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Generalized Additive Bases and Difference Bases For Cartesian Product of Finite Abelian Groups

For a finite group G and a positive integer g, a *g-additive basis* is a subset of G whose pairwise sums cover each element of G at least g times; *g-difference bases* are defined analogously using pairwise differences rather than sums. We investigate such bases in the group G^n, the n-fold Cartesian product of a finite abelian group G. We explicitly construct g-additive and g-difference bases in G^n, and in doing so obtain asymptotically sharp upper bounds on the minimal sizes of such bases as n grows.

This talk is based on joint work with Chi Hoi Yip (Georgia Institute of Technology).