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by

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STRONGLY DISCRETE SUBSETS WITH LINDELÖF CLOSURES

ANGELO BELLA AND SANTI SPADARO

Dedicated to the memory of Phil Zenor

Abstract. We define a topological space to be an *SDL space* if the closure of each one of its strongly discrete subsets is Lindelöf. After distinguishing this property from the Lindelöf property we make various remarks about cardinal invariants of SDL spaces. For example we prove that $|X| \leq 2^{\chi(X)}$ for every SDL Urysohn space and that every SDL P-space of character $\leq \omega_1$ is regular and has cardinality $\leq 2^{\omega_1}$. Finally, we exploit our results to obtain some partial answers to questions about the cardinality of cellular-Lindelöf spaces.

1. Introduction

One of the most elegant characterizations of compactness is the following: a space X is compact if and only if the closure of every discrete subset of X is compact. Whether this is true for the Lindelöf property is the subject of a well-known question of Arhangel'skii, and the class of *strongly discretely Lindelöf spaces*, that is, spaces where closures of discrete sets are Lindelöf, has received a certain amount of interest in the last few decades (see, for example [3], [4], [19]).

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Key words and phrases. cardinality bounds, cardinal invariants, strongly discretely Lindelöf, cellular-Lindelöf, cellular-compact.

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