

ON THE BASE SIZE OF FINITE PERMUTATION GROUPS

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Let $G \leq \text{Sym}(\Omega)$ be a finite permutation group. A subset $X \subset \Omega$ is called a base for G if the pointwise stabilizer of X in G is trivial. The minimal size of a base for G is denoted by $b(G)$. It is easy to see that $\log |G| / \log |\Omega| \leq b(G)$ holds for any permutation group. Pyber asked in a 1993 paper whether this formula is essentially sharp for the base size of a primitive permutation group, i.e. whether there exists a universal constant c such that $b(G) \leq c \log |G| / \log |\Omega|$ holds for any primitive permutation group. In a recent joint paper with Hülya Duyan and Attila Maróti, we confirmed this conjecture for permutation groups of affine type, which was the final step for the proof of the whole problem. In our talk, we go through the main ideas of our proof. If the time allows, we discuss other problems regarding base sizes of finite groups.