

Zbl 626.05045

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Bounds on threshold dimension and disjoint threshold coverings. (In English)
SIAM J. Algebraic Discrete Methods **8**, 151-154 (1987). [0196-5212]

The threshold dimension (threshold covering number) of a graph G is the least number of threshold graphs needed to edgecover the graph G . If $tc(n)$ is the greatest threshold dimension of any graph of n vertices, we show that for some constant A ,

$$n - A\sqrt{n} \log n < tc(n) < n - \sqrt{n} + 1.$$

We establish the same bounds for edge-disjoint coverings of graphs by threshold graphs (threshold partitions). We give an example to show there exist planar graphs on n vertices with a smallest covering of A n threshold graphs and a smallest partition of B n threshold graphs, with $B = 1.5A$. Thus the difference between these two covering numbers can grow linearly in the number of vertices.

Classification:

05C70 Factorization, etc.

Keywords:

graph partition; threshold dimension; threshold covering number; threshold graphs; coverings; threshold partitions