

Scale-free properties of the weights in a random graph model

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Abstract

Nowadays we can see networks everywhere. Every network can be interpreted as a graph with vertices and edges between them. In [2] Barabási and Albert realize that many real networks have power-law degree distribution. This property is called scale-free. They defined a graph evolving procedure, the preferential attachment rule, what leads to scale-free graphs.

In this paper we introduce a new modification of the N interaction model [3], which based on the 3-interactions model of Backhausz-Móri [1]. This is a growing model, what evolves by weights. In every step N vertices will interact by form a star graph. We can choose vertices uniformly or according to their weights (preferential attachment). Our aim is to show asymptotic power-law distributions of the weights. The proofs are based on discrete time martingale methods. Some numerical results are also presented.

Keywords: random graph, network, scale-free, power-law

MSC: 05C80, 60G42.

References

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