

On the tight boundary of the locating rainbow connection numbers of the edge-comb product of several graphs*

M. Imrona, A.N.M. Salman, S. Uttunggadewa and P.E. Putri

Abstract. We investigate the tight bounds of the locating rainbow vertex-connection number (RVCL) on the edge-comb product (ECP) of arbitrary pairs of graphs. Specifically, we present examples of graph pairs that attain the upper bound, as well as those that attain the lower bound.

Furthermore, we identify graph pairs whose RVCL lies strictly between these two bounds. The RVCL is defined as the smallest positive integer such that a graph can be colored using rainbow vertex coloring (RVC), where the ordered partition of the resulting color classes is a resolving partition. To construct the locating rainbow coloring function, we employ a set-theoretic approach.

AMS Subject Classification (2020): 05C15, 68R10

Keywords: Edge-comb product (ECP), locating rainbow connection number (RVCL), partition dimension, rainbow code, rainbow-vertex path (RVP), resolving partition, twin sets

*Telkom University partially supports this work under grant 043/SDM12/BSDM/2019.