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Stationary random graphs with prescribed iid degrees on a spatial Poisson process

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Abstract

Let $[mathcal{P}]$ be the points of a Poisson process on RR^d and F a probability distribution with support on the non-negative integers. Models are formulated for generating translation invariant random graphs with vertex set $[mathcal{P}]$ and iid vertex degrees with distribution F, and the length of the edges is analyzed. The main result is that finite mean for the total edge length per vertex is possible if and only if F has finite moment of order $(d+1)/d$.

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