Schmid, Wolfgang A.

Half-factorial sets in elementary p-groups. (English) Zbl 1120.20055

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A subset G_0 of an Abelian group G is called half-factorial if all factorizations of an element in the semigroup $B(G_0)$, consisting of zero-sum sequences of elements of G_0 with juxtaposition as multiplication, are of the same length. The author studies half-factorial subsets in elementary p-groups and determines the structure of such sets with largest cardinality $\mu(G)$. In the case when either $p \leq 7$ or the rank r of G is ≤ 2, the equality $\mu(G) = 1 + [r/2](p-2) + r$ is established. The author conjectures that this formula holds for all elementary p-groups.

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MSC:

20K01 Finite abelian groups
11R27 Units and factorization
13F05 Dedekind, Prüfer, Krull and Mori rings and their generalizations
20D60 Arithmetic and combinatorial problems involving abstract finite groups
20M14 Commutative semigroups

Keywords:

lengths of factorizations; half-factorial sets; elementary Abelian p-groups; zero-sum sequences