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Discounted tree sums in branching random walks.

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This talk is based on a joint work with Eile Aïdékon and Zhan Shi. Let $(V(u),\, u \in T)$ be a (supercritical) branching random walk and $(\eta_u,\, u \in T)$ be positive marks on the vertices of the tree, distributed in an i.i.d. fashion. Following Aldous and Bandyopadhyay (2005), for each infinite ray ξ of the tree, we associate the {\it discounted tree sum} $D(\xi)$ which is the sum of the $e^{-V(u)}\eta_u$ taken along the ray. We take interest in the finiteness of $\sup_\xi D(\xi)$. To this end, we study the extreme behaviour of the local time processes of the paths $(V(u),\, u \in \xi)$. It answers a question of Nicolas Curien, and partially solves Open Problem 31 of Aldous and Bandyopadhyay.

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