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Using cyclic codes to solve an Erdős-Ko-Rado type problem on permutation groups

Given a finite transitive group $G \leq \mathrm{Sym}(\Omega)$, we say that a subset $\mathcal{F} \subset G$ is an intersecting set if any two elements of $\mathcal{F}$ agree on some elements of Ω. If $|\Omega| = pq$, for some odd primes $q < p$, and $G \leq \mathrm{Sym}(\Omega)$ is transitive, then it was conjectured that any intersecting set of G has size at most the order of a point stabilizer. This conjecture was recently disproved using certain cyclic codes in $\mathbb{F}_q^p$. In this talk, I will show that the conjecture is essentially true whenever these cyclic codes in $\mathbb{F}_q^p$ do not exist. This is based on joint work with Roghayeh Maleki and Angelot Behajaina.