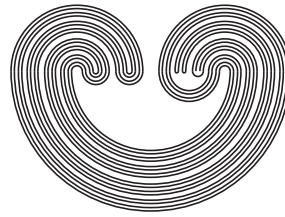


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by

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DENSE TOPOLOGICAL GROUPS IN PAROVIČENKO SPACES

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ABSTRACT. We show that the statement ‘the Čech-Stone remainder of the discrete space ω contains a dense subspace which is (homeomorphic to) a topological group’ is not a statement of ZFC. We also discuss the question of whether this result can be extended to Parovičenko spaces.

1. INTRODUCTION

All topological spaces under discussion are assumed to be Tychonoff. A space X is called a *Parovičenko space* if

- (P1) X is a zero-dimensional compact space without isolated points with weight \mathfrak{c} ,
- (P2) every two disjoint open F_σ -subsets have disjoint closures, and
- (P3) every nonempty G_δ in X has nonempty interior.

Moreover, X is called an F -space, [14], if each cozero-set in X is C^* -embedded in X . A normal space is an F -space if and only if X satisfies (P2), [21, 1.1.2(b)]. And, a space that satisfies (P3) is usually called an *almost P -space*.

Parovičenko [22] showed that under the Continuum Hypothesis (abbreviated: CH), every Parovičenko space is homeomorphic to ω^* , the Čech-Stone-remainder $\beta\omega \setminus \omega$ of the countable discrete space ω . In fact, CH is equivalent to the statement that every Parovičenko space is homeomorphic to ω^* , [9].

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Key words and phrases. P -space, Parovičenko space, G_δ -topology, π -character, homogeneous, coset space, almost P -space, topological group.

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