

ON THE PROFILE OF TREES WITH A GIVEN DEGREE SEQUENCE

ABSTRACT. Let $\mathbf{s} = (N_i; i \geq 0)$ be a finite sequence of nonnegative integers satisfying $\sum_i N_i = 1 + \sum_i iN_i$. From such sequence, we construct a uniform tree with a given degree sequence (TGDS), sampling uniformly at random a plane tree having N_0 vertices with zero children, N_1 vertices with one children, N_2 vertices with two children, etc. A more general model are uniform graphs with a given degree sequence, which have been used to model real world networks; in this talk we only consider TGDS. We will introduce the codification of TGDS using a discrete Exchangeable Increments (EI) process, and give an algorithm to simulate them. We focus on the population profile (sequence of generation sizes) of TGDS. We analyse the limit of the population profile of such trees, using a novel path transformation of EI processes. Finally, we study their relationship with Galton-Watson trees, which allows us to recover the convergence of the profile for Galton-Watson trees.