

GENERAL EDGEWORTH EXPANSIONS WITH APPLICATIONS TO PROFILES OF RANDOM TREES

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We prove an asymptotic Edgeworth expansion for the profiles of certain random trees including binary search trees, random recursive trees and plane-oriented random trees, as the size of the tree goes to infinity. All these models can be seen as special cases of the one-split branching random walk for which we also provide an Edgeworth expansion. These expansions lead to new results on mode, width and occupation numbers of the trees, settling several open problems raised in Devroye and Hwang [1], Fuchs, Hwang and Neininger [3], and Drmota and Hwang [2]. The aforementioned results are special cases and corollaries of a general theorem: an Edgeworth expansion for an arbitrary sequence of random or deterministic functions $L_n : \mathbb{Z} \rightarrow \mathbb{R}$ which converges in the mod- ϕ sense. The talk is based on a recent joint [4] work with Z. Kabluchko (Münster, Germany) and H. Sulzbach (Birmingham, UK).

REFERENCES

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