Clique Covering Numbers and Linear Preservers

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Let $\mathcal{G}_n$ be the set of all simple loopless undirected graphs on n vertices. The clique covering number and some equivalent definitions are given and shown to be equivalent. Let T be a linear mapping, $T : \mathcal{G}_n \to \mathcal{G}_n$, that is, mappings that preserve unions ($T(G \cup H) = T(G) \cup T(H)$) and such that the image of the empty graph is the empty graph. We investigate those T that preserve sets of graphs defined by clique covering numbers.