SIZES OF THE LARGEST CLUSTERS FOR SUPERCRITICAL PERCOLATION ON RANDOM RECURSIVE TREES

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We consider Bernoulli bond-percolation on a random recursive tree of size $n \gg 1$, with supercritical parameter $p(n) = 1 - t/\ln n + o(1/\ln n)$ for some $t > 0$ fixed. We show that with high probability, the largest cluster has size close to $e^{-t}n$ whereas the next largest clusters have size of order $n/\ln n$ only and are distributed according to some Poisson random measure.

The approach relies crucially on a coupling due to Iksanov and Möhle, between the so-called cutting down of random recursive trees and a random walk in the domain of attraction of a completely asymmetric Cauchy process.