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Semilattice of topological groups. (English) Zbl 07415883
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Summary: In this article, we establish necessary and sufficient condition on a topological Clifford semigroup to be a semilattice of topological groups. As a consequence, we show that a topological Clifford semigroup \((S, \tau)\) satisfies the property that for each \(G \in \tau\) and every \(x \in G\) there exists an element \(U \in \tau\) such that \(x \in U \subseteq G \cap J_x\) if and only if it is a strong semilattice of topological groups if and only if it is a semilattice of topological groups. We prove that some topological properties like \(T_0, T_1, T_2\) regularity and completely regularity are equivalent in a semilattice of topological groups. We also prove that the quotient space of a semilattice of topological groups by a full normal Clifford subsemigroup is again a semilattice of topological groups. Finally, we establish that if \(\{S_i : i = 1, 2, \ldots, n\}\) is a family of semilattices of topological groups and \(N_i\) is a full normal Clifford subsemigroup of \(S_i\) for all \(i = 1, 2, \ldots, n\), then \(\otimes_{i=1}^n(S_i/N_i)\) is topologically isomorphic to \(\otimes_{i=1}^n S_i / \otimes_{i=1}^n N_i\).

MSC:
22A15 Structure of topological semigroups
54E35 Metric spaces, metrizability
54E18 \(p\)-spaces, \(M\)-spaces, \(\sigma\)-spaces, etc.
54D30 Compactness

Keywords:
semilattice; semilattice of topological groups; topological Clifford semigroup; topological group; topological semigroup

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References:

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