

ERDŐS-KO-RADO PROPERTY OF TRANSITIVE PERMUTATION GROUPS

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The Erdős-Ko-Rado theorem is one of the central results in extremal combinatorics. It gives a bound on the size of a family of intersecting k -subsets of a set and classifies the families satisfying the bound. In this presentation I will talk about the extension of Erdős-Ko-Rado theorem to transitive permutation groups.

Given a transitive permutation group G acting on a set V , two permutations $g, h \in G$ are said to be *intersecting* if there exists $v \in V$ such that $g(v) = h(v)$. *Intersecting set* of permutations is a set in which any two permutations are intersecting. Obvious example of an intersecting set is a point stabilizer G_v . If G_v is the largest intersecting set in G , then G is said to have the *Erdős-Ko-Rado (EKR)-property*. 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 .

I will present some known and some new results on the maximum sizes of intersecting sets in certain transitive permutation groups. I will show how the existence of certain cyclic codes was used for construction of transitive groups of degree a product of two odd primes which don't have the EKR property. I will also present several results regarding intersection density of transitive groups having small point stabilizer.

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