

ON LOWER BOUND TREES FOR THE RADIO NUMBER

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Abstract: A radio labeling of a graph G is a function f from the set of vertices $V(G)$ to the set of non-negative integers such that $|f(u) - f(v)| \geq \text{diam}(G) + 1 - d(u, v)$ for every pair of distinct vertices u, v of G . The radio number of G , denoted by $\text{rn}(G)$, is the smallest number k such that G has radio labeling f with $\max\{f(v) : v \in V(G)\} = k$. In [11, Theorem 3], Liu gave a lower bound for the radio number of trees and presented a class of trees, namely spiders, achieving the lower bound. A tree T is called a lower bound tree for the radio number if the radio number of T is equal to the lower bound given in [11, Theorem 3]. In this paper, we give two techniques which convert any tree to lower bound tree for the radio number by adding new vertices to given tree.

Keywords and Phrases: Radio labeling, radio number, tree.

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1. Introduction

In a telecommunication system, the interference constraints between two transmitters play a very important role to design radio networks. The channels are assigned to the transmitters with least use of spectrum such that all the interference constraints are fulfilled for the radio network which is known as optimal channel assignment. The level of interference between two transmitters is closely