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*Cutting a graph into two dissimilar halves.* (In English)

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Given a graph  $G$  and a subset  $S$  of the vertex set of  $G$ , the discrepancy of  $S$  is defined as the difference between the actual and expected numbers of the edges in the subgraph induced on  $S$ . We show that for every graph with  $n$  vertices and  $e$  edges,  $u < e < n(n-1)/4$ , there is an  $n/2$ -element subset with the discrepancy of the order of magnitude of  $\sqrt{n}$ . For graphs with fewer than  $n$  edges, we calculate the asymptotics for the maximum guaranteed discrepancy of an  $n/2$ -element subset. We also introduce a new notion called “bipartite discrepancy” and discuss related results and open problems.

Classification:

05C99 Graph theory

Keywords:

discrepancy; numbers of the edges