

THE INTERSECTION DENSITY OF TRANSITIVE GROUPS OF DEGREE $3p$

Andriaherimanana Sarobidy Razafimahatratra

University of Primorska (Slovenia)

Given a finite transitive group $G \leq \text{Sym}(\Omega)$, a subset $\mathcal{F} \subset G$ is *intersecting* if for any $g, h \in \mathcal{F}$, there exists $\omega \in \Omega$ such that $\omega^g = \omega^h$. The *intersection density* of G is the rational number

$$\rho(G) := \max \left\{ \frac{|\mathcal{F}|}{|G|/|\Omega|} : \mathcal{F} \subset G \text{ is intersecting} \right\}.$$

In 2022, Meagher asked whether $\rho(G) \in \{1, \frac{3}{2}, 3\}$ for any transitive group $G \leq \text{Sym}(\Omega)$ of degree $|\Omega| = 3p$, where $p \geq 5$ is an odd prime. In this talk, I will present some recent progress on this question.

(Joint work with Angelot Behajaina and Roghayeh Maleki)