Schauder of (Fixed point) Theories in “Intuitionistic Fuzzy Metric Space” by (Occasionally Weakly Compatible) of Self Mapping

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Abstract

The present paper is aimed to obtain some fixed point(FP) theories (schauder) an intuitionistic fuzzy metric space(IFMS) under using the ideas of four self _mapping, such that by Occasionally Weakly Compatible(OWC) self _mapping, As an application the existence schauder and illustrative by some example of (OWC) self _mapping an (IFMS) usage one process of fixed point theories Schauder will be studied using implicit relations. This work may be considered as a general statement of fuzzy metric space(FMS) and to show another sort from fixed point theories in (OWC) self_mapping which are studied by other researchers and unify many results in the topic forfixed point.

Keywords:Fuzzy Metric Space, Intuitionistic fuzzy metric space, Fixed pointby Schauder four in Weakly Compatible Maps&Occasionally Weakly Compatible-Maps.،theories

مبرهنات شاودر النقطة الصامدة في الفضاء المتري الضبابي الحدسي بواسطة التخطيط البياني المتوافق الضعيف احيانا

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الخلاصة

يهدف هذا البحث للحصول على بعض نظريات النقطة الصامدة في الفضاء المتري الضبابي الحدسي باستخدام افكار التخطيط البياني لاربعة بواسطة التخطيط البياني المتوافق الضعيف احيانا كتطبيق على وجود شاودر والتوضيح من خلال بعض الامثلة على (OWC)لاستخدام (IFMS) واحدة من نظريات النقطة الصامدة وستتم دراسة شاودر باستخدام العلاقات الضمنية،يمكن اعتبار هذا العمل بيانا عاما للفضاء المتري الضبابي واظهار نوع اخر من نظريات النقطة الصامدة في التخطيط البياني المتوافق الضعيف احيانا والتي يدرسها باحثون اخرون وتوحيد العديد من النتائج في موضوع النقطة الثابتة .

الكلمات المفتاحية: الفضاء المتري الضبابي ،الفضاء المتري الضبابي الحدسي ،نظريات النقطة الصامدة شاودر،اربعة في تخطيط البياني متوافق الضعيف، التخطيط البياني المتوافق الضعيف احيانا.

1-Introduction

Atanassove [1] In 1986 insert & the calculated understandable from various fixed point theories at fuzzy sets an intuitionistic as a universal notice to the fuzzy group, which is inserted through Zadeh[2]. We underline studies after ten years later, Kramosil & Michalek insert note from universal notice from fuzzy metric- spaces [3]. Later on, Park, 2004[4] outlined thought from (IFMS) while that assistance from *continuous t_norm* together *continuous t_conorms*. After that lots to works were advanced to the theories on newly, in 2006. Alaca et al. [5] introduced of that outlined from (IFMS) through job usage from Intuitionistic Fuzzy sets, Turkoglu [6] et al. show Jungck's [7] mutual metric-space theories with in check from *intuitionistic fuzzy metric space*. The understandable to weakly commuting maps an (IFMS) the understandable of weakly compatible- maps are the most general. They do know the notion from Hausdorff topology fuzzy metric-space, [8]. Proved B. D. Pant &SunnyChauhan [9] common fixed-point theories to (OWC)-*Maps in manger − space*, *Surendra Singh* & *Amardeep Singh* [10] (IFMS) while mutual fixed point theories employ (OWC)-Maps self_maps, Anupama &Arvind[11], fixed point theories an (IFMS)through employ (OWC) - Maps in rational form, Pranjali while Shailesh[12] several mutual fixed point theories in (IFMS)usage the CLRG estate, In 2016, Arun & Zaheer[13], All couples from Compatible -Maps is Weakly-compatible. After that, many writers show fixed point theories employ several mapping in satisfy spaces, Rashmi & Saurabh [14].

Insert the understandable of (OWC) charts, which is more universal then the understandable of Weakly Compatible-Mapsat that sheet, us show some Schauder fixed point theories under that condition from sometimes Weakly Compatible-Maps and (IFMS), while prove another sort of this theoriesan (IFMS)which is considered at that sheet as a supplementary search tagged Schauder fixed point theories an (IFMS), about corollaries of the central effect is given.

2. Preliminaries

Several requisite understandable from fuzzy metric space (IFMS) is offered at that part.

Definition1. [15]:
A binary operation $*: [0,1] \times [0,1] \to [0,1]$ *is a (continuous t_norm) then* $*$ *satisfy the following condition*:

a) $*$ *is commutative & associative*,

b) $*$ *is continuous*,

c) $a * 1 = a$ *for all* $a \in [0,1]$,

d)) $a * b \leq c * d$, $a \leq c$ *and* $b \leq d$ *to each* $a, b, c, d \in [0,1]$.

Definition2. [16]: let X becomes a nonempty set. A popularized metric (or D-metric) on X is a function $D: W * W * W \to R^+$, that satisfy the following condition to *every* $x, y, z, a \in W$:

a) $D(x,y,z) \geq 0$,

b) $D(x,y,z) = 0$ *if and only if* $x = y = z$,

c) $D(x, y, z) = D(p\{x, y, z\}), where\ p\ is\ the\ change\ function$

d) $D(x, y, z) \leq D(x, y, a) + D(a, z, z)$.

$That\ pair\ (X, D)\ is\ called\ the\ popularized\ metric\ neither\ D - metric\ space.$

Definition3. [16] $A\ 4 - tuple\ (X, M_D, *)$ Is called M _ Fuzzy Metric Space if X is at spot (nonempty) set, * is M _continuous t_norm & M is Fuzzy subset $of\ X * X * X * (0, \infty)$, $satisfy\ the\ following\ condition\ to\ every\ x, y, z, a\ on\ X\ \&\ t, s > 0$:

a) $M_D(x, y, z, t) > 0$,

b) $M_D(x, y, z, t) = 1\ if and\ only\ if\ x = y = z$,

c) $M_D(x, y, z, t) = M_D(p\{x, y, z\}, t), wherever\ p\ is\ a\ change\ mapping\ of\ x, y\ \&\ z$,

d) $M_D(x, y, a, t) * M_D(a, z, z, s) \leq M_D(x, y, z, t + s)$,

e) $M_D(x, y, z, *) : \{(0, \infty) \rightarrow [0, 1]\}\ is\ a\ continuous.$

Example1. [17]: $let\ Z = R\ \&\ let$:

M_D (w, x, p, t) = t/ (t+D (w, x, p)), $t > 0$

Wherever:

$$D(w, x, p) = max\{|w - x|\ |x - p|\ |p - w|\}\ \forall w, x, p\ on\ Z$$

Then (Z, M_D, *) is M _ Fuzzy Metric Space.

Definition4. [15]: the binary operation◊: [0, 1] × [0, 1] ⟶ [0, 1] is a continuous t_ conorm undefined* satisfy the following condition:

1) $\lozenge\ is\ commutative\ while\ associative$,
2) $\lozenge\ iscontinuous$,
3) $a \lozenge 0 = a, to\ every\ a\ on\ [0, 1]$,
4) $a \lozenge b \leq c \lozenge d\ \&\ a \leq c\ \&\ b \leq d\ to\ each\ a, b, c, d\ on\ [0,1]$.

Lemma1. [4]: $If\ *\ is\ a\ continuous\ t - norm\ \&\ is\ a\ continuous\ t - conorm$
1) $To\ all\ a, b\ on\ [0, 1], if\ a > b, then\ c, d \in [0, 1]\ satisfy\ it\ a * c \geq b\ \&\ a \geq b \lozenge d$,
2) $If\ a\ on\ [0, 1], then\ b, c\ on\ [0, 1]\ satisfy\ it\ b * b \geq a\ \&\ a \geq c \lozenge c.$

Definition5. [18]: $A\ 5 - tuple\ (X, M, N, *, \lozenge)$ is called for become an (IFMS) if X an arbitrary sets, $*\ is\ a\ continuous\ t - norm, \lozenge\ is\ a\ continuous\ t - conorm$ & M, N are fuzzy set on $x^2 \times [0, \infty)\ satisfy\ the\ following\ condition$:
1) $M(x, y, t) + N(x, y, t) \leq 1\ for\ all\ x, y\ on\ X \& t > 0$,
2) $M(x, y, 0) = 0\ forall\ x, y\ on\ X$,
3) $M(x, y, t) = 1\ forall\ x, y\ on\ X\ \&\ t > 0\ if\ and\ only\ if\ x = y$,
4) $M(x, y, t) = M(y, x, t) forall\ x, y\ on\ X\ \&\ t > 0$,
5) $M(x, y, t) * M(y, z, s) \leq M(x, z, t + s) forall\ x, y, z\ on\ X\ \&\ s, t > 0$,
6) $M(x, y, .): [0, \infty) \rightarrow [0, 1] is\ left\ continuous, for\ all\ x, y\ on\ X$,
7) $\lim_{x \to \infty} M(x, y, t) = 1\ for\ all\ x, y\ on\ X\ \&\ t > 0$,
8) $N(x, y, .) = 1\ forall\ x, y\ on\ X$,
9) $N(x, y, t) = 0\ forall\ x, y\ on\ X\ \&\ t > 0\ if\ and\ only\ if\ x = y$,
10) $N(x, y, t) = N(y, x, t) forall\ x, y\ on\ X\ \&\ t > 0$,

11) $N(x,y,t) \lozenge N(y,z,s) \geq N(x,z,t+s) for all\ x,y,z\ on\ X\ \&\ s,t > 0,$
12) $N(x,y,.):\{[0,\infty) \to [0,1]\} is\ right\ continuous\ for all\ x,y\ on\ X,$
13)$\lim_{t\to\infty} N(x,y,t) = 0, for\ all\ x,y\ on\ X.$

An alternative definition of the convergent & Cauchy series at (IFMS) is given next.

Definition6. [18]: *Let* $(X,M,N,*,\lozenge)$ *be at* $(IFMS)$. *Then*
1)A sequence $\{x_n\}$ in X is called for become Cauchy sequence if at every t > 0 & p >0.

$$\lim_{n\to\infty} M(x_{n+p}, x_n, t) = 0\ \&\ \lim_{n\to\infty} M(x_{n+p}, x_n, t) = 1$$

2) *A sequence xn in X is called for become convergent to a point x on X if,* to each t > 0,
$\lim_{n\to\infty} M(x_n, x, t)\ \&\ \lim_{n\to\infty} M(x_n, x, t) = 0.$
3) *If all* $(M,N) - ($*Cauchy sequence is convergent*$)$*, is called for become* (M, N) - Complete.
4) *If each sequence in X includes a convergent subsequence, is called to become compact.*

Definition7. [19]: *Let a quasi_ metric on a group Z is a mapping of* $d: x^2 \to R^2$ satisfy the following condition *for all* $w,x,p \in Z$.
i) $d(w,x) = 0,$
ii) $d(w,x) = d(x,w),$
iii) $d(w,p) \leq d(w,x) + d(x,p).$

Remark1. [20]: *The* $(IFMS)$ $(X,M,N,*,\lozenge)$ & $M(x,y,*)$ *is non – decreasing* & $N(x,y,\lozenge)$ *is non – increasing for all x, y on X.*

The following proposition is fundamental in our work and we will use it later

Proposition1. [20]: let (X, M, N, *, ◊) become the (IFMS), to every r on [0, 1], where introduce d_r: $X^2 \to R^+$ as attached:

$$dr(x,y) = inf\{t > 0 \mid M(x,y,t) > 1-r, N(x,y,t) < r\} \quad \dots.(1)$$

1) (X, d_r): r ∈ (0, 1] is a popularizing distance for a quasi- metric people.
2) The topology $\{T(dr) \in (X,dr): r \in (0,1]$ agrees together that$(M,N) - Topology \in (X,M,N,*,\lozenge)$ *then, dr is compatible symmetric to* $T(M,N)\}$.

3. Schauder Fixed Point Theories using (OWC)

We afford a definition from an intuitionistic Schauder fixed point theory (IFM) (X, M, N,*, ◊). The concept of (IFMS) will become defined & calculated using the park. Sadat & park moreover advanced the notion of intuitionistic fuzzy topology together in metric & normed spaces. We insert an intuitionistic fuzzy decrease mapping & show (FP) theories in (IFMS). To that basal concepts and notes, we consider to [3], [9], [20], [21], [22] and [23].

Definition8. [9] Let (X, A) be an (IFMS), a subset for (X, A) is called for be bounded if to *every r on* $(0,1)$ *there occur* $t > 0$ show it

$$N(x,y,t) < r\ \&\ M(x,y,t) > 1-r, to\ every\ x,y \in X.$$

Definition9. [24]: Let (X, A) be an (IFMS) & B ⊆ X is called to be a closed set in (X, A) if for every r∈ (0, 1) if & little if for each sequence $\{X_n\}$ on B converges to x ∈ X (than, $\lim_{n\to\infty} M(x_n, x, t) \geq 1 - r$ & $\lim_{n\to\infty} N(x_n, x, t) \leq r, to\ every\ t > 0, x \in B$).

In what dependent $A = (X, N1, M1, *, \lozenge)$ & $B = (Y, N2, M2, \acute{*}, \acute{\lozenge})$ will denote two (IFMS), wherever X & Y are metric-space.

Definition10. [25]: Let A & B be two mapping for at (IFMS) (X, M, N,*, ◊) into it-self. The maps A & B are called for be compatible if, to every t >0,

$$\lim_{n\to\infty} M(ABx_n, BAx_n, t) = 1 \ \& \ \lim_{n\to\infty} N(ABx_n, BAx_n, t) = 0.$$

When $\{x_n\}$ is a sequence ∈ X satisfy it $lim_{n\to\infty} Ax_n = lim_{n\to\infty} Bx_n$ = x, from a few x ∈ X.

Definition11. [6]: Two self _mappings A & B of an intuitionistic fuzzy metric space (X, M, N, *, ◊) is said for become non-compatible if that exists in list one sequence $\{X_n\}$ show it

$$\lim_{n\to\infty} Ax_n = \lim_{n\to\infty} Bx_n = z, \ for\ a\ few\ z \in X\ but\ neither$$

$\lim_{n\to\infty} M(ABx_n, BAx_n, t) \neq 1$ & $\lim_{n\to\infty} N(ABx_n, BAx_n, t) \neq 0$ or the limit does not occur.

Definition12. [26]: Let (X, M, N,*, ◊) become in an intuitionistic fuzzy metric space. Let A & B become self-maps on X. Let a point x in X is termed a chance point from A & B if Ax = Bx. Is that condition, w = Ax = Bx is termed a point from chance from A & B. In1986. Jungck [25] insert the notion of weakly compatible- maps as follows.

Definition13. [27]: Two self-mappings A & B for at intuitionistic fuzzy metric space (X, M, N, *, ◊) are called for becoming at pair from self-mapping (A, B) of at intuitionistic fuzzy metric-space (X, M, N,*, ◊) is called for becoming weakly-compatible whether they commute at their chance points ($Ax = Bx\ from\ a\ few\ x \in X,\ then\ ABx = BAx$). That is simple to view the couple compatible- maps are weakly-compatible but the converse is not true.

Definition14. [28]: $Two\ self - mappings\ A\ \&\ B$ from an intuitionistic fuzzy metric-space (X, M, N, *, ◊) are called for becoming (OWC) if that is a point x ∈ X which $is\ coincidence - point\ of\ A\ \&\ B,\ what\ A\ \&\ B\ commute.$

Lemma2. [6]: let (X, M, N, *, ◊) become an intuitionistic fuzzy metric-space & from each $x, y\ in\ X, t > 0\ \&\ if\ there\ exists\ at\ number\ r \in (0,1)$
$M(x, y, rt) \geq M(x, y, t)\ \&\ N(x, y, rt) \leq N(x, y, t), satisfy\ x = y.$

As an illustration, consider the following model:

Example2 Let X = [2, 15] &(X, M, N, *,◊) become at intuitionistic fuzzy metric_space. Define mappings M, N, O & P: X→X through.

$$M(x) = \begin{cases} 2\ if\ x = 2 \\ 3\ if\ x > 2 \end{cases} \qquad O(x) = \begin{cases} x\ if\ x = 2 \\ 6\ if\ x = 2 \end{cases}$$

$$N(x) = \begin{cases} 2\ if\ x = 2 \\ 6\ if\ 2 < x \leq 5 \end{cases} \qquad P(x) = \begin{cases} 2\ if\ x = 2 \\ 12\ if\ 2 < x < 5 \\ x - 3\ if\ x > 5 \end{cases}$$

Then, where determine

$$M(Ax, By, t) = \frac{t}{(t + |x-y|)}, N(Ax, By, t) = \frac{|x-y|}{(t - |x-y|)} \quad to\ each\ x, y\ on\ X, t > 0$$

$$M(2) = 2 = O(2)\ MN\ \&\ (2) = NO\ (2)$$

$$N(2) = 2 = P(2)\ \&\ NP\ (2) = 2 = PN\ (2)$$

That is M, O as well as N and Pare (OWC) & (2) is there exist common fixed-point for M, N, O & P.

Example 3 Let R become at intuitionistic fuzzy metric-space (X, M, N, *, ◊) & introduce M, N, O & $P: R \to R$ through $OX = 9x, PX = x3, Mx = 3x2$ & $NX = x3$, from each x ∈ R. the$OX = PX, MX = NX$, from all $x = 0, 3$ then O, P, M & N $is\ (OWC)\ self - maps.$

Remark2 let (X, M) is fuzzy metric-space & K ⊂ X, then $\overline{K}$ is closed in (X, d_r (x, y)) & $\overline{K^r} \subset \overline{K} \forall$ r ∈ (0, 1), (where $\overline{K^r}$ symbolizes the closure of K in (X, d_r(x, y))).

Definition 15 *Let* $(X, M, N, *, \Diamond)$ is an intuitionistic fuzzy metric space. A continuous-mapping $W: X' \times X \times [0,1] \to X$ is called for be a convex body ∈ X if from each $x, y\ on\ X$ & $r \in [0,1], t > 0$

$$[\varphi(u, W(x, y, r), t) \leq \lambda M(u, x, t) + (1 - \lambda) N(u, y, t)]$$

Holds from each u ∈ X. the intuitionistic fuzzy metric-space (X, M, N,*, ◊) together a convex body is invited in an intuitionistic fuzzy convex metric- space.

Theorem 1

Let K become a non-empty convex, intuitionistic fuzzy compact sub-set an (IFMS) & let A, B, S & T become self_mappings of X. is satisfied r & couple{A,S}& {B, T} become (OWC). Whenever stay r∈ (0, 1) satisfy it (1) using equation (2)

$$M(Ax, By, rt) \geq \emptyset(Min\{M(Ax, Sx, t), (\frac{k_1 M(Sx, Ty, t) + K_2 M(Ax, Ty, t) + k_3 M(Sx, By, t)}{K_1 + K_2 + K_3}), M(By, Ty, t)\}$$

$$N(Ax, By, rt) \leq \varphi(Max\{N(Ax, Sx, t), (\frac{k_1 N(Sx, Ty, t) + K_2 N(Ax, Ty, t) + k_3 N(Sx, By, t)}{K_1 + K_2 + K_3}), N(By, Ty, t)\}$$

$From\ each\ x, y \in X, t > 0$ & $k1, k2$ & $k3 > 0,\ where\ \emptyset, \varphi: [0,1] \to [0,1],$

Satisfy $it\ \emptyset(t) > t$ & $\varphi(t) < t, from\ each\ t \in [0,1)$ respectively.
$There\ A, B, S$ & $T\ has\ a\ common\ (FP)\ in\ X,$

Proof:

Suppose that couple {A, S} & {B, T} become (OWC), also where are points x, y on X. satisfy it Ax = Sx & By = Ty. Since satisfies (proposition (1) and (X, d_r (Ax, B_y)) is a metric space. As B is an intuitionistic fuzzy-compact sub-set of X, B is a compact sub-set of (X, d_r (Ax, By) by definition (10) and lemma (2) from all r ∈(0, 1), where d_r (Ax, By) denotes the r-metric space of X. first allow there X is intuitionistic fuzzy-bounded there from all r ∈(0, 1), t(r)>0 such it

N (Ax, By, t(r)) ≤r & M (Ax, By, t(r)) ≥1-r from each x, y ∈ X

Now we demand that Ax = By.it not, then by (2), when

$$M(Ax, By, rt) \geq \emptyset(Min\{M(Ax, Sx, t), (\frac{k_1 M(Sx,Ty,t) + K_2 M(Ax,Ty,t) + k_3 M(Sx,By,t)}{K_1+K_2+K_3}), M(By, Ty, t)\}$$

$$\geq \emptyset(Min\{M(Ax, Ax, t(r)), (\frac{k_1 M(Ax,By,t(r)) + K_2 M(Ax,By,t(r)) + k_3 M(Ax,By,t(r))}{K_1+K_2+K_3}), M(By, Ty, t)\}$$

$$\geq \emptyset(Min\{1, (\frac{K_1+K_2+K_3}{K_1+K_2+K_3}). M(Ax, By, t(r)), 1\})$$

$$\geq \emptyset(Min\{1, 1. (M(Ax, By, t(r)), 1\})$$

$\geq \emptyset\ M(Ax, By, t(r))$

$M\ (Ax, By, rt\ )\ \geq 1 - r$

&

$N(Ax, By, rt)\ \leq \varphi(Max\ \{N\ (Ax, Sx, t), (\frac{k_1 N(Sx,Ty,t) + K_2 N(Ax,Ty,t) + k_3 N(Sx,By,t)}{K_1+K_2+K_3}),$

$N(By, Ty, t)\}$

$\leq \varphi\ (Max\ \{N\ (Ax, Ax, t), (\frac{k_1 N(Ax,By,t(r)) + K_2 N(Ax,By,t(r)) + k_3 N(Ax,By,t(r))}{K_1+K_2+K_3}), N$
$(By, By, t(r))\}$

$$N\ (Ax, By, rt)\ \leq \varphi(Max\ \{0, (\frac{k_1 + K_2 + k_3}{K_1 + K_2 + K_3}). N\ (Ax, By, t(r)), 0\}$$

$$\leq \varphi(Max\ \{(0, 1. N\ (Ax, By, t(r)), 0\}$$

$$N\ (Ax, By, rt)\ \leq\ \varphi(N\ (Ax, By, t(r))\ \leq\ r$$

$$N\ (Ax, By, rt)\ \leq\ r$$

First, from the definition of bounded where

$[dr\ (Ax, By)] = inf\ \{t > 0: N(Ax, +By, t(r)) < r\ \&\ M(Ax, By, t(r)) > 1 - r\}\ r \in (0,1) by$……. (1)

From proposition (1) we have $dr(Ax, By) \leq t(r)$ from each x, y ∈X such it X is bounded with respect to $dr\ (Ax, By)$

Conversely, suppose there X is bounded together esteem to$dr\ (Ax, By), 0 < r < 1$. Then from all r ∈ (0, 1) there exists t(r), such it:

$dr(Ax, By)\ \leq\ t(r)\ if\ \ x, y\ \in X\ that\ is\ dr(Ax, By)\ \leq\ t(r)\ < t(r)\ +\ 1, then\ x, y \in\ X.$

$M\ (Ax, By, t(r)\ + 1)\ > 1 - r, N\ (Ax, By, t(r)\ + 1) <\ r\ from\ each\ x, y\ \in X$ Show their X is intuitionistic fuzzy- bounded.

Second, suppose that B is intuitionistic fuzzy-closed. Take $r_0 \in (0, 1)$.let $\{X_n\}$ be a sequence in B such that $\lim_{n\to\infty} d_{r0}(x_n, x)$=0. Now to a offered ∈>0, that exist a positive -integer N (∊) show it d_{r0} (X_n, X)<∊, from each n ≥ N(∊) by eq. (1)

$M\ (Axn, Bx, r\ \epsilon)\ \geq \emptyset(Min\{M(Axn, Ax, \epsilon), (\frac{k_1 M(x_n,Bx,\epsilon) + K_2 M(x_n,Bx,\epsilon) + k_3 M(x_n,Bx,\epsilon)}{K_1+K_2+K_3}),$
$M(Bx_n, Bx, \epsilon)\}$

$$M\ (Axn, Bx, r\ \epsilon)\ \geq \emptyset(Min\{1, (\frac{k_1 + K_2 + k_3}{K_1 + K_2 + K_3}). M(Ax_n, Bx, \epsilon), 1\})$$

$$M\ (Axn, Bx, r\ \epsilon)\ \geq \emptyset(Min\{1, 1. M(Ax_n, Bx, \epsilon), 1\})$$

$$M\ (Axn, Bx, r\ \epsilon)\ \geq \emptyset M\ (Ax_n, Bx, \epsilon)\ \geq\ 1 - r0, \lim_{n\to\infty} M(Ax_n, Bx, r\ \epsilon) \geq\ 1 -\ r0$$

$N\ (Axn, Bx, r\ \epsilon)\ \leq \varphi(Max\{N(Axn, Ax, \epsilon), (\frac{k_1 N(x_n,Bx,\epsilon) + K_2 N(x_n,Bx,\epsilon) + k_3 N(x_n,Bx,\epsilon)}{K_1+K_2+K_3}),$
$N(Bx_n, Bx, \epsilon)\}$

$$N\ (Axn, Bx, r\ \epsilon)\ \leq \varphi(Max\{1,(\frac{k_1 + K_2 + k_3}{K_1 + K_2 + K_3}).N(Ax_n, Bx, \epsilon),1\})$$

$$N\ (Axn, Bx, r\ \epsilon)\ \leq \varphi(Max\{1, 1.N(Ax_n, Bx, \epsilon),1\})$$

$$N\ (Axn, Bx, r\ \epsilon) \leq \varphi N(Ax_n, Bx, \epsilon) \leq\ r0,\ \lim_{n\to\infty} N(Ax_n, Bx, r\ \epsilon) \leq\ r0$$

Then x ∈ B such that is closed with respect to d_{r_0}(x_n, x).since 0< r_0 <1 is spot, at next it B is closed together esteem for d_r(x_n, x), 0< r_0 <1.

Converse following by conditions (1), (6) & (12) of definition (5),

Third, assume it B intuitionistic fuzzy-compact take r_0 ∈ (0, 1) let {X_n} become a sequence in B. thus their exist a sub-sequence {X_{n_k}} & x in B (both depending on r_0) such that

$\lim_{k\to\infty} M(x_{n_k}, x, t) \geq 1-r_0$ while $\lim_{k\to\infty} N(x_{n_k}, x, t) \leq r_0$, for all t>0. For a given ∊>0 with r_0-∊>0 & to t>0 that occur a positive integer K (∊, t) show it by eq. (1) Ax_{n_k}=Bx

$$M\ (Ax_{n_k}, Bx, rt)\ \geq \emptyset(Min\{M(Ax_{n_k}, Ax, t), (\frac{k_1M(Ax_{n_k},Bx,t) + K_2M(Ax_{n_k},Bx,t) + k_3M(Ax_{n_k},Bx,t)}{K_1+K_2+K_3}),$$
$$M(Bx_{n_k}, Bx, t)\}$$

$$M\ (Ax_{n_k}, Bx, rt)\ \geq \emptyset(Min\{1,(\frac{k_1 + K_2 + k_3}{K_1 + K_2 + K_3}).M(Ax_{n_k}, Bx, t), 1\}$$

$$M\ (Ax_{n_k}, Bx, rt)\ \geq \emptyset(Min\{1,1.M(Ax_{n_k}, Bx, t), 1\}$$

$$M\ (Ax_{n_k}, Bx, rt)\ \geq \emptyset\ M(Ax_{n_k}, Bx, t)\ \geq 1 - r0 + \epsilon$$

$\lim_{k\to\infty} M(Ax_{n_k}, Bx, rt) \geq 1-r_0+\epsilon$

$$N(Ax_{n_k}, Bx, rt)\ \leq \varphi(Max\{N(Ax_{n_k}, Ax, t), (\frac{k_1N(Ax_{n_k},Bx,t) + K_2N(Ax_{n_k},Bx,t) + k_3N(Ax_{n_k},Bx,t)}{K_1+K_2+K_3}),$$
$$N(Bx_{n_k}, Bx, t)\}$$

$$N\ (Ax_{n_k}, Bx, rt)\ \leq \varphi(Max\ \{1,(\frac{k_1 + K_2 + k_3}{K_1 + K_2 + K_3}).N(Ax_{n_k}, Bx, t), 1\}$$

$$N(Ax_{n_k}, Bx, rt)\ \leq \varphi(Max\ \{1,1.N(Ax_{n_k}, Bx, t), 1\}$$

$$N\ (Ax_{n_k}, Bx, rt)\ \leq \varphi N(Ax_{n_k}, Bx, t)\ \leq r0 - \epsilon$$

$\lim_{k\to\infty} N(Ax_{n_k}, Bx, rt) \leq r_0 - \epsilon$

$\lim_{k\to\infty} d_{r_0-\epsilon}(x_{n_k}, x)=0$

Then B is compact with respect to$d_{r_0-\epsilon}(x_{n_k}, x)$ since r_0 ∈ (0, 1) & ∊>0 are arbitrary x_{n_k} it follows at B is compact with respect to $d(x_{n_k}, x)$ from all r ∈ (0, 1)

The converse follows for bounded & closed, there T has existed common (FP) hence it follow up it K is a non-empty convex & compact sub-group for the metric space (X, d_{r_0}(Ax, By)), so by Schauder fixed point theories [29] (let A become a closed convex sub-group of a Banach space & supposing that occurs a continuous-map T sending A to countably compact sub-set T (A) for A than T has (FP)) it follows it T has a Schauder constant dot theories.

Theorem (2)

Let K becomes a non- empty intuitionistic fuzzy closed convex subgroup of at (IFMS) with $\bar{T}$(k) being intuitionistic fuzzy-compact & letting A, B, S & T become person-charts for X.

Let couple {A, S} & {B, T} become (OWC). undefined that occur r ∈ (0, 1) satisfy it (1) by eq. (2), from each x, y∈ X, t>0 & k_1, k_2, k_3>0, when $\emptyset, \varphi$:[0,1] → [0,1] satisfy that $\emptyset$(t)>t & φ(t)<t from each t∈[0, 1) respectively. When A, B, S & T there exist common (FP)∈ X.

Proof:

Assume it the two {A, S} & {B, T} become (OWC), also where are points x, y on X. satisfy it

$$Ax = Sy \,\&\, By = Ty.$$

Since satisfies proposition (1), then from theorem (1) that (X, d_r (Ax, By)) is a metric space.

A gain since K is intuitionistic fuzzy-closed, K is closed with esteem to d_r(Ax, By) from all r∈ (0, 1).

Also since $\bar{T}$(k) is intuitionistic fuzzy- compact by theorem (1).

$\bar{T}$(K) is compact with respect to d_r (Ax, By) from all r ∈ (0, 1).

In particular $\bar{T}$(k) is compact an (X, d_{r_0}(Ax, Bx)).

As well for remark (2) $\bar{T}$(k) is closed in $(X, d(Ax, By)_{r_0})$ & $\bar{T}(k)^{r_0} \subset \bar{T}(k)$

Where$\bar{T}$(k)^{r_0}is the closure of $T\ (K)\ in\ (X, d(Ax, By)_{r_0})$ so $\bar{T}$(k)^{r_0}is compact in $(X, d(Ax, By)_{r_0})$.

Thus K is a non-empty closed convex sub-group for (FMS) (X,$d(Ax, By)_r$). Therefore so by Schauder fixed point theories [29], it follows up it T has (FP) theories.

4. Conclusion: we extend the concept of any one of the types of fixed point in intuitionistic fuzzy metric space by occasionally weakly compatible of self-mapping and its results are a generalization of fixed point theories through the use of the intuitionistic fuzzy metric space.

Recommendation: we recommend the use of any one of the types of fixed point in intuitionistic fuzzy cone metric space and use our results of fixed point theories through the use of the intuitionistic fuzzy metric space.

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