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Faculty of Sciences
Scientific Studies and Research
Series Mathematics and Informatics
Vol. 30 (2020), No. 1, 45 - 56

A NEW TYPE OF CLOSURE-LIKE OPERATOR VIA FUZZY SEMIOPEN SETS

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Abstract. This paper deals with a new type of closure operator in fuzzy topological spaces, called s^c-closure operator, which is an idempotent operator. Then the mutual relationships of this operator with the operators defined in [2, 3, 4, 6, 9, 10] are established. Afterwards, a new type of separation axiom is introduced and studied here. In every space with this axiom assumed fuzzy semiclosure operator and this new operator are identical. In the last section some characterizations of s^c-closure operator have been done via fuzzy net.

1. Introduction

After the introduction by Chang of the concept of fuzzy closure operator [7] several types of fuzzy closure-like operators have been introduced and studied. In this context we have to mention [2, 3, 4, 6, 9, 10, 11]. Here we introduce a different type of fuzzy closure-like operator, called s^c-closure operator which is shown to be an idempotent and isotonic operator. It is shown that, in every fuzzy s^c-regular space, fuzzy semiclosure operator and fuzzy s^c-closure operator coincide.

Keywords and phrases: Fuzzy semiopen set, fuzzy s^c-closure operator, fuzzy regular open set, fuzzy preopen set, fuzzy s^c-regular space, s^c-convergence of a fuzzy net.
(2010) Mathematics Subject Classification: 54A40, 54D99.

to x_t. Indeed, for any fuzzy semiopen set U in X with $x_t q U$, if $V \in \mathcal{D}$ and $V \succeq U$ (i.e., $V \leq U$) then $y^V_{s_V} q cl V \leq cl U \Rightarrow y^V_{s_V} q cl U$.

Conversely, let $\{S_n : n \in (D, \geq)\}$ be a fuzzy net in A such that $S_n \overrightarrow{s^c} x_t$. Then for any $U \in FSO(X)$ with $x_t q U$, there exists $m \in D$ such that $n \geq m \Rightarrow S_n q cl U \Rightarrow A q cl U$ (since $S_n \in A$). Hence $x_t \in [A]^c_s$.

Remark 6.5. It is clear that an improved version of the converse of the last theorem can be written as "$x_t \in [A]^c_s$ if there exists a fuzzy net in A with x_t as a fuzzy s^c-cluster point".

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