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PROPERTIES OF θ-I-COMPACT SETS IN IDEAL TOPOLOGICAL SPACES

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(Dedicated to Professor Maximilian Ganster on the occasion of his retirement)

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Abstract. Let (X, τ, I) be an ideal topological space. A subset A of X is said to be θ-I-compact relative to X if for every cover $\mathcal{U}$ of A by θ-open sets of X, there exists a finite subset $\mathcal{U}_0$ of $\mathcal{U}$ such that $A \setminus \cup \mathcal{U}_0 \in I$. We obtain several properties of these sets. Moreover, for a function $f : (X, \tau, I) \to (Y, \sigma)$ we define an ideal $J_I = \{B \subset Y : f^{-1}(B) \in I\}$ and by using ideals $f(I)$ [7] and J_I on Y we obtain several preservation theorems.

1. Introduction

In 1967, Newcomb [7] introduced the notion of compactness modulo an ideal. Rančin [9] and Hamlett and Janković [2] further investigated this notion and obtained some more properties of compactness modulo an ideal. The present authors [4] introduced and studied compactness via ideals called θ-I-compactness. In this paper, we define a subset A of an ideal topological space (X, τ, I) to be θ-I-compact relative to X if for every cover $\mathcal{U}$ of A by θ-open sets of X, there exists a finite subset $\mathcal{U}_0$ of $\mathcal{U}$ such that $A \setminus \cup \mathcal{U}_0 \in I$. We obtain several properties of these sets. And also, we define and investigate two kinds of strong forms of "θ-I-compact relative to X". Moreover, for a function $f : (X, \tau, I) \to (Y, \sigma)$ we define an ideal $J_I = \{B \subset Y : f^{-1}(B) \in I\}$ and by using ideals $f(I)$ [7] and J_I on Y we obtain several preservation theorms.

2. Preliminaries

The notion of ideals has been introduced in [6] and [10] and further investigated in [5].

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