Shape theorem for first-passage percolation on random geometric graphs

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Abstract

On the infinite connected component of a supercritical random geometric graph on $\mathbb{R}^d$, we consider first-passage percolation with independent and identically distributed passage times. We provide sufficient conditions on the passage times for a shape theorem to hold in this setting, and we show that the limiting shape is an Euclidean ball. For the special case of the Richardson model (exponentially distributed passage times), we further show that the growth process induced by first passage percolation converges weakly to a spatial branching process, in the joint limit of large intensities and slow times. Joint work with Cristian Coletti, Lucas R. de Lima, Alexander Hinsen and Benedikt Jahnel