

Finding the Maximum Size of (k, l) -sum-free Sets in Finite Cyclic Groups

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Let G be an Abelian group and let $A \subseteq G$. For any $h \in \mathbb{N}_0$, we define the h -fold sumset of A as

$$hA = \left\{ \sum_{i=1}^h a_i : a_i \in A \right\}.$$

For $k, l \in \mathbb{N}$, with $k > l$, we say that A is (k, l) -sum-free if $kA \cap lA = \emptyset$. Sets that satisfy this for $k = 2$ and $l = 1$ are often simply called sum-free sets. In 2005, Green and Ruzsa were able to find the maximum size of a sum-free subset of any finite Abelian group. Using results from Plagne and Hamidoune, we have an explicit formula for the maximum size of (k, l) -sum-free subsets of finite cyclic groups through the use of (k, l) -sum-free arithmetic progressions.