

به نام او

سمینار احتمال

Height of Random Trees and an Application in Random Apollonian Networks

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Abstract.

Consider a random binary tree generated in the following way. Start with a single node, the root. In the first step, add two children for the root. In every subsequent step, choose a leaf uniformly at random and add two children for it. Stop when you have n nodes. What is the behavior of the height of the obtained random tree? It follows from a general theorem of Broutin and Devroye (Large Deviations for the Weighted Height of an Extended Class of Trees, *Algorithmica*, 2006) that for n large enough, the height is concentrated around $c \log n$, where $c \sim 4.31$ is the unique solution greater than 1 to $c \exp(1/c) = 2e$. We prove this theorem and mention its application in the analysis of random Apollonian networks

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