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ON THE SEQUENCE VARIANT OF THE $1 - 2 - 3$ CONJECTURE

Let G be a connected graph other than K_2 , and let $\prec$ be a total order on $E(G)$. For an edge weighting $w : E(G) \rightarrow S$, we define a vertex colouring of G as follows: the colour $f(v)$ of a vertex v is the sequence $(w(e_1), \dots, w(e_k))$ of weights of all edges incident to v , listed according to $\prec$. Seamone and Stevens studied whether, for a given graph and total order, there exists an edge weighting w which yields a proper vertex colouring in this way.

We investigate the inverse problem: given a graph G and an edge weighting w does there exist a total order on $E(G)$ that induces a proper vertex colouring? We provide partial results for the case when w is a proper edge colouring.

This is joint work with Aleksandra Gorzkowska.