Generalized majority edge-colourings of graphs

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A *majority edge-colouring* of a graph G is a colouring of the edges of G such that for each vertex v of G, at most half the edges incident with v have the same colour. More generally, for a natural number $k \geq 2$, a *$1/k$-majority edge-colouring* of a graph is a colouring of the edges of G such that for every colour i and every vertex v of G at most $1/k$ of the edges incident with v have the colour i. This notion was introduced recently by Bock, Kalinowski, Pardey, Pilśniak, Rautenbach and Woźniak.

We provide some bounds on the minimum degree of a graph which necessitates the existence of a $1/k$-majority $(k+1)$-edge-colouring. In addition, we prove best possible result in the case of bipartite graphs.

This is a joint work with Jakub Przybyło.

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