A topological group $G$ is called $\mathbb{R}$-factorizable ($\mathcal{M}$-factorizable) if for every continuous real-valued function $f$ on $G$, there exists a continuous homomorphism $\pi$ of $G$ onto a second metrizable (metrizable) group $M$ such that $f = g \circ \pi$, for some continuous real-valued function $g$ on $M$.

The class of $\mathcal{M}$-factorizable groups contains the class of metrizable groups and the class of $\mathbb{R}$-factorizable groups. The authors claim that the class of $\mathcal{M}$-factorizable groups "...is a kind of unification of the metrizability and compactness concepts in topological groups...". A topological group is called feathered if it contains a compact subset of countable character.

In the paper are proved several results concerning $\mathcal{M}$-factorizable groups and feathered $\mathcal{M}$-factorizable groups.

Section 3 contains important results concerning feathered $\mathcal{M}$-factorizable groups. It is proved that a feathered topological group $G$ is $\mathcal{M}$-factorizable if and only if $G$ is either metrizable or $\mathbb{R}$-factorizable (Theorem 3.3). A feathered topological group $G$ is $\mathbb{R}$-factorizable if and only if $G$ is a Lindelöf $\Sigma$-group (Theorem 3.4).

The authors study in section 4 subgroups of $\mathcal{M}$-factorizable group, It is proved that that a Čech-complete $\mathcal{M}$-factorizable subgroup $H$ of a topological group $G$ is C-embedded in $G$ (Theorem 4.13). Products of $\mathcal{M}$-factorizable groups are studied in section 5. Homomorphic images of $\mathcal{M}$-factorizable groups are studied in section 6.

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MSC:
- 22A05 Structure of general topological groups
- 54A25 Cardinality properties (cardinal functions and inequalities, discrete sub-sets)
- 54H11 Topological groups (topological aspects)
- 54A35 Consistency and independence results in general topology

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- $\mathcal{M}$-factorizable group; $\mathbb{R}$-factorizable group; $PT$-group; feathered group; $d$-open homomorphism

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References:
[8] Katz, G. I., Isomorphic mapping of topological groups to direct product of groups satisfying the first axiom of countability,


[14] Tkachenko, M., Complete \( \alpha_0 \)-bounded groups need not be \( \mathbb{R} \)-factorizable, Comment. Math. Univ. Carol., 42, 3, 551-559 (2001) - Zbl 1053.54045


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