

Characterized subgroups of the circle group

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A subgroup H of the circle group \mathbb{T} is said to be characterized by a sequence of integers (u_n) if

$$H = \{x \in \mathbb{T} : u_n x \rightarrow 0\}.$$

I would like to present characterized subgroups of \mathbb{T} and their significance in various areas of Mathematics, including:

- Topological Algebra, where they are related to topologically torsion elements;
- Topology, where they are closely related to precompact group topologies on \mathbb{Z} (with or without non-trivial convergent sequences).
- Harmonic Analysis, as they are linked to sets of convergence for trigonometric series;
- Number Theory, particularly in the study of uniform distribution of sequences.

Recently, generalizations of the concept of a characterized subgroup of \mathbb{T} have been introduced, based on weaker notions of convergence. These topics stem from joint works with D. Dikranjan, A. Giordano Bruno, C. Milan, and H. Weber from the University of Udine.