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The multicolour size-Ramsey number of powers of paths

Given a positive integer s, a graph G is s-Ramsey for a graph H, denoted $G \to (H)_s$, if every s-colouring of the edges of G contains a monochromatic copy of H. The s-colour size-Ramsey number $\hat{r}_s(H)$ of a graph H is defined to be $\hat{r}_s(H) = \min\{|E(G)|\colon G \to (H)_s\}$. We prove that, for every positive integers k and s, we have $\hat{r}_s(P_n^k) = O(n)$, where P_n^k is the kth power of the n-vertex path P_n.

This is a joint work with Jie Han, Matthew Jenssen, Yoshiharu Kohayakawa and Barnaby Roberts.