Stationary random graphs on Z with prescribed iid degrees and finite mean connections

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Abstract
Let F be a probability distribution with support on the non-negative integers. A model is proposed for generating stationary simple graphs on Z with degree distribution F and it is shown for this model that the expected total length of all edges at a given vertex is finite if F has finite second moment. It is not hard to see that any stationary model for generating simple graphs on Z will give infinite mean for the total edge length per vertex if F does not have finite second moment. Hence, finite second moment of F is a necessary and sufficient condition for the existence of a model with finite mean total edge length.

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