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ON PERFECTLY PRECONTINUOUS FUNCTIONS

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Abstract. In this paper, we introduce a new class of functions called perfectly precontinuous functions and study their basic properties.

1. Introduction

It is no doubt that generalized open sets play an important and useful role not only in topology but also with respect to its applications such as separation axioms, covering properties, multifunctions, digital topology, topological groups etc. One of the notions which has been the subject of research is preopen and preclosed sets and their applications. In 1964, Corson and Michael [2] introduced the notion of locally dense sets and Mashhour et al. [10] introduced quite independently the same notion but they called it preopen. Earlier in 1958, Ptak [13] used the word nearly open. A subset S of a topological space (X, τ) is said to be *preopen* if $S \subset Int(Cl(S))$. S is preclosed [10] if $X \setminus S$ is preopen or equivalently if $Cl(Int(S)) \subset S$. The intersection of all preclosed sets containing S is called the *preclosure* of S [3], and is denoted by $pCl(S)$. The family of all preopen sets of (X, τ) is denoted by $PO(X)$.

The aim of this paper is to introduce a new type of functions called perfectly precontinuous. This type of functions is weaker than strong continuity and is stronger than perfect continuity. Throughout this paper, X and Y denote topological spaces.

2. Perfectly precontinuous functions

Definition 2.1. A function $f : X \to Y$ is said to be
(1) *perfectly precontinuous* if $f^{-1}(V)$ is clopen in X for every subset $V \in PO(Y)$,
(2) *strongly M-precontinuous* [5] if $f^{-1}(V)$ is open in X for every preopen subset V in Y,
(3) *perfectly continuous* [12] if $f^{-1}(V)$ is clopen in X for every open subset V in Y,
(4) *strongly continuous* [9] if $f^{-1}(B)$ is clopen in X for every subset B in Y,
(5) *contra-strongly M-precontinuous* [5] if $f^{-1}(V)$ is closed in X for every preopen subset V in Y,
(6) *contra-(α, p)-continuous* if $f^{-1}(V)$ is α-open in X for every preopen subset V in Y,

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