AN OVERVIEW OF INTUITIONISTIC FUZZY SUPRATOPOLOGICAL SPACES

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Abstract

The purpose of this paper is to present some fundamental results on the so called “intuitionistic fuzzy supratopological spaces”, and then give some introductory results about several connectedness concepts and a notion of compactness in these spaces. The product of two intuitionistic fuzzy supratopological spaces is also considered and some results on the productivity of connectedness and compactness are presented.

Keywords: Intuitionistic fuzzy set, Intuitionistic fuzzy topology, Intuitionistic fuzzy supratopological space, Fuzzy supracontinuity, Fuzzy super supraconnectedness, Fuzzy C₅-supraconnectedness, Fuzzy strong supraconnectedness, Fuzzy Cₛ-supraconnectedness, Intuitionistic fuzzy supracompactness.

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1. Introduction

First we give the concept of “intuitionistic fuzzy set” defined by Atanassov as a generalization of the concept of fuzzy set given by Zadeh [12].

1.1. Definition. [1, 2] Let X be a nonempty set. An intuitionistic fuzzy set (IFS for short) on X is an object of the form

\[ A = \{ x, \mu_A(x), \gamma_A(x) : x \in X \} \]

where the fuzzy sets \( \mu_A : X \to \llbracket 0, 1 \rrbracket \) and \( \gamma_A : X \to \llbracket 0, 1 \rrbracket \), denote, respectively, the membership function and the nonmembership function of \( A \), and satisfy \( 0 \leq \mu_A(x) + \gamma_A(x) \leq 1 \) for each \( x \in X \). An IFS \( A = \{ x, \mu_A(x), \gamma_A(x) : x \in X \} \) can be written in the form \( A = (x, \mu_A, \gamma_A) \), or simply \( A = (\mu_A, \gamma_A) \).

1.2. Definition. [2] Let \( A = \{ x, \mu_A(x), \gamma_A(x) : x \in X \} \) and \( B = \{ x, \mu_B(x), \gamma_B(x) : x \in X \} \) be IFS’s on \( X \). Then

(a) \( \overline{A} = \{ x, \gamma_A(x), \mu_A(x) : x \in X \} \) (the complement of \( A \));

(b) \( A \cap B = \{ x, \mu_A(x) \wedge \mu_B(x), \gamma_A(x) \vee \gamma_B(x) : x \in X \} \) (the meet of \( A \) and \( B \));

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