

## A NEW TYPE OF REGULARITY IN FUZZY MINIMAL SPACE

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**Abstract:** This paper deals with a new type of open-like set in fuzzy minimal space [2], viz., fuzzy  $m$ - $\alpha$ -preopen set taking fuzzy  $m$ - $\alpha$ -open set [3] as a basic tool. Afterwards, we introduce an idempotent operator, viz., fuzzy  $m$ - $\alpha$ -preclosure operator. With the help of this operator we introduce and study two new types of functions, viz., fuzzy  $(m, m_1)$ - $\alpha$ -precontinuous function and fuzzy  $(m, m_1)$ - $\alpha$ -preirresolute function. It is shown that fuzzy  $(m, m_1)$ - $\alpha$ -preirresolute function implies fuzzy  $(m, m_1)$ - $\alpha$ -precontinuous function, but reverse implication is not necessarily true, in general. Moreover, we introduce fuzzy  $m$ - $\alpha$ -preregular space in which the reverse implication holds.

**Keywords and Phrases:** Fuzzy  $m$ -open set, fuzzy  $m$ - $\alpha$ -preopen set, fuzzy  $(m, m_1)$ - $\alpha$ -precontinuous function, fuzzy  $(m, m_1)$ - $\alpha$ -preirresolute function, fuzzy  $m$ - $\alpha$ -pre-regular space.

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### 1. Introduction

In [8], L.A. Zadeh introduced fuzzy set as follows : A fuzzy set  $A$  is a mapping from a non-empty set  $X$  into the closed interval  $[0, 1]$ , i.e.,  $A \in I^X$ . In 1968, C.L. Chang introduced fuzzy topology [5]. Afterwards, Alimohammady and Roohi introduced a more general version of fuzzy topology by introducing fuzzy minimal structure as follows : A family  $\mathcal{M}$  of fuzzy sets in a non-empty set  $X$  is said to be a fuzzy minimal structure on  $X$  if  $\alpha 1_X \in \mathcal{M}$  for every  $\alpha \in [0, 1]$  [1]. However a