

# QUENCHED CRITICAL PERCOLATION ON GALTON-WATSON TREES

ELEANOR ARCHER

ABSTRACT. We consider critical percolation on a supercritical Galton-Watson tree with mean offspring  $m > 1$ . It is well known that the critical percolation probability for this model is  $1/m$  and that the root cluster has the distribution of a critical Galton-Watson tree. For this reason, many properties of the cluster are well understood, for example the probability of surviving for at least  $n$  generations, the limiting law of the size of the  $n$ -th generation conditioned on survival (the “Yaglom limit”), and convergence of the entire cluster to a branching process/stable tree. All these results are annealed, that is, we take the expectation with respect to the distribution of the tree and the percolation configuration simultaneously. The goal of this talk is to consider the quenched regime: are the same properties true for almost any realisation of the tree? We will see that this is indeed the case, although some scaling constants will depend on the tree.

[Joint work with Quirin Vogel and an ongoing project with Tanguy Lions]

UNIVERSITÉ PARIS DAUPHINE  
*Email address:* `eleanor.archer@dauphine.psl.eu`