Pattern avoidance in $\Pi_n \wr C_k$

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Pattern avoidance in the symmetric group S_n has provided a number of useful connections between seemingly unrelated problems from stack-sorting to Schubert varieties. Recent work [2, 4, 5] has generalized these results to $S_n \wr C_k$, the objects of which can be viewed as "colored permutations".

Another body of research that has grown from the study of pattern avoidance in permutations is pattern avoidance in Π_n, the set of set partitions of $[n]$. Pattern avoidance in set partitions is a generalization of the well studied notion of noncrossing partitions [3].

Motivated by recent results in pattern avoidance in $S_n \wr C_k$ we provide a catalog of initial results for pattern avoidance in colored partitions, $\Pi_n \wr C_k$. We note that colored set partitions are not a completely new concept. *Signed* (2-colored) set partitions appear in the work of Björner and Wachs involving the homology of partition lattices [1]. However, we seek to study these objects in a new enumerative context.

This is joint work with Lara Pudwell.

References

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