

Counting rainbow pairs

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Let $G = (V, E)$ be an undirected graph and $\Phi : E \rightarrow \{1, \dots, k\}$ an edge coloring of G with k colors. Two vertices u and v are called a rainbow pair if there exist a path between them such that no two edges of this path are colored alike. If every vertex pair of a graph with a given edge coloring is a rainbow pair, then the coloring is called a rainbow coloring. The rainbow pair number $\text{rpn}(G, k)$ is the maximum number of rainbow pairs in G for any edge coloring of G with at most k colors. In this talk we present some bounds and exact results for the rainbow pair number in general and in special graph classes.

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