Mathematics > Combinatorics

Intersecting Families of Permutations

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A set of permutations $I \subset S_n$ is said to be {\em k-intersecting} if any two permutations in I agree on at least k points. We show that for any $k \in \mathbb{N}$, if n is sufficiently large depending on k, then the largest k-intersecting subsets of S_n are cosets of stabilizers of k points, proving a conjecture of Deza and Frankl. We also prove a similar result concerning k-cross-intersecting subsets. Our proofs are based on eigenvalue techniques and the representation theory of the symmetric group.

Comments:	An expanded version (with slightly more detail and an added open problems section added) of a paper written in late 2008, previously available from the authors' webpages
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