

External lengths in Kingman's coalescent and an intriguing urn model

Goetz Kersting, Goethe University Frankfurt, Germany

We obtain asymptotic normality of the total length of external branches in Kingman's coalescent and a Poisson point process description of the external branches of maximal length. The proofs use an embedded Markov chain, which can be described as follows: Take an urn with n *black* balls. Empty it in n steps according to the rule: In each step remove a randomly chosen pair of balls and replace it by one *red* ball. Finally remove the last remaining ball. Then the numbers U_k , $0 \leq k \leq n$, of red balls after k steps exhibit an unexpected property: (U_0, \dots, U_n) and (U_n, \dots, U_0) are equal in distribution. (joint work with Svante Janson)