Some results on fuzzy topological generalized groups

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Abstract

In this paper, we find a condition that the right and left translation of fuzzy topological generalized group are relatively fuzzy homeomorphism and then we investigate some properties of fuzzy topological generalized group with respet to this condition.

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1 Introduction

The concepts of generalized group is defined by Prof Molaei in [3] and the concept of fuzzy topological group is defined in [1]. In this paper some results on fuzzy topological generalized group that is defined in [2], are investigated.

Let X be a non empty set and $I = [0, 1]$. A fuzzy set A in X is characterized by a membership function μ_A which associates with each $x \in X$ its grade of membership $\mu_A(x) \in I$.

Definition 1.1. Let A and B be fuzzy sets in X. Then:

- $A = B \Leftrightarrow \mu_A(x) = \mu_B(x)$, for all $x \in X$,

- $A \subseteq B \Leftrightarrow \mu_A(x) \leq \mu_B(x)$, for all $x \in X$,

- $C = A \cup B \Leftrightarrow \mu_C(x) = max\{\mu_A(x), \mu_B(x)\}$, for all $x \in X$,

- $D = A \cap B \Leftrightarrow \mu_D(x) = min\{\mu_A(x), \mu_B(x)\}$, for all $x \in X$.

Remark 1.2. For a family of fuzzy sets $\{A_i, i \in I\}$, the union $C = \bigcup_{i \in I} A_i$ and the intersection $D = \bigcap_{i \in I} A_i$, are defined by

$$\mu_C(x) = sup\mu_{A_i}(x), \quad x \in X,$$

$$\mu_D(x) = inf\mu_{A_i}(x), \quad x \in X.$$

We denote by k_c the fuzzy set in X with membership function $\mu_{k_c}(x) = c$ for all $x \in X$. The fuzzy set k_1 and k_0 correspond to X and $\emptyset$, respectively.

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