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Topologies on groups and semigroups

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Abstract

Topological groups and semigroups form the basic building blocks of many different areas of mathematics. The aim of this work is to determine if a general cancellative semigroup can be given a left shift invariant topology. The theory behind a class of topologies that can be created on a given group or semigroup is discussed. The t-sequence proof of the Markov theorem is presented and this serves as a catalyst for further inquiry. The algebra of the Stone-Cech compactification of a discrete semigroup is utilized to prove the existence of certain ultrafilters, with which topologies can be constructed.