On distribution of small subgraphs in the Buckley–Osthus random graph model

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We consider a random graph process $\left(G^n_{m,a}\right)_{n\geq 1}$ analogous to one suggested by Barabási and Albert (see [1] and [2]) in which, at each time step, a new vertex is added with m out-neighbours, chosen with probabilities proportional to their degree plus a strictly positive constant a, which is the so-called initial attractiveness of a vertex. Such model is a slight modification of the Buckley–Osthus random graph model (see [3]).

Let $\#(H,G)$ be the total number of subgraphs of graph G, which are isomorphic to graph H. A.A. Ryabchenko and E.A. Samosvat studied the asymptotic behavior of $\mathbb{E}\left(\#(H,G^n_{m,a})\right)$ in case $a=1$, where H is an arbitrary simple graph and $G^n_{m,a}$ is a random graph in the above-mentioned model (see [4]). Our talk is concerned with a generalization of their result for an arbitrary positive a.

References

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[4] A.A. Ryabchenko, E.A. Samosvat, *On the number of subgraphs of the Barabási–Albert random graph*, Izv. RAN. Ser. Mat., 76:3, pp. 183–202, 2012.