

Dmitry Shabanov,

Laboratory of Advanced Combinatorics and Network Applications,
National Research University Moscow Institute of Physics and Technology (MIPT)

On the limit distribution of the chromatic number of a random graph

A random graph in the binomial model $G(n,p)$ (a random graph in the Erdős-Renyi model) has been the main object of study in the probabilistic combinatorics since the end of the 50-s of the past century. One of first question posed by P. Erdős was a question concerning the asymptotic behavior of the chromatic number of the random graph $G(n,1/2)$, i.e. of the "typical" chromatic number of a graph on n vertices. This problem attracted the attention of all the world's leading researchers in the probabilistic combinatorics, but the law of the large numbers for the chromatic number of $G(n,1/2)$ was established by B. Bollobás only in 1998. For not fast growing product np , the chromatic number of $G(n,p)$ turns out to be concentrated in two consecutive numbers, which however were unknown. We will present our recent results where these values have been found for almost all functions $p=p(n)$ up to $o(n^{-3/4})$.