

An Introduction to Sharp Permutation Groups

Let (G, X) a finite permutation group with associated permutation character θ . Set $L(\theta) = \theta(G - \{1\})$, and

$$\text{sh}(\theta) := \prod_{\ell \in L(\theta)} (\theta(1) - \ell).$$

Then an elementary character theoretic argument (originally attributed to Blichfeldt) shows $|G|$ divides $\text{sh}(\theta)$. When $|G| = \text{sh}(\theta)$, (G, X) is said to be a *sharp permutation group of type $L(\theta)$* and refer $|L|$ as the *sharp permutation rank* of (G, X) . In this talk, I'll provide an introduction to the basic ideas, as well as an overview of results related to sharp permutation groups (with special emphasis on the cases $|L| = 1, 2$).