Poincare Journal of Analysis & Applications
Vol. 2018 (1), 1-8

Properties of almost $\mathcal{I}$-continuous functions

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Date of Receiving : 13.08.2017
Date of Revision : 02.10.2017
Date of Acceptance : 07.03.2018

Abstract. The aim of this paper is to introduce and characterize a new class of functions called almost $\mathcal{I}$-continuous functions in ideal topological spaces by using $\mathcal{I}$-open sets.

1. Introduction

The concept of ideals in topological spaces has been introduced and studied by Kuratowski [11] and Vaidyanathaswamy, [19]. An ideal $\mathcal{I}$ on a topological space (X, τ) is a nonempty collection of subsets of X which satisfies (i) $A \in \mathcal{I}$ and $B \subset A$ implies $B \in \mathcal{I}$ and (ii) $A \in \mathcal{I}$ and $B \in \mathcal{I}$ implies $A \cup B \in \mathcal{I}$. Given a topological space (X, τ) with an ideal $\mathcal{I}$ on X and if $\mathcal{P}(X)$ is the set of all subsets of X, a set operator $(.)^\star$: $\mathcal{P}(X) \to \mathcal{P}(X)$, called the local function [19] of A with respect to τ and $\mathcal{I}$, is defined as follows: for $A \subset X$, $A^\star(\tau, \mathcal{I}) = \{x \in X | U \cap A \notin \mathcal{I}$ for every $U \in \tau(x)\}$, where $\tau(x) = \{U \in \tau : x \in U\}$. A Kuratowski closure operator $\mathrm{Cl}^\star(\cdot)$ for a topology $\tau^\star(\tau, \mathcal{I})$ called the $\star$-topology, finer than τ is defined by $\mathrm{Cl}^\star(A) = A \cup A^\star(\tau, \mathcal{I})$ when there is no chance of confusion, $A^\star(\mathcal{I})$ is denoted by $A^\star$. If $\mathcal{I}$ is an ideal on X, then $(X, \tau, \mathcal{I})$ is called an ideal topological space. The aim of this paper is to introduce and characterize a new class of functions called almost $\mathcal{I}$-continuous functions in ideal topological spaces by using $\mathcal{I}$-open sets.

2. Preliminaries

Let A be a subset of a topological space (X, τ). We denote the closure of A and the interior of A by $\mathrm{Cl}(A)$ and $\mathrm{Int}(A)$, respectively. A subset A of a topological space (X, τ) is said to be regular open [18] if $A = \mathrm{Int}(\mathrm{Cl}(A))$. A set $A \subset X$ is said to be δ-open [20] if it is the union of regular open sets of X. The complement of a regular open (resp. δ-open) set is called regular closed (resp. δ-closed). The intersection of all δ-closed sets

2010 *Mathematics Subject Classification.* 54D10.
Key words and phrases. Ideal topological spaces, $\mathcal{I}$-open sets, almost $\mathcal{I}$-continuous functions.
The authors are grateful to the refereee for his/her comments.
Communicated by: Takashi Noiri
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