

[Alon, Noga](#)

**Choice numbers of graphs: A probabilistic approach.** (English) Zbl 0793.05076  
*Comb. Probab. Comput.* 1, No. 2, 107-114 (1992).

Summary: The choice number of a graph  $G$  is the minimum integer  $k$  such that for every assignment of a set  $S(v)$  of  $k$  colors to every vertex  $v$  of  $G$ , there is a proper coloring of  $G$  that assigns to each vertex  $v$  a color from  $S(v)$ . By applying probabilistic methods, it is shown that there are two positive constants  $c_1$  and  $c_2$  such that for all  $m \geq 2$  and  $r \geq 2$  the choice number of the complete  $r$ -partite graph with  $m$  vertices in each vertex class is between  $c_1 r \log m$  and  $c_2 r \log m$ . This supplies the solutions of two problems of *P. Erdős*, *A. L. Rubin* and *H. Taylor* [*Combinatorics, graph theory and computing*, Proc. West Coast Conf., Arcata/Calif. 1979, 125-157 (1980; [Zbl 0469.05032](#))], as it implies that the choice number of almost all the graphs on  $n$  vertices is  $o(n)$  and that there is an  $n$  vertex graph  $G$  such that the sum of the choice number of  $G$  with that of its complement is at most  $O(n^{1/2}(\log n)^{1/2})$ .

**MSC:**

[05C35](#) Extremal problems in graph theory  
[05C15](#) Coloring of graphs and hypergraphs

Cited in **2** Reviews  
Cited in **18** Documents

**Keywords:**

[choice number](#); [coloring](#)

**Full Text:** [DOI](#)

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