Tkachenko, Mikhail

Products of topological groups and \(\omega\)-stability. (English) [Zbl 1505.22001]


A topological space \(X\) is called pseudo-\(\aleph_1\)-compact if every locally finite family of open sets in \(X\) is countable. A topological space \(X\) is called fairly pseudo-\(\aleph_1\)-compact if every family \(\gamma\) of open sets in \(X\) with \(|\gamma| = \aleph_1\) has a complete accumulation point.

In section 2 is studied the following problem: Let \(X\) be a Lindelöf \(P\)-space and \(Y\) be a fairly pseudo-\(\aleph_1\)-compact space. Is the product \(X \times Y\) fairly pseudo-\(\aleph_1\)-compact? It is proved that the product of a pseudo-\(\aleph_1\)-compact \(P\)-group and a fairly pseudo-\(\aleph_1\)-compact space is fairly pseudo-\(\aleph_1\)-compact.

In section 3 are studied \(\tau\)-stably and \(\tau\)-steady topological groups (see also section 5.6 in [A. Arhangel’skii and M. Tkachenko, Topological Groups and Related Structures, Atlantis Press (2008; Zbl 1323.22001)]). The main result is theorem 3.13: A Tychonoff space \(X\) is \(\tau\)-stable if and only if the free topological group \(F(X)\) is \(\tau\)-steady.

Reviewer: Mihail I. Ursul (Oradea)

MSC:

22A05 Structure of general topological groups
54H11 Topological groups (topological aspects)
54A25 Cardinality properties (cardinal functions and inequalities, discrete subsets)
54D20 Noncompact covering properties (paracompact, Lindelöf, etc.)

Keywords:

Lindelöf; free topological group; \(\mathbb{R}\)-factorizable; \(P\)-space; weakly Lindelöf; \(\tau\)-stable; \(\tau\)-steady; pseudo-\(\aleph_1\)-compact; Tikhonov space

Full Text: DOI

References:
