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FUZZY ALMOST s^*-COMPACT SPACE

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Abstract. In this paper, we introduce and study fuzzy almost s-continuous and fuzzy almost s^*-continuous functions in fuzzy topological spaces. Afterwards, it is shown that any fuzzy almost s^*-continuous function is fuzzy almost s-continuous and the converse is true in fuzzy s^*-regular spaces. It is shown also that a fuzzy almost s^*-compact space is fuzzy almost compact [4] and the converse is true only in fuzzy s^*-regular spaces. Lastly, it is proved that fuzzy almost s^*-compactness remains invariant under fuzzy almost s^*-continuous functions.

1. Introduction and Preliminaries

After introducing the fuzzy open sets, many researchers are engaged themselves to introduce various types of continuous-like functions in a fuzzy topological space (fts, for short) in the sense of Chang [3]. The fuzzy semiopen set is introduced in [1] and using this concept as a basic tool in this paper we first introduce two new types of functions, viz., fuzzy almost s-continuous and fuzzy almost s^*-continuous functions. Then we introduce the fuzzy almost s^*-compact spaces (resp., sets) which are also fuzzy almost compact using fuzzy s^*-open set. A new type of fuzzy cover is introduced by which fuzzy almost s^*-compactness is characterized.

Throughout this paper, by (X,τ) or simply X we shall mean a fuzzy topological space. 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 of a fuzzy set A, denoted by $suppA$ or A_0 and is defined by $suppA = \{x \in X : A(x) \neq 0\}$. The fuzzy set with the singleton support $\{x\} \subseteq X$ and the value t $(0 < t \leq 1)$ will be denoted by x_t. 0_X and 1_X are the constant fuzzy sets taking values 0 and 1 respectively in X. The complement of a fuzzy set A in a fts X is denoted by $1_X \setminus A$ and is defined by $(1_X \setminus A)(x) = 1 - A(x)$, for each $x \in X$. For any two fuzzy sets A, B in X, $A \leq B$ means $A(x) \leq B(x)$, for all $x \in X$ while AqB means A is quasi-coincident (q-coincident, for short) with B, i.e., there exists $x \in X$ such that $A(x) + B(x) > 1$ ([7]). The negation of these two statements will be denoted by $A \not\leq B$ and $A \not{q} B$ respectively. For a fuzzy set A, by clA and $intA$ we will denote the fuzzy closure and the fuzzy interior, respectively.

A fuzzy set A in a fts (X,τ) is called fuzzy regular open [1] (resp., fuzzy semiopen [1]) if $A = intclA$ (resp., $A \leq cl(intA)$). The complement of a fuzzy semiopen set is called fuzzy semiclosed. The union (intersection) of all fuzzy semiopen (resp., fuzzy semiclosed) sets contained in (resp., containing) a fuzzy set A is called fuzzy semiinterior (resp., fuzzy semiclosure) of A, denoted by $sintA$ (resp., $sclA$). A fuzzy set A in X is called a fuzzy neighbourhood (nbd, for short) [7] of a fuzzy point x_t if there exists a fuzzy open set G in X such that $x_t \in G \leq A$. If, in addition, A is fuzzy open (resp, fuzzy semiopen), then A

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