

Abstract, Runze Wang, AMS-AWM

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Title: Generalizations of Pollard's Theorem to General Abelian Groups

Abstract: Let $A +_t B$ denote the set of elements in $A + B$ with at least t representations in the form $a + b$, where $a \in A$ and $b \in B$. Pollard's theorem shows the bound $\sum_{i=1}^t |A +_i B| \geq t \cdot \min\{p, |A| + |B| - t\}$ in C_p with p prime. For general abelian groups, Gryniewicz gave a Kneser-type theorem, which provides strong structural information when $\sum_{i=1}^t |A +_i B| < t|A| + t|B| - 2t^2 + 3t - 2$. Another theorem is given by Hamidoune and Serra, in which the structural result is weaker.

In this talk, we will also show a recent result, which optimizes the coefficient of the quadratic term in Gryniewicz's theorem, and still preserves all its structural results. Joint work with David J. Gryniewicz.