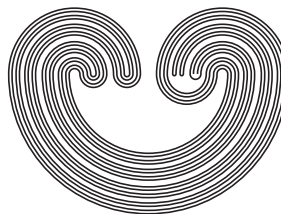


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A VARIATION OF THE MARDEŠIĆ CONJECTURE

by

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A VARIATION OF THE MARDEŠIĆ CONJECTURE

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ABSTRACT. We shall show that if d is a positive integer, K_i is a compact linearly ordered topological space for each $i < d$, Z_j is a nonseparable Hausdorff space for each $j < d$, and there is a continuous surjection from a countably compact subspace of $\prod_{i < d} K_i$ onto $\prod_{j < d} Z_j$, then every Z_j is a continuous image of a countably compact GO-space. Several variations of this theorem are also proved.

1. INTRODUCTION

G. Peano [11] proved that there exists a continuous surjection from $[0, 1]$ onto $[0, 1] \times [0, 1]$. By using this theorem, we can prove that for all positive integers n and m , there exists a continuous surjection from $[0, 1]^n$ onto $[0, 1]^m$.

We may wonder if such a phenomenon can occur when $[0, 1]$ is replaced by another compact linearly ordered topological space. We shall use a commonly used abbreviation LOTS for a linearly ordered topological space. The following theorem was conjectured by Sibe Mardešić in [9] and proved by Gonzalo Martínez-Cervantes and Grzegorz Plebanek in [10].

Theorem 1.1 (The Mardešić Conjecture). *Let d and s be positive integers. If K_i is a compact LOTS for each $i < d$, Z_j is an infinite Hausdorff space for each $j < d + s$, and there exists a continuous surjection from $\prod_{i < d} K_i$ onto $\prod_{j < d+s} Z_j$, then there exist at least $s + 1$ -many indexes $j < d + s$ such that Z_j is metrizable.*

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