EFFECTIVE CONDUCTANCES OF BRANCHING RANDOM NETWORKS

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Let T be a supercritical Galton-Watson tree endowed with a family of resistances (r(e)). Following Addario-Berry, Broutin and Lugosi (2009) and Lyons and Pemantle (1992), we are interested in the following two choices of (r(e)):

(i) $r(e) = m^{d(e)}\xi(e)$ with m the mean number of offsprings of T, d(e) the height of the edge e and $\xi(e)$ a family of i.i.d. positive random variables;

(ii) $r(e) = \prod_{s \leq e} A(s)$ with a family (A(e)) of i.i.d. positive random variables.

We study the asymptotic behaviors of the effective conductances between the root and the vertices in the n-th generation of T, by way of a class of recursive equations on trees.

This talk is based on a joint work with Dayue Chen (Beijing University) and Shen Lin (Paris 6).