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Title: On partitions of \mathbb{Z}_m with the same representation function

Author(s): Cui-Fang Sun and Meng-Chi Xiong

For any positive integer m , let \mathbb{Z}_m be the set of residue classes modulo m . For $A \subseteq \mathbb{Z}_m$ and $\bar{n} \in \mathbb{Z}_m$, let $R_A(\bar{n})$ denote the number of solutions of $\bar{n} = \bar{a} + \bar{a}'$ with unordered pairs $(\bar{a}, \bar{a}') \in A \times A$. In this paper, we prove that if $m = 2^\alpha$ with $\alpha \neq 2$, $A \cup B = \mathbb{Z}_m$ and $|A \cap B| = 2$, then $R_A(\bar{n}) = R_B(\bar{n})$ for all $\bar{n} \in \mathbb{Z}_m$ if and only if $B = A + \frac{m}{2}$.

Address:

Cui-Fang Sun
School of Mathematics and Statistics
Anhui Normal University
241002 Wuhu
P. R. China

Address:

Meng-Chi Xiong
School of Mathematics and Statistics
Anhui Normal University
241002 Wuhu
P. R. China