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fwg-CLOSED SET AND ITS APPLICATIONS

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Abstract. This paper deals with a new type of generalized version of fuzzy closed set, viz., fwg-closed set which is introduced in (Bhattacharyya, 2017). Using this set as a basic tool, here we introduce a new type of closure operator, viz., fwg-closure operator which is shown to be an idempotent operator. Afterwards, fwg-open and fwg-closed functions are introduced and studied with the help of this new operator. Next we introduce fwg-continuous function the class of which is strictly larger than that of fuzzy continuous function. However fwg-regular, fwg-normal, fwg-compact and fwg-T_2 spaces are introduced and studied and the applications of fwg-continuous function, fwg-irresolute function are established.

AMS Subject Classifications : 54A40, 54C99, 54D20.

Keywords : fwg-closed set, fg-closed set, $f\pi g$-closed set, fuzzy regular open set, fwg-continuous function, fwg-irresolute function.

1. Introduction. In (Balasubramanian and Sundaram, 1997 and Bhattacharyya, 2013), fuzzy generalized version of closed set is introduced. Afterwards, different types of generalized version of fuzzy closed sets are introduced and studied. In this context, we have to mention (Bhattacharyya, 2013, 2916, 2017). fwg-closed set is introduced in (Bhattacharyya, 2017). Using this concept as a basic tool, a new type of closure operator and different types of functions are introduced and studied. Then establish mutual relationships of this newly defined set (function) with the set (functions) defined in (Bhattacharyya, 2013, 2016, 2017, 2019, 2020, 2020, 2020, 2021, 2022).

2. Preliminaries. Throughout this paper (X, τ) or simply by X we shall mean a fuzzy topological space (fts, for short) in the sense of Chang (Chang, 1968). In (Zadeh, 1965), L.A. Zadeh introduced fuzzy set as follows: A fuzzy set A is a function from a non-empty set X into the closed interval $I = [0, 1]$, i.e., $A \in I^X$. The support (Zadeh, 1965) of a fuzzy set A, denoted by $suppA$ and is defined by $suppA = \{x \in X : A(x) \neq 0\}$. The fuzzy set with the singleton support $\{x\} \subseteq X$ and

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