International Journal of Mathematical Archive-11(8), 2020, 37-45
IJMA Available online through www.ijma.info ISSN 2229 – 5046

SOME SPECIAL CLASSES OF NAGENDRAM Γ-SEMI SUB NEAR-FIELD SPACES OF A Γ-NEAR-FIELD SPACE OVER NEAR-FIELD

DR N V NAGENDRAM*

**Professor of Mathematics,
Kakinada Institute of Technology & Science (K.I.T.S.),
Department of Humanities & Science (Mathematics),
Tirupathi (Vill.) Peddapuram (M), Divili 533 433,
East Godavari District. Andhra Pradesh. INDIA.**

(Received On: 25-07-20; Revised & Accepted On: 10-08-20)

ABSTRACT

In this paper author solely introduces the concept of fuzzy complex near-field spaces, fuzzy near matrix near-field, fuzzy polynomial near-field space, special fuzzy near-field space and fuzzy non-associative complex near-field spaces of Nagendram Γ-semi sub near-field spaces of a Γ-near-field space over near-field and studies them.

All these concepts are far from the conventional way of defining the same. Hence we in this section define these five types of fuzzy near-field spaces and study some of its interesting properties.

Keywords: *sub representation, representation,Γ-near-field space; Γ-Semi sub near-field space of Γ-near-field space; Semi near-field space of Γ-near-field space, Nagendram Γ-semi sub near-field space, smooth, space deformation retracts, Nagendram Γ-semi near-field space, closed Nagendram Γ-semi sub near-field spaces of a Γ-near-field space over near-field.*

2000 Mathematics Subject Classification: *43A10, 46B28, 46H25,6H99, 46L10, 46M20, 51 M 10, 51 F 15,03 B 30.*

SECTION 1: Some special classes of Nagendram Γ-semi sub near-field spaces of a Γ-near-field space over near-field.

Definition 1.1: Let $Q_{n \times n}$ denote the set of all n x n matrices with entries from [0, 1] i.e., $Q_{n \times n} = \{ [a_{ij} : a_{ij} \in [0, 1] \}$ for any two matrices A, B $\in Q_{n \times n}$ define $\oplus$ as follows:

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \dots & \dots & \dots & \dots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix} \text{ and } B = \begin{bmatrix} b_{11} & b_{12} & \dots & b_{1n} \\ b_{21} & b_{22} & \dots & b_{2n} \\ \dots & \dots & \dots & \dots \\ b_{n1} & b_{n2} & \dots & b_{nn} \end{bmatrix}$$

$$A \oplus B = \begin{bmatrix} a_{11}+b_{11} & a_{12}+b_{12} & \dots & a_{1n}+b_{11} \\ a_{21}+b_{21} & a_{22}+b_{22} & \dots & a_{2n}+b_{21} \\ \dots & \dots & \dots & \dots \\ a_{n1}+b_{11} & a_{n2}+b_{11} & \dots & a_{nn}+b_{11} \end{bmatrix}$$

$$\text{where } a_{ij+}\, b_{ij} = \begin{cases} a_{ij}+b_{ij} & if \quad a_{ij}+b_{ij} < 1 \\ 0 & if \quad a_{ij}+b_{ij} = 1 \\ a_{ij}+b_{ij}-1 & if \quad a_{ij}+b_{ij} > 1 \end{cases}$$

Corresponding Author: Dr. N. V. Nagendram,
Professor of Mathematics, Kakinada Institute of Technology & Science, Tirupathi (v), Peddapuram(M), Divili 533 433, East Godavari District, Andhra Pradesh. India.
E-mail: nvn220463@yahoo.co.in.

Clearly, ($Q_{n \times n}$, ⊕) is an abelian group and $0 = \begin{bmatrix} 0 & 0 & \ldots & 0 \\ 0 & 0 & \ldots & 0 \\ \ldots & \ldots & \ldots & \ldots \\ 0 & 0 & \ldots & 0 \end{bmatrix}$

is zero matrix which acts as the additive identity with respect to ⊕.

Define ⊗ on $Q_{n \times n}$ as follows. For A, B ∈ $Q_{n \times n}$

$$A \otimes B = \begin{bmatrix} a_{11} & a_{12} & \ldots & a_{11n} \\ a_{11} & a_{12} & \ldots & a_{1n} \\ \ldots & \ldots & \ldots & \ldots \\ a_{n1} & a_{n2} & \ldots & a_{nn} \end{bmatrix} \otimes \begin{bmatrix} b_{11} & b_{12} & \ldots & b_{11n} \\ b_{11} & b_{12} & \ldots & b_{1n} \\ \ldots & \ldots & \ldots & \ldots \\ b_{n1} & b_{n2} & \ldots & b_{nn} \end{bmatrix}$$

$$= \begin{bmatrix} a_{11}+\ldots+a_{1n} & \ldots & a_{11}+\ldots & \ldots+a_{1n} \\ a_{21}+\ldots+a_{2n} & \ldots & a_{21}+\ldots & \ldots+a_{2n} \\ \ldots & \ldots & \ldots & \ldots \\ a_{2n}+\ldots+a_{nn} & \ldots & a_{n1}+\ldots & \ldots+a_{nn} \end{bmatrix}$$

where a_{ij} .b_{ij} = a_{ij} for all a_{ij}∈ A and b_{ij}∈ B. Clearly, ($Q_{n \times n}$, ⊗) is a nagendram gamma semi sub near-field space. Thus (A ⊕ B) ⊗ C = A ⊗ C ⊕ B ⊗ C. Hence ($Q_{n \times n}$, ⊕, ⊗) is a nagendram gamma near-field space. Which we call as the fuzzy matrix nagendram gamma near-field space.

Definition 1.2: In ($Q_{n \times n}$, ⊕, ⊗) be a fuzzy matrix nagendram gamma near-field space we say a fuzzy matrix nagendram gamma sub near-field space I of $Q_{n \times n}$ is a fuzzy left ideal of $Q_{n \times n}$ if

a. (I , +) is a normal subgroup of Q n x n

b. $n(n^| + i) + n_r n^|$∈ I for each i∈ I and n_r, n, $n^|$∈ N where n_r denotes the unique right inverse of n.

Note 1.3: All properties enjoyed by near-field spaces can be defined and will be true with appropriate modifications.

Now we proceed on to define the concept of fuzzy complex nagendram gamma near-field spaces.

Definition 1.4: Let U = {a +*i* b: a, b ∈ [0, 1]} define on U the operation called addition denoted by ⊕ s follows:
For a + *i* b, a_l + *i*b_l∈ U, a + *i* b ⊕ a_l + *i*b_l = a + a_l + *i (b +* b_l) where a ⊕ a_l = a + a_l if a + a_l< l and a + a_l = a + a_l *– 1* if a + a_l ≥ 1 where "+" is the usual addition of numbers. Clearly, (U, ⊕) is a field.

Define ⊗ on U by (a + *i b*) ⊗ (a_l + *i*b_l) = a + *i* b for all ∈are fuzzy complex nagendram gamma sub near-field spaces of (U, ⊕, ⊗) a + *i* b, a_l + *i*b_l∈ U. (U, ⊗) is a nagendram gamma semi sub near-field space. It is easily verified. (U, ⊕, ⊗) is a nagendram gamma near-field space, which we call as the fuzzy complex nagendram gamma near-field space.

Note 1.5: Q = {a: a ∈ [0, 1]} and C = {*ib:* b ∈ [0, 1]} are fuzzy complex nagendram gamma sub near-field spaces of (U, ⊕, ⊗).

Definition 1.6: Let V = {a + *i*b: a, b ∈ [0, 1]} called the set of fuzzy complex numbers} Define on V two binary operations ⊕ and ⊗ as follows:
(V, ⊕) is a commutative loop where a + *i*b, c + *id*∈ V define a + *i*b⊕ c + *id* = a ~ c + *i* (b ~ d) where ~ is the difference between a and b. Clearly (V, ⊕) is a commutative loop.

Define ⊗ on V by a + *i*b ⊗ c + *id* = a + *i* b for all a + *i*b, c + *id*∈ V. (V, ⊕, ⊗) is called the fuzzy complex non-associative nagendram gamma near-field space. ([0, 1], ⊕, ⊗) ⊆ (V, ⊕, ⊗) is a fuzzy non-associative nagendram gamma sub near-field space.

Definition 1.7: Let N be the set of real number. The fuzzy polynomial nagendram gamma sub near-field space $N[x^{[0,\ 1]}]$ consist of elements of the form $p_0 + p_1 x^{r1} + p_2 x^{r2} + \ldots\ldots + p_n x^{rn}$ where $p_0, p_1, p_2, \ldots\ldots, p_n$∈ N and $\gamma_1, \gamma_2, \ldots\ldots \gamma_n$∈ [0, 1] with $\gamma_1 < \gamma_2 < \ldots\ldots < \gamma_n$
Two elements p(x) = q(x) ⇔ $p_i = q_i$. and $\gamma_1 = s_i$ where $p(x) = p_0 + p_1 x^{r1} + p_2 x^{r2} + \ldots\ldots + p_n x^{rn}$ and $q(x) = q_0 + q_1 x^{s1} + q_2 x^{s2} + \ldots\ldots + q_n x^{sn}$. Addition is performed as in the case of usual polynomials.
Define ⊗ on N $[x^{[0,\ 1]}]$ by p(x) ⊗ q(x) = p(x) for p(x), q(x) ∈ N $[x^{[0,\ 1]}]$. Clearly {N$[x^{[0,\ 1]}$, +, ⊗} is called the fuzzy right polynomial nagendram gamma near-field space. x^0 = 1 by definition.

Definition 1.8: Let {N [$x^{[0, 1]}$, +, ⊗}be a fuzzy polynomial nagendram gamma near-field space. for any polynomial p(x) ∈ N [$x^{[0, 1]}$] define the derivative of p(x) as follows.

If $p(x) = p_0 + p_1 x^{s1} + p_2 x^{s2} + \ldots + p_n x^{sn}$ and on differentiation p(x) w.r.t. x we get
$d[p(x)]/dx = 0 + p_1 x^{s1-1} + p_2 x^{s2-1} + \ldots\ldots + p_n x^{sn-1} = (s_1 p_1) x^{s1-1} + \ldots\ldots.. + (s_n p_n) x^{s1-1}$. Where "~" denotes the difference between s_i and 1. Clearly, if p(x) ∈N [$x^{[0, 1]}$] then d[p(x)]/dx ∈N [$x^{[0, 1]}$]. Likewise successive derivatives are also defined i.e., product of s_i p_i∈ N as s_i∈ 0, 1] and p_i∈ N i.e., the usual multiplication of the real numbers.

Example 1.9: Let N be the set of real numbers N [$x^{[0, 1]}$] be a polynomial nagendram gamma near-field space.
$p(x) = 5 – 6 x^{1/5} + 2 x^{3/8} – 15 x^{7/9}$ then on differentiation p(x) w.r.t. x we get,
$d[p(x)]/dx = 0 – 1/5\ 6.x^{4/5} + 2\ x3\ /8\ x^{5/8} – 15\ x\ 7/9\ x^{2/9} = - 6/5\ x^{4/5 +}\ ¾\ x^{5/8} – 35/3\ x^{2/9}$

The observation to be made is that no polynomial other than the polynomial x vanishes after differentiation.

Definition 1.10: Let p(x) ∈ {N [$x^{[0,1]}$} the fuzzy degree of polynomial nagendram gamma near-field space p(x) is s_n where $p(x) = p_0 + p_1 x^{s1} + p_2 x^{s2} + \ldots\ldots + p_n x^{sn}$, $s_1 < s_2 < \ldots < s_n$ ($p_n \neq 0$) deg p(x) = s_n. The maximal degree of any polynomial p(x) can take is 1. Now it is important to note that as in the case polynomial fields we cannot say deg [p(x).q(x)] = deg p(x) + deg q(x).

But we have always in fuzzy polynomial nagendram gamma near-field space is a fuzzy degree we shall denote then by *f* (deg (p(x)).

Definition 1.11: Let p(x) ∈ [N[$x^{[0,1]}$] - p(x) is said to have a root α if p(α) = 0.

Example 1.12: Let $p(x) = \sqrt{2} – x^{1/2}$ be a polynomial in N [$x^{[0, 1]}$]. The root of p(x) is 2 for $p(2) = \sqrt{2} – 2^{1/2} = 0$.

In case of root of polynomial nagendram gamma near-field space of degree n has n only n roots which is the fundamental theorem of algebra. We in case of fuzzy polynomial nagendram gamma near-field spaces cannot say the number of roots in a nice mathematical terminology that is itself fuzzy.

A study of these fuzzy polynomial nagendram gamma near-field spaces over a nearfield N is left open for any interested upcoming researchers and scholars. We proceed on to define fuzzy polynomial nagendram gamma near-field spaces when the number of variables is more than one x and y.

Definition 1.13: Let N be the set of real numbers x, y be two variables we first assume xy = yx. Define the fuzzy polynomial nagendram gamma near-field space.

N [$x^{[0, 1]}$, $y^{[0, 1]}$] by = {$\sum r_i x^{pi} y^{qi}$: r_i∈ N_i ; p_i∈ [0, 1], q_i∈ [0, 1]}

Define "+" as in the case of polynomial and "." By p(xy). q(x.y) = p(x, y). Clearly, N [$x^{[0, 1]}$, $y^{[0, 1]}$] is called as fuzzy polynomial nagendram gamma right near-field space.

Definition 1.14: Let {N [$x^{[0, 1]}$, $y^{[0, 1]}$] ⊕ "."} be a fuzzy polynomial nagendram gamma right near-field space in the variable x and y.

Definition 1.15: homogeneous of fuzzy polynomial nagendram gamma right near-field space degree. A fuzzy polynomial nagendram gamma near-field space p(x, y) is said to be homogeneous of fuzzy polynomial nagendram gamma right near-field space degree t, t ∈ [0, 1] if $p(x, y) = a_n x^{s1} y^{t1} + \ldots\ldots. + b_n x^{sp} y^{tp}$ then $t_i \neq 0$, $s_i \neq 0$ for all I = 1, 2, 3,….,p and $s_i + t_i = t$ for I = 1, 2, 3,…..,p.

Definition 1.16: symmetric fuzzy polynomial nagendram gamma near-field space. Let N {$x^{[0, 1]}$, $y^{[0, 1]}$, ⊕, ⊗} be the fuzzy nagendram gamma near-field space is a homogeneous polynomial nagendram gamma near-field space of fuzzy degree t, t ∈ [0, 1] such that $p(x, y) = p_1 x^{t1} y^{s1} + \ldots\ldots. + p_n x^{tm} y^{sn}$ where $t_1 < t_2 < \ldots. < t_n s_n < s_{n-1} < \ldots < s_1$ with $t_1 = s_n$, $t_2 = s_{n-1}$, …., $t_n = s_1$ further $p_1 = p_n$, $p_2 = p_{n-1}$, so on.

Example 1.17: $p(x, y) = 3 x^{1/2} y^{1/2} + 3 x^{2/3} y^{1/2}$.$p(x, y) = x^r y^r$ r∈ [0, 1].
$p(x, y) = x^r + y^r + x^s.y^t$ where s + t = 1 and s, t , r ∈ [0, 1].

Definition 1.18: fuzzy polynomial nagendram gamma near-field space in n-variables. As we have other polynomials we can extend the fuzzy polynomial nagendram gamma near-field spaces to any number of variables say X_1, X_2, …., X_n under the assumption $X_i X_j = X_j X_i$ and denote it by N [$X_1^{[0, 1]}$, $X_2^{[0, 1]}$, ….., $X_n^{[0, 1]}$] is called the fuzzy polynomial nagendram gamma near-field space in n-variables.

SECTION 2: FUZZY NON-ASSOCIATIVE POLYNOMIAL NAGENDRAM GAMMA NEAR-FIELD SPACE AND SPECIAL CLASS OF FUZZY NAGENDRAM GAMMA RIGHTNEAR-FIELD SPACE.

We have introduced the concept of complex near-field space, nagendram gamma sub near-field space, nagendram gamma semi sub near-field space, nagendram gamma near-field space and now we just define yet new notion called fuzzy non-associative nagendram gamma near-field space.

Definition 2.1: fuzzy non-associative polynomial nagendram gamma near-field space. Let $\{V, \oplus, \otimes\}$ be the fuzzy non-associative complex nagendram gamma near-field space. Let x be an indeterminate. We define the fuzzy non-associative polynomial nagendram gamma near-field spaceas follows

$V[x] = \{\sum p_i x^i : p_i \in V\}$ we say p(x), q(x) $\in$ V [x] are equal if and only if every coefficient of same power of x is equal i.e., if $p(x) = p_0 + p_1x + \ldots + p_nx^n$ and $q(x) = q_0 + q_1x + \ldots + q_nx^n$. p(x) = q(x) if and only if $p_i = q_i$ for i = 1, 2, 3,….,n. Addition is performed as follows $p(x) \oplus q(x) = p_0 \oplus q_0 + \ldots + (p_n \oplus q_n)x^n$ where $\oplus$ is the operation on V. For p(x), q(x) in V [x] define $p(x) \otimes q(x) = p(x)$. Clearly, $\{v [x], \oplus, \otimes\}$ is a fuzzy non-associative complex polynomial nagendram gamma near-field space.

Let us take $Z^0 = Z^+ \cup \{0\}$. Let $p : Z^0 \rightarrow V$ be defined by p(0) = 0, p(x) = 1/x for $0 \neq x \in Z$.

Clearly, p(z) is a fuzzy non-associative polynomial nagendram gamma sub near-field space of V. thus p is a fuzzy non-associative polynomial nagendram gamma sub near-field space. Let $N = Z^0 \times Z^0$. Define a map $p_0 : N \rightarrow V[x]$ by
p(0, 0) = 0.
p(x, y) = 1/x + 1/y where $x \neq 0$, $y \neq 0$.
p(x, 0) = 1/x.
p(0, y) = 1/y.
Then the map p is a fuzzy non-associative complex nagendram gamma sub near-field space of N.

Definition 2.2: special fuzzy nagendram gamma right near-field space.
Let Q = [0, 1] the interval from 0 to 1. Define $\oplus$ and $\otimes$ on Q s follows. For a, b $\in$ Q define $a \oplus b = a + b$ if $a + b < 1$, $a \oplus b = 0$ if $a + b = 1$ and $a \oplus b = a + b - 1$ if $a + b > 1$. Thus $\oplus$ acts as modulo 1. Define $\otimes$ on a, b $\in$ Q = [0, 1] by $a \otimes b = a$; clearly, $(a \oplus b) \otimes c = a \otimes c \oplus b \otimes c = a \oplus b$. clearly, $(Q, \oplus)$ is a nagendram gamma sub near-field space of N and $(Q, \otimes)$ is a nagendram gamma semi sub near-field space of N. Hence $(Q, \oplus, \otimes)$ is a nagendram gamma right near-field space of N.

We recall $\{Q, \oplus, \otimes\}$ the special fuzzy nagendram gamma right near-field space of N.

Definition 2.3: fuzzy nagendram gamma right near-field space zero symmetric and constant part over nagendram gamma near-field space. Let $\{Q, \oplus, \otimes\}$ be a fuzzy nagendram gamma near-field space. $Q_0 = \{q \in Q: q.0 = 0\}$ is called the fuzzy nagendram gamma near-field space zero symmetric part and $Q_c = \{n \in Q: n.0 = n\}$ is called the fuzzy nagendram gamma near-field space constant part over nagendram gamma near-field space.

Definition 2.4: fuzzynagendram gamma right near-field space invariant and fuzzynagendram gamma right near-field space right invariant. A fuzzy nagendram gamma sub near-field space N of Q is called fuzzy nagendram gamma near-field space invariant if $NQ \subseteq N$ and $QN \subseteq N$ we call fuzzy nagendram gamma sub near-field space N of Q to be a fuzzy nagendram gamma near-field space right invariant if $NP \subset N$.

Note 2.5: Every fuzzy nagendram gamma sub near-field space N of Q is fuzzy nagendram gamma near-field space right invariant.

Definition 2.6: The set Q = {0, 1} with two binary operations $\oplus$ and $\otimes$ is called fuzzy nagendram gamma right semi near-field space if $\{Q, \oplus\}$ and $\{Q, \otimes\}$ are fuzzy nagendram gamma semi near-field space.

Example 2.7: We being all results can be easily extended in case of fuzzy nagendram gamma semi near-field space.
Further, let $\{Q, \oplus, \otimes\}$ be the fuzzy nagendram gamma semi near-field space.
define $\oplus$ as
$p \oplus q = 0$ if $p + q < 1$
$p \oplus q = 1$ if $p + q \geq 1$. Then $(Q, \oplus)$ is a nagendram gamma semi near-field space.
Define $\otimes$ as
$p \otimes q = p$ for all p, q $\in$ Q. Clearly, $\{Q, \oplus, \otimes\}$ is a special fuzzy nagendram gamma semi near-field space.

SECTION 3: MAIN RESULTS ON SPECIAL CLASSES OF FUZZY NON-ASSOCIATIVE POLYNOMIAL NAGENDRAM GAMMA NEAR-FIELD SPACE AND SPECIAL CLASS OF FUZZY NAGENDRAM GAMMA RIGHT NEAR-FIELD SPACE.

In this third section, we study and deduce some main results related on special classes of Fuzzy non-associative polynomial nagendram gamma near-field space and special class of fuzzy nagendram gamma right near-field space.

Theorem 3.1: The fuzzy matrix nagendram gamma near-field space is a commutative polynomial nagendram gamma near-field space.

Proof: with the help of basic definitions one can prove straightforward.

Theorem 3.2: The fuzzy matrix nagendram gamma near-field space is not an abelian nagendram gamma near-field space.

Proof: for M, N $\in Q_{n \times n}$ we have $M \otimes N \neq N \otimes M$ in general. Hence The fuzzy matrix nagendram gamma near-field space is not an abelian nagendram gamma near-field space. This completes the proof of the theorem.

Note 3.3: In $\{Q_{n \times n}, \oplus, \otimes\}$ we have $J_{n \times n} \neq M$ where $J_{n \times n}$ is the fuzzy matrix nagendram gamma near-field space with diagonal elements 1 and rest 0.

Note 3.4: $W = \{a + ib: a, b \in [0, 1]\}$ has non-trivial idempotent.

Note 3.5: The special fuzzy right nagendram gamma right near-field space $\{Q, \oplus, \otimes\}$ has no fuzzy invertible elements.

Example 3.6: Let S = {r/p, 0: 1 < r < p} is a fuzzy nagendram gamma sub near-field space or to be more specific S = {0, ¼, ½, ¾}; S is a fuzzy nagendram gamma sub near-field space.

Theorem 3.7: Let $\{W, \oplus, \otimes\}$ be a fuzzy complex nagendram gamma near-field space. Every non-trivial fuzzy nagendram gamma sub near-field space of N is a fuzzy right ideal of W.

Proof: It is obvious by the fact that if N is a fuzzy nagendram gamma sub near-field space of W then $NW \subseteq N$.
It is open question. Does W have non-trivial fuzzy left, right ideals and ideals. The reason that we are to develop new and analogous notions and definitions about the concepts of special classes of Fuzzy non-associative polynomial nagendram gamma near-field space and special class of fuzzy nagendram gamma right near-field space.

Now a natural question would can we have the concept of fuzzy non-associative complex nagendram gamma near-field space; to this end we define a fuzzy non-associative complex nagendram gamma near-field space.

ACKNOWLEDGEMENT

Dr N V Nagendram being a Professor is indebted to the referee for his various valuable comments leading to the improvement of the advanced research article. For the academic and financial year 2020 – 2021, this work under project cum 5 th book publishing being myself author and was supported by the Hon'ble chairman Sri B. Srinivasa Rao, Kakinada Institute of Technology & Science (K.I.T.S.), R&D education Department Humanities & sciences (Mathematics), Divili 533 433. Andhra Pradesh INDIA.

REFERENCES

1. G. L. Booth A note on Γ-near-rings Stud. Sci. Math. Hung. 23 (1988) 471-475.
2. G. L. Booth Jacobson radicals of Γ-near-rings Proceedings of the Hobart Conference, Longman Sci. & Technical (1987) 1-12.
3. G Pilz Near-rings, Amsterdam, North Holland.
4. P. S. Das Fuzzy groups and level subgroups J. Math. Anal. and Appl. 84 (1981) 264-269.
5. V. N. Dixit, R. Kumar and N. Ajal On fuzzy rings Fuzzy Sets and Systems 49 (1992) 205-213.
6. S. M. Hong and Y. B. Jun A note on fuzzy ideals in Γ-rings Bull. Honam Math. Soc. 12 (1995) 39-48.
7. Y. B. Jun and S. Lajos Fuzzy (1; 2)-ideals in semigroups PU. M. A. 8(1) (1997) 67-74.
8. Y. B. Jun and C. Y. Lee Fuzzy -rings Pusan Kyongnam Math. J. 8(2) (1992) 163-170.
9. Y. B. Jun, J. Neggers and H. S. Kim Normal L-fuzzy ideals in semiringsFuzzy Sets and Systems 82 (1996) 383-386.
10. N V Nagendram,T V Pradeep Kumar and Y V Reddy On "Semi Noetherian Regular Matrix δ–Near-Rings and their extensions", International Journal of Advances in Algebra (IJAA), Jordan, ISSN 0973 - 6964, Vol.4, No.1, (2011), pp.51-55.

11. NV Nagendram,T V Pradeep Kumar and Y V Reddy “A Note on Bounded Matrices over a Noetherian Regular Delta Near Rings”, (BMNR-delta-NR) published in International Journal of Contemporary Mathematics, Vol.2, No.1, June 2011, Copyright@MindReaderPublications, ISSNNo:0973-6298, pp.13-19.
12. N V Nagendram,T V Pradeep Kumar and Y V Reddy “A Note on Boolean Regular Near-Rings and Boolean Regular δ–Near Rings”, (BR-delta-NR) published in International Journal of Contemporary Mathematics, IJCM Int. J. of Contemporary Mathematics ,Vol. 2, No. 1, June 2011, Copyright @ Mind Reader Publications, ISSN No: 0973-6298, pp. 29 - 34.
13. NV Nagendram,T V Pradeep Kumar and Y V Reddy “on p-Regular δ–Near-Rings and their extensions”, (PR-delta-NR) accepted and to be published in int. J. Contemporary Mathematics (IJCM),0973-6298,vol.1, no.2, pp.81-85, June 2011.
14. N V Nagendram, T V Pradeep Kumar and Y V Reddy “On Strongly Semi –Prime over Noetherian Regular δ–Near Ringsand their extensions”,(SSPNR-delta-NR) published in International Journal of Contemporary Mathematics, Vol.2, No.1, June 2011, pp.83-90.
15. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Structure Theory and Planar of Noetherian Regular δ-Near–Rings (STPLNR-delta-NR)”,International Journal of Contemporary Mathematics, IJCM ,published by IJSMA, pp.79-83, Dec, 2011.
16. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Matrix’s Maps over Planar of Noetherian Regular δ-Near–Rings (MMPLNR-delta-NR)”,International Journal of Contemporary Mathematics, IJCM, published by IJSMA, pp.203-211, Dec, 2011.
17. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On IFP Ideals on Noetherian Regular-δ- Near Rings(IFPINR-delta-NR)”, Int. J. of Contemporary Mathematics, Copyright @ Mind Reader Publications, ISSN No: 0973-6298, Vol. 2, No. 1, pp.53-58, June 2011.
18. N V Nagendram, B Ramesh paper "A Note on Asymptotic value of the Maximal size of a Graph with rainbow connection number 2*(AVM-SGR-CN2*)" published in an International Journal of Advances in Algebra(IJAA) Jordan @ Research India Publications, Rohini, New Delhi, ISSN 0973-6964 Volume 5, Number 2 (2012), pp. 103-112.
19. N V Nagendram research paper on "Near Left Almost Near-Fields (N-LA-NF)" communicated to for 2nd intenational conference by International Journal of Mathematical Sciences and Applications, IJMSA@ mindreader publications, New Delhi on 23-04-2012 also for publication.
20. N V Nagendram, T Radha Rani, Dr T V Pradeep Kumar and Dr Y V Reddy “A Generalized Near Fields and (m, n) Bi-Ideals over Noetherian regular Delta-near rings (GNF-(m, n) BI-NR-delta-NR)", published in an International Journal of Theoretical Mathematics and Applications (TMA), Greece, Athens, dated 08-04-2012.
21. N V Nagendram, Smt.T.Radha Rani, Dr T V Pradeep Kumar and Dr Y V Reddy "Applications of Linear Programming on optimization of cool freezers(ALP-on-OCF)" Published in International Journal of Pure and Applied Mathematics, IJPAM-2012-17-670 ISSN-1314-0744 Vol-75 No-3(2011).
22. N V Nagendram "A Note on Algebra to spatial objects and Data Models(ASO-DM)" Published in international Journal American Journal of Mathematics and Mathematical Sciences, AJMMS,USA, Copyright @ Mind Reader Publications, Rohini , New Delhi, ISSN. 2250-3102, Vol.1, No.2 (Dec. 2012), pp. 233 – 247.
23. N V Nagendram, Ch Padma, Dr T V Pradeep Kumar and Dr Y V Reddy "A Note on Pi-Regularity and Pi-S-Unitality over Noetherian Regular Delta Near Rings (PI-R-PI-S-U-NR-Delta-NR)" Published in International Electronic Journal of Pure and Applied Mathematics, IeJPAM-2012-17-669 ISSN-1314-0744 Vol-75, No-4(2011).
24. N V Nagendram, Ch Padma, Dr T V Pradeep Kumar and Dr Y V Reddy "Ideal Comparability over Noetherian Regular Delta Near Rings(IC-NR-Delta-NR)" Published in International Journal of Advances in Algebra (IJAA, Jordan),ISSN 0973-6964 Vol:5,NO:1(2012),pp.43-53@ Research India publications, Rohini, New Delhi.
25. N. V. Nagendram, S. VenuMadava Sarma and T. V. Pradeep Kumar , “A Note On Sufficient Condition Of Hamiltonian Path To Complete Graphs (SC-HPCG)”, IJMA-2(11), 2011 , pp.1-6.
26. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Noetherian Regular Delta Near Rings and their Extensions(NR-delta-NR)”,IJCMS,Bulgaria,IJCMS-5-8-2011,Vol.6,2011,No.6,255-262.
27. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Semi Noehterian Regular Matrix Delta Near Rings and their Extensions(SNRM-delta-NR)”,Jordan,@ResearchIndiaPublications,AdvancesinAlgebraISSN 0973-6964 Volume 4, Number 1 (2011), pp.51-55© Research India Publicationspp.51-55
28. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Boolean Noetherian Regular Delta Near Ring(BNR-delta-NR)s”, International Journal of Contemporary Mathematics, IJCM Int. J. of Contemporary Mathematics ,Vol. 2, No. 1-2,Jan-Dec 2011 , Mind Reader Publications, ISSN No: 0973-6298,pp. 23-27.
29. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Bounded Matrix over a Noetherian Regular Delta Near Rings(BMNR-delta-NR)”,Int. J. of Contemporary Mathematics, Vol. 2, No. 1-2, Jan-Dec 2011 ,Copyright @ Mind Reader Publications, ISSN No: 0973-6298,pp.11-16
30. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy “On Strongly Semi Prime over Noetherian Regular Delta Near Rings and their Extensions(SSPNR-delta-NR)”, Int. J. of Contemporary Mathematics, Vol. 2, No. 1, Jan-Dec 2011 ,Copyright @ Mind Reader Publications ,ISSN No: 0973-6298,pp.69-74.

31. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "On IFP Ideals on Noetherian Regular Delta Near Rings(IFPINR-delta-NR)", Int. J. of Contemporary Mathematics, Vol. 2, No. 1-2, Jan-Dec 2011 ,Copyright @ Mind Reader Publications, ISSN No: 0973-6298,pp.43-46.
32. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "On Structure Theory and Planar of Noetherian Regular delta-Near–Rings (STPLNR-delta-NR)",International Journal of Contemporary Mathematics, IJCM ,accepted for Ist international conference conducted by IJSMA, New Delhi December 18,2011, pp:79-83, Copyright @ Mind Reader Publications and to be published in the month of Jan 2011.
33. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "On Matrix's Maps over Planar of Noetherian Regular delta-Near–Rings (MMPLNR-delta-NR)", International Journal of Contemporary Mathematics, IJCM, accepted for Ist international conference conducted by IJSMA, New Delhi December 18,2011,pp:203-211, Copyright @ Mind Reader Publications and to be published in the month of Jan 2011.
34. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "Some Fundamental Results on P- Regular delta-Near–Rings and their extensions (PNR-delta-NR)",International Journal of Contemporary Mathematics ,IJCM,Jan-December'2011,Copyright@MindReader Publications,ISSN:0973-6298, vol.2,No.1-2, PP.81-85.
35. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "A Generalized ideal based-zero divisor graphs of Noetherian regular Delta-near rings (GIBDNR- d-NR)" , International Journal of Theoretical Mathematics and Applications (TMA)accepted and published by TMA, Greece, Athens,ISSN:1792- 9687 (print),vol.1, no.1, 2011, 59-71, 1792-9709 (online),International Scientific Press, 2011.
36. N V Nagendram, Dr T V Pradeep Kumar and Dr Y V Reddy "Inversive Localization of Noetherian regular Delta-near rings (ILNR- Delta-NR)" , International Journal of Pure And Applied Mathematics published by IJPAM-2012-17-668, ISSN.1314-0744 vol-75 No-3,SOFIA,Bulgaria.
37. N VNagendram1, N Chandra Sekhara Rao2 "Optical Near field Mapping of Plasmonic Nano Prisms over Noetherian Regular Delta Near Fields (ONFMPN-NR-Delta-NR)" accepted for 2nd international Conference by International Journal of Mathematical Sciences and Applications, IJMSA @ mind reader publications, New Delhi going to conduct on 15 – 16 th December 2012 also for publication.
38. N V Nagendram, K V S K Murthy(Yoga), "A Note on Present Trends on Yoga Apart From Medicine Usage and Its Applications(PTYAFMUIA)" Pubished by the International Association of Journal of Yoga Therapy, IAYT 18 thAugust, 2012.
39. N VNagendram, B Ramesh, Ch Padma , T Radha Rani and S V M Sarma research article "A Note on Finite Pseudo Artinian Regular Delta Near Fields(FP AR-Delta-NF)" communicated to International Journal of Advances in Algebra, IJAA ,Jordan on 22 nd August 2012.
40. N V Nagendram "Amenability for dual concrete complete near-field spaces over a regular delta near-rings (ADC-NFS-R-δ-NR)" accepted for 3nd international Conference by International Journal of Mathematical Sciences and Applications, IJMSA @ mind reader publications, New Delhi going to conduct on 15 – 16 th December 2014 also for publication.
41. N V Nagendram "Characterization of near-field spaces over Baer-ideals" accepted for 4th international Conference by International Journal Conference of Mathematical Sciences and Applications, IJCMSA @ mind reader publications, New Delhi going to conduct on 19 – 20 th December 2015 at Asian Institute of Technology AIT, Klaung Lange 12120, Bangkok, Thailand.
42. N V Nagendram, S V M Sarma Dr T V Pradeep Kumar "A note on sufficient condition of Hamiltonian path to Complete Graphs" published in International Journal of Mathematical archive IJMA, ISSN 2229-5046, Vol.2, No..2, Pg. 2113 – 2118, 2011.
43. N V Nagendram, S V M Sarma, Dr T V Pradeep Kumar "A note on Relations between Barnette and Sparse Graphs" published in an International Journal of Mathematical Archive (IJMA), An International Peer Review Journal for Mathematical, Science & Computing Professionals, 2(12), 2011, pg no.2538-2542,ISSN 2229 – 5046.
44. N V Nagendram "On Semi Modules over Artinian Regular Delta Near Rings(S Modules-AR-Delta-NR) Accepted and published in an International Journal of Mathematical Archive (IJMA)", An International Peer Review Journal for Mathematical, Science & Computing Professionals ISSN 2229-5046, IJMA-3-474, 2012.
45. N V Nagendram "A note on Generating Near-field efficiently Theorem from Algebraic K - Theory" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.3, No.10, Pg. 1 – 8, 2012.
46. N V Nagendram and B Ramesh on "Polynomials over Euclidean Domain in Noetherian Regular Delta Near Ring Some Problems related to Near Fields of Mappings(PED-NR-Delta-NR & SPR-NF)" Accepted and published in an International Journal of Mathematical Archive (IJMA), An International Peer Review Journal for Mathematical, Science & Computing Professionals ISSN 2229-5046,vol.3, no.8, pp no. 2998-3002,2012.
47. N V Nagendram "Semi Simple near-fields Generating efficiently Theorem from Algebraic K - Theory" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.3, No.12, Pg. 1 – 7, 2012.
48. N V Nagendram" A Note On Generating Near Fields Efficiently: Theorems From Algebraic K-Theory (G-NF-E-TFA-KT)" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.3, No.10, Pg. 3612 – 3619, 2012.
49. N V Nagendram, E Sudeeshna Susila, "Applications of linear infinite dimensional system in a Hilbert space and its characterizations in engg. Maths (AL FD S HS & EM)", IJMA, ISSN.2229-5046, Vol.4, No.7, Pg. 1– 11 (19 – 29), 2013.

50. NVNagendram, Dr T V Pradeep Kumar, "Compactness in fuzzy near-field spaces (CN-F-NS)", IJMA, ISSN. 2229 – 5046, Vol.4, No.10, Pg. 1 – 12, 2013.
51. N V Nagendram, Dr T V Pradeep Kumar and Dr Y Venkateswara Reddy, "Fuzzy Bi-Γ ideals in Γ semi near – field spaces (F Bi-Gamma I G)" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.4, No.11, Pg. 1 – 11, 2013.
52. N V Nagendram," EIFP Near-fields extension of near-rings and regular delta near-rings (EIFP-NF-E-NR)" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229 - 5046, Vol.4, No.8, Pg. 1 –11, 2013.
53. N V Nagendram, E Sudeeshna Susila, "Generalization of (∈,∈Vqk) fuzzy sub near-fields and ideals of near-fields(GF-NF-IO-NF)", IJMA, ISSN.2229-5046, Vol.4, No.7,Pg. 1 – 11, 2013.
54. N V Nagendram,Dr T V Pradeep Kumar," A note on Levitzki radical of near-fields(LR-NF)" ,Published by International Journal of Mathematical Archive, IJMA,ISSN. 2229-5046, Vol.4, No.4, Pg.288 – 295, 2013.
55. N V Nagendram, "Amalgamated duplications of some special near-fields(AD-SP-N-F)", Published by International Journal of Mathematical Archive, IJMA,ISSN. 2229-5046, Vol.4, No.2, Pg.1 – 7, 2013.
56. N V Nagendram," Infinite sub near-fields of infinite near-fields and near-left almost near-fields (IS-NF-INF-NL-A-NF)", Published by International Journal of Mathematical Archive, IJMA,ISSN. 2229-5046, Vol.4, No.2, Pg. 90 – 99, 2013.
57. N V Nagendram "Tensor product of a near-field space and sub near-field space over a near-field" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.8, No.6, Pg. 8 – 14, 2017.
58. N V Nagendram, E Sudeeshna Susila, Dr T V Pradeep Kumar "Some problems and applications of ordinary differential equations to Hilbert Spaces in Engg mathematics (SP-O-DE-HS-EM)", IJMA, ISSN.2229-5046, Vol.4, No.4,Pg. 118 – 125, 2013.
59. N V Nagendram, Dr T V Pradeep Kumar and D Venkateswarlu, "Completeness of near-field spaces over near-fields (VNFS-O-NF)" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.5, No.2, Pg. 65 – 74, 2014
60. Dr N V Nagendram "A note on Divided near-field spaces and ϕ-pseudo – valuation near-field spaces over regular δ-near-rings (DNF-ϕ-PVNFS-O-δ-NR)" published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.6, No.4, Pg. 31 – 38, 2015.
61. Dr. N V Nagendram "A Note on B_1-Near-fields over R-delta-NR(B_1-NFS-R-δ-NR)", Published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.6, No.8, Pg. 144 – 151, 2015.
62. Dr. N V Nagendram " A Note on TL-ideal of Near-fields over R-delta-NR(TL-I-NFS-R-δ-NR)", Published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.6, No.8, Pg. 51 – 65, 2015.
63. Dr. N V Nagendram "A Note on structure of periodic Near-fields and near-field spaces (ANS-P-NF-NFS)", Published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.7, No.4, Pg. 1 – 7, 2016.
64. Dr. N V Nagendram "Certain Near-field spaces are Near-fields(C-NFS-NF)", Published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.7, No.4, Pg. 1 – 7, 2016.
65. Dr. N V Nagendram "Sum of Annihilators Near-field spaces over Near-rings is Annihilator Near-field space (SA-NFS-O-A-NFS)", Published by International Journal of Mathematical Archive, IJMA, ISSN. 2229-5046, Vol.7, No.1, Pg. 125 – 136, 2016.
66. Dr. N V Nagendram "A note on commutativity of periodic near-field spaces", Published by IJMA, ISSN. 2229 - 5046, Vol.7, No. 6, Pg. 27 – 33, 2016.
67. Dr N V Nagendram "Densely Co-Hopfian sub near-field spaces over a near-field, IMA, ISSN No.2229-5046,2016, Vol.7, No.10, Pg 1-12.
68. Dr N V Nagendram, "Closed (or open) sub near-field spaces of commutative near-field space over a near-field", 2016, Vol.7, No, 9, ISSN NO.2229 – 5046, Pg No.57 – 72.
69. Dr N V Nagendram, "Homomorphism of near-field spaces over a near-field "IJMA Jan 2017, Vol.8, No, 2, ISSN NO.2229 – 5046, Pg No. 141 – 146.
70. Dr N V Nagendram, "Sigma – toe derivations of near-field spaces over a near-field "IJMA Jan 2017, Vol.8, No, 4, ISSN NO. 2229 – 5046, Pg No. 1 – 8.
71. Dr N V Nagendram, "On the hyper center of near-field spaces over a near-field "IJMA Feb 2017, Vol.8, No, 2, ISSN NO.2229 – 5046, Pg No. 113 – 119.
72. Dr N V Nagendram, "Commutative Theorem on near-field space and sub near-field space over a near-field " IJMA July, 2017, Vol.8, No,7, ISSN NO.2229 – 5046, Pg No. 1 – 7.
73. Dr N V Nagendram, "Project on near-field spaces with sub near-field space over a near-field " , IJMA Oct, 2017, Vol.8, No,11, ISSN NO.2229 – 5046, Pg No. 7 – 15.
74. Dr N V Nagendram, "Abstract near-field spaces with sub near-field space over a near-field of Algebraic in Statistics" ,IJMA Nov, 2017, Vol.8, No,12, ISSN NO.2229 – 5046, Pg No. 13 – 22.
75. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Commutative Prime Γ-near-field spaces with permuting Tri-derivations over near-field", IJMA Dec, 2017, Vol.8, No,12, ISSN NO.2229 – 5046, Pg No. 1 – 9.
76. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Fuzzy sub near-field spaces in Γ-near-field space over a near-field" ,IJMA Nov, 2017, Vol.8, No, 12, ISSN NO.2229 – 5046, Pg No.188 – 196.

77. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Gamma Semi Sub near-field spaces in gamma near-field space over a near-field PART I" ,IJMA Jan, 2018, Vol. 9, No, 2, ISSN NO.2229 – 5046, Pg No.135 – 145.
78. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Gamma Semi Sub near-field spaces in gamma near-field space over a near-field PART II" ,IJMA 14 Feb, 2018, Vol. 9, No, 3, ISSN NO.2229 – 5046, Pg No.6 – 12.
79. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Gamma Semi Sub near-field spaces in gamma near-field space over a near-field PART III", IJMA 26 Feb, 2018, Vol. 9, No, 3, ISSN NO.2229 – 5046, Pg No.86 – 95.
80. Smt. T MadhaviLatha, Dr T V Pradeep Kumar and Dr N V Nagendram, "Gamma Semi Sub near-field spaces in gamma near-field space over a near-field PART IV", IJMA 09 Mar, 2018, Vol. 9, No, 4, ISSN NO.2229 – 5046, Pg No.1 – 14.
81. Dr N V Nagendram, "Nagendram Gamma-Semi Sub near-field spaces in gamma near-field space over a near-field", IJMA 29 April, 2018, Vol. 9, No, 6, ISSN NO.2229 – 5046, Pg No.58 – 66.
82. Dr N V Nagendram, "Topological Nagendram Gamma-Semi Sub near-field spaces in gamma near-field space over a near-field", IJMA 2005 2018, Vol. 9, No, 7, ISSN NO.2229 – 5046, Pg No.7 – 18.
83. Dr N V Nagendram, "Deformation Retracts of classical Nagendram Gamma-semi sub near-field spaces of a Gamma-near-field space over near-field" 22 09 2018, Vol. 9, No, 11, ISSN NO.2229 – 5046, Pg No.64 – 69.
84. Dr N V Nagendram, "Representation of Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 1010 2018, IJMA Aug, 2019, Vol. 9, No, 11, ISSN NO.2229 – 5046, Pg No. 46- 54.
85. Dr N V Nagendram, "Almost prime ideal in Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 26 03 2019, IJMA Mar, 2019, Vol. 10, No, 5, ISSN NO.2229 – 5046, Pg No.1 - 7.
86. Dr N V Nagendram, "Characters of Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 21 07 2019, IJMA Sept, 2019, Vol. 10, No, 9, ISSN NO.2229 – 5046, Pg No.1- 7.
87. Dr N V Nagendram, "Part – I characters of Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 23 07 2019, IJMA Feb, 2020, Vol. 10, No, 8, ISSN NO.2229 – 5046, Pg No. 11-17.
88. Dr N V Nagendram, "Part – II characters of Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field",3110 2019, IJMA Feb, 2020, Vol. 11, No, 3, ISSN NO.2229 – 5046, Pg No.1- 6.
89. Dr N V Nagendram "Part III Characters of Nagendram Gamma semi sub near-field spaces of a Gamma-near-field space over near-field" April 2019,", IJMA, Vol. xx, No, xx, ISSN NO.2229 – 5046, Pg No .xx – xx.
90. K H Prasad[1],Dr T V Pradeep Kumar[2], Dr N V Nagendram[3], "Kalangi non-associative Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 22 02 2020, IJMA Feb, 2020, Vol. 11, No, 4, ISSN NO. 2229 – 5046, Pg No.7- 9.
91. K H Prasad[1],Dr T V Pradeep Kumar[2], Dr N V Nagendram[3], "Part I Kalangi non-associative Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 28 02 2020, IJMA Feb, 2020, Vol. 11, No, 4, ISSN NO. 2229 – 5046, Pg No.42- 45.
92. K H Prasad[1],Dr T V Pradeep Kumar[2], Dr N V Nagendram[3], "Part II Applications of fuzzy Kalangi non-associative Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 03 05 2020, IJMA May, 2020, Vol. 11, No, 6, ISSN NO.2229 – 5046, Pg No. 7- 13.
93. K H Prasad[1],Dr T V Pradeep Kumar[2], Dr N V Nagendram[3], "Part III Applications of fuzzy Kalangi non-associative Gamma semi sub near-field spaces of a Gamma-near-field space over near-field", 03 05 2020, IJMA May, 2020, Vol. 11, No, 6, ISSN NO.2229 – 5046, Pg No.28- 32.

Source of support: Nil, Conflict of interest: None Declared.