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VOLTERRA PROPERTIES IN GENERALIZED TOPOLOGICAL SPACES

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Abstract. In this paper, we study Volterra properties in generalized topological spaces and also those Volterra properties in subspaces by using compactness and separation properties.

1. Introduction

In 1881, Vito Volterra [19] introduced an interesting and important class of spaces, now called after his name, *Volterra spaces* about which he obtained several important and interesting results. Let $f : \mathbb{R} \to \mathbb{R}$ be a function such that both the sets of points where f is continuous and its complement are dense. Then there is no function $g : \mathbb{R} \to \mathbb{R}$ such that the set of points where g is continuous is precisely the set of points where f is discontinuous. In 1993, the concept of Volterra spaces was restated by Gauld et al. [[6], Definition 15], and proved that a space X is Volterra if for each $f, g\colon \mathbb{X} \to \mathbb{R}$ for which $C(f)$ and $C(g)$ are dense in X, the set $C(f) \cap C(g)$ is also dense in X where $C(f)$ denotes the set of points of X at which f is continuous. In [7], they also proved that X is strongly Volterra (respectively, Volterra) if $C(f) \cap C(g)$ is dense in X (respectively, non-empty) whenever $f, g\colon X \to \mathbb{R}$ are two functions for which $C(f)$ and $C(g)$ are dense in X. In [8], the concepts of Volterra and weakly Volterra were stabilized and the authors proved that a topological space X is Volterra (respectively, weakly Volterra) if for every pair G and H of dense G_δ subsets of X, the set $G \cap H$ is dense (respectively, non-empty). A subset of X is called G_δ if it is the intersection of countably many open subsets of X. In 2005, Cao et al.[1] revisited the papers of Gauld et al.[7, 8] and also studied Volterraness in homogeneous spaces. Spadaro [17] established the relation between P-spaces and the Volterra property. Milan Matejdes (see [14] and [15]) studied the basic properties of weak ε-Volterra and ε-Volterra spaces which correspond to the known results of the Volterra

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