The Constrained-degree percolation model

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Abstract. Let k be a positive integer and consider a sequence of iid uniform random variables on $[0.1]$ indexed by the edges e of a graph G, denoted by Ue. In the Constrained-degree percolation model each bond is closed at $t = 0$ and tries to become open at time $t = Ue$, it succeeds if both its end-vertices have degrees at most $k - 1$ by that time.

We prove a non-trivial phase transition theorem for this model on the 2D square lattice, as well on the d-ary regular tree. W e also prove that on the square lattice the infinite cluster is unique in the supercritical phase.

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