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Rainbow solutions to the Sidon equation in cyclic groups and in the interval

Given a coloring of group elements, a rainbow solution to an equation is solution whose every element is assigned a different color. Rainbow number of \mathbb{Z}_n for an equation eq , denoted $rb(\mathbb{Z}_n, eq)$, is the smallest number of colors r such that every exact r -coloring of \mathbb{Z}_n admits a rainbow solution to this equation. We show that for every exact 4-coloring of \mathbb{Z}_p , where $p \geq 3$ is prime, there exists a rainbow solution to the Sidon equation $x_1 + x_2 = x_3 + x_4$. Furthermore, we determine the rainbow numbers of \mathbb{Z}_n and the set of integers $[n] = \{1, \dots, n\}$ for the Sidon equation. Joint work with Jürgen Kritschgau.