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Summary: Let $S$ be a set of at least two vertices in a graph $G$. A subtree $T$ of $G$ is an $S$-Steiner tree if $S \subseteq V(T)$. Two $S$-Steiner trees $T_1$ and $T_2$ are edge-disjoint (resp. internally disjoint) if $E(T_1) \cap E(T_2) = \emptyset$ (resp. $E(T_1) \cap E(T_2) = \emptyset$ and $V(T_1) \cap V(T_2) = S$). Let $\lambda_G(S)$ (resp. $\kappa_G(S)$) be the maximum number of edge-disjoint (resp. internally disjoint) $S$-Steiner trees in $G$, and let $\lambda_k(G)$ (resp. $\kappa_k(G)$) be the minimum $\lambda_G(S)$ (resp. $\kappa_G(S)$) for $S$ ranges over all $k$-subsets of $V(G)$. Clearly, $\lambda_2(G)$ (resp. $\kappa_2(G)$) is the classical edge-connectivity $\lambda(G)$ (resp. connectivity $\kappa(G)$). In this paper, we study the $\lambda_3$-connectivity and $\kappa_3$-connectivity of a recursive circulant $G$, determine $\lambda_3(G) = \delta(G) - 1$ for each recursive circulant $G$, and $\kappa_3(G) = \delta(G) - 1$ for each recursive circulant $G$ except $G \cong G(2^n, 2)$.

MSC:
05C40 Connectivity
05C05 Trees
05C76 Graph operations (line graphs, products, etc.)

Keywords:
recursive circulant; $\lambda_3$-connectivity; $\kappa_3$-edge-connectivity

Full Text: DOI

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