On Certain Type of Semi open Sets in Soft Topological Space

Ahmed Shihab HAmad
Wasit Governorate Education Directorate, Iraq
drahmed99@gmail.com

Abstract: — In this item the concept of $soft\ W$-Hausdorff or $soft\ W$-T_2 construction in $soft\ topological\ spaces$ is announced with relationship to $semi\ open\ sets$. since via the normal points of $soft\ topology$. is called a $soft\ \alpha$ W-Hausdorff briefly ($soft\ \alpha$ W-T_2) construction. $Some\ sub$-$spaces$ of $soft\ \alpha\ W$-T_2 construction are as well think carefully. Creation of these $spaces$ is too $avail$.

Keywords— Soft set, soft α-open set, soft closed set. Soft topological space, soft α W- Hausdorf space.

1. Introduction.

Topology in general is $space\ time\ geometry$, also several disciplines of unadulterated and practical mathematics, they play an appealing role. We talk about space points in Separation Axioms. It proves that the points are separated by their proximity. When we want to see the contrast between two spots that are unglued from each additional, the idea of $separation\ axioms$ resolve arise into show. The majority of real-life problems are fraught with uncertainty. Molodstvo [6], the first to present a revolutionary notion of $soft\ set$ system, which be a totally novel tactic aimed at showing ambiguity then doubt in 2011, was the first to provide a amount of philosophies to commerce with doubts in an effective in 1999. $Shabir$ and Naz [7] construct $soft\ topological\ spaces$ also investigate $separation\ axioms$ in section two of this article. In segment three of this study, the idea of $soft\ W$–$Housdroffness$ in $soft\ topological\ spaces$ is presented using the definition of $soft\ open\ sets$.

All through this work, a letters $\breve{X}$ also E refer toa father set and the set of $parameters$ for the father $\breve{X}$.

2. Preliminaries.

Definition. 1:[6] If $\breve{E}$ is a set of parameters thus $\breve{X}$ is the father set. And $P(\breve{X})$ stand for the energy set then $\breve{A}$ be a not free $subset$ of $\breve{E}$. $F_{\breve{A}}$ represented a pair of (F, A˘), is referred to as a $soft\ set\ over\ \breve{X}$, where F is a $mapping$ assumed $F: \breve{A} \rightarrow P($X˘ $)$. In new arguments a $soft\ set\ over$ X˘ be $parameterized$ domestic $of\ subsets$ the cosmos X˘ for a specific $e\epsilon\breve{A}$, F(e) might is careful $the\ set$ of e-a$pproximate\ elements$ of the $soft\ set\ equation$ (F,$\breve{A}$) if $e \notin \tilde{A}$ thus F$(e) = \tilde{\emptyset}$ $F_{\tilde{A}} = \{F(e); e \epsilon \breve{A} \subseteq \breve{E}\ ;\ F; \breve{A} \rightarrow P(\breve{X})\}$

The domestic to very these $soft\ set\ over$ $\breve{X}$ with detail to the parameter set $\breve{E}$ be symbolized $SS\ (\breve{X})_{\breve{E}}$.

Definition 2:[5] 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 $F_{\breve{A}}$,$\tilde{\sqsubseteq}$ $G_{\breve{B}}$ if

(1) $\breve{A} \subseteq \breve{B}$

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

The event $F_{\breve{A}}$ is called a $soft\ subset$ of $G_{\breve{B}}$, then $G_{\breve{B}}$ is named a $soft\ super\ set$ of $F_{\breve{A}}$, $G_{\breve{B}}\ \tilde{\sqsupseteq}\ F_{\breve{A}}$

Definition 3: [3] A two soft subset $F_{\breve{A}}$ and $G_{\breve{B}}$ above a shared $father\ set\ \breve{X}$ are called equivalent if $F_{\breve{A}}$ is $soft\ subset$ of $G_{\breve{B}}$ and $G_{\breve{B}}$ is a $soft\ subset$ of $F_{\breve{A}}$.

Definition 4: [9]. If τ is the assortment of $soft\ sets\ over\ X$, then τ is named a $soft\ topology$ on X,

1. $\emptyset, X$ affiliate on τ.
2. A merger of every quantity of $soft\ sets$ in τ fit in to τ
3. A node of every $two\ soft\ sets$on τ feel right of τ

The trio (X, F, E) is named a $soft\ topological\ space$.

Definition5: [8]. A soft set (A, E) in $a\ soft\ topological\ space$ (X, τ, E) is termed $soft\ semi\ open$ $(briefly\ \ S.S.O)$ $if\ and\ only\ if$a $soft\ open\ set$ (O, E) then (O,E)⊆$\overline{(}$A,E)⊆ $Cl(O$,E).

Definition4: [1]

A $complement$ of a soft (F,$\tilde{A}$) set symbolized via $(F, \tilde{A})^c$then {$(F^c; \tilde{A} \rightarrow P(\tilde{X})$ } $is\ a\ mapping$ assumed by $F^C\ (e) = X - F(e)$; ,$\forall\ e\epsilon\tilde{A}$ also F^c be named the $soft\ complement\ \ function$ of F . obviously $(F^c)^c$ is equal ($(F, \breve{A})^c)^c$ =$(F\ , \tilde{A})$.

Definition 5: [5] A $soft\ set$ (F,A˘) $over\ \breve{X}$ is called a $null\ \ soft\ set$ symbolized is φ˘or Ø˜_A˜ $if\ \ \forall\ e\ \epsilon\ \breve{A}\ ,F(e)\ =\ \varphi.$

Definition6:[6] A $soft\ set$ (F,A˘) up $\tilde{X}$ is called $absolute\ soft$ set represented by $\breve{A}$ or $X_{\breve{A}}$ if $\forall\ e\epsilon\breve{A}\ ,\ F(e)=\tilde{X}$ obviously we must ($\tilde{X}_{\breve{A}}$) ^{c}=$\varphi_{\breve{A}}$ then $\varphi_{\breve{A}}\ ^{c}= X_{\breve{A}}$

Definition 7: [5] the merger of two $soft\ set$ $(F,\breve{A})$ then $(G,\breve{B})$ $over\ the\ common$ cosmos $\breve{X}$ is the soft set $(H,\breve{C})$ wherever C˜=A˜∪B˜ also $\forall\ e\epsilon\tilde{C}$

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

Definition 8: [5] the node of $two\ soft\ set$ $(F,\breve{A})$ and $(G,\breve{B})$ $over\ the$ shared cosmos X˘ be $the\ soft\ set$ (H,C˘) when C˘ =A˘ ∩B˘ and $\forall\ e\epsilon\breve{C}$ H˘ (e) = $F(e)\cap G(e)$.

Definition 9:[7] If $(\breve{X}\ ,\tau,\breve{E})$ be $soft\ topological\ space$ (F,E)϶ SS(〖X)〗_E , Y be a $non\ null\ subset\ of\ X\ then\ the\ soft\ \ subset$ of (F,E) over Y˘ symbolized by $(F_{\breve{Y}},\breve{E})$ be definite as to be continued $F_{\breve{Y}}(e)=\ \breve{Y}\cap\ F(e)\forall\ e\epsilon\breve{E}$ In other arguments $(F_{\breve{Y}},\breve{E})$ =Y˘_E˘∩(F,E˘)

Definition 10:[7] If (X˘, τ, E˘) be $soft\ topological\ space$ $(F,\breve{E})$ too Y˘be $a\ non-null\ subset$ of X˘ . thus { $(F,\breve{E})$: $(F,\breve{E})\epsilon\tau$ } is called a $relative\ soft\ topology$ on Y then $(\breve{Y},T_{\breve{Y}},\breve{E})$ is $called\ a\ soft\ subspace$ of $(\breve{X},\tau,\breve{E})$

Definition 11: [2] If $F_{\breve{A}}\ \epsilon$ $S\ S(X)_{\breve{E}}$ then $G_{\breve{B}}.\ \epsilon$ $S\ S(Y)_{k}$. The $cartesian\ product$ $(F_{\breve{A}}\odot G_{\breve{B}}\ )\ (e,k)=\ (F_{\breve{A}}(e)\times G_{\breve{B}}(k)\ \forall\ (e,k)\ \epsilon\breve{A}\times\breve{B}$. Matching to this meaning $(F_{\breve{A}}\odot G_{\breve{B}}\ )$ i $s\ soft\ set\ over$ $\breve{X}\times\breve{Y}$ and its $parameter\ set$ is $\breve{E}\times\breve{K}$

Definition 12: [2] If $(\breve{X}\ \tau_{\breve{X}},\breve{E})$ 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 segment is devoted to $soft\ semi\ W - T_2 space$. Dissimilar consequences are intensely deliberated to this $soft\ topological\ structure$, the request of $soft\ semi - open\ sets$since by normal points of $soft\ topology$.

Definition 13: A $soft\ topological\ space\ (\tilde{X}, \tau, \tilde{E})$ is called a $soft$ semi $W - Hausedorff\ space$ of type1 symbolized by $(\mathrm{SSW} - \mathrm{H})_1$ if every e_1 , $e_2\ \epsilon\ \breve{E}$, $e_1 \neq e_2$ be present $soft$ semi $open\ sets$ thus $(F, \breve{A})$, $(G, \breve{B})$such that $F_{\breve{A}}\ (e_1) = X$, $G_{\breve{B}}\ (e_2)$ =X˘ also (F,A˘)∩(G,(B)˘)= φ˘.

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

Proof

If $(\breve{X}, \tau, \breve{E})$ is a 〖 (SSW-H ̃)〗 _1 $space$. and Y˘ is a $non\text{-}vacuous\ subset$ of X˘. So $(\breve{Y}\ \tau_{\breve{Y}}, \breve{E})$ is a $soft\ subspace\ of$ (X˘,τ, E˘) wherever $\{\tau_{\breve{Y}} = F_{\breve{Y}}, \breve{E}) : (F, \breve{E}) \epsilon \tau\}$ 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 $F_{\breve{A}}(e_1) = \tilde{X}$, $G_{\breve{B}}(e_2) = \breve{X}$ and $F_{\breve{A}} \cap G_{\breve{B}} = \breve{\varphi}$

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

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

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

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

$$= \breve{Y} \cap \breve{\varphi}(e)$$

$$= \breve{Y} \cap \breve{\varphi}$$

$$= \breve{\varphi}$$

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

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

Definition 14: If (X˘,τ,E˘) is $soft\ topological$, then $\widetilde{H} \subseteq \breve{E}$ also $(\breve{X}, \tau_{\widetilde{H}}, \breve{E})$ is named $soft\ subspace$ of $(\breve{X}, \tau, \breve{E})$ $relative\ to\ the\ parameter\ set\ H$

wherever $\tau_{\widetilde{H}} = \{(F_{\breve{A}}/\ \widetilde{H}: \widetilde{H} \subseteq \breve{A} \subseteq \breve{E}; (F, \breve{A})\}$ is $soft\ semi\ open\ set\ =$ $\{(F_{\breve{A}})/H\}$ is the $restriction\ map$ on $\widetilde{H}$

Proposition 2. A $soft$ p-$subspace$ a $(\mathrm{SSW}-\mathrm{H})_1$ $space$ is $(\mathrm{SSW}-\mathrm{H})_1$

Proof

If $(\breve{X}, \tau, \breve{E})$ is a $(\mathrm{SW}-\mathrm{H})_1$ $space$ .Let $(Y, \tau_H, \breve{E})$ be $soft$ p- $subspace$ of $(\breve{X}, \tau, \breve{E})$ $relative\ parameter\ set\ H,$ where $\tau_H = \{(F_{\tilde{A}}/\mathrm{H}: \widetilde{H} \subseteq \breve{A} \subseteq \breve{E}; where(F, \breve{A}) is\ soft\ semi\ open\ set \in \tau)\}$ Consider $h, h\epsilon\breve{H}$ $h_1 \neq h_2$ and $h, h\epsilon\breve{E}$, since semi $open\ sets$ $(F, \breve{A})$, $(G, \breve{B})$ .So $F_{\breve{A}}(h_1) = X,$ $G_{\breve{B}}(h_2) = X$ then (F,A˘)∩ (G,B˘)=φ˘

Then $(F_{\breve{A}})/\ H,$ $(G_{\breve{B}})/\ \widetilde{H} \in \tau_H$

$(F_{\breve{A}})/\ \widetilde{H}(h_1) = F_{\breve{A}}(h_1) = \breve{X}$

$(G_{\breve{B}})/\widetilde{H}(h_2) = G_{\breve{B}}(h_2) = \breve{X}$

$(F_{\breve{A}})/\ \widetilde{H} \cap (G_{\breve{B}})/\ \widetilde{H}=(F_{\breve{A}} \cap G_{\breve{B}})/\ \widetilde{H}$

=φ˘/H

=φ˘

Therefore $(\breve{X}, \tau_H, H)$ be 〖$(SSW - H)$〗_1

Propositin 3. The product $of\ two$ $(\mathrm{SSW}-\mathrm{H})_1$ $spaces$ $(\mathrm{SSW}-\mathrm{H})_1$

Proof

given $(\breve{X}, \tau_{\breve{X}}, \breve{E})$ so $(\breve{Y}, \tau_{\breve{Y}}, \breve{K})$ is dual $(\mathrm{SSW}-\mathrm{H})_1$ $spaces$ $consider$ two separate $points$ $(e_1, \breve{K}_1)$ and $(e_2, \breve{K}_2)\epsilon$ E˘×K˘

Both $e_1 \neq e_2$ or $\breve{K}_1 \neq \breve{K}_2,$ suppose $e_1 \neq e_2$ $(\breve{X}, \tau_{\breve{X}}, \breve{E})$ is $(\mathrm{SSW}-\mathrm{H})_1$ then $soft$ semi $open\ sets$ $(F, \breve{A}), (G, \breve{B})$ since $F_{\breve{A}}(e_1) = \breve{X},$ $G_{\breve{B}}(e_2) = \breve{X}$ and $(F, \breve{A}) \cap (G, \breve{B}) = \breve{\varphi}$,

Hence $F_{\breve{A}} \odot Y_K$, $G_{\breve{B}} \odot \breve{Y}_K \in \tau_{\breve{X}} \odot \tau_{\breve{Y}}$

$(F_{\breve{A}} \odot Y_{\breve{K}})$ $(e_1, \breve{K}_1) = F_{\breve{A}}(e_1) \times \breve{Y}_K(\breve{K}_1)$

$= \breve{X} \times \breve{Y}$

$(G_{\breve{B}} \odot \breve{Y}_{\breve{K}})(e_2, \breve{K}_2) = G_{\breve{B}}(e_2) \times \breve{A}_{\breve{K}}(\breve{K}_2)$

$= \breve{X} \times \breve{Y}$

If for any

$(e,k) \in \breve{E} \times \breve{K}$, $(F_{\breve{A}} \odot Y_{\breve{K}})$,(e,k) $\neq \tilde{\emptyset}$

$\Rightarrow$F_A˘ (e) $\times \breve{Y}_{\breve{K}}$(k) $\neq \tilde{\emptyset}$

〚 $\Rightarrow$F〛 _A˘ (e) $\times \breve{Y}_{\breve{K}} \neq \tilde{\emptyset}$

$\Rightarrow$F_A˘ (e)$\neq \tilde{\emptyset}$

〚 $\Rightarrow$G〛 _B˘ (e)= $\tilde{\emptyset}$ Since F_A˘ ∩G_B˘= $\breve{\varphi}$

$\Rightarrow F_{\breve{A}}$(e) ∩G_B˘(e) $= \tilde{\emptyset}$

$\Rightarrow F_{\breve{A}}(e) \times \breve{Y}_{\breve{K}}(k) = \tilde{\emptyset}$

$\left(G_{\breve{B}} \odot \breve{Y}_{\breve{K}}\right), (e,k) = \tilde{\emptyset}$

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

Suppose $\breve{K}_1 \neq \breve{K}_2$ $(\breve{Y}, \tau_{\breve{Y}}, \breve{K})$ is $(\mathrm{SSW}-\mathrm{H})_1$, then a semi *open sets* $\left(F,\breve{A}\right), (G,\breve{B})$ $F_{\breve{A}}(K_1) = Y$, $G_{\breve{B}}(K_2) = \breve{Y}$ as well as $(F,\breve{A}) \cap (G,\breve{B}) = \breve{\varphi}$

$(\breve{X}_{\breve{E}} \odot F_{\breve{A}})$ (e_1, K_1) = $\breve{X}_{\breve{E}}(e_1) \times F_{\breve{A}}(K_1)$

$= \breve{X} \times \breve{Y}$

$(\breve{X}_{\breve{E}} \odot G_{\breve{B}})(e_2, \breve{K}_2)$= $(\breve{X}_E(e_2) \times G_{\breve{B}}(K_2)$

= X˘×Y˘

Every $(e,k) \in$ E˘×K˘

$\Rightarrow (\breve{X}_{\breve{E}}(e) \times F_{\breve{A}}(k) \neq \tilde{\emptyset}$

$\Rightarrow \breve{X} \times F_{\breve{A}}(k) \neq \tilde{\emptyset}$

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

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

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

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

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

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

Hence $\breve{X} \times \breve{Y}$ $(\tau_{\breve{X}} \odot \tau_{\breve{Y}}, \tilde{E}$ ×K˜ }be $(\mathrm{SSW}-\mathrm{H})_1$

Definition 15: If *soft topological space* (X,τ,E) is called a *soft* semi *W-hausdorff* is *briefly S-W-Hausdorrf space* of style 2 symbolized by $(SSW-H)_2$. If for every $e_1, e_2 \in \breve{E}, e_1 \neq e_2$, then *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 $F_{\breve{E}} \cap G_{\breve{E}} = \tilde{\emptyset}$

Proposition 4.
A soft subspace a $(SSW-\widetilde{H})_2$ space be $(SSW-\widetilde{H})_2$
Proof
If $(\breve{X},\tau,\breve{E})$ is a $(SSW-\widetilde{H})_2$space. And $\breve{Y}$ is a $Non\text{-}null\ subset$ of $\breve{X}$. So $(\breve{Y},\tau_{\breve{Y}},\breve{Y})$ is a $soft\ subspace$ Of $((\breve{X},\tau,\tilde{E})$ wherever $\tau_{\breve{Y}} = \{(F_{\breve{Y}},\breve{E}): where(F,\breve{E}) is\ soft\ semi\ open\ sets \in \tau\}$ is the $relative\ soft\ topology$ on $\breve{Y}$. Consider $e_1, e_2 \in \tau$, $e_1, e_2 \neq \tau, the\ soft$ semi $open\ sets$ $(F,\breve{E}),(G,\breve{E})$ and $F_{\breve{E}}(e_1)=\breve{X}, G_E(e_2)=\breve{X}\ and\ (F,\breve{E}),(G,\breve{E}) = \widetilde{\emptyset}\ that\ is F_{\breve{E}} \cap G_{\breve{E}} = \widetilde{\emptyset}$.

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

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

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

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

$(F_{\tilde{A}})_{\breve{Y}} \cap (G_{\tilde{B}})_{\breve{Y}} = \widetilde{\emptyset}$
Therefore $(\tilde{Y},\tau_{\breve{Y}},\tilde{E})\ is\ (SSW-\widetilde{H})_2$

Proposition 5. A $Soft\ p\text{-}subspace$ a $(SSW-\widetilde{H})_2$ be $(SSW-\widetilde{H})_2$

Proof
If $(\tilde{X},\tau,\tilde{E})$ is a $(SSW-\widetilde{H})_2\ space$. And $\tilde{H} \subseteq \tilde{E}$
Since $(\tilde{X}, \tau_{\widetilde{H}}, \tilde{H})$ a $soft\ p$ - $subspace$ $(\tilde{X},\tau,\tilde{E})$, relative to the parameter set $\widetilde{H}$ then $\{(F_{\tilde{A}})/\widetilde{H}: \widetilde{H} \subseteq \tilde{A} \subseteq \tilde{E},\ (F,\tilde{A}) \in \tau\}\ where\ (F,\tilde{A}) is\ soft\ semi\ open\ set$
Consider $h_1, h_2 \in \widetilde{H}, h_1 \neq h_2$.
Then $h_1, h_2 \in \widetilde{H}$ so $soft$ semi $open\ set$ $(F,\tilde{E}),(G,\tilde{E})$
thus $F_{\tilde{E}}(h_1)=\tilde{X}, G_{\tilde{E}}(h_2) = \tilde{X}\ and (F,\tilde{E}),(G,\tilde{E}) = \widetilde{\emptyset}\ that\ is\ F_{\tilde{E}} \cap G_{\tilde{E}} = \widetilde{\emptyset}$
Therefore $(F_{\tilde{A}})/\widetilde{H}, ((G_{\tilde{E}})/H \in \tau_{\widetilde{H}}$

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

((G_E˜) / H˜)$(h_2) = G_{\tilde{E}}(h_2) = \tilde{X}$ &

((F_E˜)/ H˜)∩((G_E˜)/H˜) $= (F_{\tilde{E}} \cap G_{\tilde{E}})/\widetilde{H}$

$= \widetilde{\emptyset}/H$

$= \widetilde{\emptyset}$

Therefore (X,τ,E) is $(SSW-H)_2$

Propositin 6. A $product\ of\ two\ (SSW-H)_2\ spaces$ is$(SSW-H)_2$

Proof

If (X˜, $\tau_{\tilde{X}}$,E˜) and (Y˜, $\tau_{\tilde{Y}}$,K˜) $be\ two\ SSW-H)_2$
$Soft\ spaces.\ Consider\ two\ distinct\ points\ (e_1,k_1)$,
$(e_2,k_2). \in \tilde{E} \times \widetilde{K}$
Either $e_1 \neq e_2\ or\ k_1 \neq k_2$
Assume $e_1 \neq e_2$ Since $(\tilde{X},\tau_{\tilde{X}},\tilde{E})$ is $(SSW-H)_2$, then
$Soft$ semi $open\ sets(F,\tilde{E})$,$(G,\tilde{E}) \in \tau_{\tilde{X}}$ thus $F_{\tilde{E}}(e_1) = \tilde{X}, G_E(e_2) = \tilde{X}$ and
$(F,\tilde{E})$,$(G,\tilde{E}) = \widetilde{\emptyset}$ that is $F_{\tilde{E}} \cap G_{\tilde{E}} = \widetilde{\emptyset}$
Therefore $F_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}}, G_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}} \in \tau_{\tilde{X}} \odot \tau_{\tilde{Y}}$

$$\left(F_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}}\right)(e_1,k_1) = F_{\tilde{E}}(e_1) \times \tilde{Y}_{\widetilde{K}}(k_1)$$
$$= \tilde{X} \times \tilde{Y}$$
$$\left(G_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}}\right)(e_2,k_2) = G_{\tilde{E}}(e_2) \times \tilde{Y}_{\widetilde{K}}(k_2)$$
$$= \tilde{X} \times \tilde{Y}$$

then $(e,k) \in (\tilde{E} \times \widetilde{K}), (F_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}})(e,k) \neq \widetilde{\emptyset}$
$\Rightarrow F_{\tilde{E}}(e) \times \tilde{Y}_{\widetilde{K}}(\tilde{k}) \neq \widetilde{\emptyset}$
$\Rightarrow F_{\tilde{E}}(e) \times \tilde{Y} \neq \widetilde{\emptyset}$
$\Rightarrow F_{\tilde{E}}(e) \neq \widetilde{\emptyset} \Rightarrow G_{\tilde{E}}(e) = \widetilde{\emptyset}\ (since\ F_{\tilde{E}} \cap G_{\tilde{E}} = \widetilde{\emptyset} \Rightarrow F_{\tilde{E}}(e) \cap G_{\tilde{E}}(e) = \widetilde{\emptyset})$
$\Rightarrow G_{\tilde{E}}(e) \times \tilde{Y}_K(k) = \widetilde{\emptyset}$
$\Rightarrow G_{\tilde{E}} \odot \tilde{Y}_K(e,k) = \widetilde{\emptyset}$
$\Rightarrow \left(F_{\tilde{E}} \odot \tilde{Y}_K\right) \cap \left(G_{\tilde{E}} \odot \tilde{Y}_{\widetilde{K}}\right) = \widetilde{\emptyset}$
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

The idea of Soft Semi $W-$Hausdorff spaces is explained in this article through detail to usual points of $soft\ topological\ spaces$, the several essential features of this concept are better illustrated. On behalf of Soft Topology, I have attentively investigated many sources. Finally, we came to the conclusion that soft topology is completely tied to structure, or, to put it another way, Soft Topology (Separation Axioms) is related to structure. If a $related$ to $structures$, it beautifully conveys the concept of $non\text{-}linearity$. In other words, $Soft$ to$pology$ is inversely related to non-linearity in various ways. In Applied Mathematics, we do use non-linearity. As a result, it is incorrect for claim $that\ soft\ topology$ is a type of applied mathematics in and of itself. Soft Topology combines the flavors of pure and practical mathematics. $Separation\ axioms\ in\ soft\ topology$ will be discussed to the future.

REFERENCES

[1] M. I. Ali, F. Feng, X .Liu, W. K. Min and M. Shabir, On some new operations in soft set theory. Computers and Mathematics with Applications, 57(2009), 1547-1553.
[2] K. V. Babitha and J. J. Sunil, Soft set relations and functions, Comput. Math. Appl. 60(2010) 1840-1848.
[3] C.L.Chang, "Fuzzy Topological Spaces", Journal of Mathematical Analysis and Applications, vol.24, no.1, pp.182-190, 1968.
[4] T. E. Gantner, R. C. Steinlage and R. H. Warren, Compactness in Fuzzy Topological Spaces", Journal of Mathematical Analysis and Applications, vol. 62 pp. 547- 562, 1978.
[5] P. K. Maji, R.Biswas and A.R.Roy, "Soft Set Theory", Computers and Mathematics with Applications, vol.45, no.4-5, pp.555-562, 2003.
[6] D.Molodstov, "Soft Set Theory – First Results", Computers and Mathematics with Applications, vol.37, no.4-5, pp.19-31, 1999.
[7] M.Shabir and M.Naz, "On Soft Topological Spaces", Computers and Mathematics with Applications, vol.61, no.7, pp.1786-1799, 2011.
[8] Y. Zou and Z. Xiao, 2008, Data analysis approach of soft sets under incomplete information, Knowledge-Based System, 21, 941-945.
[9] S.Hussain, B.Ahmad, 2015, Soft separation axioms in soft topological space submitted to elsvier. Published as resubmitted by the authors 29 November 2021.