

Maruša Lekše: Separating subsets from their images

Let G be a transitive permutation group of degree n . Let $m(G)$ be the largest integer such that, for every set A of this size, we are guaranteed the existence of a permutation $g \in G$ such that $A \cap Ag$ is empty. By Neumann's Separation Lemma, we know that $m(G) \geq \sqrt{n}$. Experimental evidence suggests that, unless G contains a large alternating subgroup, $m(G)$ grows asymptotically as $\mathcal{O}(\sqrt{n})$. We discuss for which families of permutation groups we can currently establish this expected bound (e.g., automorphism groups of k -valent graphs whose vertex-stabiliser has bounded order).

This is joint work with Marco Barbieri, Kamilla Rekvényi and Primož Potočnik.