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Iterated jumps of perfect subtrees of positive trees.

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A (binary) tree is *positive* iff its infinite paths form a set with positive Lebesgue measure. It is a well-known phenomenon in algorithmic randomness that positive trees contain infinite paths with weak computational power. By Cantor, positive trees always have perfect subtrees and even positive perfect subtrees. Chong et al. [1] studied computational power of perfect subtrees of positive trees, and to some extent showed that positive trees also contain perfect subtrees of weak computational power. This work was followed up by Barmpalias and Wang [2], by Barmpalias and Zhang [3], and also by Greenberg, J. Miller and Nies [4]. This talk will survey the main results in the above works, and also sketch a recent result that every Δ_n positive tree contains a low_n perfect subtree.

[1] CHONG, CHITAT AND LI, WEI AND WANG, WEI AND YANG, YUE, *On the computability of perfect subsets of sets with positive measure*, ***Proceedings of the American Mathematical Society***, vol. 147 (2019), no. 9, pp. 4021–4028.

[2] BARMPALIAS, GEORGE AND WANG, WEI, *Pathwise-randomness and models of second-order arithmetic*, ***Information and Computation***, vol. 299 (2024), 105181.

[3] BARMPALIAS, GEORGE AND ZHANG, XIAOYAN, *Growth and irreducibility in path-incompressible trees*, ***Information and Computation***, vol. 297 (2024), 105136.

[4] GREENBERG, NOAM AND MILLER, JOSEPH S. AND NIES, ANDRÉ, *Highness properties close to PA completeness*, ***Israel Journal of Mathematics***, vol. 244 (2021), pp. 419–465.