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Intuitionistic Fuzzy ω Supra Connectedness And Intuitionistic Fuzzy ω Supra Compactness

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Abstract -Aim of this present paper is to introduce and study the concepts of Intuitionistic fuzzy ω supra connectedness and Intuitionistic fuzzy ω compactness in Intuitionistic fuzzy supra topological space.

Keywords —Intuitionistic fuzzy ω supra open sets, Intuitionistic fuzzy ω supra closed sets ,Intuitionistic fuzzy ω supra connectedness, Intuitionistic fuzzy ω compactness, Intuitionistic fuzzy supra topological space

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INTRODUCTION

L.A.Zadeh's[24] introduced fuzzy sets, using this fuzzy sets C.L. Chang [4] introduced and developed fuzzy topological space. Atanassov's[2] introduced Intuitionistic fuzzy sets, Using this Intuitionistic fuzzy sets Coker[5] introduced the notion of Intuitionistic fuzzy topological spaces. The supra topological spaces introduced and studied by A.S. Mashhour[10] in the year 1983. M. E. AbdEl-Monsef et al. [1] introduced the fuzzy supra topological spaces and studied fuzzy supra-continuous functions and obtained some properties and characterizations. In 2003 NeclaTuranl [23] introduced the concept of Intuitionistic fuzzy supra topological space.M. Parimala, [13]Jafari Saeid, introduce Intuitionistic fuzzy α-supra continuous maps in Intuitionistic fuzzy supra topological spaces. S.Chandrasekar [11] et al introduced Intuitionistic fuzzy ω supra closed sets. Aim of this present paper is to introduce and study the concepts of Intuitionistic fuzzy ω supra connectedness and Intuitionistic fuzzy ω compactness in Intuitionistic fuzzy supra topological space.

II. PRELIMINARIES

Definition 2.1[3]

An Intuitionistic fuzzy set (IF for short) A is an object having the form

A = {⟨x, μ_A(x), ν_A(x)⟩ : x ∈ X}

where the functions μ_A:X⟶[0,1] and ν_A:X⟶ [0,1] denote the degree of membership (namely μ_A(x)) and the degree of non-membership (namely ν_A(x)) of each element x ∈ X to the set A respectively, and 0 ≤ μ_A(x) + ν_A(x) ≤ 1 for each x ∈ X. Obviously, every fuzzy set A on a nonempty set X is an IFS of the following form

A = {⟨x, μ_A(x), 1- μ_A(x)⟩: x ∈ X}.

Definition 2.2 [3]

Let A and B be two Intuitionistic fuzzy sets of the form A = {⟨x, μ_A(x), ν_A(x)⟩: x ∈ X} and B = {⟨x, μ_B(x), ν_B(x)⟩ : x∈X}. Then,

(i) A ⊆ B if and only if μ_A (x)≤μ_B(x) and ν_A(x)≥ ν_B(x) for all x ∈ X,

(ii) A = B if and only if A ⊆ B and A ⊇ B,

(iii) A^C = {⟨x, ν_A(x), μ_A(x)⟩: x ∈ X},

(iv) A∪B = {⟨x, μ_A(x) ∨μ_B(x), ν_A(x) ∧ν_B(x)⟩: x ∈ X},

(v) A∩B = {⟨x, μ_A(x) ∧μ_B(x), ν_A(x) ∨ν_B(x)⟩: x ∈ X}.

(vi) [ ]A= {⟨x, μ_A(x), 1 − μ_A(x)⟩, x ∈X};

(vii) ⟨⟩A = {⟨x, 1 − ν_A(x), ν_A(x)⟩, x ∈X};

The Intuitionistic fuzzy sets 0~ = ⟨x, 0, 1⟩ and 1~ = ⟨x, 1, 0⟩ are respectively the empty set and the whole set of X

Definition 2.3. [3]

Let {A_i:i ∈J } be an arbitrary family of Intuitionistic fuzzy sets in X. Then

(i) ∩A_i = {⟨x,∧μ_{Ai}(x),∨ν_{Ai} (x) ⟩ : x ∈ X};

(ii) ∪A_i = {⟨x,∨μ_{Ai}(x),∧ν_{Ai} (x) ⟩ : x ∈ X}.

Definition 2.3.[3]

we must introduce the Intuitionistic fuzzy sets 0~ and 1~in X as follows:

0~ = {⟨x, 0, 1⟩: x ∈X} and 1~ = {⟨x, 1, 0⟩ :x ∈X}.

Definition 2.5[3]

Let A, B, C be Intuitionistic fuzzy sets in X. Then

(i) A ⊆B and C ⊆D ⇒A ∪C B∪D and A ∩ C ⊆B ∩ D,

(ii) A ⊆B and A ⊆C ⇒A ⊆B ∩ C,

(iii) A ⊆C and B ⊆C ⇒A ∪B ⊆C,

(iv) A⊆B and B ⊆C ⇒A ⊆C,

(v)$\overline{A \cup B} = \bar{A} \cap \bar{B}$

(vi) $\overline{A \cap B} = \bar{A} \cup \bar{B}$,

(vii) A ⊆B ⇒$\bar{B}$⊆$\bar{A}$,

(viii) $\overline{(\bar{A})}$= A,

(ix) $\bar{1}$~ = 0~,

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(x) $\bar{0}\sim = 1\sim$.

Definition 2.6[3]

Let f be a mapping from an ordinary set X into an ordinary set Y ,If B ={⟨y, μ_B(y), ν_B(y) ⟩: y∈Y } is an IFST in Y , then the inverse image of B under f is an IFST defined by f^{-1}(B) = {⟨x, $f^{-1}(\mu_B)$(x), $f^{-1}(\nu_B)$(x) ⟩: x ∈X}The image of IFST A = {⟨y, μ_A(y), ν_A(y) ⟩:y ∈Y } under f is an IFST defined by f(A) = {⟨y, f(μ_A)(y), f(ν_A)(y) ⟩: y ∈Y }.

Definition 2.7 [3]

Let A, A_i (i ∈J) be Intuitionistic fuzzy sets in X, B, Bi (i ∈K) be Intuitionistic fuzzy sets in Y and f: X → Y is a function. Then

(i) $A_1 \subseteq A_2 \Rightarrow f(A_1) \subseteq f(A_2)$,

(ii) $B_1 \subseteq B_2 \Rightarrow f^{-1}(B_1) \subseteq f^{-1}(B_2)$,

(iii) A $\subseteq f^{-1}$(f (A)) { If f is injective, then A = f^{-1}(f (A))},

(iv) f (f^{-1}(B)) ⊆B { If f is surjective, then f (f^{-1}(B)) = B },

(v) $f^{-1}(\cup B_j) = \cup f^{-1}(B_j)$

(vi)$f^{-1}(\cap B_j) = \cap f^{-1}(B_j)$

(vii) $f(\cup B_j) = \cup f(B_j)$

(viii) $f(\cap B_j) \subseteq \cap f(B_j)${If f is injective, then $f(\cap B_j) = \cap f(B_j)$}

(ix) $f^{-1}(1\sim) = 1\sim$,

(x) $f^{-1}(0\sim) = 0\sim$,

(xi) f (1∼) = 1∼ , if f is surjective

(xii) f (0∼) = 0∼,

(xiii) $\overline{f(A)} \subseteq f(\bar{A})$, if f is surjective,

(xiv) $f^{-1}(\bar{B}) = \overline{f^{-1}(B)}$.

Definition 2.8[22]

A family τ_μ Intuitionistic fuzzy sets on X is called an Intuitionistic fuzzy supra topology (in short,IFST) on X if $0\sim \in \tau_\mu, 1\sim \in \tau_\mu$ and $\tau_\mu$is closed under arbitrary suprema. Then we call the pair (X,τ_μ) an Intuitionistic fuzzy supra topological space.

Each member of τ_μ is called an Intuitionistic fuzzy supra open set and the complement of an Intuitionistic fuzzy supra open set is called an Intuitionistic fuzzy supra closed set.

Definition 2.9 [22]

The Intuitionistic fuzzy supra closure of a set A is denoted by S-cl(A) and is defined as

S-cl (A) = ∩{B : B is Intuitionistic fuzzy supra closed and A ⊆ B} .

The Intuitionistic fuzzy supra interior of a set A is denoted by S-int(A) and is defined as

S-int(A) = ∪{B:B is Intuitionistic fuzzy supra open and A ⊇ B}

Definition 2.10[23]

(i). ¬ (AqB) ⇔ A ⊆ B^C .

(ii).A is an Intuitionistic fuzzy supra closed set in X⇔S-Cl (A) = A.

(iii). A is an Intuitionistic fuzzy supra open set in X⇔S-int (A)= A.

(iv). S-cl(A^C) = $(S\text{-int}(A))^C$.

(v). S-int(A^C) = $(S\text{-cl}(A))^C$.

(vi). A ⊆ B ⇒ S-int(A) ⊆ S-int(B).

(vii). A ⊆ B ⇒ S-cl(A) ⊆ S-cl(B).

(viii). S-cl(A ∪ B) =S-cl(A)∪ S-cl(B).

(ix). S-int(A ∩ B) = S-int(A)∩S-int(B).

Definition 2.11[23]

An Intuitionistic fuzzy point (IFP in short), written as p(α, β), is defined to be an IFS of X given by

$$P_{(\alpha,\beta)}(x) = \begin{cases} (\alpha,\beta) \ if \ x = p, \\ (0,1) \ otherwise \end{cases}$$

An IFP p(α,β) is said to belong to a set A if $\alpha \leq \mu_A$ and $\beta \geq \nu_A$

Definition 2.12: [17]

An IFS A of an IFSTS (X, τ_μ) is an Intuitionistic fuzzy generalized supra closed set (IFGSCS in short) if S-cl(A) ⊆U whenever A ⊆U and U is an IFSOS in X.

Definition 2.13: [20]

Let an IFS A of an IFSTS (X, τ_μ). Then

S-cl (A) = ∩{ K / K is an IFSCS in X and A ⊆K }.

S-int(A) = ∪{ K / K is an IFSOS in X and K ⊆A}.

Note that for any IFS A in (X, τ_μ),

S-cl(A^C)= $S\text{-int}(A)^C$ and

S-int(A^C) =$scl(A)^C$

Definition 2.13. [12]

Let (X, τµ) be a Intuitionistic fuzzy supra topological space. Then A is called Intuitionistic fuzzy supra semi open set (IFS supra open set for short) if A ⊆ S-cl(S-int(A)).

Definition 2.15. [12]

Let (X, τµ) be a Intuitionistic fuzzy supra topological space. Then A is called Intuitionistic fuzzy semi supra closed set(IF supra-closed set for short) if S-int(S-cl(A))⊆ A.

Definition 2.16. [12]

Let A be a Intuitionistic fuzzy set of a Intuitionistic fuzzy supra topological space (X, τµ). Then,

i). The Intuitionistic fuzzy supra semi closure of A is defined as IFS supra-cl(A) = ∩{K: K is a IFS-supra closed in X and A ⊆K}

ii).The Intuitionistic fuzzy supra semi interior of A is defined as IFS supra-int(A) = ∪{G: G is a IFS-supra open in X and G ⊆ A}

Definition 2.17:[15]

The IFS C(α ,β) = {x, c_α, $c_{1-\beta}$}where α ∈(0, 1], β ∈[0, 1) and α + β ≤ 1 is called an Intuitionistic fuzzy point in X.

Definition 2.18.[11]

Let (X, τµ) be a Intuitionistic fuzzy supra topological space. Then A is called Intuitionistic fuzzy supra ω closed set(IFω-supra closed set for short) if S-cl(A) ⊆ G whenever A ⊆ G and G is Intuitionistic fuzzy semi supra open set.

Definition 2.19. [11]

Let A be a Intuitionistic fuzzy set of a Intuitionistic fuzzy supra topological space (X, τ_μ). Then,

i). The Intuitionistic fuzzy supra ω closure of A is defined as IF ω supra-cl(A) = ∩{K: K is a IF ω -supra closed in X and A ⊆K}

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ii).The Intuitionistic fuzzy ω supra interior of A is defined as IF ω supra-int(A)=∪{G:G is a IF ω-supra open in X and G ⊆ A}

III: INTUITIONISTIC FUZZY ω SUPRA CONNECTEDNESS AND INTUITIONISTIC FUZZY ω COMPACTNESS

In this section, we introduce the concept of Intuitionistic fuzzy ω supra connectedness and Intuitionistic fuzzy ω compactness in Intuitionistic fuzzy supra topological space

Definition 3.1:

An Intuitionistic fuzzy supra topological space (X,τ_μ) is called Intuitionistic fuzzy ω - supra connected if there is no proper Intuitionistic fuzzy set of X which is both Intuitionistic fuzzy ω supra open and Intuitionistic fuzzy ω supra closed .

Theorem 3.2:

Every Intuitionistic fuzzy ω supra connected space is Intuitionistic fuzzy supra connected.

Proof:

Let (X, τ_μ) be an intuitionisic fuzzy ω supra connected space and suppose that (X, τ_μ) is not Intuitionistic fuzzy supra connected .Then there exists a proper Intuitionistic fuzzy set A (A≠ **0~**, A≠ **1~**) such that A is both Intuitionistic fuzzy supra open and Intuitionistic fuzzy supra closed. Since every Intuitionistic fuzzy supra open set (resp.Intuitionistic fuzzy supra closed set) is Intuitionistic ω supra open ((resp. Intuitionistic fuzzy ω supra closed), X is not Intuitionistic fuzzy ω supra connected, a contradiction.

Remark 3.3:

Converse of theorem 3.1 may not be true for ,

Example 3.4:

Let X = {a,b} and τ_μ={**0~**,**1~**,A,B,A∪B} be an Intuitionistic fuzzy supra topology on X, whereA ={< a,0.7,0.7>,< b, 0.6, 0.8>}.B=={< a,0.6,0.6>,< b, 0.7, 0.9>}.Then Intuitionistic fuzzy supra topological space (X, τ_μ) is Intuitionistic fuzzy supra connected but not Intuitionistic fuzzy ω supra connected because there exists a proper Intuitionistic fuzzy set C={<a,0.7,0.7>,<b,0.7,0.7>} which is both Intuitionistic fuzzy ω supra closed and Intuitionistic ω supra open in X.

Theorem 3.5:

An Intuitionistic fuzzy supra topological (X, τ_μ) is Intuitionistic fuzzy ω supra connected if and only if there exists no non zero Intuitionistic fuzzy ω supra open sets A and B in X such that $A=B^C$.

Proof:

Necessity: Suppose that A and B are Intuitionistic fuzzy ω supra open sets such that A≠ **0~**≠ B and A $=B^C$. Since $A=B^C$, B is an Intuitionistic fuzzy ω supra open set which implies that B^C = A is Intuitionistic fuzzy ω supra closed set and B≠ **0~** this implies that B^C≠ **1** ~ i.e. A≠ **1~** Hence there exists a proper Intuitionistic fuzzy set A(A≠ **0~**, A≠ **1~**) such that A is both Intuitionistic fuzzy ω supra open and Intuitionistic fuzzy ω supra closed. But this is contradiction to the fact that X is Intuitionistic fuzzy ω-supra connected.

Sufficiency: Let (X, τ_μ) is an Intuitionistic fuzzy supra topological space and A is both Intuitionistic fuzzy ω supra open set and Intuitionistic fuzzy ω supra closed set in X such that **0~** ≠ A ≠ 1**~.** Now take B = A^C .In this case B is an Intuitionistic fuzzy ω supra open set and A≠ **1~.**This implies that B $=A^C$ ≠ 0~ which is a contradiction. Hence there is no proper Intuitionistic fuzzy set of X which is both Intuitionistic fuzzy ω supra open and Intuitionistic fuzzy ω supra closed. Therefore Intuitionistic fuzzy supra topological space (X, τμ) is Intuitionistic fuzzy ω supra connected

Definition 3.6:

Let (X, τ_μ) be an Intuitionistic fuzzy supra topological space and A be an Intuitionistic fuzzy set X.Then IFωS-interior and IFωS -closure of A are defined as follows.

IFωScl (A) = ∩ {K: K is an Intuitionistic fuzzy ω supra closed set in X and A⊆ K}

IFωSint (A) = ∪ {G: G is an Intuitionistic fuzzy ω supra open set in X and G⊆ A}

Theorem 3.7:

An Intuitionistic fuzzy supra topological space (X, τ_μ) is Intuitionistic fuzzy ω supra connected if and only if there exists no non zero Intuitionistic fuzzy ω supra open sets A and B in X such that B= A^C , B $=\{IF\omega S\text{-}cl(A)\}^C$, $A=(IF\omega S\text{-}cl(B))^C$.

Proof:

Necessity : Assume that there exists Intuitionistic fuzzy sets A and B such that A≠ **0~** ≠ B in X such that $B=A^C$,B $=(IF\omega S\text{-}cl(A))^C$,$A=(IF\omega S\text{-}cl(B))^C$.Since $(IF\omega S\text{-}cl(A))^C$ and $(IF\omega S\text{-}cl(B))^C$ are Intuitionistic fuzzy ω supra open sets in X, which is a contradiction.

Sufficiency: Let A is both an Intuitionistic fuzzy ω supra open set and Intuitionistic fuzzy ω supra closed set such that **0~** ≠ A ≠ 1**~.** Taking B= A^C, we obtain a contradiction.

Definition 3.8:

An Intuitionistic fuzzy supra topological space (X, τ_μ) is said to be Intuitionistic fuzzy ω supra- $T_{1/2}$ if every Intuitionistic fuzzy ω supra closed set in X is Intuitionistic fuzzy supra closed in X.

Theorem 3.9:

Let (X, τ_μ) be an Intuitionistic fuzzy ω supra-$T_{1/2}$ space, then the following conditions are equivalent:

(i) X is Intuitionistic fuzzy ω supra connected.

(ii) X is Intuitionistic fuzzy supra connected.

Proof:

(i) ⇒(ii) follows from Theorem 3.2

(ii) ⇒(i): Assume that X is Intuitionistic fuzzy ω supra - $T_{1/2}$ and Intuitionistic fuzzy ω supra connected space. If possible, let X be not Intuitionistic fuzzy ω supra connected, then there exists a proper Intuitionistic fuzzy set A such that A is both Intuitionistic fuzzy ω supra open and ω supra closed. Since X is Intuitionistic fuzzy ω supra-$T_{1/2}$,A is Intuitionistic fuzzy supra open and

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Intuitionistic fuzzy supra closed which implies that X is not Intuitionistic fuzzy supra connected, a contradiction.

Definition 3.10:

An IFωS-open set A is called an Intuitionistic fuzzy regular ωS-open set if A=IFωSInt (IFωS-cl(A)). The complement of an Intuitionistic fuzzy regular ωS-open set is called an Intuitionistic fuzzy regular ωS-closed set.

Definition 3.11:

An IFSTS (X, τ_μ) is called an IFωS–super connected space if there exists no Intuitionistic fuzzy regular IFωS open set in (X, τμ) .

Theorem 3.12:

Let (X, τ_μ) be an IFSTS, then the following are equivalent.

(i).(X, τ_μ) is an IFωS- super connected space.

(ii).For every non-zero Intuitionistic fuzzy regular ωSopen set A, IFωS-cl(A)=1∼.

(iii).For every Intuitionistic fuzzy regular ωS closed set A withA= 1∼, IFωS-Int(A)= 0∼.

(iv).There exists no Intuitionistic fuzzy regular ωS open sets A and B in (X, τ_μ) such that A=0∼=B, A⊆B^C.

(v).There exists no Intuitionistic fuzzy regular ωS open sets A and B in(X, τμ) , Such that A=0∼ = B, B = IFωS-cl(A), A= IFωS-cl(B).

(vi).There exists no Intuitionistic fuzzy regular ωS closed sets A and B in (X, τ_μ) such that A=1∼=B, B= IFωS-Int(A), A= IFωS-Int (B).

Proof:

(i) ⇒ (ii) Assume that there exists an Intuitionistic fuzzy regular ωS-open set A in (X, τ_μ) such that A=0∼ and IFωS-cl(A)= 1∼. Now let B=IFωS-Int(IFωS-cl))^C. Then B is a proper Intuitionistic fuzzy regular ωS-open set in (X, τ_μ) . But this is a contradiction to the fact that (X, τ_μ) is an IFωS-super connected space. Therefore IFωS-cl(A)= 1∼.

(ii)⇒(iii) Let A=1∼, be an Intuitionistic fuzzy regular ωS closed set in (X, τ_μ) . If B=A^C, then B is an Intuitionistic fuzzy regular ωS-open set in(X, τ_μ) with B=0∼. That is IFωSInt(B^C)= 0∼Hence IFωS-Int(A)= 0∼.

(iii)⇒(iv) Let A and B be two Intuitionistic fuzzy regular ωS open sets in (X, τ_μ) such that A=0∼=B, A⊆B^C. Since B is an Intuitionistic fuzzy regular ωS-closed set in (X, τ_μ) and B=0∼, implies B=1∼, BC=IFωS-cl(IFωS-Int(B^C)) and we have,IFωS-Int(B^C)=0∼. But A⊆B^C.Therefore 0∼=A=IFωS-Int(IFωS-cl(A))⊆IFωS-Int(IFωS-cl(B^C))=IFωS-Int(IFωS-cl(IFωS-cl(IFωS-nt(B^C))))=IFωS-Int(IFωSCl(IFωS-Int(B^C))) =IFωS -Int(B^C) =0∼, Which is a contradiction. Therefore (iv) is true.

(iv) ⇒(i) Let 0∼=A=1∼ be an Intuitionistic fuzzy regular ωS-open set in (X, τ_μ) . If we take B=IFωS-cl(A))^C, then B is an Intuitionistic fuzzy regular ωS open set.

(iv)⇒(i) Let 0∼=A=1∼, be an Intuitionistic fuzzy regular ωS open set in (X, τ_μ) , If we take B=(IFωS-cl(A))^C, then B is an Intuitionistic fuzzy regular ωS open set, since IFωS-Int(IFωS-cl(B))=IFωS-Int(IFωS-cl(IFωS-cl(A))^C)=IFωS-Int(IFωS-Int(IFωS-cl(A)))^C=IFωS-int(A^C)=IFωScl(A))^C=B. Also we get B=0∼, this implies =(IFωS-cl(A))^C, Hence IFωS-cl(A)= 1∼. Hence A= IFωS-Int(IFωS-cl(A))=IFωS-Int(1∼)=1∼. This is A=1∼, which is a contradiction. Therefore B=0∼ and A⊆B^C. But this is a contradiction to (iv). Therefore (X, τ_μ) is an IFωS-super connected space.

(i)⇒(v) Let A and B be two Intuitionistic fuzzy regular ωS open sets in (X, τ_μ) such that A=0∼, B=IFωS-cl(A))^C and A=(IFωS-cl(B))^C. We have IFωS-Int(IFωS -Cl(A)) =IFωS-Int(B^C) =(IFωS -cl(B))^C =A, A=0∼ andA=1∼, since if A=1∼, then1∼=(IFωS-cl(B))^C⇒IFωS-cl(B)=0∼. ⇒B=0∼. But B=0∼⇒ A=1∼, which implies A is proper Intuitionistic fuzzy regular ωS-open set in (X, τ_μ) , which is a contradiction to (i). Hence (v) is true.

(v)⇒(i) Let A be an Intuitionistic fuzzy regular ωS-open set in (X, τ_μ) such that A=IFωS-Int(IFωS-cl(A) and 0∼=A=1∼. Now take B=IFωS-cl(A)^C. In this case we get B= 0 ∼ and B is Intuitionistic fuzzy regular ωS-open set in (X,τ_μ) B=(IFωS-cl(A))^C and (IFωS-cl(B))^C=(IFωS-cl(IFωS-cl(A))^C)^C=IFωS-Int(IFωS-cl(A)^C)^C=IFωS-Int(IFωS-cl(A)) =A. But this is a contradiction to(v). Therefore (X, τ_μ) is an Intuitionistic fuzzy ωS-super connected space.

(v)⇒(vi) Let A and B be two Intuitionistic fuzzy regular ωS closed sets in (X, τ_μ) such that A=1∼=B,B=(IFωS-Int(A))^C and A=(IFωS-Int(B))^C. Taking C=A^C and D=B^C, C and D become Intuitionistic fuzzy regular IFωS open set in (X, τ_μ) with C=0∼=D,D=(IFωS-cl(C)),C=IFωS-cl(D))^C which is a contradiction to (v). Hence (vi) is true.

(vi)⇒(v) can be easily proved by the similar way as in (v)⇒(vi).

Definition 3.13:

A collection { Ai:i∈Λ} of Intuitionistic fuzzy ω supra open sets in Intuitionistic fuzzy supra topological space (X, τ_μ) is called Intuitionistic fuzzy ω supra open cover of Intuitionistic fuzzy set B of X if B⊆∪{Ai : i∈ Λ}

Definition 3.14:

An Intuitionistic fuzzy supra topological space (X, τ_μ) is said to be Intuitionistic fuzzy ω-supra compact if every Intuitionistic fuzzy ω supra open cover of X has a finite sub cover.

Definition 3.15 :

An Intuitionistic fuzzy set B of Intuitionistic fuzzy supra topological space (X, τ_μ) is said to be Intuitionistic fuzzy ω-supra compact relative toX, if for every collection {Ai:i∈Λ} of Intuitionistic fuzzy ω supra open subset of X such that B⊆∪{ Ai : i∈ Λ} there exists finite subset Λo of Λ such that B ⊆ ∪{ Ai : i∈ Λo}.

Definition 3.16:

A crisp subset B of Intuitionistic fuzzy supra topological space (X, τ_μ) is said to be Intuitionistic fuzzy ω-supra compact if B is Intuitionistic fuzzy ω-supra compact as Intuitionistic fuzzy subspace of X .

Theorem 3.17:

A Intuitionistic fuzzy ω supra closed crisp subset of Intuitionistic fuzzy ω-supra compact space is Intuitionistic fuzzy ω-supra compact relative to X.

Proof:

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Let A be an Intuitionistic fuzzy ω supra closed crisp subset of Intuitionistic fuzzy ω-supra compact space(X, τ_μ) . Then A^C is Intuitionistic fuzzy ω supra open in X. Let M be a cover of A by Intuitionistic fuzzy ω supra open sets in X. Then the family $\{M, A^C\}$ is Intuitionistic fuzzy ω supra open cover of X. Since X is Intuitionistic fuzzy wcompact,it has a finite sub cover say $\{G_1, G_2, G_3 \ldots\ldots, G_n\}$. If this sub cover contains A^C, we discard it.Otherwise leave the sub cover as it is. Thus we obtained a finite Intuitionistic fuzzy ω supra open sub cover of A. Therefore A is Intuitionistic fuzzy ω supra compact relative to X.

IV. Conclusion

Many different forms of generalized closed sets have been introduced over the years. Various interesting problems arise when one considers openness. Its importance is significant in various areas of mathematics and related sciences, In this paper we introduce and study the concepts of Intuitionistic fuzzy ω supra connectedness and Intuitionistic fuzzy ω supra compactness in Intuitionistic fuzzy supra topological space .This shall be extended in the future Research with some applications.

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