# Intersection densities of transitive permutation groups

Dragan Marušič

*University of Primorska*

`dragan.marusic@upr.si`

Two elements $g$ and $h$ of a permutation group $G$ acting on a set $V$ are said to be *intersecting* if $g(v) = h(v)$ for some $v \in V$. More generally, a subset $\mathcal{F}$ of $G$ is an *intersecting set* if every pair of elements of $\mathcal{F}$ is intersecting. The *intersection density* $\rho(G)$ of a transitive permutation group $G$ is the maximum value of the quotient $|\mathcal{F}|/|G_v|$ where $\mathcal{F}$ runs over all intersecting sets in $G$ and $G_v$ is a stabilizer of $v \in V$.

In this talk intersection densities of transitive permutation groups of certain degrees are determined, thus settling some of the problems and conjectures raised in [K. Meagher, A. S. Razafimahatratra and P. Spiga, On triangles in derangement graphs, *J. Combin. Theory, Ser. A* **180** (2021), 105390.] and [A. S. Razafimahatratra, On multipartite derangement graphs, *Ars Math. Contemp.* (2021), doi: 10.26493/1855-3974.2554.856.].