Some Contribution of Semi open Sets to Soft W-Hausdorff Space in Soft Topological Spaces

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Abstract: The main purpose of this paper is to study the notion of soft W- Hausdorff or soft W-T_2 structure in soft topological spaces is proclaimed with respect to semi open sets while using the ordinary points of Soft Topology. That's is why it is named as soft α W-Hausdorf or soft α W-T_2 structure. Some sub-spaces of soft α W-T_2 structure is also reflected. Moreover product of these spaces is also avail.

Keywords: Soft set, soft α-open set, soft closed set. Soft topological space, soft α W Hausdorff space.

1. Introduction.

General Topology Play attractive role in space time geometry as well as different branches of pure and applied mathematics. In Separation Axioms we discuss points of the space. It shows the points are separated by neighbour-hood**.** When we are interested to know the distance among the points that are separated from each other, then in that case the concept of separation axioms will come in play**.** Most of the real-life problem have various uncertainties. A number of theory have been proposed for handling with uncertainties in an efficient way in 1999 , Molodstvo [1] was first who given birth to a novel concept of soft set theory which is completely a new approach for modelling vagueness and uncertainty in 2011 , Shabir and Naz[2] define soft topological spaces and studied separation axioms and section two of this paper preliminary definition regarding soft sets and soft topological spaces are given in section three of this paper the concept of soft W–Housdroffness in soft topological spaces is introduced by referring the definition of soft α open sets.

Throughout this paper$\breve{X}$ denotes the father set and E denotes the set of parameter for the father$\breve{X}$.

2. Preliminaries

Definition 1:[1].Let $\breve{X}$ be the father set and $\breve{E}$ be a set of parameters. Let $P(\breve{X})$ denotes the power set of and$\breve{A}$ be a nonempty subset of$\breve{E}$. A pair $(F,\breve{A})$ denoted by $F_{\breve{A}}$ Is called a soft set over $\breve{X}$where$F$ is a mapping given by $F; \breve{A} \to P(\breve{X})$ .In other words a soft set over $\breve{X}$ is parameterized family of subsets of the universe $\breve{X}$ for a particular $e\epsilon\breve{A}$, $F(e)$ may be considered the set of e-approximate elements of the soft set equation $(F,\breve{A})$ if $e \notin \breve{A}$ then $F(e) = \widetilde{\emptyset} F_{\breve{A}}$ ={ $F(e); e\epsilon\breve{A} \subseteq \breve{E}; F; \breve{A} \to P(\breve{X})$ } The family of all these soft set over $\breve{X}$ w.r.t the parameter set $\breve{E}$ is denoted $SS(\breve{X})_{\breve{E}}$

Definition 2:[3] Let$F_{\breve{A}}, G_{\breve{B}} \in SS(\breve{X})_{\breve{E}}$ .then $F_{\breve{A}}$ is soft subset of $G_{\breve{B}}$ is denoted by$F_{\breve{A}}, \widetilde{\subseteq} G_{\breve{B}}$ if

(1) $\breve{A} \subseteq \breve{B}$ and
(2) $F(e) \subseteq G(e)$,$\forall e\epsilon\breve{A}$

In this case $F_{\breve{A}}$ is said to be a soft subset of $G_{\breve{B}}$ and $G_{\breve{B}}$ is said to be soft super set of$F_{\breve{A}}, G_{\breve{B}} \widetilde{\supseteq} F_{\breve{A}}$

Definition 3: [4]Two soft subset $F_{\breve{A}}$ and $G_{\breve{B}}$ over a common father set$\breve{X}$are said to be equalif $F_{\breve{A}}$ is soft subset of$G_{\breve{B}}$and $G_{\breve{B}}$ is a soft subset of$F_{\breve{A}}$.

Definition 4:[5]. Let τ be the collection of soft sets over X , then τ is said to be a soft topology on X, if
1. $\emptyset, X$ belong to τ
2.   The union of any number of soft sets in τ belongs to τ

3.   The intersection of any two soft sets in τ belong to τ

The triplet(X, F, E) is called a soft topological space.

Definition5:[6].A soft set (A, E)in a soft topological space (X, τ, E) will be termed soft semi open (written S.S.O) if and only if there exists a soft open set (O,E) such that $(O, E) \subseteq (A, E) \subseteq Cl(O, E)$.

Definition4:[1]complement of a soft$(F, \tilde{A})$ set denoted by $(F, \tilde{A})^c$ denoted by$(F, \tilde{A})^c (F^c; \tilde{A} \rightarrow P(\tilde{X})\}$ is a mapping given by $F^c(e) = X - F(e)$; ,$\forall e \epsilon \tilde{A}$ and F^c is called the soft complement function of F .clearly $(F^c)^c$ is the same as a $((F, \tilde{A})^c)^c = (F, \tilde{A})$.**Definition 5:**[5]A soft set $(F, \breve{A})$ over $\breve{X}$ is said to be a   null soft set denoted by $\breve{\varphi}$ or $\widetilde{\emptyset}_{\tilde{A}}$ if $\forall e \epsilon \breve{A}$, $F(e) = \varphi$**Definition6:**[6] A soft set $(F, \breve{A})$ over $\tilde{X}$ is said in absolute soft set denoted by $\breve{A}$ or $X_{\tilde{A}}$ IF $\forall e \epsilon \breve{A}$, $F(e) = \tilde{X}$ clearly we have $\tilde{X}_{\tilde{A}}{}^c = \varphi_{\tilde{A}}$ and $\varphi_{\tilde{A}}{}^c = X_{\tilde{A}}$

Definition 7:[3] the union of two soft set $(F, \breve{A})$ and $(G, \breve{B})$ over the common universe $\tilde{X}$ is the soft set $(H, \breve{C})$ where $\tilde{C} = \tilde{A} \cup \tilde{B}$ and $\forall e \epsilon \tilde{C}$

$$H(e) = \begin{cases} F(e), e \epsilon \breve{A} - \breve{B} \\ G(e), e \epsilon \breve{B} - \breve{A} \\ F(e) \cup G(e), e \epsilon \breve{A} \cap \breve{B} \end{cases}$$

Definition 8: [3]the intersection of two soft set$(F, \breve{A})$ and $(G, \breve{B})$ over the common universe $\breve{X}$ Is the soft set $(H, \breve{C})$ where $\breve{C} = \breve{A} \cap \breve{B}$ and $\forall e \epsilon \breve{C} \tilde{H}(e) = F(e) \cap G(e)$.

Definition 9:[2]Let $(\breve{X}, \tau, \breve{E})$ be soft topological space $(F, E) \epsilon SS(X)_E$ and Y be a non null subset of X then the soft subset of (F, E) over $\breve{Y}$ denoted by $(F_{\breve{Y}}, \breve{E})$ is defined as follows $F_{\breve{Y}}(e) = \breve{Y} \cap F(e) \forall e \epsilon \breve{E}$ In other words$(F_{\breve{Y}}, \breve{E}) = \breve{Y}_{\breve{E}} \cap (F, \breve{E})$

Definition 10:[2]Let $(\breve{X}, \tau, \breve{E})$ be soft topological space $(F, \breve{E})$ and $\breve{Y}$ be a non-null subset of $\breve{X}$ .then $\{(F, \breve{E}): (F, \breve{E}) \epsilon \tau\}$ is said to be the relative soft topology on Y and $(\breve{Y}, T_{\breve{Y}}, \breve{E})$ is called a soft subspace of $(\breve{X}, \tau, \breve{E})$

Definition 11: [8] $F_{\breve{A}} \epsilon SS(X)_{\breve{E}}$ and $G_{\breve{B}} \epsilon SS(Y)_k$. TheCartesian product $(F_{\breve{A}} \odot G_{\breve{B}})$ $(e, k) = (F_{\breve{A}}(e) \times G_{\breve{B}}(k) \forall (e, k) \epsilon \breve{A} \times \breve{B}$. According to this definition$(F_{\breve{A}} \odot G_{\breve{B}})$ is soft set over $\breve{X} \times \breve{Y}$ and its parameter set is $\breve{E} \times \breve{K}$

Definition 12:[9]$(\breve{X}\tau_{\breve{X}}, \breve{E})$ and $(\breve{Y}\tau_{\breve{Y}}, \breve{K})$ BE two soft topological spaces the soft product topology $\tau_{\breve{X}} \odot \tau_{\breve{Y}}$ over $\breve{X} \times \breve{Y}$ w.r.t $\breve{E} \times \breve{K}$ *is the soft topology having the collection* $\{F_{\breve{E}} \odot G_{\breve{K}} / F_{\breve{A}} \epsilon \ \tau_{\breve{X}}, G_{\breve{K}} \epsilon \ \tau_{\breve{Y}}\}$ is the basis.

3. SOFT W-HAUSDORFF SPACES

This section is devoted to soft semi-W-T_2Space. Different results are deeply discussed related to this soft topological structure with the application of soft semi-open sets while using ordinary points of Soft Topology.

Definition 13: A soft topological space $(\breve{X}, \tau, \breve{E})$ is said to be soft semi W-Hausedorff space of type 1 denoted by $(SSW - H)_1$ if for every$e_1, e_2 \epsilon \breve{E}, e_1 \neq e_2$ there exist soft semi open sets $(F, \breve{A})$, $(G, \breve{B})$such that $F_{\breve{A}}(e_1) = X$, $G_{\breve{B}}(e_2) = \breve{X}$ and $(F, \breve{A}) \cap (G, \breve{B}) = \breve{\varphi}$.

Proposition 1. Soft subspace of a $(SSW - \widetilde{H})_1$ space is soft $(SSW - H)_1$

Proof:let $(\breve{X}, \tau, \breve{E})$ be a $(SSW - \widetilde{H})_1$ space. Let $\breve{Y}$ be a non-vacuous subset of $\breve{X}$.Let $(\breve{Y}\tau_{\breve{Y}}, \breve{E})$ be soft subspace of $(\breve{X}, \tau, \breve{E})$ where $\{\tau_{\breve{Y}} = F_{\breve{Y}}, \breve{E}): (F, \breve{E}) \epsilon \tau\}$ is the relative soft topology on $\breve{Y}$.considered $e_1, e_2 \epsilon \breve{E}, e_1 \neq e_2$, there exist soft semi open sets $(F, \breve{A})$, $(G, \breve{B})$such that $F_{\breve{A}}(e_1) = \breve{X}$, $G_{\breve{B}}(e_2) = \breve{X}$ and $F_{\breve{A}} \cap G_{\breve{B}} = \breve{\varphi}$

Therefore,, $((F_{\breve{A}})_{\breve{Y}}, E), \left((G_{\breve{B}})_{\breve{Y}}, \breve{E}\right) \epsilon \tau_{\breve{Y}} = \breve{Y} \cap \breve{X} = \breve{Y}$

$((G_{\breve{B}})_{\breve{Y}}, (e_2) = \breve{Y} \cap G_{\breve{B}}(e_2) = \breve{Y} \cap \breve{X} = \breve{Y}$

$(F_{\breve{A}})_{\breve{Y}} \cap (G_{\breve{B}})_{\breve{Y}})(e) = (F_{\breve{A}} \cap G_{\breve{B}})_{\breve{Y}})(e)$

$$= \breve{Y} \cap (F_{\breve{A}} \cap G_{\breve{B}})_{\breve{Y}})(e) \quad = \breve{Y} \cap \breve{\varphi}(e) = \breve{Y} \cap \breve{\varphi} = \breve{\varphi}$$

$(F_{\breve{A}})_Y \cap (G_{\breve{B}})_{\breve{Y}}) = \breve{\varphi}$

Hence $(Y, \tau_{\breve{Y}}, E)$ is soft semi $(SW - \widetilde{H})_1$

Definition 14: Let $(\breve{X}, \tau, \breve{E})$ be a soft topological and $\widetilde{H} \subseteq \breve{E}$ then let $(\breve{X}, \tau_{\widetilde{H}}, \breve{E})$ is called soft subspace of ($\breve{X}, \tau, \breve{E}$) relative to the parameter set H where $\tau_{\widetilde{H}} = \{(F_{\breve{A}}/\widetilde{H} : \widetilde{H} \subseteq \breve{A} \subseteq \breve{E}; (F, \breve{A}) \text{ is soft semi open set})\}$ and $= \{(F_{\breve{A}})/H\}$ is the restriction map on $\widetilde{H}$

Proposition 2. Soft p −subspace of a $(SSW - H)_1$ space is $(SSW - H)_1$

Proof: let $(\breve{X}, \tau, \breve{E})$ be a $(SW - H)_1$ space .Let $(Y, \tau_H, \breve{E})$ be soft p- subspace of ($\breve{X}, \tau, \breve{E}$) relative parameter set H where H $\tau_H = \{(F_{\breve{A}}/ \text{H} : \widetilde{H} \subseteq \breve{A} \subseteq \breve{E}; where (F, \breve{A}) \text{ is soft semi open set} \in \tau)\}$ Consider $h, h \epsilon \breve{H} h_1 \neq h_2$ then $h, h \epsilon \breve{E}$ Therefore, there exists semi open sets $(F, \breve{A})$, $(G, \breve{B})$ such that $F_{\breve{A}}(h_1) = X$, $G_{\breve{B}}(h_2) = X$ and $(F, \breve{A}) \cap (G, \breve{B}) = \breve{\varphi}$

Therefore $(F_{\breve{A}})/H$, $(G_{\breve{B}})/ \widetilde{H} \in \tau_H$
$(F_{\breve{A}})/\widetilde{H}(h_1) = F_{\breve{A}}(h_1) = \breve{X}$
$(G_{\breve{B}})/\widetilde{H}(h_2) = G_{\breve{B}}(h_2) = \breve{X}$
$(F_{\breve{A}})/\widetilde{H} \cap (G_{\breve{B}})/\widetilde{H} = (F_{\breve{A}} \cap G_{\breve{B}})/\widetilde{H} = \breve{\varphi}/H = \breve{\varphi}$

Hence $(\breve{X}, \tau_H, H)$ is $(SSW - H)_1$.

Proposition 3. Product of two $(SSW - H)_1$ spaces $(SSW - H)_1$
Proof: let $(\breve{X}, \tau_{\breve{X}}, \breve{E})$ and let $(\breve{Y}, \tau_{\breve{Y}}, \breve{K})$ be two $(SSW - H)_1$ spaces Consider two distinct points $(e_1, \breve{K}_1)$ and $(e_2, \breve{K}_2) \epsilon \, \breve{E} \times \breve{K}$

Either $e_1 \neq e_2$ or $\breve{K}_1 \neq \breve{K}_2$ Assume $e_1 \neq e_2$ $(\breve{X}, \tau_{\breve{X}}, \breve{E})$ is $(SSW - H)_1$ there exist soft semi open sets $(F, \breve{A}), (G, \breve{B})$ such that $F_{\breve{A}}(e_1) = \breve{X}$, $G_{\breve{B}}(e_2) = \breve{X}$ and $(F, \breve{A}) \cap (G, \breve{B}) = \breve{\varphi}$ Therefore $F_{\breve{A}} \odot Y_K$,$G_{\breve{B}} \odot \breve{Y}_K \in \quad \tau_{\breve{X}} \odot \tau_{\breve{Y}}$
$(F_{\breve{A}} \odot Y_{\breve{K}}) (e_1, \breve{K}_1) = F_{\breve{A}}(e_1) \times \breve{Y}_K(\breve{K}_1) = \breve{X} \times \breve{Y}$

$(G_{\breve{B}} \odot \breve{Y}_{\breve{K}})(e_2, \breve{K}_2) = G_{\breve{B}}(e_2) \times \breve{A}_{\breve{K}}(\breve{K}_2) = \breve{X} \times \breve{Y}$
If for any $(e, k) \in \breve{E} \times \breve{K}$, $(F_{\breve{A}} \odot Y_{\breve{K}}), (e, k) \neq \widetilde{\emptyset}$
$\Rightarrow F_{\breve{A}}(e) \times \breve{Y}_{\breve{K}}(k) \neq \widetilde{\emptyset}$
$\Rightarrow F_{\breve{A}}(e) \times \breve{Y}_{\breve{K}} \neq \widetilde{\emptyset}$
$\qquad \Rightarrow F_{\breve{A}}(e) \neq \widetilde{\emptyset}$
$\qquad \Rightarrow G_{\breve{B}}(e) = \widetilde{\emptyset}$ Since $F_{\breve{A}} \cap G_{\breve{B}} = \breve{\varphi}$
$\Rightarrow F_{\breve{A}}(e) \cap G_{\breve{B}}(e) = \widetilde{\emptyset}$
$\Rightarrow F_{\breve{A}}(e) \times \breve{Y}_{\breve{K}}(k) = \widetilde{\emptyset}$
$(G_{\breve{B}} \odot \breve{Y}_{\breve{K}}), (e, k) = \widetilde{\emptyset}$

$$(F_{\breve{A}} \odot \breve{Y}_{\breve{K}}) \cap (G_{\breve{B}} \odot \breve{Y}_{\breve{K}}) = \widetilde{\emptyset}$$

Assume $\breve{K}_1 \neq \breve{K}_2$ $(\breve{Y}, \tau_{\breve{Y}}, \breve{K})$ is $(SSW - H)_1$ there exist semi open sets $(F, \breve{A}), (G, \breve{B}) F_{\breve{A}}(K_1) = Y$, $G_{\breve{B}}(K_2) = \breve{Y}$ and $(F, \breve{A}) \cap (G, \breve{B}) = \breve{\varphi}$
$(\breve{X}_{\breve{E}} \odot F_{\breve{A}}) (e_1, K_1) = \breve{X}_{\breve{E}}(e_1) \times F_{\breve{A}}(K_1) = \breve{X} \times \breve{Y}$
$(\breve{X}_{\breve{E}} \odot G_{\breve{B}})(e_2, \breve{K}_2) = (\breve{X}_E(e_2) \times G_{\breve{B}}(K_2) = \breve{X} \times \breve{Y}$
If for any $(e, k) \in \breve{E} \times \breve{K} \Rightarrow (\breve{X}_{\breve{E}}(e) \times F_{\breve{A}}(k) \neq \widetilde{\emptyset}$
$\Rightarrow \breve{X} \times F_{\breve{A}}(k) \neq \widetilde{\emptyset}$

$\Rightarrow F_{\breve{A}}(k) \neq \widetilde{\emptyset}$

$G_{\breve{B}}(k) = \phi$ Since $(F, \breve{A}), (G, \breve{B}) = \breve{\varphi}$ that is $F_{\breve{A}} \cap G_{\breve{B}} = \breve{\varphi}$

$\Rightarrow F_{\breve{A}}(k) \cap G_{\breve{B}}(K) = \widetilde{\emptyset}$

$\Rightarrow \breve{X}_{\breve{E}}(e) \times G_{\breve{B}}(e) = \widetilde{\emptyset}$

$\Rightarrow (\breve{X}_{\breve{E}} \odot G_{\breve{B}})(e,k) = \widetilde{\emptyset}$

$(\breve{X}_{\breve{E}} \odot F_{\breve{A}}) \cap (\breve{X}_{\breve{E}} \odot G_{\breve{B}}) = \breve{\varphi}$

Hence $\breve{X} \times \breve{Y}(\tau_{\breve{X}} \odot \tau_{\breve{Y}}, \widetilde{E} \times \widetilde{K}\}$ is $(SSW - H)_1$

Definition 15: A soft topological space (X, τ, E) is said to be soft Semi W-hausdorff that is S-W-Hausdorrff space of type 2 denoted by $(SSW - H)_2$ If for every $e_1, e_2 \in \breve{E}, e_1 \neq e_2$ there exists soft semi open sets $(F, \breve{E}), (G, \breve{E})$ such that $F_e(e_1) = \breve{X}$, $G_E(e_2) = \breve{X}$ and $F_{\breve{E}} \cap G_{\breve{E}} = \widetilde{\emptyset}$

Proposition 4. Soft subspace of a $(SSW - \widetilde{H})_2$ space is $(SSW - \widetilde{H})_2$

Proof: Let $(\breve{X}, \tau, \breve{E})$ be a $(SSW - \widetilde{H})_2$ space. Let $\breve{Y}$ be a Non-null subset of $\breve{X}$. Let $(\breve{Y}, \tau_{\breve{Y}}, \breve{Y})$ be a soft subspace Of $((\breve{X}, \tau, \widetilde{E})$ where $\tau_{\breve{Y}} = \{(F_{\breve{Y}}, \widetilde{E}) : where (F, \breve{E}) is soft semi open sets \in \tau\}$ is the relative soft topology on $\breve{Y}$. Consider $e_1, e_2 \in \tau$, $e_1, e_2 \neq \tau$ There exist soft semi open sets $(F, \breve{E}), (G, \breve{E})$ such that $F_{\breve{E}}(e_1) = \breve{X}, G_E(e_2) = \breve{X}$ and $(F, \breve{E}), (G, \breve{E}) = \widetilde{\emptyset}$ that is $F_{\breve{E}} \cap G_{\breve{E}} = \widetilde{\emptyset}$.

 Therefore $((F_{\breve{E}})_{\breve{Y}}, \breve{E}), ((G_{\breve{E}})_Y, \breve{E}) \in \tau_{\breve{Y}}$

 Also $(F_E)_Y(e_1) = \breve{Y} \cap F_{\breve{E}}(e_1) = \breve{Y} \cap \breve{X} = \breve{Y}$

$(G_E)_Y(e_2) = \breve{Y} \cap G_{\breve{E}}(e_2) = \breve{Y} \cap \breve{X} = \breve{Y}$

$((F_E)_{\breve{Y}} \cap (G_E)_{\breve{Y}})(e) = ((F_{\breve{E}} \cap G_{\breve{E}})_{\breve{Y}}(e) = \breve{Y} \cap (F_{\breve{E}} \cap G_{\breve{E}})_{\breve{Y}})(e) = \breve{Y} \cap \widetilde{\emptyset} = \breve{Y} \cap \widetilde{\emptyset} = \widetilde{\emptyset}$

$$(F_{\breve{A}})_{\breve{Y}} \cap (G_{\breve{B}})_{\breve{Y}} = \widetilde{\emptyset}$$

Hence $(\breve{Y}, \tau_{\breve{Y}}, \widetilde{E}) is (SSW - \widetilde{H})_2$

Proposition 5. Soft p-subspace of a $(SSW - \widetilde{H})_2$ is $(SSW - \widetilde{H})_2$

Proof: Let $(\widetilde{X}, \tau, \widetilde{E})$ be a $(SSW - \widetilde{H})_2$ space. Let $\widetilde{H} \subseteq \widetilde{E}$

Let $(\widetilde{X}, \tau_{\widetilde{H}}, \widetilde{H})$ be a soft p-subspace of $(\widetilde{X}, \tau, \widetilde{E})$, relative to the parameter set $\widetilde{H}$ where $\{(F_{\breve{A}})/\widetilde{H} : \widetilde{H} \subseteq \widetilde{A} \subseteq \widetilde{E}, (F, \widetilde{A}) \in \tau\}$ where $(F, \widetilde{A})$ is soft semi open set

 Consider $h_1, h_2 \in \widetilde{H}, h_1 \neq h_2$.

Then $h_1, h_2 \in \widetilde{H}$ there exists soft semi open set $(F, \widetilde{E}), (G, \widetilde{E})$ Such that $F_{\breve{E}}(h_1) = \widetilde{X}, G_{\breve{E}}(h_2) = \widetilde{X}$ and $(F, \widetilde{E}), (G, \widetilde{E}) = \widetilde{\emptyset}$ that is $F_{\breve{E}} \cap G_{\breve{E}} = \widetilde{\emptyset}$

Therefore $(F_{\breve{A}})/\widetilde{H}, ((G_{\breve{E}})/H \in \tau_{\widetilde{H}}$

Also $\left((F_{\breve{E}}) / \widetilde{H}\right)(h_1) = F_{\breve{E}}(h_1) = \widetilde{X}$

$\left((G_{\breve{E}}) / \widetilde{H}\right)(h_2) = G_{\breve{E}}(h_2) = \widetilde{X} \&$

$((F_{\breve{E}})/ \widetilde{H}) \cap ((G_{\breve{E}})/\widetilde{H}) = (F_{\breve{E}} \cap G_{\breve{E}})/\widetilde{H} = \widetilde{\emptyset}/H = \widetilde{\emptyset}$

Hence (X, τ, E) is $(SSW - H)_2$

Proposition 6. Product of two $(SSW - H)_2$ spaces is $(SSW - H)_2$

Proof: Let $(\widetilde{X}, \tau_{\widetilde{X}}, \widetilde{E}) \& (\widetilde{Y}, \tau_{\widetilde{Y}}, \widetilde{K})$ be two $SSW - H)_2$

Soft spaces. Consider two distinct points (e_1, k_1), $(e_2, k_2). \in \widetilde{E} \times \widetilde{K}$

Either $e_1 \neq e_2$ or $k_1 \neq k_2$

Assume $e_1 \neq e_2$ Since $(\widetilde{X}, \tau_{\widetilde{X}}, \widetilde{E})$ is $(SSW - H)_2$, there Soft semi open sets $(F, \widetilde{E}), (G, \widetilde{E}) \in \tau_{\widetilde{X}}$ such that $F_{\breve{E}}(e_1) = \widetilde{X}, G_E(e_2) = \widetilde{X}$ and $(F, \widetilde{E}), (G, \widetilde{E}) = \widetilde{\emptyset}$ that is $F_{\breve{E}} \cap G_{\breve{E}} = \widetilde{\emptyset}$

Therefore $F_{\breve{E}} \odot \widetilde{Y}_{\widetilde{K}}, G_{\breve{E}} \odot \widetilde{Y}_{\widetilde{K}} \in \tau_{\widetilde{X}} \odot \tau_{\widetilde{Y}}$

$(F_{\breve{E}} \odot \widetilde{Y}_{\widetilde{K}})(e_1, k_1) = F_{\breve{E}}(e_1) \times \widetilde{Y}_{\widetilde{K}}(k_1) = \widetilde{X} \times \widetilde{Y}$

$\left(G_{\tilde{E}} \odot \tilde{Y}_{\tilde{K}}\right)(e_2, k_2) = G_{\tilde{E}}(e_2) \times \tilde{Y}_{\tilde{K}}(k_2) = \tilde{X} \times \tilde{Y}$

If for any $(e, k) \in (\tilde{E} \times \tilde{K}), (F_{\tilde{E}} \odot \tilde{Y}_{\tilde{K}})(e, k) \neq \tilde{\emptyset}$

$\Rightarrow F_{\tilde{E}}(e) \times \tilde{Y}_{\tilde{K}}(\tilde{k}) \neq \tilde{\emptyset}$

$\Rightarrow F_{\tilde{E}}(e) \times \tilde{Y} \neq \tilde{\emptyset}$

$\Rightarrow F_{\tilde{E}}(e) \neq \tilde{\emptyset}$

$\Rightarrow G_{\tilde{E}}(e) = \tilde{\emptyset}$ $(since\ F_{\tilde{E}} \cap G_{\tilde{E}} = \tilde{\emptyset} \Rightarrow F_{\tilde{E}}(e) \cap G_{\tilde{E}}(e) = \tilde{\emptyset})$

$\Rightarrow G_{\tilde{E}}(e) \times \tilde{Y}_K(k) = \tilde{\emptyset}$

$\Rightarrow G_{\tilde{E}} \odot \tilde{Y}_K(e, k) = \tilde{\emptyset}$

$\Rightarrow \left(F_{\tilde{E}} \odot \tilde{Y}_K\right) \cap \left(G_{\tilde{E}} \odot \tilde{Y}_{\tilde{K}}\right) = \tilde{\emptyset}$

Similarly, one can prove the case when $k_1 \neq k_2$

Hence $(\tilde{X} \times \tilde{Y}, \tau_{\tilde{X}} \odot \tau_{\tilde{Y}}, E \times K)$ is $(SSW - H)_2$.

4. CONCLUSION

In this article the idea of Soft Semi W-Hausdorff spaces is presented with respect to ordinary points of the soft topological spaces and some basic properties regarding this concept are demonstrated in a better way. I havemeticulously studied various sources on the behalf of Soft Topology. And finally I concluded that soft Topology is totally related or in other sense we can rightly say that Soft Topology (Separation Axioms) are related with structure. Provided if it is related with structures then it gives the idea of non-linearity beautifully. In other ways we can rightly say Soft Topology is somewhat directly proportional to non-linearity. Although we use non-linearity in Applied Math. So it is not wrong to say that Soft Topology is applied Math in itself. It means that Soft Topology has the taste of both of pure and applied math. In future I will discuss Separation Axioms in Soft Topology With respect to soft points.

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