Intuitionistic Fuzzy Contra λ-Continuous Mappings

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ABSTRACT
The aim of this paper is to introduce and study the concepts of intuitionistic fuzzy contra λ –continuous mappings in intuitionistic fuzzy topological space and obtain some of their basic properties.

KEYWORDS
Intuitionistic fuzzy topology , intuitionistic fuzzy **λ- c**losed set, intuitionistic fuzzy **λ**- open set and intuitionistic fuzzy contra **λ**-continuous mappings.

AMS subject classification: 54A40, 03F55

1. INTRODUCTION
The concept of intuitionistic fuzzy set was introduced Atanassov [1] in 1983 as a generalised of fuzzy sets. This approach provided a wide field to the generalization of various concepts of fuzzy Mathematics.In 1997 coker [3] defined intuitionistic fuzzy topogical spaces.Recently many concepts of fuzzy topological space have been extended in intuitionistic fuzzy (IF) topological space.We provide some characterizations of intuitionistic fuzzy contra λ - continuous mappings and establish the relationships with other classes of early defined forms of intuitionistic mappings.

2. PRELIMINARIES
Definition 2.1 [1] : Let X be a nonempty fixed set. An intuitionistic fuzzy set (IFS in short) A in X is an object having the form $A = \{<x, \mu_A(x), \upsilon_B(x)> : x \in X\}$, where the function $\mu_A : X \to [0,1]$ and $\upsilon_A : X \to [0,1]$ denotes the degree of membership $\mu_A(x)$ and the degree of non membership $\upsilon_A(x)$ of each element $x \in X$ to the set A respectively and $0 \le \mu_A(x) + \upsilon_A(x) \le 1$ for each $x \in X$.

Definition 2.2[1]: Let A and B be intuitionistic fuzzy sets of the form

$A = \{<x, \mu_A(x), \upsilon_A(x)>: x \in X\}$, and form

$B = \{<x, \mu_B(x), \upsilon_B(x)>: x \in X\}$.Then

(a) $A \subseteq B$ if and only if $\mu_A(x) \le \mu_B(x)$ and $\nu_A(x) \ge \nu_B(x)$ for all $x \in X$

(b) $A = B$ if and only if $A \subseteq B$ and $B \subseteq A$

(c) $A^c = \{< x, \nu_A(x), \mu_A(x) > / x \in X\}$

(d) $A \cap B = \{ < \mu_A(x) \wedge \mu_B(x), \nu_A(x) \vee \nu_B(x) > / x \in X\}$

(e) $A \cup B = \{< x, \mu_A(x) \vee \mu_B(x), \nu_A(x) \wedge \nu_B(x) > / x \in X\}$.

Definition 2.3 [5]: An intuitionistic fuzzy topology (IFT for short) on X is a family τ of IFSs in X satisfying the following axioms.

(i) $\underset{\sim}{0}, \underset{\sim}{1} \in \tau$

(ii) $G_1 \cap G_2 \in \tau$ for any $G_1, G_2 \in \tau$

(iii) $\cup G_i \in \tau$ for any family $\{G_i / i \in I\} \subseteq \tau$

In this the pair (X, τ) is called an intuitionistic fuzzy topological space (IFTS) and each intuitionistic fuzzy set in τ is known as intuitionistic fuzzy open set in X.

Definition 2.4 [5]: The complement A^c of an intuitionistic fuzzy open set A in an intuitionistic fuzzy topological space (X, τ) is called intuitionistic fuzzy closed set in X.

Remark 2.5 [5]: For any intuitionistic fuzzy set A in

(X, τ), we have

(i) $cl(A^c) = [int(A)]^c$,

(ii) $int(A^c) = [cl(A)]^c$,

(iii) A is an intuitionistic fuzzy closed set in X ⇔

Cl (A) = A

(iv) A is an intuitionistic fuzzy open set in X ⇔

int (A) =A

Definition 2.6. Let (X, τ) be an IFTS and IFS

$A = \{ \{<x, \mu_B(x), \upsilon_B(x)>: x \in X\}$ is said to be

(a)intuitionistic fuzzy semi closed set [7] (IFSCS in short) if $int(cl(A)) \subseteq A$,

(b)intuitionistic fuzzy α − closed set [7] (IF α -CS in short) if $cl(int(cl(A))) \subseteq A$,

(c)intuitionistic fuzzy pre-closed set [7] (IFPCS in short) if $cl(int(A)) \subseteq A$,

(d)intuitionistic fuzzy regular closed set [7] (IFRCS in short) if $cl(int(A)) = A$,

(e) intuitionistic fuzzy generalized closed set [14] (IFGCS in short) if $cl(A) \subseteq U$,whenever $A \subseteq U$, and U is an IFOS.

(f)intuitionistic fuzzy generalized semi closed set [13] (IFGSCS in short) if $scl(A) \subseteq U$, whenever $A \subseteq U$, and U is an IFOS.

(g)intuitionistic fuzzy α − generalized closed set [11]

(I F α -GCS in short) if $\alpha\text{-}cl(A) \subseteq U$, whenever $A \subseteq U$, and U is an IFOS.

An IFS A is called intuitionistic fuzzy semi open set, intuitionistic fuzzy α − open set, intuitionistic fuzzy pre open set, intuitionistic fuzzy regular open set, intuitionistic fuzzy generalized open set, intuitionistic fuzzy generalized semi open set, and intuitionistic fuzzy α − generalized open set and (IFSOS,IF α −OS, IFPOS, IFROS, IFGOS, IFGSOS, IF α -GOS and) if the complement A^c is an IFSCS, IF α -CS, IFPCS, IFRCS, IFGCS, IFGSCS, and IF α − GCS respectively.

Definition 2.7 : Let f be a mapping from an IFTS ($X;\tau$) into an IFTS ($Y;\sigma$).Then f is said to be

(a) intuitionistic fuzzy continuous [5] (IF continuous in short) if f^{-1} (B) is an IFOS in X for every IFOS B in Y.

(b) intuitionistic fuzzy contra continuous [4] if f^{-1} (B) is an IFCS in X for every IFOS B in Y,

(c) intuitionistic fuzzy contra semi continuous [4] if

f^{-1} (B) is an IFSCS in X for every IFOS B in Y,

(e) intuitionistic fuzzy contra pre continuous([4]) if

f^{-1} (B) is an IFPCS in X for every IFOS B in Y.

Definition 2.8 [5]: Let X and Y are nonempty sets and

$f : X\to Y$ is a function.

(a) If $B = \{< y, \mu_B(y), \upsilon_B(y) > : y \in Y\}$ is an

intuitionistic fuzzy set in Y, then the pre image of

B under f denoted by $f^{-1}(B)$, and is defined by

$f^{-1}(B) = \{<x, f^{-1}(\mu_B(x)), f^{-1}(\upsilon_B(x)) > : x \in X\}$

(b) If $A= \{<\{x, \mu_A(x), \upsilon_B(x),)> / x\in X\}$ is an intuitionistic fuzzy set in X, then the image of A under f denoted by f(A) is the intuitionistic fuzzy set in Y defined by

$f(A) = \{<y, f(\mu_A(y)), f(\upsilon_A(y)) > : y \in Y\}$ where

$f(\upsilon_A) = 1- f(1- \mu_A)$.

Definition 2.9 [6] Let $f : (X , \tau) \to (Y , \sigma)$ be any intuitionistic fuzzy continuous map if and if the pre image of each intuitionistic fuzzy open set in Y is an intuitionistic fuzzy topological space X.

Definition 2.10 A mapping $f : (X, \tau)\to (Y, \sigma)$ is called an

(i)intuitionistic fuzzy generalised semi- pre continuous (IFGSP continuous for short) mapping**[12]** if $f^{-1}(V)$ is an IFGSPCS in (X , τ) for every IFCS V of (Y, σ).

(ii) intuitionistic fuzzy alpha generalised continuous (IFαG continous in short) **[10]** mapping if $f^{-1}(V)$ is an IFαGCS in **(**X , τ) for every IFCS V of (Y, σ).

Through out this paper $f : (X, \tau) \to (Y ,\sigma)$ denotes a mapping from an intuitionistic fuzzy topological space (X , τ) to another topological space (Y , σ).

Remark 2.11 [11]: Every intuitionistic fuzzy continuous mapping is intuitionistic fuzzy g-continuous but the converse may not be true.

Definition 2.12 [9] : An intuitionistic fuzzy set A of an intuitionistic topology space (X , τ) is called an

(i) intuitionistic fuzzy λ-closed set (IF λ-CS) if

$A \supseteq cl(U)$ whenever $A \supseteq U$ and U is intuitionistic fuzzy open set in X.

(ii) intuitionistic fuzzy λ-open set (IF λ-OS) if the complement A^c of an intuitionistic fuzzy λ-closed set A.

Definition 2.13: [9] A mapping $f :(X, \tau)\to (Y, \sigma)$

is called an intuitionistic fuzzy λ-continuous if

$f^{-1}(V)$ is an intuitionistic fuzzy λ -closed sets in (X , τ) for every IFCS V of (Y, σ).

The family of all intuitionistic fuzzy λ-closed set

(resp. intuitionistic fuzzy λ-open set) of an IFTS

(X, τ) is denoted by IF λ-CS(X).(resp.IF λ-OS(X))

3. INTUITIONISTIC FUZZY CONTRA λ-CONTINUOUS MAPPINGS

In this section, we introduce intuitionistic fuzzy contra λ –continuous mappings and study some of their properties.

Definition 3.1 : A mappings $f : (X, \tau) \to (Y, \sigma)$ is called an intuitionistic fuzzy contra **λ -** continuous mappings if f^{-1} (B) is an IF λ -CS in (X,) for every IFOS B of (Y, σ) on X .

Example 3.2: Let X = {a,b } and Y= {u,v } and

$\tau = \{ \tilde{0}, \tilde{1}, U \}$ and $\sigma = \{ \tilde{0}\ \tilde{1}, V\}$

be topologies of X and Y respectively. Where

U = { <x, 0.5,0.5>, < y, 0.3,0.6 > } and

V= { <u, 0.5,0.5>, < v , 0.8,0.2 > } be the topologies of X and Y respectively. Consider a mapping $f : (X, \tau) \to (Y, \sigma)$ as f(a) =u and f (b) =v . This f is an intuitionistic fuzzy contra λ -coninuous mapping.

Theorem 3.3 : Every intuitionistic fuzzy contra continuous mappings is an intuitionistic fuzzy contra **λ** – continuous mappings but not conversely.

Proof : Let $f : (X, \tau) \to (Y, \sigma)$ be an intuitionistic fuzzy contra continuous mappings. Let A be an IFOS in Y By hypothesis f^{-1} (A) is an IFCS in X. Since every IFCS is an IF λ –CS in X. Hence f is an intuiitionistic fuzzy contra λ – continuous mapping.

Converse of the above theorem is not true as seen from the following example :

Example 3.4 : Let X = {a, b } and Y= {u, v } and $\tau = \{ \tilde{0}, \tilde{1}, U \}$ and $\sigma = \{ \tilde{0}, \tilde{1}, V \}$

be topologies of X and Y respectively. Where

U = { <x, 0.5,0.5>, < y, 0.3,0.6 > } and

V= { <x, 0.5,0.5>, < y, 0.8,0.2 > } be the topologies on X and Y respectively. Consider a mapping

$f : (X , \tau) \to (Y,\sigma)$ as f(a) =u and f (b) =v . This f is an intuitionistic fuzzy contra λ -coninuous mapping but not an intutionistic fuzzy contra continuous mappings. Since intuitionistic fuzzy set V is an IFOS in Y.

But f^{-1} (V) = {< x, 0.5 , 0.5 > , < y , 0.8 .0.2 > } is not an IFCS in X.

Theorem 3.5. Let $f : (X , \tau) \to (Y , \sigma)$ be an intuitionistic fuzzy contra weakly generalized continuous mapping and X an IF **λ** - $T_{1/2}$ space. Then f is an intuitionistic fuzzy contra continuous mapping.

Proof *:* Let B be an IFOS in Y. By hypothesis, $f^{-1}(B)$ is an IF **λ** - CS in X. Since X is an *IF* **λ** *- $T_{1/2}$* space, $f^{-1}(B)$ is an IFCS in X. Hence f is an intuitionistic fuzzy contra continuous mapping.

Theorem 3.6. Let f : (X; τ) → (Y; σ) be a mapping from an IFTS X into an IFTS Y and X an IF **λ** - $T_{½}$ space. Then the following statements are equivalent.
(a) f is an intuitionistic fuzzy contra **λ** - continuous mapping,
(b) f is an intuitionistic fuzzy contra continuous
Proof. Obvious.

Theorem 3.7. Every intuitionistic fuzzy contra pre-continuous mapping is an intuitionistic fuzzy contra **λ** - continuous mapping but not conversely.

Proof. Let f : (X , τ) → (Y , σ) be an intuitionistic fuzzy contra pre-continuous mapping. Let A be an IFOS in Y. By hypothesis, f^{-1} (A) is an IFPCS in X. Since every IFPCS is an IF **λ** –CS[8], f^{-1} (A) is an IF **λ** - CS in X. Hence f is an intuitionistic fuzzy contra **λ** - continuous mapping.

Remark 3.8 : Converse of the above theorem is not true as seen from the following example.

Example3.9 : Let X = {a,b } and Y= {u,v } and

τ = { $\underset{\sim}{0}$, $\underset{\sim}{1}$, U } and σ ={ $\underset{\sim}{0}$ $\underset{\sim}{1}$, V} be topologies of X and Y respectively.

Where U = { <x, 0.5,0.5>, < y, 0.3,0.6 > } and

V={ <u, 0.5,0.5>, <v, 0.8,0.2 > } be the topologies on X and Y respectively. . Consider a mapping

f : (*X*, τ) → (*Y* , σ) as f(a) =u and f (b) =v . This f is an intuitionistic fuzzy contra λ -coninuous mapping but not an intutionistic fuzzy contra pre continuous mappings. Since Intuitionistic fuzzy set V is an IFOS in Y. But

f^{-1} (V) = {<a, 0.5 , 0.5 > , < b, 0.8 .0.2 > } is IF λ -closed set but not IF pre closed set in X.

Remark 3.4: The concept of intuitionistic fuzzy contra λ -continuous mapping and Intuitionistic fuzzy contra g-continuous mappings are independent as seen from the following examples.

Example3.5: Let X= {a, b}, Y={u, v} and intuitionistic fuzzy sets U and V are defined as follows.U={<a,0.5,0.5>,<b,0.6,0.3>},
V={<u,0.5,0.5>,<v,0.6,0.2>}. Let τ = { $\underset{\sim}{0}$, $\underset{\sim}{1}$, U } and

σ ={ $\underset{\sim}{0}$ $\underset{\sim}{1}$, V} be intuitionistic fuzzy topologies on X and Y respectively. Then the mapping

f: (X, τ) → (Y, σ) defined by f(a)=u and f(b)=v is intuitionistic fuzzy contra g-continuity but not intuitionistic fuzzy contra λ-continuity. Since Intuitionistic fuzzy set V is an IFOS in Y. But

f^{-1} (V) = {<a, 0.5 , 0.5 > , < b, 0.6 .0.2 > } is IFg-closed set but not IF λ- closed set in X

Example 3.6: Let X= {a ,b } and Y={u, v} and intuitionistic fuzzy sets U and V are defined as follows U={<a,0.5,0.5> , <b,0.5, 0.2 >} and

V={<a,0.5,0.5> , <b,0.5,0.4>} Let τ = { $\underset{\sim}{0}$ $\underset{\sim}{1}$, U } and σ = { $\underset{\sim}{0}$ $\underset{\sim}{1}$,V } be intuitionistic fuzzy topologies on X and Y respectively. Then the mapping f:(X, τ) → (Y, σ) defined by f(a)=u and f(b)=v is intuitionistic fuzzy contra λ-continuous but not intuitionistic fuzzy contra g- continuous. Since Intuitionistic fuzzy set V is an IFOS in Y. But

f^{-1} (V) = {<a, 0.5 , 0.5 > , < b, 0.5.0.4 > } is IF λ-closed but not IF g-closed set in X

Remark 3. 11 : The concept of intuitionistic fuzzy contra λ-continuous mappings and intuitionistic fuzzy contra semi continuous mappings are independent as seen from the following examples.

Example 3.12 : Let X={a ,b}, Y={u, v} and intuitionistic fuzzy sets U and V are defined as follows U= {<a, 0.5, 0.5>, <b, 0.2, 0.5 >},
V= {u, 0 .5, 0.5>, <v, 0.4, 0 .5>}.

Let τ ={ $\underset{\sim}{0}$ $\underset{\sim}{1}$,U } and σ ={ $\underset{\sim}{0}$ $\underset{\sim}{1}$,V}be intuitionistic fuzzy topologies on X and Y respectively. Then the mapping f: (X, τ) → (Y, σ) defined by f(a)=u and f(b)=v is intuitionistic fuzzy contra λ- continuous but not intuitionistic fuzzy contra semi continuous. Since Intuitionistic fuzzy set V is open in Y.but f^{-1} (V) = {<a, 0.5 , 0.5 > , <b, 0.5 .04> } is IF λ–closed in X,but not IF semi closed in X.

Example 3. 13 : Let X={a , b} , Y={u , v} and intuitionistic fuzzy sets U and V are defined as follows:
U= {<a, 0. 5, 0 .5 >, <b, 0. 4, 0 .6>}
V = {<a, 0.2 ,0.8 >, <b, 0 .1, 0 .9>}.

Let τ = { $\underset{\sim}{0}$, $\underset{\sim}{1}$,U} and σ = { $\underset{\sim}{0}$ $\underset{\sim}{1}$,V} } be intuitionistic fuzzy topologies on X and Y respectively then the mapping f: (X, τ) → (Y, σ) defined by (a)=x and f (b)=y is intuitionistic fuzzy contra semi continuous mapping but not intuitionistic fuzzy contra λ - continuousmappings. . Since Intuitionistic fuzzy set V is open inY.but f^{-1} (V) = {<a, 0.5 , 0.5 > , <b, 0.1 .0.9 > } is IFsemi closed in X .but not IF λ– semi closed in X.

Remark 3.14 : The concept of intuitionistic fuzzy contra λ- continuous mappings and intuitionistic fuzzy contra generalised semi -pre continuous mappings are independent as seen from the following examples.

Example 3.15 : Let X={a , b} , Y={u ,v } and intuitionistic fuzzy sets U and V are defined as follows: U= {<a, 0. 5, 0 .5 >, <b, 0. 5, 0 .3>} and

V = {<u, 0.5 .0.5 >, <v, 0 .5, 0 .4>}.

Let τ = { $\underset{\sim}{0}$, $\underset{\sim}{1}$,U} and σ ={ $\underset{\sim}{0}$ $\underset{\sim}{1}$,V} be intuitionistic fuzzy topologies on X and Y respectively then the mapping . f: (X, τ) → (Y, σ) defined by f(a)=u and f (b)=v is intuitionistic fuzzy contra generalized semi -pre continuous mapping but not intuitionistic fuzzy contra λ- continuous mapping. Since Intuitionistic fuzzy set V is open inY.but f^{-1} (V) = {<a, 0.5 , 0.5 > , <b, 0.5 .0. > } is IFgeneralised semi preclosed in X .but not IF λ– semi closed in X.

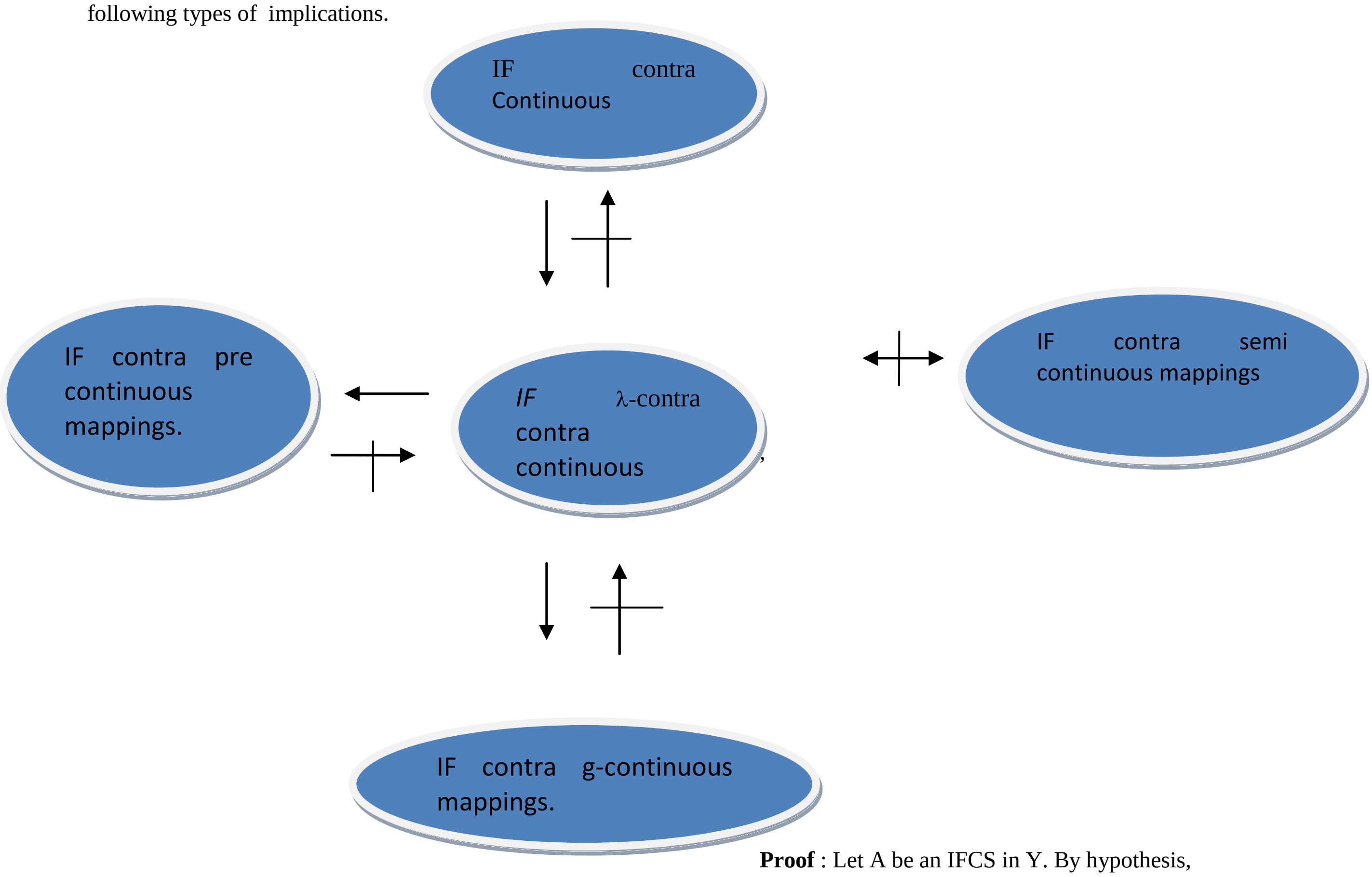
Example 3.16 : Let X={a , b} , Y={u, v} and intuitionistic fuzzy sets U and V are defined as follows:

U= {<a, 0. 5, 0 .5 >, <b, 0. 6, 0 .3>},

V = {<a, 0.5 .0.5 >, <b, 0 .2, 0 .8>}.

Let τ = { $\tilde{0}$, $\tilde{1}$,U} and σ = { $\tilde{0}$ $\tilde{1}$,V } be intuitionistic fuzzy topologies on X and Y respectively then the mapping f: (X, τ) → (Y, σ) defined by f(a)=u and f (b)=v is not intuitionistic fuzzy contra generalized semi -pre continuous mapping but intuitionistic fuzzy contra λ- continuous mapping. Since Intuitionistic fuzzy set V is open inY.but not generalised semi pre closed set in X.

Remark 3.17 : From the above theorems and remarks we get following types of implications.



In this diagram A → B means that A implies B

A ↛ B means that B does not imply A

A ↮ B means that A and B are independent to each other

Theorem 3.18: Let f : (X ; τ) → (Y; σ) be a mapping from an IFTS X into an IFTS Y. Then the following statements are equivalent

(a) f is an intuitionistic fuzzy contra **λ** - continuous mapping,

(b) f^{-1} (B) is an IF **λ** - OS in X for every IFCS B in Y.

Proof :

(a))⇒ (b) : Let B be an IFCS in Y. Then B^C is an IFOS in Y. By hypothesis,

$f^{-1}(B^C) = (f^{-1}(B))^C$ is an IF **λ** -CS in X. Hence f^{-1} (B) is an IF **λ** –OS in X.

(b) ⇒ (a) : Let B be an IFOS in Y. Then B^C is an IFCS in Y. By (b), $f^{-1}(B^C) = (f^{-1}(B))^C$ is an IF **λ** -OS in X. Hence f^{-1} (B) is an IF **λ** -CS in X. Therefore f is an intuitionistic fuzzy contra **λ** - continuous mapping.

Theorem 3.19 :Let f : (X, τ) → (Y, σ) be a bijective mapping from an IFTS X into an IFTS Y. Then f is an intuitionistic fuzzy contra **λ** - continuous mapping if

cl(f(A)) ⊆ f(**λ** - int(A)) for every IFS A in X

Proof : Let A be an IFCS in Y. By hypothesis,

$cl(f(f^{-1}(A))) \subseteq f(\lambda - int(f^{-1}(A)))$.Since f is onto, $f(f^{-1}(A))$ = A. Therefore $A = cl(A) = cl(f(f^{-1}(A))) \subseteq$

$(\lambda - int(f^{-1}(A)))$. This implies

$f^{-1}(A) \subseteq f^{-1}(f(\lambda - int(f^{-1}(A)))) = \lambda - int(f^{-1}(A)) \subseteq$

f^{-1} (A). Thus f^{-1} (A) is an IF **λ** - OS in X. Hence f is an intuitionistic fuzzy contra **λ** - continuous mapping.

Theorem 3.20 :Let f : (X ,τ) → (Y, σ) be a mapping from an IFTS X into an IFTS Y. Then f is an intuitionistic fuzzy contra **λ** - continuous mapping if

f^{-1} (**λ** -cl(B)) ⊆**λ** - int(f^{-1} (B)) for every IFS B in Y.

Proof : Let B be an IFCS in Y. Since every IFCS is an IF **λ** -CS, we have **λ** - cl(B) =B. By hypothesis, f^{-1} (B) = f^{-1} (**λ** -cl(B)) ⊆ **λ** - int(f^{-1} (B)) ⊆ f^{-1} (B):

This implies f^{-1}(B) is an IF **λ** - OS in X. Hence f is an intuitionistic fuzzy contra continuous mapping. Then by Theorem 3.3, f is an intuitionistic fuzzy contra **λ** - continuous mapping.

Theorem 3.21 : An intuitionistic fuzzy continuous mapping f : (X; τ) → (Y; σ) is an intuitionistic fuzzy contra **λ** - continuous mapping if IF **λ** -O (X)=IF **λ** -C(X).

Proof. Let A be an IFOS in Y. By hypothesis, f^{-1} (A) is an IFOS in X. Since every IFOS is an IF **λ** -CS, f^{-1} (A) is an IF **λ** -CS in X. Thus f^{-1} (A) is an IF **λ** –CS in X, by hypothesis. Hence f is an intuitionistic fuzzy contra **λ** - continuous mapping.

Theorem 3.22 : Let f : (X, τ) →(Y, σ) and

g : (Y , σ) → (Z , δ) be any two mappings.. Then the following statements hold.

(a) Let f : (X, τ) → (Y, σ) be an intuitionistic fuzzy contra **λ**-weakly generalized continuous mapping and

g : (Y, σ) → (Z , δ) an intuitionistic fuzzy continuous mapping. Then their composition gof : (X, τ) → (Z, δ) is an intuitionistic fuzzy contra **λ** -continuous mapping

(b) Let f : (X, τ) → (Y, σ) be an intuitionistic fuzzy contra **λ** -continuous mapping and

g : (Y, σ) → (Z, δ) an intuitionistic fuzzy contra continuous mapping. Then their composition

gof : (X, τ) → (Z, δ) is an intuitionistic fuzzy **λ**- continuous mapping.

(c) Let f : (X, τ) → (Y, σ) be an intuitionistic fuzzy **λ**-irresolute mapping and g : (Y, σ) → (Z, δ) an intuitionistic fuzzy contra **λ** -continuous mapping. Then their composition gof : (X, τ) → (Z, δ) is an intuitionistic fuzzy contra **λ** -continuous mapping.

Proof :

(a) Let A be an IFOS in Z. According to the hypothesis, g^{-1} (A) is an IFOS in Y. Since f is an intuitionistic fuzzy contra **λ** –continuous mapping,we have f^{-1} (g^{-1} (A)) = $(gof)^{-1}$ (A) is an IF **λ** –CS in X. Hence gof is an intuitionistic fuzzy contra **λ** – weakly generalized continuous mapping.

(b) Let A be an IFOS in Z. Hypothetically stating,

g^{-1} (A) is an IFCS in Y.

Since f is an intuitionistic fuzzy contra **λ** -continuous mapping, f^{-1} (g^{-1} (A)) = $(gof)^{-1}$ (A) is an IF **λ** –OS in X. Hence gof is an intuitionistic fuzzy **λ** –continuous mapping.

(c) Let A be an IFOS in Z. To state hypothetically, g^{-1} (A) is an IF **λ** –CS inY. Since f is an intuitionistic fuzzy

λ -irresolute mapping, f^{-1} (g^{-1} (A)) = $(gof)^{-1}$ (A) is an IF **λ** -CS in X. Hence gof is an intuitionistic fuzzy contra **λ** -continuous mapping.

4. CONCLUSION

In this paper we have introduced intuitionistic fuzzy contra **λ** -continuous mapping and studied some of its basic properties. Also we have studied the relationship between intuitionistic fuzzy contra **λ**-continuos mapping and some of the intuitionistic fuzzy mappings already exists.

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