

On certain cardinality observations of characterized subgroups and its variants

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We primarily consider a non-arithmetic sequence (d_n) arising out of an arithmetic sequence (a_n) , generalizing the method considered in [4] for the sequence $(n!)$ and first investigate the cardinality properties of the corresponding characterized subgroups. Extending the observation of [4] which showed that it is \mathbb{Q}/\mathbb{Z} for the sequence $(n!)$ we see that the characterized subgroup corresponding to the sequence (d_n) is always countable (which interestingly happens when one considers sequences arising out of continued fraction of irrationals as has been proved in [1]). Subsequently we study the problem in case of “statistically characterized subgroups” introduced in [3] and it is established that statistically characterized subgroups corresponding to the sequence (d_n) is always of size \mathfrak{c} .

References

- [1] A. B  r  , J.M. Deshouillers, V.T. S  s, Good approximation and characterization of subgroups of \mathbb{R}/\mathbb{Z} , *Studia Sci. Math. Hungar.* 38 (2001), 97–113.
- [2] P. Das, A. Ghosh, On a new class of trigonometric thin sets extending Arbault sets, *Bul. Sci. Math.*, 179 (2022), 103157.
- [3] D. Dikranjan, P. Das, K. Bose, Statistically characterized subgroups of the circle, *Fund. Math.*, 249 (2020), 185–209.
- [4] D. Dikranjan, K. Kunen, Characterizing countable subgroups of compact abelian groups, *J. Pure Appl. Algebra* 208 (2007), 285–291.

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