Brownian motion on stable looptrees

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Stable looptrees
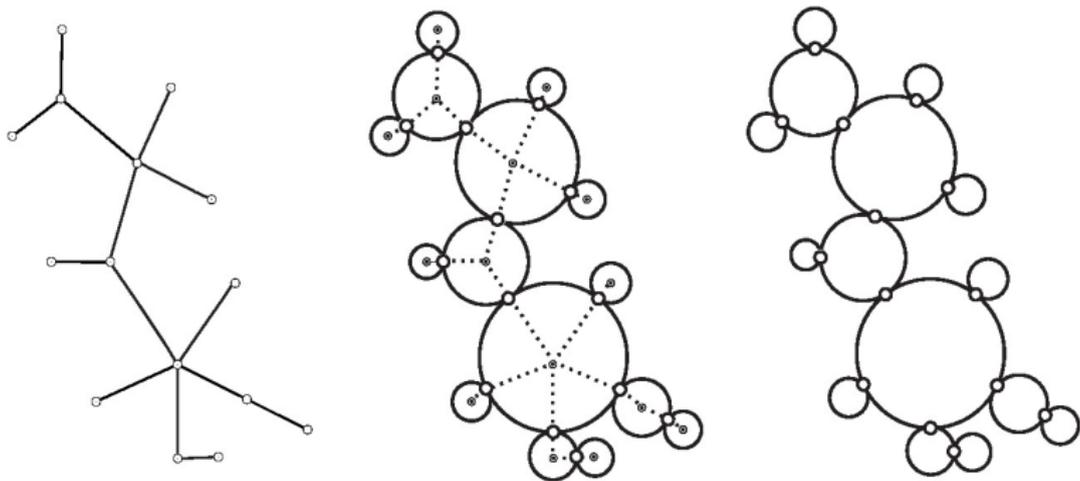
[Image by Igor Kortchemski, from http://igor-kortchemski.perso.math.cnrs.fr/images/loopdiscret.jpg.]

▶ Arise as scaling limits of critical percolation boundaries on random (uniform) infinite triangulation models.
▶ Can be thought of as a countable collection of loops glued along a tree structure in a self-similar way.

Random Walks on Looptrees
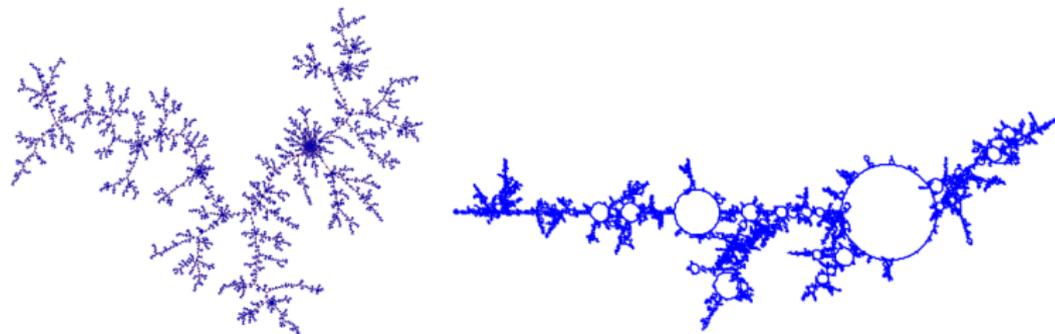
[$\mathcal{T}_\alpha$ and $\mathcal{L}_\alpha$, with $\alpha = \frac{3}{2}$. Picture from https://arxiv.org/pdf/1307.6818.pdf, by Nicolas Curien and Igor Kortchemski.]

By considering electrical resistance on these looptrees, we obtain:

▶ random walk invariance principles,

▶ precise heat kernel estimates,

▶ precise volume growth results for the looptrees.