

## A NEW TYPE OF REGULARITY VIA FUZZY $\alpha$ -PREOPEN SET

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**Abstract:** This paper deals with a new type of set, viz., fuzzy  $\alpha$ -preopen set, the class of which is strictly larger than that of fuzzy open set as well as fuzzy  $\alpha$ -open set [4]. Using this newly defined fuzzy set, here we introduce and study fuzzy  $\alpha$ -precontinuous and fuzzy  $\alpha$ -preirresolute functions. It is shown that fuzzy  $\alpha$ -preirresolute function is fuzzy  $\alpha$ -precontinuous, but the converse may not be true, in general. Next we introduce fuzzy  $\alpha$ -preregular space, in which fuzzy open set and fuzzy  $\alpha$ -preopen set coincide. Lastly, some applications of the functions defined here are established.

**Keywords and Phrases:** Fuzzy  $\alpha$ -open set, fuzzy  $\alpha$ -preopen set, fuzzy  $\alpha$ -nbd of a fuzzy point, fuzzy  $\alpha$ -precontinuous function, fuzzy  $\alpha$ -preregular space, fuzzy  $\alpha$ -preirresolute function.

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### 1. Introduction

After introducing fuzzy topology by Chang [5], many mathematicians have engaged themselves to introduce different types of fuzzy open-like sets. In [7], fuzzy strongly preopen set and fuzzy strong precontinuous function are introduced and studied by using fuzzy preopen set [8] as a basic tool whereas in [3], fuzzy pre-semiopen set and fuzzy pre-semi-continuous function are introduced and studied by using fuzzy semiopen set [1] introduced by K. K. Azad. In [4], Bin Shahna introduced fuzzy  $\alpha$ -open set. Using this set as a basic tool, here we introduce