

Scaling limit of a branching process in random environment

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Abstract

A branching process in random environment (BPRE) is a Galton-Watson tree whose offspring distribution is re-sampled at each generation, in an i.i.d. way. These models have been subject to much attention recently, in particular « lateral » scaling limits (i.e. the limiting profile of the size of successive generations). We assume that offspring distributions have mean 1 a.s. and finite expected variance. We show that for almost all sequences of offspring distributions, the whole genealogical structure of a tree conditioned to be large converges to the Brownian Continuum Random Tree - as in the standard Galton-Watson tree setting.

Changing the offspring distribution adds asymmetry and dependencies in many places. This requires drastical changes to the usual arguments, in particular for the height process. We propose for the latter a simple interpretation, that is new to our knowledge.

This is a joint work with Daniel Kious and Cécile Mailler.