

Partitioning two-coloured complete multipartite graphs into monochromatic paths and cycles

Schaudt, Oliver

Stein, Maya

© 2018 Wiley Periodicals, Inc. We show that any complete k -partite graph G on n vertices, with $k \geq 3$, whose edges are two-coloured, can be covered with two vertex-disjoint monochromatic paths of distinct colours, given that the largest partition class of G contains at most $n/2$ vertices. This extends known results for complete and complete bipartite graphs. Secondly, we show that in the same situation, all but (n) vertices of the graph can be covered with two vertex-disjoint monochromatic cycles of distinct colours, if colourings close to a split colouring are excluded. From this we derive that the whole graph, if large enough, may be covered with 14 vertex-disjoint monochromatic cycles.