Adjoining Cofinitary Permutations

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We consider two kinds of closely related mathematical structures, cofinitary permutation groups and almost disjoint permutation families in $Sym(N)$.

We say that two permutations $f, g \in Sym(N)$ are almost disjoint (a.d.) iff $|f \cap g| < \omega$. And an a.d. permutation family $A \subseteq Sym(N)$ is a subset of $Sym(N)$ such that for any $f, g \in A$, f and g are a.d.

A permutation g is cofinitary iff g has only finitely many fixed points. A group $G \leq Sym(N)$ is cofinitary iff every non-identity elements is cofinitary. It is easily seen that $G \leq Sym(N)$ is cofinitary iff G is both an almost disjoint set of permutations and a group. For a discussion of different aspects of cofinitary groups, the reader can consult the well-written survey paper [C].

In several papers, some common features had been proved about these two structures, eg, in [BSZ], we proved that any maximal cofinitary group or any maximal a.d. family in $Sym(N)$ cannot be meager in N^N.

However, it is also interesting to know the difference between the cardinalities of these two structures. In my talk, I will explain a forcing result in [Z] which is my first attempt to work in this direction. I will also ask several open questions concerning the subject.

[BSZ] J.Brendle, O.Spinas and Y.Zhang: Uniformity of meager ideals and maximal cofinitary groups, *Journal of Algebra*, to appear

[C] P. Cameron: Cofinitary permutation groups *Bulletin of the London Mathematical Society, 28, March, 1996, pp. 113–140*

[Z] Y. Zhang: Adjoining Cofinitary Permutations *Journal of Symbolic Logic*, to appear

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