Differences of Bijections
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Take two permutations in S_n and subtract one from the other as functions modulo n. What kind of function can be obtained in this way? This question was answered by Marshall Hall in the 1950s. We'll look at Hall's theorem and various generalizations, replacing S_n with other abelian groups and replacing permutations with injections or surjections. We will mention Laszlo Fuchs, George Szekeres, graphs, Latin squares, juggling, and bus scheduling. Recent work is joint with Dan Velleman