

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

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Abstract

Let $\{P\}$ be the points of a Poisson process on $\mathbb{R}^d$ and F a probability distribution with support on the non-negative integers. Models are formulated for generating translation invariant random graphs with vertex set $\{P\}$ 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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