Partition-homogeneity and applications

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(Joint work with João Araújo)

Martin and Sagan defined a permutation group of degree \( n \) to be \( \lambda \)-transitive, where \( \lambda \) is a partition of \( n \), if it acts transitively on ordered set-partitions of shape \( \lambda \). There is an obvious weakening to transitivity on unordered partitions, which by analogy with classical concepts we call \( \lambda \)-homogeneity. This arises in a problem on transformation semigroups. I will prove a partition analogue of the Livingstone–Wagner theorem by finding all the groups which are \( \lambda \)-homogeneous but not \( \lambda \)-transitive, and explain how this is applied in semigroup theory.