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A study on Meantime Assessment $\mathfrak{Q}-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring

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Abstract

In this paper some of the new definitions of meantime assessment $\mathfrak{Q}-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring are proposed.

Keywords: $\mathfrak{Q}$ - Intuitionistic reluctant Fuzzy auxiliary nearring, $\mathfrak{Q}$ - reluctant Fuzzy subsample, pre-effigy, normal auxiliary nearing, Fuzzy auxiliary nearring relation.

1. Introduction and Motivation

Nearrings are the generalisation of rings. The systematic study and research on nearrings is continuous. In 1905, Dickson who defined near fields formalized the key idea behind nearrings. Wieland studied nearrings, which were not near fields in late 1930s and the extensive studies about the subject is found in two famous books on nearrings.

The introduction of fuzzy sets by L.A.Zadeh, Jun.Y.B and Kin.K.H defined an interval-valued fuzzy R-subgroups of nearrings. The uncertainty are handling by fuzzy set theory which explains Dr R Poornima and happens in day-to-day life problems[15,16,17,18,19]. Fuzzy sets are extended to four main categories. The first one is Atanassov's Intuitionistic Fuzzy Sets (IFS)which deals with membership and the non – membership degree of each element. The second one is Type – 2 Fuzzy Sets (T2FS) that model the uncertainty through the use of a fuzzy set. The third is the Interval–Valued Fuzzy Sets (IVFS) , where the membership degree of an element belongs to the closed subinterval of the unit interval in which the length of interval measures the lack of certainty for building the precise membership degree of the element and the fourth main category is the fuzzy multisets , where the membership degree of each element is given by a subset of [0,1]. The Hesitant Fuzzy Set (HFS) is introduced by Torra which deals with the general complication that appears in some possible values to make one hesitate in selecting the right one. The literature review shows the application and the growth of HFS quantitative and qualitative because the hesitation can arise out of modelling the uncertainty in both ways.

The motivation of this paper is to develop the meantime assessment $\Omega-$intuitionistic reluctant fuzzy auxiliary nearring with the abstract mathematical notion as subnearring. Hence, it is necessary to develop the planar nearring which is applied in various fields such as group theory geometry and its branches, combination, design of statistical experiments, coding theory and cryptography and construction of balanced incomplete block design through Hesitant Fuzzy Set.

2. Ω - Intuitionistic reluctant Fuzzy auxiliary nearing - Basic Concepts

2.1 Definition: Let X be a non-nullity set and Ω be a non-nullity set. A Ω - Intuitionistic reluctant Fuzzy auxiliary nearring $\tilde{h}_{\theta}^{\sigma(\kappa)}$ of X is a function $\tilde{h}_{\theta}^{\sigma(\kappa)}: X\times \Omega \to Int[0,1]$.

2.2 Definition: The sum of two Ω - intuitionistic reluctant Fuzzy auxiliary nearring $\tilde{h}_{\theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ of a set X is defined by

$$\tilde{h}_{\theta\cup\Delta}^{\sigma(\kappa)}(p,z) = \rho\, max\left\{\begin{matrix}\left[\tilde{h}_{\mu\theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\nu\theta}^{\sigma(\kappa)U}(p,z)\right]\\ \left[\tilde{h}_{\mu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\Delta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\nu\Delta}^{\sigma(\kappa)U}(p,z)\right]\end{matrix}\right\}$$ for all p in X and z in Ω.

2.3 Definition: The disjunction of two Ω -reluctant Fuzzy auxiliary nearringss $\tilde{h}_{\theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ of a set X is defined by

$$\tilde{h}_{\theta\cap\Delta}^{\sigma(\kappa)}(p,z) = \rho\, max\left\{\begin{matrix}\left[\tilde{h}_{\mu\theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\theta}^{\sigma(\kappa)L}(x,q),\tilde{h}_{\nu\theta}^{\sigma(\kappa)U}(p,z)\right]\\ \left[\tilde{h}_{\mu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\Delta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\nu\Delta}^{\sigma(\kappa)U}(p,z)\right]\end{matrix}\right\}$$ for all p in X and z in Ω.

2.4 Definition: Get $(T,+,\cdot)$ be a nearring . A Ω - reluctant Fuzzy subsample $\tilde{h}_{\theta}^{\sigma(\kappa)}$ of T is said to be a meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring of T if it satisfies the latter terms.

(i) $\tilde{h}_{\theta}^{\sigma(\kappa)}(p+q,z) \geq \rho \min\left\{\left[\tilde{h}_{\mu\theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\theta}^{\sigma(\kappa)L}(q,z),\tilde{h}_{\nu\theta}^{\sigma(\kappa)U}(q,z)\right]\right\}$

(ii) $\tilde{h}_{\theta}^{\sigma(\kappa)}(-p,z) \geq \tilde{h}_{\theta}^{\sigma(\kappa)}(p,z)$

(iii) $\tilde{h}_{\theta}^{\sigma(\kappa)}(pq,z) \geq \rho \min\left\{\left[\tilde{h}_{\mu\theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\theta}^{\sigma(\kappa)L}(q,z),\tilde{h}_{\nu\theta}^{\sigma(\kappa)U}(q,z)\right]\right\}$

2.5 Definition: Get $(T,+,\cdot)$ be a nearring. A meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ of T is said to be an meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Normal Auxiliary Nearring of T if $\tilde{h}_{\Theta}^{\sigma(\kappa)}(pq,z) = \tilde{h}_{\Theta}^{\sigma(\kappa)}(qp,z)$, for all p and q in T and z in Ω.

2.6 Definition: Get $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ be a meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring of sets I and J respectively. The product of $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ is defined by

$$\tilde{h}_{\Theta\times\Delta}^{\sigma(\kappa)}[(p,q),z] = \rho\, min\left\{\begin{matrix}\left[\tilde{h}_{\mu\Theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\Theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\Theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\nu\Theta}^{\sigma(\kappa)U}(p,z)\right]\\ \left[\tilde{h}_{\mu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\Delta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\Delta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\nu\Delta}^{\sigma(\kappa)U}(p,z)\right]\end{matrix}\right\}.$$

2.7 Definition: Get $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ be a meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring in a set Z , the strongest meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring relation on Z , that is an meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring relation on $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ is $\tilde{h}_{V}^{\sigma(\kappa)}$ given by $\tilde{h}_{V}^{\sigma(\kappa)}((p,q),z) = \rho \min\left\{\left[\tilde{h}_{\mu\Theta}^{\sigma(\kappa)L}(p,z),\tilde{h}_{\mu\Theta}^{\sigma(\kappa)U}(p,z)\right],\left[\tilde{h}_{\nu\Theta}^{\sigma(\kappa)L}(q,z),\tilde{h}_{\nu\Theta}^{\sigma(\kappa)U}(q,z)\right]\right\}$ for all p and q in Z and z in Ω.

2.8 Definition: Consider $(T,+,\cdot)$ and $(T',+,\cdot)$ are two nearrings. Let g : T $\rightarrow T'$ be any function and $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ be a meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring in T, $\tilde{h}_{V}^{\sigma(\kappa)}$ be a meantime assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring in $g(T) = T'$, defined by $\tilde{h}_{V}^{\sigma(\kappa)}(q,z) = \sup_{p\in g^{-1}(q)} \tilde{h}_{\Theta}^{\sigma(\kappa)}(p,z)$ for all p in T and q in T' and z in Ω . Then $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ is called a pre-effigy of $\tilde{h}_{V}^{\sigma(\kappa)}$ underneath g and is noted as $g^{-1}\left(\tilde{h}_{V}^{\sigma(\kappa)}\right)$.

3. Properties of Meantime Assessment $\Omega-$Intuitionistic Reluctant Fuzzy Auxiliary Nearring

In this section the properties of meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring are discussed . The following properties of normality are studied to lay the theoretical frame work for further studies in this area.

3.1 Theorem: Consider $(T,+,\cdot)$ is a nearring. If $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ are two meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring T, then their intersection $\tilde{h}_{\Theta\cap\Lambda}^{\sigma(\kappa)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T.

Proof: Let p and q in T and z in Ω

Let $\tilde{h}_{\theta}^{\sigma(\kappa)} = \{ < (p,z), \tilde{h}_{\theta}^{\sigma(\kappa)}(p,z) > / $ p in T and z in Ω **}**

and $\tilde{h}_{\Lambda}^{\sigma(\kappa)} = \{ < (p,q), \tilde{h}_{\Lambda}^{\sigma(\kappa)}(p,z) > / $ p in T and z in Ω }

be a meantime assessment $\Omega -$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring T. Let $\tilde{h}_{\theta\cap\Lambda}^{\sigma(\kappa)}$ and

$K = \{ < (p,z), \tilde{h}_{k}^{\sigma(\kappa)}(p,z) > / $ p in T and z in Ω }

Where $$\tilde{h}_{K}^{\sigma(\kappa)}(p,z) = \rho \, min \begin{Bmatrix} \left[\tilde{h}_{\mu\theta}^{\sigma(\kappa)L}(p,z), \tilde{h}_{\mu\theta}^{\sigma(\kappa)U}(p,z)\right], \left[\tilde{h}_{\nu\theta}^{\sigma(\kappa)L}(p,z), \tilde{h}_{\nu\theta}^{\sigma(\kappa)U}(p,z)\right] \\ \left[\tilde{h}_{\mu\Delta}^{\sigma(\kappa)L}(p,z), \tilde{h}_{\mu\Delta}^{\sigma(\kappa)U}(p,z)\right], \left[\tilde{h}_{\nu\Delta}^{\sigma(\kappa)L}(p,z), \tilde{h}_{\nu\Delta}^{\sigma(\kappa)U}(p,z)\right] \end{Bmatrix}$$

Then clearly K is a meantime assessment $\Omega -$intuitionistic reluctant Fuzzy auxiliary nearring of a nearring T, since $\tilde{h}_{\theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ are two meantime assessment $\Omega -$intuitionistic reluctant Fuzzy auxiliary nearring of a nearring T and $\tilde{h}_{K}^{\sigma(\kappa)}(p,z) = \rho \min \{\tilde{h}_{\theta}^{\sigma(\kappa)}(p,z), \tilde{h}_{\Lambda}^{\sigma(\kappa)}(p,z)\} = \rho \min \{\tilde{h}_{\theta}^{\sigma(\kappa)}(qp,z), \tilde{h}_{\Lambda}^{\sigma(\kappa)}(qp,z)\}$

$$= \tilde{h}_{K}^{\sigma(\kappa)}(qp,z)$$

For all p and q in T and z in Ω **.**

Therefore $\tilde{h}_{K}^{\sigma(\kappa)}(pq,z) = \tilde{h}_{K}^{\sigma(\kappa)}(qp,z)$, for all p and q in T and z in Ω **.**

Hence $\tilde{h}_{\theta\cap\Lambda}^{\sigma(\kappa)}$ is a meantime assessment $\Omega -$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring T.

3.2 Theorem:

Let $(T, +, \cdot)$ be a nearring. The disjunction of a collection of meantime assessment $\Omega -$intuitionistic reluctant Fuzzy normal auxiliary nearring of T is a meantime assessment $\Omega -$intuitionistic reluctant Fuzzy normal auxiliary nearring of T.

Proof: Let be a collection of meantime assessment $\Omega -$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearing T and let p and q in T and z in Ω clearly disjunction of a collection of meantime assessment $\Omega -$

intuitionistic reluctant Fuzzy normal auxiliary nearring of the nearring T is a meantime assessment $\mathfrak{Q}-$ intuitionistic reluctant Fuzzy auxiliary nearring T and $\tilde{h}_{\Theta}^{\sigma(\kappa)}(pq,z) = \inf \tilde{h}_{\Theta i}^{\sigma(\kappa)}(pq,z) = \tilde{h}_{\Theta}^{\sigma(\kappa)}(qp,z)$ for all p and q in T and z in $\mathfrak{Q}$ **.**

Therefore $\tilde{h}_{\Theta}^{\sigma(\kappa)}(xy,q) = \tilde{h}_{\Theta}^{\sigma(\kappa)}(yx,q)$ for all p and q in T and z in $\mathfrak{Q}$ **.** Hence the disjunction of a collection of meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring T is a meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring T.

3.3 Theorem:

Get $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ be a meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring of the nearrings are accordingly I and J . If $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ are meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring then $\tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}$ is a meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring I and J.

Proof: Let $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ and $\tilde{h}_{\Lambda}^{\sigma(\kappa)}$ be a meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring of the nearrings are accordingly I and J . Clearly $\tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}$ is a meantime assessment $\mathfrak{Q}-$intuitionistic reluctant Fuzzy normal auxiliary nearring I x J.

Let $p_1$and p_2 be in I, $q_1$and q_2 be in J.

Then (p_1, q_1) and (p_2, q_2) are in I x J and z in $\mathfrak{Q}$ **.**

Now $\tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_1,q_1)(p_2,q_2),z] = \tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_1 p_2, q_1 q_2),z]$

$$= \rho \min\left\{\tilde{h}_{\Theta}^{\sigma(\kappa)}(p_1 p_2,z), \tilde{h}_{\Delta}^{\sigma(\kappa)}(q_1 q_2,z)\right\}$$

$$= \rho \min\left\{\tilde{h}_{\Theta}^{\sigma(\kappa)}(p_2 p_1,z), \tilde{h}_{\Delta}^{\sigma(\kappa)}(q_2 q_1,z)\right\}$$

$$= \tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_2 p_1, q_2 q_1),z]$$

$$= \tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_2,q_2)(p_1,q_1),z]$$

Therefore $\tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_1,q_1)(p_2,q_2),z] = \tilde{h}_{\Theta x\Lambda}^{\sigma(\kappa)}[(p_2,q_2)(p_1,q_1),z]$ (p_1,q_1) and (p_2,q_2) are in

I x J and z in Ω .

Hence $\tilde{h}^{\sigma(\kappa)}_{\Theta x\Lambda}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of I x J.

3.4 Theorem: Get $\tilde{h}^{\sigma(\kappa)}_{\Theta}$ be a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring subset in a nearring T and $\tilde{h}^{\sigma(\kappa)}_{v}$ be the strongest meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring relation on T. Then $\tilde{h}^{\sigma(\kappa)}_{\Theta}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T if and only if $\tilde{h}^{\sigma(\kappa)}_{v}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $T \times T$.

Proof:

Suppose that $\tilde{h}^{\sigma(\kappa)}_{\Theta}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T. Then for any $p = (p_1, p_2)$ and $q = (q_1,q_2)$ are in $T \times T$ and z in Ω clearly $\tilde{h}^{\sigma(\kappa)}_{v}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of nearring T. We have

$$\tilde{h}^{\sigma(\kappa)}_{v}(pq,z) = \tilde{h}^{\sigma(\kappa)}_{v}\ [(p_1, p_2)(q_1,q_2),z]$$

$$= \tilde{h}^{\sigma(\kappa)}_{v}\ [(p_1q_1,p_2q_2),z]$$

$$= \rho \min\{[\tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_1q_1,z), \tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_1q_1,z)],[\tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_1q_1,z)],$$

$$[\tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_2q_2,z)]\,[\tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_2q_2,z)]\}$$

$$\geq \rho \min\{[\tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_1q_1,z), \tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_1q_1,z)],[\tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_1q_1,z)]$$

$$[\tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_2q_2,z)]\,[\tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_2q_2,z)]\}$$

$$\geq \rho \min\{[\tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_1q_1,z), \tilde{h}^{\sigma(\kappa)L}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)L}_{v\Theta}(p_2q_2,z)],$$

$$[\tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)U}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)U}_{v\Theta}(p_2q_2,z)]\}$$

$$\geq \rho \min\{inf[\tilde{h}^{\sigma(\kappa)}_{\mu\Theta}(p_1q_1,z), \tilde{h}^{\sigma(\kappa)}_{v\Theta}(p_1q_1,z)],sup[\tilde{h}^{\sigma(\kappa)}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)}_{v\Theta}(p_2q_2,z)]\}$$

$$= \rho \min\{\tilde{h}^{\sigma(\kappa)}_{\mu\Theta}(p_1q_1,z), \tilde{h}^{\sigma(\kappa)}_{v\Theta}(p_1q_1,z),\tilde{h}^{\sigma(\kappa)}_{\mu\Theta}(p_2q_2,z),\tilde{h}^{\sigma(\kappa)}_{v\Theta}(p_2q_2,z)\}$$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(q_1p_1, q_2p_2), z]$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(q_1, q_2)(p_1, p_2), z]$

$= \tilde{h}_{V}^{\sigma(\kappa)}(qp, z)$

Therefore $\tilde{h}_{V}^{\sigma(\kappa)}(pq, z) = \tilde{h}_{V}^{\sigma(\kappa)}(qp, z)$, for all p and q in $T \times T$ and z in Ω .

This proves that $\tilde{h}_{V}^{\sigma(\kappa)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $T \times T$.

Conversely assume that $\tilde{h}_{V}^{\sigma(\kappa)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $T \times T$, then for any $p = (p_1, p_2)$ and $q = (q_1, q_2)$ are in $T \times T$, we know that $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T, then

$\tilde{h}_{\Theta}^{\sigma(\kappa)}(p_1q_1, z) = \rho \min \{[\tilde{h}_{\Theta}^{\sigma(\kappa)}(p_1q_1, z), \tilde{h}_{\Theta}^{\sigma(\kappa)}(p_2q_2, z)]\}$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(p_1q_1, p_2q_2), z]$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(p_1, p_2)(q_1, q_2), z]$

$= \tilde{h}_{V}^{\sigma(\kappa)}(pq, z)$

$= \tilde{h}_{V}^{\sigma(\kappa)}(qp, z)$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(q_1, q_2)(p_1, p_2), z]$

$= \tilde{h}_{V}^{\sigma(\kappa)} \, [(q_1p_1, q_2p_2), z]$

$= \rho \min \{\tilde{h}_{\Theta}^{\sigma(\kappa)}(q_1p_1, z), \tilde{h}_{\Theta}^{\sigma(\kappa)}(q_2p_2, z)\}$

$= \tilde{h}_{\Theta}^{\sigma(\kappa)}(q_1p_1, z)$.

If $p_2 = 0, q_2 = 0$, we get

$\tilde{h}_{\Theta}^{\sigma(\kappa)}(p_1q_1,z) = \tilde{h}_{\Theta}^{\sigma(\kappa)}(q_1p_1,z)$ for all $p_1 \, and \, q_1$ in T and z in Ω.

Therefore $\tilde{h}_{\Theta}^{\sigma(\kappa)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T.

3.5 Theorem:

Consider $(T,+,\cdot)$ and $(T',+,\cdot)$ be any two nearrings .The meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T underneath the homomorphic paradigm is a meantime assessment $\Omega-$ intuitionistic reluctant Fuzzy normal auxiliary nearring of $g(T) = T'$.

Proof:

Let $(T,+,\cdot)$ and $(T',+,\cdot)$ be any two nearrings and $g: T \to T'$ be a homomorphism, then

$g(p+q) = g(p) + g(q)$ and $g(pq) = g(p)g(q)$ for all p and q in T. Let $\tilde{h}_{\Theta}^{\sigma(k)}$ be a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring T and $\tilde{h}_V^{\sigma(k)}$ be the homomorphic paradigm of $\tilde{h}_{\Theta}^{\sigma(k)}$ underneath g. It is to be proved that $\tilde{h}_V^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring $g(T) = T'$. Now, for $g(p)$ and $g(q)$ in T', and z in Ω, clearly $\tilde{h}_V^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of the nearring T', since $\tilde{h}_{\Theta}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of a nearring T. Now, $\tilde{h}_V^{\sigma(k)}[g(p)g(q),z] = \tilde{h}_V^{\sigma(k)}[g(pq),z]$ as g is a homomorphism.

$$\geq \tilde{h}_{\Theta}^{\sigma(k)}[pq,z]$$

$$= \tilde{h}_{\Theta}^{\sigma(k)}[qp,z]$$

$$\leq \tilde{h}_V^{\sigma(k)}[g(qp),z]$$

$= \tilde{h}_V^{\sigma(k)}[g(q)g(p),z]$, as g is a homomorphism.

It point to,

$\tilde{h}_V^{\sigma(k)}[g(p)g(q),z] = \tilde{h}_V^{\sigma(k)}[g(q)g(p),z]$ for all g(p) and f(q) in T' and z in Ω.

Hence $\tilde{h}_V^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of the nearring $T^{'}$.

3.6 Theorem:

Let $(T,+,\cdot)$ and $(T^{'},+,\cdot)$ be any two nearrings. The i meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $g(T)=T^{'}$ under homomorphic pre-effigy is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of T.

Proof:

Let $(T,+,\cdot)$ and $(T^{'},+,\cdot)$ be any two nearrings and $g:T\rightarrow T^{'}$ be a homomorphism, then

$g(p+q)=g(p)+g(q)$ and $g(pq)=g(p)g(q)$ for all p and q in T. Let $\tilde{h}_V^{\sigma(k)}$ be a

meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of a nearring $T^{'}$ and $\tilde{h}_\Theta^{\sigma(k)}$ be a homomorphic pre-effigy of $\tilde{h}_V^{\sigma(k)}$ underneath g. It is to be proved that $\tilde{h}_\Theta^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of the nearring T. Let p and q in T and z in Ω.

Then clearly $\tilde{h}_\Theta^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of the nearring T, since $\tilde{h}_V^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of a nearring $T^{'}$. Now

$\tilde{h}_\Theta^{\sigma(k)}[pq,z]=\tilde{h}_V^{\sigma(k)}[f(pq),z]$.

Since $\tilde{h}_\Theta^{\sigma(k)}(p,z)=\tilde{h}_V^{\sigma(k)}[g(p),z]$

$=\tilde{h}_V^{\sigma(k)}[g(p)g(q),z]$, as g is a homomorphism

$=\tilde{h}_\Theta^{\sigma(k)}[qp,z]$.

Since $\tilde{h}_\Theta^{\sigma(k)}(p,z)=\tilde{h}_V^{\sigma(k)}[g(p),z]$

Which implies that $\tilde{h}_\Theta^{\sigma(k)}[pq,z]=\tilde{h}_\Theta^{\sigma(k)}[qp,z]$ for all p and q in T and z in Ω.

Hence $\tilde{h}_{\Theta}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T.

3.7 Theorem: Consider $(T,+,\cdot)$ and $(T',+,\cdot)$ are two nearrings. The meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T underneath the anti-homomorphic paradigm is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $g(T)=T'$.

Proof:

Let $(T,+,\cdot)$ and $(T',+,\cdot)$ be any two nearrings and $g:T\rightarrow T'$ be an anti-homomorphism. Then $g(p+q)=g(p)$ and $g(pq)=g(q)g(p)$ for all p and q in T. Let $\tilde{h}_{\Theta}^{\sigma(k)}$ be a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T and $\tilde{h}_{V}^{\sigma(k)}$ be an anti-homomorphic paradigm of $\tilde{h}_{\Theta}^{\sigma(k)}$ under f. It is to be proved that $\tilde{h}_{V}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of $g(T)=T'$. Now, for g(p) and g(q) in T' and z in Ω, clearly $\tilde{h}_{V}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring T', since $\tilde{h}_{\Theta}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearring of T.

$\tilde{h}_{V}^{\sigma(k)}[g(p)g(q),z]=\tilde{h}_{V}^{\sigma(k)}[g(qp),z]$, as g is an anti-homomorphism

$$\geq \tilde{h}_{\Theta}^{\sigma(k)}(qp,z)$$

$$=\tilde{h}_{\Theta}^{\sigma(k)}(pq,z)$$

$$\leq \tilde{h}_{V}^{\sigma(k)}[g(pq),z]$$

$=\tilde{h}_{V}^{\sigma(k)}[g(q)g(p),z]$ as g is an anti-homomorphism it gives that

$\tilde{h}_{V}^{\sigma(k)}[g(p)g(q),z]=\tilde{h}_{V}^{\sigma(k)}[g(q)g(p),z]$ for all g(p) and g(q) in T' and z in Ω.

Hence $\tilde{h}_{V}^{\sigma(k)}$ is a meantime assessment $\Omega-$intuitionistic reluctant Fuzzy normal auxiliary nearring of T'.

4. Conclusion

This paper concludes that, the concept of meantime assessment $\Omega-$intuitionistic reluctant Fuzzy auxiliary nearing is developed with the basic concepts and theorems.

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