $p = \frac{c}{n}$ and $|A_n(0)| = o(n)$, the activation does not spread through a positive part of the vertices (as $n \rightarrow \infty$). When $\frac{1}{p} = o(n)$ we show that, depending on $|A_n(0)|$ the total number of activated vertices varies from $o(n)$ to $n - o(n)$. This indicates existence of a phase transition along different parameters of the model.