

VERTEX COLORINGS WITHOUT RAINBOW SUBGRAPHS

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Abstract

Given a coloring of the vertices of a graph G , we say a subgraph is rainbow if its vertices receive distinct colors. For a graph F , we define the F -upper chromatic number of G as the maximum number of colors that can be used to color the vertices of G such that there is no rainbow copy of F . We present some results on this parameter for certain graph classes. The focus is on the case that F is a star or triangle. For example, we show that the K_3 -upper chromatic number of any maximal outerplanar graph on n vertices is $\lfloor n/2 \rfloor + 1$.

Keywords: coloring, rainbow, monochromatic, forbidden, path.

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