\(\mathcal{H}\)–PANCHROMATIC DIGRAPHS.

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Let \(H\) be a digraph possibly with loops and \(D\) a digraph without loops, an \(H\)–coloring of \(D\) is a function \(\rho : A(D) \to V(H)\). A directed path in \(D\), say \(C = (x_1, \ldots, x_n)\), is an \(H\)–path, if \((\rho(x_1,x_2), \ldots, \rho(x_{n-1},x_n))\) is a directed walk in \(H\). A subset \(S\) of vertices of \(D\) is \(H\)–independent if no two vertices of \(S\) are connected by an \(H\)–path. We say that \(S\) is \(H\)–absorbent if every vertex outside \(S\) can reach some vertex in \(S\) by an \(H\)–path. We say that \(S\) is an \(H\)–kernel if \(S\) is both \(H\)–independent and \(H\)–absorbent.

For a digraph \(D\), we say that \(D\) is \(\mathcal{H}\)–panchromatic if \(D\) has an \(H\)–kernel for every digraph \(H\) and every \(H\)–coloring of \(D\). In this talk, we will show that such digraphs cannot be characterized by means of forbidden subdigraphs. So, it is of interest to find some large classes of digraphs that are \(\mathcal{H}\)–panchromatic and operations that preserve \(\mathcal{H}\)–panchromaticity. In particular we will show that transitive digraphs and acyclic digraphs are \(\mathcal{H}\)–panchromatic, we will characterize quasi-transitive digraphs and tournaments which are \(\mathcal{H}\)–panchromatic and we will show that some operations on digraphs, such the union of (non necessarily vertex disjoint) digraphs and the composition of digraphs, preserve \(\mathcal{H}\)–panchromaticity.

**Keywords:** Edge colored digraph, Kernels in digraphs, \(H\)–kernel.

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References


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