

Local convergence of spatial Gibbs random graphs

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Abstract:

The spatial Gibbs random graphs, introduced in [2], is embedded in the space of integer numbers, defined through a probability measure that favors graphs of small diameter but penalizes the presence of edges whose extremities are distant in the geometry of the ambient space. In [2] these graphs were shown to exhibit behavior related to the formation of hierarchical structures of edges organized so as to produce a small diameter. We prove in [1] that, for certain values of the underlying parameters, the spatial Gibbs graphs may or may not converge locally.

[1] E.O. Endo, D. Valesin. Local limits of spatial Gibbs random graphs. arXiv:1712.03841, 2017.

[2] J.-C. Mourrat, D. Valesin. Spatial Gibbs random graphs. *Ann. Appl. Probab.* Volume 28, Number 2, 751–789, 2018.