Turkish Online Journal of Qualitative Inquiry (TOJQI)

Volume 12, Issue 7, July 2021: 2265 – 2274

BMBJw – Filters Of Lattice Wajsberg Algebras

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Abstract

In this paper we define the BMBJw - filters of Lattice wajsberg algebras and prove some of the properties of BMBJw - filters. We derive some relations between fuzzy filters, intuitionistic fuzzy filters to BMBJw - filters of Lattice wajsberg algebras. Further we prove that M_B^J – cut sets formed BMBJw – filters. Finally we define the BMBJw - sub algebra and prove that every BMBJw – filter is a BMBJw - sub algebra. Later we give a condition to BMBJw - sub algebra is a BMBJw – filter.

Keywords: Lattice wajsberg algebra, MBJ-neutrosophic sets, BMBJw – filter and BMBJ-

Subalgebra.

1. Introduction

Wajsberg presented the concept of wajsberg algebra in 1935. In 1984,[6] Front, Antonio and Torrens led the lattice wajsberg algebra and investigate about filters. Ibrahim and Saravan [1] introduced the strong implicative filters of lattice wajsberg algebras and derived some properties. B.Ahamed introduced [2] the concept of fuzzy implicative filter and obtained some properties of lattice wajsberg algebra. Several researchers [3, 4, 5, 8, 11, 14, 15, 16,] applied the fuzzy theory to different algebras, differential equations and derived some results. Later Gaw derived the vague set as a generalization of fuzzy set. Vague theory applied to several streams by researchers [12,16]. After that Smarandache [7] introduced the concept of neutrosophic sets as a generalization of intuitionistic fuzzy sets. Later Monoranjan and Madhumangal [9] led the neutrosophic sets and define new operations with examples. Then neutrosophic applied to different streams[12,13] Y.B.Jun, R.A.Borzooei and M. Mohseni[10] introduced the MBJ-neutrosophic sets and applied to BCK algebra. T.Anitha, V.Amarendra Babu, G. Bhanu Vinolia[18, 17] introduced the NW- filters and MBJ- filters of lattice wajsberg algebras and proved the some properties.

In this paper we introduce the concepts of $\mathbb{BMBJw}$ – filter and $\mathbb{BMBJ}-$ Subalgebras of lattice wajsberg algebras and obtain some results on them. For further information of lattice wajsberg algebra refer the wajsberg algebra[6] by Front, Antonio and Torrens and for MBJ-neutrosophic sets refer the [10].

2. Preliminaries

Definition 2.1[6]: Let ($\mathcal{W}$, $\curvearrowright$, ´, 1_m) be a wajsberg algebra if it satisfies the following axioms for all $\mathfrak{x}_m$, $\mathfrak{y}_m$, $\mathfrak{z}_m \in \mathcal{W}$

1. $1_m \curvearrowright \mathfrak{x}_m = \mathfrak{x}_m$

2. $(\mathfrak{x}_m \curvearrowright \mathfrak{y}_m) \curvearrowright ((\mathfrak{y}_m \curvearrowright \mathfrak{z}_m) \curvearrowright (\mathfrak{x}_m \curvearrowright \mathfrak{z}_m)) = 1_m$

3. $(\mathfrak{x}_m \curvearrowright \mathfrak{y}_m) \curvearrowright \mathfrak{y}_m = (\mathfrak{y}_m \curvearrowright \mathfrak{x}_m) \curvearrowright \mathfrak{x}_m$

4. $(\mathfrak{x}'_m \curvearrowright \mathfrak{y}'_m) \curvearrowright (\mathfrak{y}_m \curvearrowright \mathfrak{x}_m) = 1_m$

Definition 2.2[6]: The wajsberg algebra $\mathcal{w}$ is called a lattice wajsberg algebra with the bounds0_m, 1_m if it satisfies the following axioms for all $\mathfrak{x}_m, \mathfrak{y}_m \in \mathcal{w}$

A partial ordering $\leq$ on $\mathcal{w}$, such that $\mathfrak{x}_m \leq \mathfrak{y}_m$ if and only if $\mathfrak{x}_m \curvearrowright \mathfrak{y}_m = 1_m$, $(\mathfrak{x}_m \vee \mathfrak{y}_m) = (\mathfrak{x}_m \curvearrowright \mathfrak{y}_m) \curvearrowright \mathfrak{y}_m$ and $(\mathfrak{x}_m \wedge \mathfrak{y}_m) = ((\mathfrak{x}'_m \curvearrowright \mathfrak{y}'_m) \curvearrowright \mathfrak{y}'_m)'$

Let $\mathbb{I}$ denote the family of all intervals numbers of [0, 1]. If $\mathbb{I}_1 = [a_1, b_1]$, $\mathbb{I}_2 = [a_2, b_2]$ are two elements of $\mathbb{I}$ [0, 1], me call $\mathbb{I}_1 \succcurlyeq \mathbb{I}_2$ if $a_1 \geq a_2$ and $b_1 \geq b_2$. Me define the term rmax to mean the maximum of two interval as rmax $[\mathbb{I}_1, \mathbb{I}_2] = [\max\{a_1, a_2\}, \max\{b_1, b_2\}]$.

Similarly, me can define the term rmin of any two intervals.

Definition 2.4 [10]: A MBJ neutrosophic set($\mathfrak{M}_{\mathfrak{B}}^{\mathfrak{J}}$- set) is of the structure $A_m = \{< \mathfrak{y}_m, \mathbb{M}_T^A(\mathfrak{y}_m), \mathbb{B}_I^A(\mathfrak{y}_m), \mathbb{J}_F^A(\mathfrak{y}_m)>, \mathfrak{y}_m \in \mathbb{x}\}$ where $\mathbb{M}_T^A$is truth membership function, $\mathbb{B}_I^A$is an indeterminate interval –valued membership function and $\mathbb{J}_F^A$ is false membership function, on a nonempty set $\mathbb{x}$ .The $\mathfrak{M}_{\mathfrak{B}}^{\mathfrak{J}}$- set is simply denoted by $A_m = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$.

Throughout this paper' $\mathbb{w}$' denotes the lattice wajsberg algebra and '$\mathfrak{M}_{\mathfrak{B}}^{\mathfrak{J}}$- set' denotes the MBJ-neutrosophic set.

3. $\mathbb{BMBJw}$ - Filters

Definition3.1: A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{J}}$- set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ of $\mathbb{w}$ is called a $\mathbb{BMBJw}$ - filter if it satisfies $\forall\, \mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{w}$,

(3.1) $\mathbb{M}_T^A(\mathfrak{x}_b) \dot{+} \mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq 1$ and $\mathbb{B}_I^{A+}(\mathfrak{y}_b) + \mathbb{J}_F^A(\mathfrak{y}_b) \leq 1$

(3.2) $\mathbb{M}_T^A(1_b) \geq \mathbb{M}_T^A(\mathfrak{x}_b)$,$\mathbb{B}_I^{A-}(1_b) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(1_b) \geq \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^A(1_b) \leq \mathbb{J}_F^A(\mathfrak{x}_b)$.

(3.3) $\mathbb{M}_T^A(\mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$,

$\mathbb{J}_F^A(\mathfrak{y}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$.

Example 3.2: Let $\mathbb{w} = \{0_b, \mathfrak{x}_b, \mathfrak{y}_b, \mathfrak{z}_b, \mathfrak{v}_b, 1_b\}$ with the binary operation $\curvearrowright$ as follows:

$\curvearrowright$	0_b	$\mathfrak{x}_b$	$\mathfrak{y}_b$	$\mathfrak{z}_b$	$\mathfrak{v}_b$	1_b
0_b	1_b	1_b	1_b	1_b	1_b	1_b
$\mathfrak{x}_b$	$\mathfrak{z}_b$	1_b	$\mathfrak{y}_b$	$\mathfrak{z}_b$	$\mathfrak{y}_b$	1_b
$\mathfrak{y}_b$	$\mathfrak{v}_b$	$\mathfrak{x}_b$	1_b	$\mathfrak{y}_b$	$\mathfrak{x}_b$	1_b
$\mathfrak{z}_b$	$\mathfrak{x}_b$	$\mathfrak{x}_b$	1_b	1_b	$\mathfrak{x}_b$	1_b
$\mathfrak{v}_b$	$\mathfrak{y}_b$	1_b	1_b	$\mathfrak{y}_b$	1_b	1_b
1_b	0_b	$\mathfrak{x}_b$	$\mathfrak{y}_b$	$\mathfrak{z}_b$	$\mathfrak{v}_b$	1_b

The $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{J}}$set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ defined on $\mathbb{w}$ as follows is a $\mathbb{BMBJw}$ - filter of $\mathbb{w}$.

Lemma 3.3: Every $\mathbb{BMBJw}$ – filter of $\mathbb{w}$ satisfies the following assertion:

$\mathfrak{z}$	$\mathbb{M}_T^A(\mathfrak{z})$	$\mathbb{B}_I^A(\mathfrak{z})$	$\mathbb{J}_F^A(\mathfrak{z})$
0_b	0.41	[0.45,0.457]	0. 48
$\mathfrak{x}_b$	0. 48	[0.5,0.51]	0. 445
$\mathfrak{y}_b$	0.41	[0.45,0.457]	0. 48
$\mathfrak{z}_b$	0.41	[0.45,0.457]	0. 48
$\mathfrak{v}_b$	0.41	[0.45,0.457]	0. 48
1_b	0. 48	[0.5,0.51]	0. 445

$\forall\, \mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{W}$, $\mathfrak{x}_b \le \mathfrak{y}_b \Rightarrow \mathbb{M}_T^A(\mathfrak{y}_b) \ge \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(\mathfrak{y}_b) \le \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(\mathfrak{y}_b) \ge \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^A(\mathfrak{y}_b) \le \mathbb{J}_F^A(\mathfrak{x}_b)$.

Proof: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}\mathbb{W}$ – filter of $\mathbb{W}$ and $\mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{W}$ such that $\mathfrak{x}_b \le \mathfrak{y}_b$, so $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b = 1_b$. Then we have

$\mathbb{M}_T^A(\mathfrak{y}_b) \ge \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\} = \min\{\mathbb{M}_T^A(1_b), \mathbb{M}_T^A(\mathfrak{x}_b)\} = \mathbb{M}_T^A(\mathfrak{x}_b)$,
$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \le \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\} = \max\{\mathbb{B}_I^{A-}(1_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\} = \mathbb{B}_I^{A-}(\mathfrak{x}_b)$

$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \ge \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\} = \min\{\mathbb{B}_I^{A+}(1_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\} = \mathbb{B}_I^{A+}(\mathfrak{x}_b)$

and

$\mathbb{J}_F^A(\mathfrak{y}_b) \le \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\} = \max\{\mathbb{J}_F^A(1_b), \mathbb{J}_F^A(\mathfrak{x}_b)\} = \mathbb{J}_F^A(\mathfrak{x}_b)$

This completes the proof:

Theorem3.4: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}\mathbb{W}$ – filter of $\mathbb{W}$. Then A_B satisfies the following assertion $\forall\, \mathfrak{x}_b, \mathfrak{y}_b, z_b \in \mathbb{W}$

(3.5) $\mathfrak{x}_b \le \mathfrak{y}_b \curvearrowright z_b \Rightarrow \mathbb{M}_T^A(z_b) \ge \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(z_b) \le \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(z_b) \ge \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^A(z_b) \le \max\{\mathbb{J}_F^A(\mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$.

Proof: Let $\mathfrak{x}_b, \mathfrak{y}_b, z_b \in \mathbb{W}$ such that $\mathfrak{x}_b \le \mathfrak{y}_b \curvearrowright z_b$. Then

$\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright z_b) \ge \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright z_b)), \mathbb{M}_T^A(\mathfrak{x}_b)\}$

$= \min\{\mathbb{M}_T^A(1_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$

$= \mathbb{M}_T^A(\mathfrak{x}_b)$,

$\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright z_b) \le \max\{\mathbb{B}_I^{A-}((\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright z_b)), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$

$= \max\{\mathbb{B}_I^{A-}(1_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$

$= \mathbb{B}_I^{A-}(\mathfrak{x}_b)$,

$\mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright z_b) \ge \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright z_b)), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

$= \min\{\mathbb{B}_I^{A+}(1_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

$= \mathbb{B}_I^{A+}(\mathfrak{x}_b)$

and $\mathbb{J}_F^A(\mathfrak{y}_b \curvearrowright z_b) \le \max\{\mathbb{J}_F^A((\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright z_b)), \mathbb{J}_F^A(\mathfrak{x}_b)\}$

$= \max\{\mathbb{J}_F^A(1_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$

$= \mathbb{J}_F^A(\mathfrak{x}_b)$.

It follows that

$\mathbb{M}_T^A(z_b) \ge \min\{\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright z_b), \mathbb{M}_T^A(\mathfrak{y}_b)\} = \min\{\mathbb{M}_T^A(\mathfrak{x}_b), \mathbb{M}_T^A(\mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A-}(z_b) \leq \max\{\mathbb{B}_I^{A-}((\mathfrak{y}_b \curvearrowright z_b)\ \mathbb{B}_I^{A-}((\mathfrak{y}_b)\} = \max\{\mathbb{B}_I^{A-}((\mathfrak{x}_b), \mathbb{B}_I^{A-}((\mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A+}(z_b) \geq \min\{\mathbb{B}_I^{A+}((\mathfrak{y}_b \curvearrowright z_b), \mathbb{B}_I^{A+}((\mathfrak{y}_b)\} = \min\{\mathbb{B}_I^{A+}((\mathfrak{x}_b), \mathbb{B}_I^{A+}((\mathfrak{y}_b)\}$,

and $\mathbb{J}_F^{A}((z_b) \leq \max\{\mathbb{J}_F^{A}((\mathfrak{y}_b \curvearrowright z_b), \mathbb{J}_F^{A}(\mathfrak{y}_b)\} = \max\{\mathbb{J}_F^{A}((\mathfrak{x}_b), \mathbb{J}_F^{A}((\mathfrak{y}_b)\}$.

Theorem3.5: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set of $\mathbb{w}$ is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$ if and only if A_B satisfying (3.1) , (3.2) and

⇒ (3.6) $\mathbb{M}_T^A(\mathfrak{x}_b \otimes \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A-}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^{A}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{y}_b), \mathbb{J}_F^{A}(\mathfrak{x}_b)\}$ for all $\mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{w}$.

Proof: Suppose that $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$, obviously (3.1) and (3.2) holds. Since $\mathfrak{x}_b \leq \mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b)$, we get $\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b)) \geq \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b)) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b)) \geq \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^{A}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b)) \leq \mathbb{J}_F^{A}(\mathfrak{x}_b)$.

By (3.3), it follows that $\mathbb{M}_T^A(\mathfrak{x}_b \otimes \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b))\}$

$\geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A-}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b))\}$

$\leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b), \mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b))\}$

$\geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^{A}(\mathfrak{x}_b \otimes \mathfrak{y}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{y}_b), \mathbb{J}_F^{A}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \otimes \mathfrak{y}_b))\}$

$\leq \max\{\mathbb{J}_F^{A}(\mathfrak{y}_b), \mathbb{J}_F^{A}(\mathfrak{x}_b)\}$.

Conversely suppose that Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set of $\mathbb{w}$ and satisfies (3.1) , (3.2) and (3.6). Clearly $\mathfrak{x}_b \otimes (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \leq \mathfrak{y}_b$, so we have $\mathbb{M}_T^A(\mathfrak{y}_b) \geq \mathbb{M}_T^A(\mathfrak{x}_b \otimes (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b))$, $\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b \otimes (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b))$, $\mathbb{B}_I^{A+}((\mathfrak{y}_b) \geq \mathbb{B}_I^{A+}((\mathfrak{x}_b \otimes (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b))$ and $\mathbb{J}_F^{A}(\mathfrak{y}_b) \leq \mathbb{J}_F^{A}(\mathfrak{x}_b \otimes (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b))$. By (3.6), we have

$\mathbb{M}_T^A(\mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^{A}(\mathfrak{y}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^{A}(\mathfrak{x}_b)\}$.

This completes the proof.

Theorem3.6: Every $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ of $\mathbb{w}$ satisfying (3.1) and (3.4) is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$.

Proof: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set of $\mathbb{w}$ satisfying (3.1) and (3.4).

Clearly for all $\forall\ \mathfrak{x}_b, \mathfrak{y}_b, z_b \in \mathbb{w}$, $\mathfrak{x}_b \leq (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \curvearrowright \mathfrak{y}_b$, by (3.4) we have

$\mathbb{M}_T^A(\mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b), \mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\}$

and $\mathbb{J}_F^{A}(\mathfrak{y}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{x}_b), \mathbb{J}_F^{A}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\}$.

Theorem 3.7: A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ of $\mathbb{w}$ is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$ if and only if the cut sets $\mathbb{M}_T^{A\alpha} = \{\mathfrak{x}_b \in \mathbb{w} / \mathbb{M}_T^A(\mathfrak{x}_b) \geq \alpha\}$,

$\mathbb{B}_I^{A-\beta} = \{\mathfrak{x}_b \in \mathbb{w} / \mathbb{B}_I^{A-}(\mathfrak{x}_b) \leq \beta_1\}$,

$\mathbb{B}_I^{A+\beta} = \{\mathfrak{x}_b \in \mathbb{w} / \mathbb{B}_I^{A+}(\mathfrak{x}_b) \geq \beta_2\}$

and $\mathbb{J}_F^{A\gamma}$ = { $\mathfrak{x}_b \in \mathbb{w}$ / $\mathbb{J}_F^A(\mathfrak{x}_m) \leq \gamma$}, where $\alpha,\ \gamma\ \beta_1, \beta_2 \in [0,1]$

are filters of $\mathbb{w}$.

Proof: Suppose that $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}$w – filter of $\mathbb{w}$. Let $\alpha,\ \beta_1, \beta_2, \gamma \in [0,1]$

such that $\mathbb{M}_T^{A\alpha}$, $\mathbb{B}_I^{A-\beta}$, $\mathbb{B}_I^{A+\beta}$ and $\mathbb{J}_F^{A\gamma}$ are nonempty. Obviously $1 \in \mathbb{M}_T^{A\alpha}$, $\mathbb{B}_I^{A-\beta}$, $\mathbb{B}_I^{A+\beta}$ and $\mathbb{J}_F^{A\gamma}$. For any $\mathfrak{x}_{1_b}$, $\mathfrak{x}_{2_b}$, $\mathfrak{y}_{1_b}$, $\mathfrak{y}_{2_b}$, $\mathfrak{u}_{1_b}$, $\mathfrak{u}_{2_b}$, $\mathfrak{z}_{1_b}$ and $\mathfrak{z}_b \in \mathbb{w}$ such that ($\mathfrak{x}_{1_b} \curvearrowright \mathfrak{x}_{2_b}$, $\mathfrak{x}_{1_b} \in \mathbb{M}_T^{A\alpha}$), ($\mathfrak{y}_{1_b} \curvearrowright \mathfrak{y}_{2_b}$, $\mathfrak{y}_{1_b} \in \mathbb{B}_I^{A-\beta}$), ($\mathfrak{u}_{1_b} \curvearrowright \mathfrak{u}_{2_b}$, $\mathfrak{u}_{1_b} \in \mathbb{B}_I^{A+\beta}$) and ($\mathfrak{z}_{1_b} \curvearrowright \mathfrak{z}_{2_b}$, $\mathfrak{z}_{1_b} \in \mathbb{J}_F^{A\gamma}$).

Then $\mathbb{M}_T^A(\mathfrak{x}_{2_b}) \geq \min \{\mathbb{M}_T^A(\mathfrak{x}_{1_b} \curvearrowright \mathfrak{x}_{2_b}), \mathbb{M}_T^A(\mathfrak{x}_{1_b})\} \geq \alpha$ implies $\mathfrak{x}_{2_b} \in \mathbb{M}_T^{A\alpha}$,

$\mathbb{B}_I^{A-}(\mathfrak{y}_{2_b}) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_{1_w} \curvearrowright \mathfrak{y}_{I_w}), \mathbb{B}_I^{A-}(\mathfrak{y}_{1_w})\} \leq \beta$ implies $\mathfrak{y}_{2_w} \in \mathbb{B}_I^{A-\beta}$,

$\mathbb{B}_I^{A+}(\mathfrak{u}_{2_b}) \geq \min \{\mathbb{B}_I^{A+}(\mathfrak{u}_{1_b} \curvearrowright \mathfrak{u}_{2_b}), \mathbb{B}_I^{A+}(\mathfrak{u}_{1_b})\} \geq \beta_2$ implies $\mathfrak{u}_{2_b} \in \mathbb{B}_I^{A+\beta}$

$\mathbb{J}_I^A(\mathfrak{z}_{2_b}) \leq \max\{\mathbb{J}_F^A(\mathfrak{z}_{1_b} \curvearrowright \mathfrak{z}_{2_b}), \mathbb{J}_F^A(\mathfrak{z}_{1_b})\} \leq \gamma$ implies $\mathfrak{z}_{2_b} \in \mathbb{J}_F^{A\gamma}$.

.

$\mathbb{M}_T^{A\alpha}$, $\mathbb{B}_I^{A-\beta}$, $\mathbb{B}_I^{A+\beta}$ and $\mathbb{J}_F^{A\gamma}$ are filters of $\mathbb{w}$.

Conversely suppose that the nonempty cut sets $\mathbb{M}_T^{A\alpha}$, $\mathbb{B}_I^{A-\beta}$, $\mathbb{B}_I^{A+\beta}$ and $\mathbb{J}_F^{A\gamma}$ are implicative filters of $\mathbb{w}$ for all $\alpha,\ \beta_1, \beta_2, \gamma \in [0,1]$. Assume that $\mathbb{M}_T^A(1_b) < \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(1_b) > \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(1_b) < \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^A(1_b) > \mathbb{J}_F^A(\mathfrak{x}_b)$ for some $\mathfrak{x}_b \in \mathbb{w}$.

Then $1_b \notin \mathbb{M}_T^{AM(xb)} \cap \mathbb{B}_I^{A-M(xb)} \cap \mathbb{B}_I^{A+M(xb)} \cap \mathbb{J}_F^{M(xb)}$.

This is a contradiction.

So $\mathbb{M}_T^A(1_b) \geq \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(1_b) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(1_b) \geq \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^A(1_b) \leq \mathbb{J}_F^A(\mathfrak{x}_b)$ for all $\mathfrak{x}_b \in \mathbb{w}$.

If $\mathbb{M}_T^A(a_{2_b}) < \min \{\mathbb{M}_T^A(a_{1_b} \curvearrowright a_{2_b}), \mathbb{M}_T^A(a_{1_b})\}$ for some $a_{1_b}, a_{2_b} \in \mathbb{w}$ then $a_{1_b} \curvearrowright a_{2_b}$, $a_{1_b} \in \mathbb{M}_T^{A\alpha 0}$

but $a_{2_b} \notin \mathbb{M}_T^{A\alpha 0}$ for some $\alpha 0 = \min \{\mathbb{M}_T^A(a_{1_b} \curvearrowright a_{2_b}), \mathbb{M}_T^A(a_{1_b})\}$. This is a contradiction, so

$\mathbb{M}_T^A(\mathfrak{x}_{2_b}) \geq \min \{\mathbb{M}_T^A(\mathfrak{x}_{1_b} \curvearrowright \mathfrak{x}_{2_b}), \mathbb{M}_T^A(\mathfrak{x}_{1_b})\}$ for all $\mathfrak{x}_{1_b}, \mathfrak{x}_{2_b} \in \mathbb{w}$. Similarly we can prove that

$\mathbb{J}_I^A(\mathfrak{z}_{2_b}) \leq \max\{\mathbb{J}_F^A(\mathfrak{z}_{1_b} \curvearrowright \mathfrak{z}_{2_b}), \mathbb{J}_F^A(\mathfrak{z}_{1_b})\}$)} for all $\mathfrak{x}_{1_b}, \mathfrak{x}_{2_b} \in \mathbb{w}$. If $\mathbb{B}_I^{A-}(a_{2_b}) > \max\{\mathbb{B}_I^{A-}(a_{1_w} \curvearrowright a_{I_w}), \mathbb{B}_I^{A-}(a_{1_w})\}$ for some $a_{1_b}, a_{2_b} \in \mathbb{w}$ then $a_{1_b} \curvearrowright a_{2_b}$, $a_{1_b} \in \mathbb{B}_I^{A-\beta 0}$ but $a_{2_b} \notin \mathbb{B}_I^{A-\beta 0}$

For some $\beta 0 = \max \{\mathbb{B}_I^{A-}(a_{1_w} \curvearrowright a_{2_w}), \mathbb{B}_I^{A-}(a_{1_w})\}$ This is a contradiction, so $\mathbb{B}_I^{A-}(\mathfrak{y}_{2_b}) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright \mathfrak{y}_{I_b}), \mathbb{B}_I^{A-}(\mathfrak{y}_{1_w})\}$ for all $\mathfrak{y}_{1_b}$, $\mathfrak{y}_{I_b} \in \mathbb{w}$. Similarly we can prove that $\mathbb{B}_I^{A+}(\mathfrak{u}_{2_b}) \geq \min \{\mathbb{B}_I^{A+}(\mathfrak{u}_{1_b} \curvearrowright \mathfrak{u}_{2_b}), \mathbb{B}_I^{A+}(\mathfrak{u}_{1_b})\}$ for all $\mathfrak{u}_{1_b}, \mathfrak{u}_{2_b} \in \mathbb{w}$. Therefore $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}$w – filter of $\mathbb{w}$.

Theorem 3.8: A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ of $\mathbb{w}$ is a $\mathbb{BMBJ}$w – filter of $\mathbb{w}$ if and only if the($\mathbb{M}_T^A$, $\mathbb{B}_I^{A-}$) and ($\mathbb{B}_I^{A+}$, $\mathbb{J}_I^A$) are intuitionistic fuzzy filters of $\mathbb{w}$.

Theorem 3.9: For any nonempty subset A of $\mathbb{w}$, let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$- set in $\mathbb{w}$ defined by $\mathbb{M}_T^A(\mathfrak{x}_w) = \alpha\ if\ \mathfrak{x}_w \in$ A and other wise 0,

$\mathbb{B}_I^{A-}(\mathfrak{x}_w) = \beta_1\ \ if\ \ \mathfrak{x}_w \in$ A and other wise 1,

$\mathbb{B}_I^{A+}(\mathfrak{x}_w) = \beta_2\ \ if\ \ \mathfrak{x}_w \in$ A and other wise 0,

$\mathbb{J}_F^A(\mathfrak{x}_w) = \gamma\ if\ \ \mathfrak{x}_w \in$ A and other wise 1, where $\alpha, \beta_2 \in (0,1]$. $\beta_1, \gamma \in \{0,1)$.

Then A is a filter of $\mathbb{w}$ if and only if $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}$w – filter of $\mathbb{w}$.

Proof: Suppose that A is an filter of $\mathbb{w}$ and $\mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{w}$.

It is obvious that $\mathbb{M}_T^A(1_b) \geq \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(1_b) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(1_b) \geq \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ and $\mathbb{J}_F^A(1_b) \leq \mathbb{J}_F^A(\mathfrak{x}_b)$ for all $\mathfrak{x}_b \in \mathbb{w}$.

Case(i): If $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b$, $\mathfrak{x}_b \in$ A then $\mathfrak{y}_b \in$ A and so

$$\mathbb{M}_T^A(\mathfrak{y}_b) = \alpha = \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A-}(\mathfrak{y}_b) = \beta_1 = \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A+}(\mathfrak{y}_b) = \beta_2 = \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\},$$
$$\mathbb{J}_F^A(\mathfrak{y}_b) = \gamma = \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$$

Case(ii): If any one of $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b$, $\mathfrak{x}_b$ is contained in A, say $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b \in$ A, then

$\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \alpha$, $\mathbb{M}_T^A(\mathfrak{x}_b) = 0$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \beta_1$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b) = 1$, $\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \beta_2$, $\mathbb{B}_I^{A+}(\mathfrak{x}_b) = 0$, $\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \gamma$, $\mathbb{J}_F^A(\mathfrak{x}_b) = 1$. Therefore

$$\mathbb{M}_T^A(\mathfrak{y}_b) \geq 0 = \min\{\alpha, 0\} = \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq 1 = \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq 0 = \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\},$$
$$\mathbb{J}_F^A(\mathfrak{y}_b) \leq 1 = \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}.$$

Case(iii): If $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b$ and $\mathfrak{x}_b$ are not contained in A.

$\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = 0 = \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = 1 = \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = 0 = \mathbb{B}_I^{A+}(\mathfrak{x}_b)$, $\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = 1 = \mathbb{J}_F^A(\mathfrak{x}_b)$. Therefore

$$\mathbb{M}_T^A(\mathfrak{y}_b) \geq 0 = \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq 1 = \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\},$$
$$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq 0 = \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\},$$
$$\mathbb{J}_F^A(\mathfrak{y}_b) \leq 1 = \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}.$$

Therefore $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$.

Conversely suppose that $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$. Obviously $1 \in$ A. Let $\mathfrak{x}_b \curvearrowright \mathfrak{y}_b$, $\mathfrak{x}_b \in$ A.

Then $\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \alpha = \mathbb{M}_T^A(\mathfrak{x}_b)$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \beta_1 = \mathbb{B}_I^{A-}(\mathfrak{x}_b)$, $\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \beta_2 = \mathbb{B}_I^{A+}(\mathfrak{x}_b)$, $\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) = \gamma = \mathbb{J}_F^A(\mathfrak{x}_b)$. Then

$$\mathbb{M}_T^A(\mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\} = \alpha,$$
$$\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\} = \beta_1,$$
$$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\} = \beta_2,$$
$$\mathbb{J}_F^A(\mathfrak{y}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\} = \gamma,$$

and so $\mathfrak{x}_b \in$ A. Hence A is a filter of $\mathbb{w}$.

Theorem 3.10: A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{J}}$ set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$ if and only if it holds (3.1) , (3.2)and

$$(3.5)\quad \mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{z}_b)), \mathbb{M}_T^A(\mathfrak{y}_b)\},$$
$$\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{z}_b))\ \mathbb{B}_I^{A-}(\mathfrak{y}_b)\},$$
$$\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{z}_b)), \mathbb{B}_I^{A+}(\mathfrak{y}_b)\},$$
$$\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{y}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{z}_b)), \mathbb{J}_F^A(\mathfrak{y}_b)\}\ \forall\ \mathfrak{x}_b, \mathfrak{y}_b, \mathfrak{z}_b \in \mathscr{w}.$$

Proof: Let A_b is a $\mathbb{BMBJ}\mathbb{w}$ – filter of $\mathbb{w}$, perceptibly it hold (3.1), (3.2) and (3.5).

Conversely suppose that A_m is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{J}}$ - set with(2.1) and (2.3).

Taking $\mathfrak{x}_b = 1_b$ in (3.5), we get

$$\mathbb{M}_T^A(1_b \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright (1_b \curvearrowright \mathfrak{z}_b)), \mathbb{M}_T^A(\mathfrak{y}_b)\}$$
$$\mathbb{M}_T^A(\mathfrak{z}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b), \mathbb{M}_T^A(\mathfrak{y}_b)\},$$
$$\mathbb{B}_I^{A-}(1_b \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright (1_b \curvearrowright \mathfrak{z}_b))\ \mathbb{B}_I^{A-}(\mathfrak{y}_b)\},$$

$\mathbb{B}_I^{A-}(\mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)\ \mathbb{B}_I^{A-}(\mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A+}(1_b \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright (1_b \curvearrowright \mathfrak{z}_b)), \mathbb{B}_I^{A+}(\mathfrak{y}_b)\}$

$\mathbb{B}_I^{A+}(\mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b), \mathbb{B}_I^{A+}(\mathfrak{y}_b)\}$,

and

$\mathbb{J}_F^{A}(1_b \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{y}_b \curvearrowright (1_b \curvearrowright \mathfrak{z}_b))\ \mathbb{J}_F^{A}(\mathfrak{y}_b)\}$,

$\mathbb{J}_F^{A}(\mathfrak{z}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)\ \mathbb{J}_F^{A}(\mathfrak{y}_b)\}$.

Therefore A_b is a $\mathbb{BMBJ}\mathbb{w}-$ filter of $\mathbb{w}$

Theorem 3.11: A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$ set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is $\mathbb{BMBJ}\mathbb{w}-$ filter of $\mathbb{w}$ if and only if it holds (3.1) , (3.2) and

(3.6) $\mathbb{M}_T^{A}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{M}_T^{A}(\mathfrak{x}_b), \mathbb{M}_T^{A}(\mathfrak{y}_b)\}$,
$\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b)\ \mathbb{B}_I^{A-}(\mathfrak{y}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b)), \mathbb{B}_I^{A+}(\mathfrak{y}_b)\}$,

$\mathbb{J}_F^{A}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{x}_b), \mathbb{J}_F^{A}(\mathfrak{y}_b)\}\ \forall\ \mathfrak{x}_b, \mathfrak{y}_b, \mathfrak{z}_b \in \mathbb{w}$

Proof: Suppose that $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is $\mathbb{BMBJ}\mathbb{w}-$ filter of $\mathbb{w}$ and $\mathfrak{x}_b, \mathfrak{y}_b, \mathfrak{z}_b \in \mathbb{w}$.

Clearly $\mathbb{M}_T^{A}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{M}_T^{A}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)), \mathbb{M}_T^{A}(\mathfrak{y}_b)\}$-------(i)

and$((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b) = \mathfrak{x}_b \vee (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b) \geq \mathfrak{x}_b$.

So $\mathbb{M}_T^{A}(((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \geq \mathbb{M}_T^{A}(\mathfrak{x}_b)$ ---------------- (ii)

From (i) and (ii), $\mathbb{M}_T^{A}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{M}_T^{A}(\mathfrak{x}_b), \mathbb{M}_T^{A}(\mathfrak{y}_b)\}$, .

Clearly $\mathbb{B}_I^{A-}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)), \mathbb{B}_I^{A-}(\mathfrak{y}_b)\}$------(iii)

So $\mathbb{B}_I^{A-}(((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \leq \mathbb{B}_I^{A-}(\mathfrak{x}_b)$ ---------------- (iv)

From (iii) and (iv), $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b)\ \mathbb{B}_I^{A-}(\mathfrak{y}_b)\}$,

Clearly$\mathbb{B}_I^{A+}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)), \mathbb{B}_I^{A+}(\mathfrak{y}_b)$--------- (v)

So $\mathbb{B}_I^{A+}(((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \geq \mathbb{B}_I^{A+}(\mathfrak{x}_b)$ ---------------- (vi)

From (v) and (vi), $\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b)), \mathbb{B}_I^{A+}(\mathfrak{y}_b)\}$,

and $\mathbb{J}_F^{A}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{J}_F^{A}((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)), \mathbb{J}_F^{A}(\mathfrak{y}_b)\}$-------(vii)

So $\mathbb{J}_F^{A}(((\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)) \leq \mathbb{J}_F^{A}(\mathfrak{x}_b)$ ---------------- (ii)

From (i) and (ii), $\mathbb{J}_F^{A}(\mathfrak{x}_b \curvearrowright (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b))\curvearrowright \mathfrak{z}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{x}_b), \mathbb{J}_F^{A}(\mathfrak{y}_b)\}$

Conversely suppose that A_b is a $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{I}}$ -set with (3.1) , (3.2) and (3.6).

$\mathbb{M}_T^{A}(\mathfrak{y}_b) = \mathbb{M}_T^{A}(1_b \curvearrowright \mathfrak{y}_b) = \mathbb{M}_T^{A}(((\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)) \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^{A}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^{A}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A-}(\mathfrak{y}_b) = \mathbb{B}_I^{A-}(1_b \curvearrowright \mathfrak{y}_b) = \mathbb{B}_I^{A-}(((\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)) \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{M}_T^{A}(\mathfrak{y}_b) = \mathbb{M}_T^{A}(1_b \curvearrowright \mathfrak{y}_b) = \mathbb{M}_T^{A}(((\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)) \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^{A}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^{A}(\mathfrak{x}_b)\}$.,

$\mathbb{J}_F^{A}(\mathfrak{y}_b) = \mathbb{J}_F^{A}(1_b \curvearrowright \mathfrak{y}_b) = \mathbb{J}_F^{A}(((\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)) \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{J}_F^{A}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^{A}(\mathfrak{x}_b)\}$

So $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ is $\mathbb{BMBJ}\mathbb{w}-$ filter of $\mathbb{w}$

Theorem3. :

Theorem 3.11: Let A and B are two $\mathbb{BMBJ}\mathbb{w}-$ filters of $\mathbb{w}$, then $A \cap B$ is a $\mathbb{MBJ}\mathbb{w}-$ filter of $\mathbb{w}$.

Proof: Let $\mathfrak{x}_b, \mathfrak{y}_b, \mathfrak{z}_b \in \mathbb{w}$ such that $\mathfrak{x}_b \leq (\mathfrak{y}_b \curvearrowright \mathfrak{z}_b)$, then $\mathfrak{x}_b \curvearrowright(\mathfrak{y}_b \curvearrowright \mathfrak{z}_b) = 1_b$.

Since A and B are two $\mathbb{BMBJ}\mathbb{w}-$ filters of $\mathbb{w}$, then we have

$\mathbb{M}_T^A(\mathfrak{z}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(\mathfrak{z}b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{z}b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^A(\mathfrak{z}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$

$\mathbb{M}_T^B(\mathfrak{z}_b) \geq \min\{\mathbb{M}_T^B(\mathfrak{y}_b), \mathbb{M}_T^B(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{B-}(\mathfrak{z}b) \leq \max\{\mathbb{B}_I^{B-}(\mathfrak{y}_b)\ \mathbb{B}_I^{B-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{B+}(\mathfrak{z}b) \geq \min\{\mathbb{B}_I^{B+}(\mathfrak{y}_b)\ \mathbb{B}_I^{B+}(\mathfrak{x}_b)\}$

and $\mathbb{J}_F^B(\mathfrak{z}_b) \leq \max\{\mathbb{J}_F^B(\mathfrak{y}_b), \mathbb{J}_F^B(\mathfrak{x}_b)\}$

$\mathbb{M}_T^{A\cap B}(\mathfrak{z}_b) = \min\{\mathbb{M}_T^A(\mathfrak{z}_b), \mathbb{M}_T^B(\mathfrak{z}_b)\}$

$= \min\{\min\{\mathbb{M}_T^A(\mathfrak{x}_b), \mathbb{M}_T^A(\mathfrak{y}_b)\}, \min\{\mathbb{M}_T^B(\mathfrak{x}_b), \mathbb{M}_T^B(\mathfrak{y}_b)\}$

$= \min\{\min\{\mathbb{M}_T^A(\mathfrak{x}_b), \mathbb{M}_T^B(\mathfrak{x}_b)\}, \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^B(\mathfrak{y}_b)\}$

$= \min\{\mathbb{M}_T^{A\cap B}(\mathfrak{x}_b), \mathbb{M}_T^{A\cap B}(\mathfrak{y}_b)\}$.

Similarly we can prove that

$\mathbb{B}_I^{A\cap B}(\mathfrak{z}_b) = = \min\{\mathbb{B}_I^{A\cap B}(\mathfrak{x}_b), \mathbb{B}_I^{A\cap B}(\mathfrak{y}_b)\}$, $\mathbb{J}_F^{A\cap B}(\mathfrak{z}_m) = \max\{\mathbb{J}_F^{A\cap B}(\mathfrak{x}_b), \mathbb{J}_F^{A\cap B}(\mathfrak{y}_b)\}$.

So A ∩ B is a 𝔹𝕄𝔹𝕁𝕨 – filter of 𝕨.

Definition3.12 : A $\mathfrak{M}_{\mathbb{B}}^{\mathfrak{J}}$- set $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ on 𝕨 is called a 𝔹𝕄𝔹𝕁- sbalgebra of 𝕨

if it satisfies $\forall\ \mathfrak{x}_b, \mathfrak{y}_b \in$ 𝕨,

$$\mathbb{M}_T^A(\mathfrak{x}_b) + \mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq 1 \text{ and } \mathbb{B}_I^{A+}(\mathfrak{y}_b) + \mathbb{J}_F^A(\mathfrak{y}_b) \leq 1$$

and

$\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)$,

$\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$,

$\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$

Theorem 3.13: Every 𝔹𝕄𝔹𝕁𝕨 – filter of 𝕨 is a 𝔹𝕄𝔹𝕁- sbalgebra of $\mathcal{w}$.

Proof: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ be a 𝔹𝕄𝔹𝕁- filter of 𝕨 .

Since $\mathfrak{y}_b \leq \mathfrak{x}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)$ for all $\mathfrak{x}_b, \mathfrak{y}_b \in$ 𝕨, it follows from lemma 3.1 that

$\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{y}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{y}_b)\ \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$,

$\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}\ \forall\ \mathfrak{x}_b, \mathfrak{y}_b \in$ 𝕨

Hence $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ be a 𝔹𝕄𝔹𝕁- sbalgebra of $\mathcal{w}$.

Theorem3. 14: Let $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ be a 𝔹𝕄𝔹𝕁- sbalgebra of 𝕨 satisfying the condition(3.3). Then $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ be a 𝔹𝕄𝔹𝕁𝕨- filter of 𝕨.

Proof: For any $\mathfrak{x}_b \in$ 𝕨, we have

$\mathbb{M}_T^A(1_b) = \mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{x}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\} = \mathbb{M}_T^A(\mathfrak{x}_b)$,

$\mathbb{B}_I^{A-}(1_b) = \mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{x}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b)\ \mathbb{B}_I^{A-}(\mathfrak{x}_b)\} = \mathbb{B}_I^{A-}(\mathfrak{x}_b)$,

$\mathbb{B}_I^{A+}(1_b) = \mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{x}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b), \mathbb{B}_I^{A+}(\mathfrak{x}_b)\} = \mathbb{B}_I^{A+}(\mathfrak{x}_b)$,

and

$\mathbb{J}_F^A(1_b) = \mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{x}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{x}_b)\, \mathbb{J}_F^A \mathfrak{x}_b)\} = \mathbb{J}_F^A(\mathfrak{x}_b)$.

Since $\mathfrak{y}_b \leq \mathfrak{x}_b \curvearrowright (\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)$ for all $\mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{W}$, it follows from condition(3.3) that

$\mathbb{M}_T^A(\mathfrak{y}_b) \geq \min\{\mathbb{M}_T^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{M}_T^A(\mathfrak{x}_b)\}$, $\mathbb{B}_I^{A-}(\mathfrak{y}_b) \leq \max\{\mathbb{B}_I^{A-}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\, \mathbb{B}_I^{A-}(\mathfrak{x}_b)\}$,

$\mathbb{B}_I^{A+}(\mathfrak{y}_b) \geq \min\{\mathbb{B}_I^{A+}(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b)\, \mathbb{B}_I^{A+}(\mathfrak{x}_b)\}$,

$\mathbb{J}_F^A(\mathfrak{y}_b) \leq \max\{\mathbb{J}_F^A(\mathfrak{x}_b \curvearrowright \mathfrak{y}_b), \mathbb{J}_F^A(\mathfrak{x}_b)\}$

for all all $\mathfrak{x}_b, \mathfrak{y}_b \in \mathbb{W}$. Then $A_B = (\mathbb{M}_T^A, \mathbb{B}_I^A, \mathbb{J}_F^A)$ be a $\mathbb{BMBJ}\mathbb{W}$- filter of $\mathbb{W}$.

4. Conclusion

We defined the $\mathbb{BMBJ}\mathbb{W}$- filter of Lattice wajsberg algebras and proved the properties of $\mathbb{BMBJ}\mathbb{W}$- filter. We derived some relation between fuzzy ideals, interval valued fuzzy ideals to $\mathbb{BMBJ}\mathbb{W}$- filter. Further we provde that cut sets of $\mathfrak{MBJ}_-$ sets formed $\mathbb{BMBJ}\mathbb{W}$- filter. Finally defined the $\mathbb{BMBJ}$- subalgebra and proved every $\mathbb{BMBJ}\mathbb{W}$- filter is a $\mathbb{BMBJ}$- subalgebra and converse is need not be true. Further we investigate the point filters of Lattice wajsberg algebras.

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