Moors, Warren B.

Any semitopological group that is homeomorphic to a product of Čech-complete spaces is a topological group. (English) Zbl 1321.22006


The main result of the paper gives sufficient topological conditions that ensure that a semitopological group is a topological one. These conditions involve two notions that are introduced via the framework of topological games, namely that of nearly strongly Baire spaces, respectively, of nearly \( q_D \)-points. It is shown that if \( G \) is a semitopological group, which is (as a topological space) nearly strongly Baire, and if \( D \) is a dense subset of \( G \) such that the identity element of \( G \) is a nearly \( q_D \)-point, then \( G \) is a topological group. A consequence of this result states that a semitopological group that is (as a topological space) homeomorphic to a product of Čech-complete spaces, is a topological group.

Reviewer: Brigitte Breckner (Cluj-Napoca)

MSC:

- 22A20 Analysis on topological semigroups
- 91A44 Games involving topology, set theory, or logic
- 54E18 \( p \)-spaces, \( M \)-spaces, \( \sigma \)-spaces, etc.
- 54H11 Topological groups (topological aspects)
- 54H15 Transformation groups and semigroups (topological aspects)

Keywords:
topological group; semitopological group; nearly strongly Baire space; nearly \( q_D \)-point; Čech-complete space

Full Text: DOI

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