Free Abelian topological groups and k-spaces

Kohzo Yamada, Shizuoka, Japan

Keywords: free topological group, free Abelian topological group, metrizable space, k-space, locally compact space

AMS Subject classification: 22A05, 54D50, 54E45

Abstract: In this paper, we give a metrizable space X such that $A_n(X)$ is a k-space for each $n \in \mathbf{N}$, but $A(X)$ is not a k-space. Moreover, we shall show that for a metrizable space X, if each $F_n(X)$ $(A_n(X))$ is a k-space, then either X is locally compact or X', the set of non-isolated points of X, is compact. On the other hand, we give a characterization of a metrizable space X such that every $F_n(X)$ is locally compact.