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"Explosion of growing trees" Joint work with R. Abraham

Abstract

I will present a construction of a Levy continuum random tree (CRT) associated with a super-critical continuous state branching process using a Girsanov's theorem. I will also extend the pruning procedure to this super-critical case. The pruning procedure allows to construct a decreasing Levy-CRT-valued Markov process, such that it is sub-critical for positive time and super-critical for negative time. I will then consider A the explosion time of the CRT: the smaller (negative) time for which the Levy CRT has finite mass. I will give the law of A as well as the distribution of the CRT just after this explosion time. The CRT just after explosion can be seen as a CRT conditioned not to be extinct which is pruned with an independent intensity related to A . I will present the evolution of the CRT-valued process after the explosion time. This extends results from Aldous and Pitman on Galton-Watson trees. For the particular case of the quadratic branching mechanism, after explosion, the total mass of the CRT behaves like the inverse of a stable subordinator with index $1/2$. This result is related to the size of the tagged fragment for the fragmentation of Aldous' CRT.

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