Arbitrarily vertex decomposable suns with few rays

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Abstract

A graph G of order n is called arbitrarily vertex decomposable if for each sequence $(n_1, ..., n_k)$ of positive integers with $n_1 + ... + n_k = n$, there exists a partition $(V_1, ..., V_k)$ of the vertex set of G such that V_i induces a connected subgraph of order n_i, for all $i = 1, \ldots, k$. A sun with r rays is a unicyclic graph obtained by adding r hanging edges to r distinct vertices of a cycle. We characterize all arbitrarily vertex decomposable suns with at most three rays. We also provide a list of all on-line arbitrarily vertex decomposable suns with any number of rays.

Keywords: Arbitrary partition (vertex decomposition) of graphs, partition on-line, dominating cycle.