

MONOCHROMATIC PATH/CYCLE PARTITIONS

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A conjecture of Gyárfás says that given any colouring with r colours of the edges of the complete graph K_n on n vertices, there are r disjoint monochromatic paths that induce a partition of $V(K_n)$. The conjecture is true for $r \leq 3$. Replacing paths with cycles, it is known that in general, the number of cycles needed is greater than r , but can be bounded by a function of r . (Here, single vertices/edges count as cycles.) For $r = 2$, it is known that 2 paths/cycles suffice.

This talk gives an overview on the history of the problem. We then describe some recent results for bipartite and multipartite graphs, with fixed values of r . We also study variants of the problem for r -local colourings, and for r -mean colourings. The results mentioned are joint work with Conlon, with Lang, with Lang and Schaudt, and with Schaudt, respectively.