

ON ENTRANCE BOUNDARIES AND A GENERALISED NOTION OF AN INTERLACEMENT

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In a recent sequence of articles, various authors analysed under which conditions self-similar Markov processes admit to be started in 0. This problem is intimately related to starting Lévy processes in $-\infty$.

In this talk, we will elude that questions of this type are related to a generalised notion of an interlacement. Interlacements were introduced by Sznitman [1] as a model for a fabric. Originally, it was defined as a random collection (Poisson point process) of paths in \mathbb{Z}^d each performing a simple random walk. More generally, one can introduce the concept for any Feller process: intuitively, it is a Poisson point process whose points are càdlàg paths that behave like the Markov process after entrance into arbitrarily large compact sets. So different interlacements just differ by the way how compact sets are *entered*.

We introduce this concept rigorously and show its connections to so called entrance families. We provide an integral representation on the basis of extremal interlacements. The extremal interlacements are in a way natural candidates for the objects described in the first paragraph. More explicitly, any extremal interlacement with the properties that

- the paths of the interlacement come from the boundary (down from infinity) in finite time and
- the total number of paths of the interlacement is finite

allows to define a process started at the corresponding boundary point that leave the boundary and not come back. We will provide examples and also point out how one can treat regular boundary points.

The theory is tightly related to the theory of entrance boundaries.

REFERENCES

- [1] A.S. Sznitman. *Vacant set of random interlacements and percolation*, Ann. Math., pp. 2003-2087 (2010).