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*A bounded diameter strengthening of König's Theorem*

König's theorem says that the vertex cover number of every bipartite graph is equal to its matching number. An equivalent formulation of König's theorem states that for every 2-colouring of the edges of a graph  $G$ , the vertex set of  $G$  can be covered by a set of at most  $\alpha(G)$  monochromatic components. Here  $\alpha(G)$  denotes the independence number of  $G$ .

We strengthen König's theorem by proving the existence of a function  $f$  such that the following holds. For every 2-colouring of the edges of a graph  $G$ , there exists a set of at most  $\alpha(G)$  monochromatic subgraphs, each of diameter at most  $f(\alpha)$ , that covers the vertex set of  $G$ .

Joint work with Louis DeBiasio, António Girão and Maya Stein