

On Certain Type of Semi open Sets in Soft Topological Space

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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 α W*-Hausdorff briefly (*soft α W*- T_2) construction. Some sub-spaces of *soft α 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- Hausdorff 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 $\tilde{X}$ also E refer to a father set and the set of parameters for the father $\tilde{X}$.

2. Preliminaries.

Definition. 1:[6] If $\tilde{E}$ is a set of parameters thus $\tilde{X}$ is the father set. And $P(\tilde{X})$ stand for the energy set then $\tilde{A}$ be a not free subset of $\tilde{E}$. $F_{\tilde{A}}$ represented a pair of $(F, A^{\sim})$, is referred to as a *soft set over $\tilde{X}$* , where F is a mapping assumed $F: \tilde{A} \rightarrow P(X^{\sim})$. In new arguments a *soft set over $X^{\sim}$*

be *parameterized domestic of subsets* the cosmos $X^\sim$ for a specific $e \in \tilde{A}$, $F(e)$ might be careful *the set of e-approximate elements* of the *soft set equation* $(F, A^\sim)$ if $e \notin \tilde{A}$ thus $F(e) = \emptyset$ $F_{\tilde{A}} = \{F(e); e \in \tilde{A} \subseteq \tilde{E}; F; \tilde{A} \rightarrow P(\tilde{X})\}$

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

Definition 2:[5] Let $F_{\tilde{A}}, G_{\tilde{B}} \in SS(\tilde{X})_{\tilde{E}}$, then $F_{\tilde{A}}$ is soft subset of $G_{\tilde{B}}$ is denoted by $F_{\tilde{A}} \subseteq G_{\tilde{B}}$ if

- (1) $A^\sim \subseteq B^\sim$
- (2) $F(e) \subseteq G(e), \forall e \in A^\sim$

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

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

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 set* 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 $(O, E) \subseteq (A, E) \subseteq Cl(O, E)$.

Definition4: [1]

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

Definition 5: [5] A soft set $(F, A^\sim)$ over $\tilde{X}$ is called a *null soft set* symbolized is $\varnothing^\sim$ or $\tilde{\emptyset}_A$ if $\forall e \in A^\sim, F(e) = \varnothing$.

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

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

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

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

Definition 9:[7] If $(\tilde{X}, \tau, \tilde{E})$ be soft topological space $(F, E) \in SS(\llbracket X \rrbracket)_{\sim E}$, Y be a non null subset of X then the soft subset of (F, E) over $Y^\sim$ symbolized by $(F_{\tilde{Y}}, \tilde{E})$ be definite as to be continued $F_{\tilde{Y}}(e) = \tilde{Y} \cap F(e) \forall e \in \tilde{E}$ In other arguments $(F_{\tilde{Y}}, \tilde{E}) = Y^\sim_{\sim E} \cap (F, E)$

Definition 10:[7] If $(X^\sim, \tau, E^\sim)$ be soft topological space $(F, \tilde{E})$ too $Y^\sim$ be a non – null subset of $X^\sim$. thus $\{(F, \tilde{E}) : (F, \tilde{E}) \in \tau\}$ is called a *relative soft topology* on Y then $(\tilde{Y}, T_{\tilde{Y}}, \tilde{E})$ is called a *soft subspace* of $(\tilde{X}, \tau, \tilde{E})$

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

Definition 12: [2] If $(\check{X}, \tau_{\check{X}}, \check{E})$ and $(\check{Y}, \tau_{\check{Y}}, \check{K})$ be two soft topological spaces the soft product topology $\tau_{\check{X}} \odot \tau_{\check{Y}}$ over $\check{X} \times \check{Y}$ w.r.t $\check{E} \times \check{K}$ is the soft topology having the collection $\{F_{\check{E}} \odot G_{\check{K}} / F_{\check{A}} \in \tau_{\check{X}}, G_{\check{K}} \in \tau_{\check{Y}}\}$ 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 $(\check{X}, \tau, \check{E})$ is called a *soft semi $W - Hausdorff$ space* of type 1 symbolized by $(SSW - H)_1$ if $e_1, e_2 \in \check{E}, e_1 \neq e_2$ be present soft semi open sets thus $(F, \check{A}), (G, \check{B})$ such that $F_{\check{A}}(e_1) = X, G_{\check{B}}(e_2) = X^{\sim}$ also $(F, \check{A}^{\sim}) \cap (G, \check{B}^{\sim}) = \check{\phi}$.

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

Proof

If $(\check{X}, \tau, \check{E})$ is a $[(SSW - \check{H})]_1$ space. and $Y^{\sim}$ is a non-vacuous subset of $X^{\sim}$. So $(\check{Y}, \tau_{\check{Y}}, \check{E})$ is a soft subspace of $(\check{X}, \tau, \check{E})$ wherever $\{\tau_{\check{Y}} = F_{\check{Y}}, \check{E}\}: (F, \check{E}) \in \tau\}$ is the relative soft topology on $\check{Y}$. considered $e_1, e_2 \in \check{E}, e_1 \neq e_2$, there exist soft semi open sets $(F, \check{A}), (G, \check{B})$ such that $F_{\check{A}}(e_1) = \check{X}, G_{\check{B}}(e_2) = \check{X}$ and $F_{\check{A}} \cap G_{\check{B}} = \check{\phi}$
Hence, $((F_{\check{A}})_{\check{Y}}, \check{E}), ((G_{\check{B}})_{\check{Y}}, \check{E}) \in \tau_{\check{Y}} = \check{Y} \cap \check{X} = \check{Y}$
 $((G_{\check{B}})_{\check{Y}}, (e_2) = \check{Y} \cap G_{\check{B}}(e_2) = \check{Y} \cap \check{X} = \check{Y}$
 $(F_{\check{A}})_{\check{Y}} \cap (G_{\check{B}})_{\check{Y}}(e) = (F_{\check{A}} \cap G_{\check{B}})_{\check{Y}}(e)$
 $= \check{Y} \cap (F_{\check{A}} \cap G_{\check{B}})_{\check{Y}}(e)$
 $= \check{Y} \cap \check{\phi}(e)$
 $= \check{Y} \cap \check{\phi}$
 $= \check{\phi}$
 $(F_{\check{A}})_{\check{Y}} \cap (G_{\check{B}})_{\check{Y}} = \check{\phi}$
Hence $(Y, \tau_{\check{Y}}, \check{E})$ is soft semi $(SW - \check{H})_1$

Definition 14: If (X, τ, E) is soft topological, then $\tilde{H} \subseteq \tilde{E}$ also $(\tilde{X}, \tau_{\tilde{H}}, \tilde{E})$ is named *soft subspace* of $(\tilde{X}, \tau, \tilde{E})$ relative to the parameter set H wherever $\tau_{\tilde{H}} = \{(F_{\tilde{A}}/\tilde{H} : \tilde{H} \subseteq \tilde{A} \subseteq \tilde{E}; (F, \tilde{A}) \in \tau\}$ is soft semi open set $= \{(F_{\tilde{A}})/H\}$ is the restriction map on $\tilde{H}$

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

Proof

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

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

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

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

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

$$= \emptyset/H$$

$$= \emptyset$$

Therefore $(\tilde{X}, \tau_H, H)$ be $\llbracket (SSW - H) \rrbracket_1$

Propositin 3. The product of two $(SSW - H)_1$ spaces $(SSW - H)_1$

Proof

given $(\tilde{X}, \tau_{\tilde{X}}, \tilde{E})$ so $(\tilde{Y}, \tau_{\tilde{Y}}, \tilde{K})$ is dual $(SSW - H)_1$ spaces consider two separate points $(e_1, \tilde{K}_1)$ and $(e_2, \tilde{K}_2) \in E \times K$

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

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

$$(F_{\tilde{A}} \odot Y_K)(e_1, \tilde{K}_1) = F_{\tilde{A}}(e_1) \times \tilde{Y}_K(\tilde{K}_1) \\ = \tilde{X} \times \tilde{Y}$$

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

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

If for any

$$\begin{aligned} (e, k) \in \check{E} \times \check{K}, (F_{\check{A}} \odot Y_{\check{K}}), (e, k) \neq \emptyset \\ \Rightarrow F_{\check{A}}(e) \times \check{Y}_{\check{K}}(k) \neq \emptyset \\ \llbracket \Rightarrow F \rrbracket_{\check{A}}(e) \times \check{Y}_{\check{K}} \neq \emptyset \\ \Rightarrow F_{\check{A}}(e) \neq \emptyset \\ \llbracket \Rightarrow G \rrbracket_{\check{B}}(e) = \emptyset \text{ Since } F_{\check{A}} \cap G_{\check{B}} = \emptyset \\ \Rightarrow F_{\check{A}}(e) \cap G_{\check{B}}(e) = \emptyset \\ \Rightarrow F_{\check{A}}(e) \times \check{Y}_{\check{K}}(k) = \emptyset \end{aligned}$$

$$(G_{\check{B}} \odot \check{Y}_{\check{K}}), (e, k) = \emptyset$$

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

Suppose $\check{K}_1 \neq \check{K}_2$ ($\check{Y}, \tau_{\check{Y}}, \check{K}$) is $(SSW - H)_1$, then a semi open sets

$$(F, \check{A}), (G, \check{B}) \quad F_{\check{A}}(K_1) = Y, \quad G_{\check{B}}(K_2) = \check{Y} \text{ as well as } (F, \check{A}) \cap (G, \check{B}) = \emptyset$$

$$\begin{aligned} (\check{X}_{\check{E}} \odot F_{\check{A}})(e_1, K_1) &= \check{X}_{\check{E}}(e_1) \times F_{\check{A}}(K_1) \\ &= \check{X} \times \check{Y} \end{aligned}$$

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

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

Every $(e, k) \in \check{E} \times \check{K}$

$$\begin{aligned} &\Rightarrow (\check{X}_{\check{E}}(e) \times F_{\check{A}}(k)) \neq \emptyset \\ &\Rightarrow \check{X} \times F_{\check{A}}(k) \neq \emptyset \\ &\Rightarrow F_{\check{A}}(k) \neq \emptyset \end{aligned}$$

$G_{\check{B}}(k) = \emptyset$. As $(F, \check{A}), (G, \check{B}) = \emptyset$ that is $F_{\check{A}} \cap G_{\check{B}} = \emptyset$

$$\begin{aligned} &\Rightarrow F_{\check{A}}(k) \cap G_{\check{B}}(K) = \emptyset \\ &\Rightarrow \check{X}_{\check{E}}(e) \times G_{\check{B}}(e) = \emptyset \\ &\Rightarrow (\check{X}_{\check{E}} \odot G_{\check{B}})(e, k) = \emptyset \end{aligned}$$

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

Hence $\check{X} \times \check{Y} \quad (\tau_{\check{X}} \odot \tau_{\check{Y}}, \check{E} \times \check{K})$ be $(SSW - H)_1$

Definition 15: If soft topological space (X, τ, E) is called a soft semi

W -hausdorff is briefly S - W -Hausdorff space of style 2 symbolized by $(SSW - H)_2$. If for every $e_1, e_2 \in \tilde{E}, e_1 \neq e_2$, then soft semi open sets $(F, \tilde{E}), (G, \tilde{E})$ such that

$$F_e(e_1) = \tilde{X}, G_E(e_2) = \tilde{X} \text{ and } F_{\tilde{E}} \cap G_{\tilde{E}} = \tilde{\emptyset}$$

Proposition 4.

A soft subspace a $(SSW - \tilde{H})_2$ space be $(SSW - \tilde{H})_2$

Proof

If (X, τ, E) is a $(SSW - \tilde{H})_2$ space. And $\tilde{Y}$ is a

Non-null subset of $\tilde{X}$. So $(\tilde{Y}, \tau_{\tilde{Y}}, \tilde{Y})$ is a soft subspace

Of $((\tilde{X}, \tau, \tilde{E}))$ wherever

$\tau_{\tilde{Y}} = \{(F_{\tilde{Y}}, \tilde{E}) : \text{where } (F, \tilde{E}) \text{ is soft semi open sets } \in \tau\}$ is the

relative soft topology on $\tilde{Y}$. Consider $e_1, e_2 \in \tau$,

$e_1, e_2 \neq \tau$, the soft semi open sets $(F, \tilde{E}), (G, \tilde{E})$

and $F_E(e_1) = \tilde{X}, G_E(e_2) = \tilde{X}$ and $(F, \tilde{E}), (G, \tilde{E}) = \tilde{\emptyset}$ that is $F_{\tilde{E}} \cap G_{\tilde{E}} = \tilde{\emptyset}$.

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

$$\begin{aligned} \text{Also } (F_E)_{\tilde{Y}}(e_1) &= \tilde{Y} \cap F_{\tilde{E}}(e_1) \\ &= \tilde{Y} \cap \tilde{X} \\ &= \tilde{Y} \end{aligned}$$

$$\begin{aligned} (G_E)_{\tilde{Y}}(e_2) &= \tilde{Y} \cap G_{\tilde{E}}(e_2) \\ &= \tilde{Y} \cap \tilde{X} \\ &= \tilde{Y} \end{aligned}$$

$$\begin{aligned} ((F_E)_{\tilde{Y}} \cap (G_E)_{\tilde{Y}})(e) &= ((F_{\tilde{E}} \cap G_{\tilde{E}})_{\tilde{Y}})(e) \\ &= \tilde{Y} \cap (F_{\tilde{E}} \cap G_{\tilde{E}})_{\tilde{Y}}(e) \\ &= \tilde{Y} \cap \tilde{\emptyset} \\ &= \tilde{Y} \cap \tilde{\emptyset} \\ &= \tilde{\emptyset} \end{aligned}$$

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

Therefore $(\tilde{Y}, \tau_{\tilde{Y}}, \tilde{E})$ is $(SSW - \tilde{H})_2$

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

Proof

If (X, τ, E) is a $(SSW - \tilde{H})_2$ space. And $\tilde{H} \subseteq \tilde{E}$

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

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

Then $h_1, h_2 \in \tilde{H}$ 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 $(F, \tilde{E}), (G, \tilde{E}) = \tilde{\emptyset}$ that is $F_{\tilde{E}} \cap G_{\tilde{E}} = \tilde{\emptyset}$

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

$$\begin{aligned} \text{Also } ((F_{\tilde{E}})/\tilde{H})(h_1) &= F_{\tilde{E}}(h_1) = \tilde{X} \\ ((G_{\tilde{E}})/\tilde{H})(h_2) &= G_{\tilde{E}}(h_2) = \tilde{X} \text{ \& } \\ ((F_{\tilde{E}})/\tilde{H}) \cap ((G_{\tilde{E}})/\tilde{H}) &= (F_{\tilde{E}} \cap G_{\tilde{E}})/\tilde{H} \\ &= \tilde{\emptyset}/\tilde{H} \\ &= \tilde{\emptyset} \end{aligned}$$

Therefore (X, τ, E) is $(SSW - H)_2$

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

Proof

If $(\tilde{X}, \tau_{\tilde{X}}, \tilde{E})$ and $(\tilde{Y}, \tau_{\tilde{Y}}, \tilde{K})$ be two $(SSW - H)_2$

Soft spaces. Consider two distinct points $(e_1, k_1),$

$(e_2, k_2) \in \tilde{E} \times \tilde{K}$

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 $F_{\tilde{E}}(e_1) = \tilde{X}, G_{\tilde{E}}(e_2) = \tilde{X}$ and

$(F, \tilde{E}), (G, \tilde{E}) = \tilde{\emptyset}$ that is $F_{\tilde{E}} \cap G_{\tilde{E}} = \tilde{\emptyset}$

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

$$\begin{aligned} (F_{\tilde{E}} \odot \tilde{Y}_{\tilde{K}})(e_1, k_1) &= F_{\tilde{E}}(e_1) \times \tilde{Y}_{\tilde{K}}(k_1) \\ &= \tilde{X} \times \tilde{Y} \end{aligned}$$

$$\begin{aligned} (G_{\tilde{E}} \odot \tilde{Y}_{\tilde{K}})(e_2, k_2) &= G_{\tilde{E}}(e_2) \times \tilde{Y}_{\tilde{K}}(k_2) \\ &= \tilde{X} \times \tilde{Y} \end{aligned}$$

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

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

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

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

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

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

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

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

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-linearity*. In other words, *Soft topology* 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.

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