
Zbl 485.05052

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On the covering of the vertices of a graph by cliques. (In English)

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Let $G(n)$ be a graph of n vertices. Denote by $f(G(n)) = t$ the smallest integer for which the vertices of $G(n)$ can be covered by t cliques. Denote furthr by $h(G(n)) = \ell$ the largest integer for which there are ℓ edges of $G(n)$, no two are in the same clique. K. R. Parthasarathy and *S.A.Choudum* [J. Math. Phys. Sci. Madras 10, 255-261 (1976; Zbl 335.05125)] conjectured that if $G(n)$ has no isolated vertices then (1) $f(G(n)) \leq h(G(n))$ holds for all graphs. A simple application of the probability method shows that (1) fails for almost graphs, as shown in the following theorem: There are positive absolute constants c_1 and c_2 for which for $n > m_0(c_1, c_2) c_1 \frac{n}{(\log n)^3} < \max \frac{f(G(n))}{h(G(n))} < c_2 \frac{n}{(\log n)^3}$.

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Classification:
05C70 Factorization, etc.
05C30 Enumeration of graphs and maps
05C35 Extremal problems (graph theory)

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clique covering