Bootstrap Percolation on the Random Graph $G_{n,p}$.

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Bootstrap percolation on a graph G is defined as the spread of activation according to the following rule, with a given threshold $r \geq 2$:

- We start with a set $\mathcal{A}(0) \subseteq V(G)$ of *active* vertices where $V(G)$ denotes the set of vertices in the graph.

- Each inactive vertex that has at least r active neigbours becomes active and can in turn participate to the spread of activation.

I will first give a short introduction to the theory of random graphs and introduce the concept of bootstrap percolation.

In a second part, I will expose some results found on the spread of activation on the random graph $G_{n,p}$ also called Erdös–Rényi random graph. The model exhibits a phase transition depending on the parameters p (probability of an edge between 2 vertices) and $A(0) = |\mathcal{A}(0)|$ (number of initially activated vertices):

- either the activation dies out quickly and not more than $A^* = 2A(0)$ vertices are eventually activated

- or the activation spreads to almost all the graph, $A^* = n - o(n)$.

This is a joint work with Svante Janson, Tomasz Łuczak and Tatyana Schmeling.