

**van Douwen, Eric K.**

**The maximal totally bounded group topology on  $G$  and the biggest minimal  $G$ -space, for Abelian groups  $G$ .** (English) Zbl 0696.22003  
Topology Appl. 34, No. 1, 69-91 (1990).

Let  $G$  be an abstract Abelian group.  $G^\#$  denotes the group  $G$  with the topology it inherits from  $bG$ , its Bohr compactification. This is the maximal totally bounded group topology on  $G$  and the major portion of the paper is devoted to the investigation of the topological group  $G^\#$ . For example, it is shown that  $G^\#$  is 0-dimensional. It is shown further that every infinite subset  $A$  of  $G^\#$  has a relatively discrete subset  $D$  with  $|D| = |A|$  that is  $\mathbb{N}$ -embedded in  $G^\#$  and is  $I$ -embedded in  $bG$  where  $\mathbb{N}$  and  $I$  denote the natural numbers and the closed unit interval respectively. This implies that no nontrivial sequence in  $G^\#$  converges to a point in  $bG$ . The results on  $G^\#$  are then applied to gain information about  $BG$ . This is a compact space on which  $G$  acts and is, in a certain sense, unique. It is referred to here as the biggest minimal  $G$ -space and coincides with what is referred to in [*R. Ellis*, Lectures on Topological Dynamics (Benjamin, New York, 1969; [Zbl 0193.515](#))] as a universal minimal set.

Reviewer: [K.D.Magill](#), jun

**MSC:**

- [22A05](#) Structure of general topological groups
- [54D35](#) Extensions of spaces (compactifications, supercompactifications, completions, etc.)
- [54H10](#) Topological representations of algebraic systems
- [54B99](#) Basic constructions in general topology
- [54C20](#) Extension of maps
- [54G99](#) Peculiar topological spaces
- [20K45](#) Topological methods for abelian groups

Cited in **16** Reviews  
Cited in **48** Documents

**Keywords:**

[Bohr compactification](#); [maximal totally bounded group topology](#); [topological group](#); [biggest minimal  \$G\$ -space](#)

**Full Text:** [DOI](#)

**References:**

- [1] Comfort, W.W.; Ross, K.A., Topologies induced by groups of characters, *Fund. math.*, 55, 283-291, (1964) · [Zbl 0138.02905](#)
- [2] Comfort, W.W.; Saks, V., Countably compact groups and finest totally bounded topologies, *Pacific J. math.*, 49, 33-44, (1973) · [Zbl 0271.22001](#)
- [3] E.K. van Douwen, Barely separable extremally disconnected compacts, in preparation.
- [4] E.K. van Douwen, Maximal topologies, in preparation. · [Zbl 0845.54028](#)
- [5] Ellis, R., Lectures on topological dynamics, (1969), Benjamin New York · [Zbl 0193.51502](#)
- [6] R. Ellis, personal communication, 1986.
- [7] Gillman, L.; Jerison, M., Rings of continuous functions, (1960), Van Nostrand Reinhold New York · [Zbl 0093.30001](#)
- [8] Hewitt, E.; Ross, K.A., Abstract harmonic analysis I, () · [Zbl 0837.43002](#)
- [9] Kuz'minov, V., On a hypothesis of P.S. Alexandroff in the theory of topological groups, *Dokl. akad. nauk SSSR*, 125, 727-729, (1959) · [Zbl 0133.28704](#)
- [10] Rudin, W., Fourier analysis on groups, Interscience, (1962) · [Zbl 0107.09603](#)
- [11] Uspenskii, V., Why topological groups are dyadic, (), 601-610

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.