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Clique partitions and clique coverings. (In English)

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Only undirected graphs without loops or multiple edges are considered here. K_n is a clique on n vertices. The clique covering number and the clique partition number of the graph G is denoted by $cc(G)$ and $cp(G)$ respectively. The authors obtain asymptotic results for $cp(K_n - K_m)$ for m in the range $\sqrt{n} < m < n$; for example if $m = cn^a$, $1/2 < a < 1$, then $cp(K_n - K_m)$ is asymptotic to $c^2 n^{2a}$. They apply bounds developed in this connection to bound the maximum value of $cp(G)/cc(G)$ on graphs G with n vertices, showing it can grow as fast as cn^2 where $c > 1/64$. Further they prove that if T_n is K_n minus a matching then, for all n , $(\log n) - 1 \leq cc(T_n) \leq 2(\log n)$.

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Classification:

05C35 Extremal problems (graph theory)

05C70 Factorization, etc.

Keywords:

clique covering number; clique partition number; asymptotic results; bounds