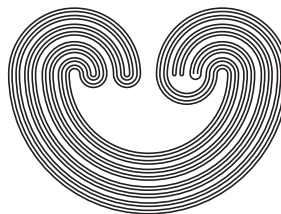

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by

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**\mathfrak{c}^+ -LINEABILITY OF THE CLASS OF DARBOUX MAPS
WITH THE STRONG CANTOR INTERMEDIATE VALUE
PROPERTY WHICH ARE NOT CONNECTIVITY**

GBREL M. ALBKWRE, KRZYSZTOF CHRIS CIESIELSKI,
AND JERZY WOJCIECHOWSKI

*We dedicate this work to the memory of Professor Ralph Kopperman,
a coauthor and friend of the second author.*

ABSTRACT. We prove, under an additional set-theoretic assumption, specifically *continuum is a regular cardinal*, that there exists a subspace of the vector space $\mathbb{R}^{\mathbb{R}}$ of dimension \mathfrak{c}^+ whose non-zero elements are the functions that are everywhere surjective (ES), have strong Cantor intermediate value property (SCIVP), and are not connectivity (Conn). Since every map in ES is Darboux (D), this means that the class $\text{SCIVP} \cap \text{D} \setminus \text{Conn}$ is \mathfrak{c}^+ -lineable under our set-theoretic assumption.

1. INTRODUCTION

For sets X and Y , let Y^X be the family of all functions from X to Y and let $|X|$ denote the cardinality of X .

Let V be a vector space, let $M \subseteq V$, and let κ be a cardinal number. We say that M is κ -lineable if there exists a subspace W of V contained in $M \cup \{0\}$ such that the dimension of W is κ . This notion was motivated by the result of V. I. Gurarii [16], which, in the language of lineability, says that the set of continuous nowhere differentiable functions from $[0, 1]$ to \mathbb{R} (treated as a subset of the vector space $[0, 1]^{\mathbb{R}}$ over \mathbb{R}) is ω -lineable.

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