Properties of the Stochastic Kronecker graph

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The stochastic Kronecker graph model introduced by Leskovec et al. is a random graph with vertex set $\mathbb{Z}_2^n$ where two vertices $\mathbf{u}$ and $\mathbf{v}$ are connected with probability

$$\alpha^{\mathbf{u}\cdot\mathbf{v}}\gamma^{(\mathbf{1}-\mathbf{u})\cdot(\mathbf{1}-\mathbf{v})}\beta^{n-\mathbf{u}\cdot\mathbf{v}-(\mathbf{1}-\mathbf{u})\cdot(\mathbf{1}-\mathbf{v})}$$

independently of the presence or absence of any other edge. Here $0 < \alpha, \beta, \gamma < 1$ are fixed parameters.

They have shown empirically that the degree sequence resembles a power law degree distribution. We have shown that this does not describe the asymptotic behavior of the graph. We have also analyzed the subgraphs present in the graph and have looked at the typical neighbors of the vertecies.