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$fswg$-CLOSED SET AND ITS APPLICATIONS

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Abstract. In this paper, a new type of generalized version of closure operator which is an idempotent operator in a fuzzy topological space is introduced by using $fswg$-closed set (Bhattacharyya, 2017) as a basic tool. Then using this new operator, $fswg$-open function and $fswg$-closed function are introduced and characterized. Afterwards, $fswg$-continuous function, $fswg$-irresolute function, strongly $fswg$-continuous function and $fswg$-strongly continuous function are introduced and studied. Again we introduce $fswg$-regular space and $fswg$-normal space. It is shown that in fsT_g-space, fuzzy regularity (Hutton and Reilly, 1980), fuzzy normality (Hutton, 1975) remain invariant under $fswg$-continuous function and fuzzy regular space and fuzzy normal space become $fswg$-regular space and $fswg$-normal space respectively under strongly $fswg$-continuous function. Lastly, some applications of $fswg$-continuous functions, $fswg$-irresolute function, strongly $fswg$-continuous function and $fswg$-strongly continuous function on the above mentioned spaces are shown.

AMS Subject Classification: 54A40, 54C99, 03E72

Keywords: Fuzzy semiopen set, $fswg$-closed set, $fswg$-open function, $fswg$-closed function, $fswg$-continuous function, $fswg$-irresolute function, fsT_g-space.

1. Introduction After introducing fg-closed set in (Balasubramanian and Sundaram, 1997 and Bhattacharyya, 2013), several types of generalized version of fuzzy closed-like sets are introduced and studied. In (Bhattacharyya, 2017), $fswg$-closed set is introduced. In this paper we thoroughly studied this set and using this concept we study different types of generalized version of functions and separation axioms in a fuzzy topological space.

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 (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 $suppA = \{x \in X : A(x) \neq 0\}$.

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