SOFT J^CHOMOEMORPHISM IN SOFT TOPOLOGICAL SPACE

Abstract

The study of Soft J^Chomeomorphism and Soft Strongly J^Chomeomorphism in Soft Topological space is the subject of this article. We come up with a few of its properties and talk about a few composition theorems.

Keywords: Soft J^Chomeomorphism, Soft Strongly J^Chomeomorphism, Soft homeomorphism, Soft mappings.

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I. INTRODUCTION

Molodtov D [3] introduced the Soft set concept in 1999 to deal uncertainty in a parametric fashion. Naim Cagman et al. [4] in 2011 created a soft topological space and established a soft topology on soft set. In 2002, P. K. Maji et al. [5] defined certain fundamental terminology for the theory, including the equality of two Soft sets, subset and superset of a Soft set, complement of a Soft set, null Soft set, and absolute soft set. C. G. Aras and H. Cakalli [1] presented soft mappings in soft topological spaces in 2013. Soft πgb-homeomorphism in Soft topological space was presented by C. Janaki and D. Sreeja [2] in 2014. We previously discussed the soft J^Cclosed set, soft J^Copen set, soft J^Ccontinuous and soft J^Copen map. In this work, we look into soft J^Chomeomorphism using an example. Theorems relating to their properties and composition were also examined. Additionally, we discover soft strongly J^Chomeomorphisms and their characteristics. Throughout this paper Soft set has been represented as S-set.

II. PRELIMINARIES

Definition 2.1[3]: A **S-set** F_A on the universe G is defined by the set of ordered pairs $F_A = \{(x, f_a(x)): x \in E \; and \; f_a(x) \in P(G)\}$, where $f_a: A \to P(G)$ such that $f_a(x) = \phi$ for all $x \notin A$. Hence f_a is called an approximate function of the S-set F_A. The value of f_a may be arbitrary, some of them may be empty, some may have non empty intersection.

Definition 2.2[3]

1. A S-set (F_A) over G is said to be **Null S-Set** denoted by F_ϕ or $\tilde{\phi}$ if for all $e \in A$, $F(e) = \phi$.
2. A S-set (F_E) over G is said to be an **Absolute S-Set** denoted by F_G or $\tilde{G}$ if for all $e \in A$, $F(e) = G$.

Definition 2.3[3]: Let $x \tilde{\in} G$. Then (x_e) denotes the **S-point** over G, for which $x(\alpha) = \{x\} \; \forall \; \alpha \tilde{\in} E$. Also the **S-Singleton Set** corresponding to (x_e) is denoted by (x_E).

Definition 2.4[4]: Let τ be a collection of S-sets over G with a fixed set E of parameters. Then τ is called a **S-topology** on G if

1. $\tilde{\phi}$, $\tilde{G}$ belongs to τ.
2. The union of any number of S-sets in τ belongs to τ.
3. The intersection of any two S-sets in τ belongs to τ.

The triplet (G, τ_E) is called **S-topological Space** over G. The members of τ are called **S-open** sets in G and complements of them are called **S-closed** sets in G.

Definition 2.5[4]: A S-map $m: (G, \tau_E) \to (H, \sigma_K)$ is said to be **S-open (closed)**, if the image of every S-open(closed) set in (G, τ_E) is S-open (closed) in (H, σ_K).

Definition 2.6[6]: A S-Subset (F_E) of a S-Topological space (G, τ_E) is known as **S-J^Cclosed set** if $Scl^*(F_E) \tilde{\subseteq} (U_E)$ whenever $(F_E) \tilde{\subseteq} (U_E)$ and (U_E) is S-semi*open set. $SJ^C C(G)$ represents the collection of all S-J^Cclosed sets. The complement of S-J^Cclosed set is **S-J^Copen set** and noted by $SJ^C O(G)$.

Definition 2.7[6]: A S-map $m:(G,\tau_E) \to (H,\sigma_K)$ is said to be **S-J^Ccontinuous map** if $m^{-1}(V_K)$ is s-J^Cclosed set in (G,τ_E) for every s-closed set (V_K) in (H,σ_K).

Definition 2.8[6]: A S-map $m:(G,\tau_E) \to (H,\sigma_K)$ is said to be **S-J^Cclosed (open)** if $m(U_E)$ is s-J^Cclosed (open) set in (H,σ_K) for every s-closed (open) set (U_E) in (G,τ_E).

Definition 2.9[5]: A S-bijective map $m:(G,\tau_E) \to (H,\sigma_K)$ is called **S-homeomorphism** if m is both S-continuous map and S-open map.

Definition 2.10[6]: A S-topological space (X,τ_E) is said to be **S-T_{J^c} space** if every S-J^Cclosed set is S-closed.

III. S-J^CHOMEOMORPHISM

Definition 3.1: A S-bijective map m from (G,τ_E) to (H,σ_K) is called **S-J^Chomeomorphism** if m is both S-J^Ccontinuous map and S-J^Copen map.

Example 3.2: Consider $G = \{x_1,x_2\}, H = \{y_1,y_2\}, E = \{e_1,e_2\}$, $K = \{k_1,k_2\}$. Define $u : G \to H$ and $v : E \to K$ as $u(x_1) = y_1, u(x_2) = y_2$ and $v(e_1) = k_1, v(e_2) = k_2$. Consider the S-topologies $\tau = \{\tilde{\phi}, \tilde{G}, (F_{E1}), (F_{E2})\}$ where $F_1(e_1) = \{x_1\}, F_1(e_2) = \{x_1\}, F_2(e_1) = \{x_2\}, F_2(e_2) = \{x_2\}$ and $\sigma = \{\tilde{\phi}, \tilde{H}, (X_{K1})\}$ where $X_1(k_1) = \{y_1,y_2\}$, $X_1(k_2) = \tilde{\phi}$. Therefore the s-mapping $m:(G,\tau_E) \to (H,\sigma_K)$ is both S-J^Ccontinuous and S-J^Copen map. Hence, m is S-J^Chomeomorphism.

Theorem 3.3: A S-bijective map $m:(G,\tau_E) \to (H,\sigma_K)$ is S-homeomorphism. Then m is S-J^Chomeomorphism.

Proof. Consider $m:(G,\tau_E) \to (H,\sigma_K)$ is a S-homeomorphism, then m is S-continuous and S-open map. Also consider (M_K) is a S-open set in (H,σ_K). Therefore, $m^{-1}(M_K)$ is S-open set in (G,τ_E). We know that all S-open sets are S-J^Copen set, $m^{-1}(M_K)$ is S-J^Copen set in (G,τ_E). Thus m is S-J^Ccontinuous. Again consider (N_E) is a S-open in (G,τ_E). Since m is a S-open map, $m(N_E)$ is S-open set in (H,σ_K). We know that all S-open sets are S-J^Copen set, $m(N_E)$ is S-J^Copen set in (H,σ_K). Then m is a S-J^Copen map. Hence m is S-J^Chomeomorphism.

Remark 3.4: S-J^Chomeomorphism need not be S-homeomorphism.

Example 3.5: Consider $G = \{x_1,x_2\}$, $H = \{y_1,y_2\}$, $E = \{e_1,e_2\}$, $K = \{k_1,k_2\}$. Define $u : G \to H$ and $v : E \to K$ as $u(x_1) = y_1, u(x_2) = y_2$ and $v(e_1) = k_1, v(e_2) = k_2$. Consider the S-topologies $\tau = \{\tilde{\phi}, \tilde{G}, (P_{E1}), (P_{E2})\}$ where $P_1(e_1) = \{x_2\}, P_1(e_2) = \{x_1\}, P_2(e_1) = \{x_2\}, P_2(e_2) = \{x_1,x_2\}$ and $\sigma = \{\tilde{\phi}, \tilde{H}, (Q_{K1}), (Q_{K2}), (Q_{K3})\}$ where $Q_1(k_1) = \{y_2\}$, $Q_1(k_2) = \tilde{\phi}, Q_2(k_1) = \tilde{\phi}$, $Q_2(k_2) = \{y_1\}, Q_3(k_1) = \{y_2\}$, $Q_3(k_2) = \{y_1\}$. Therefore the S-mapping $m:(G,\tau_E) \to (H,\sigma_K)$ is both S-J^Ccontinuous and S-J^Copen map, but m is not S-continuous and S-open map. Since, $m(\alpha_E) = \{(e_1,y_2),(e_2,y_1,y_2)\}$ is not S-open set in (H,σ_K), also $m^{-1}(\beta_K) = \{(e_1,x_1),(e_2,x_1,x_2)\}$ is not S-closed set in (G,τ_E). Hence, m is not S-homeomorphism.

Theorem 3.6: A S-bijective map $m : (G, \tau_E) \to (H, \sigma_K)$ is S-J^Ccontinuous, then the following are equivalent

(i) m is S-J^Copen map
(ii) m is S-J^Chomeomorphism
(iii) m is S-J^Cclosed map

Proof: (i) ⇒ (ii) Since a S-bijective map m is S-J^Ccontinuous, also m is S-J^Copen map. Then m is S-J^Chomeomorphism.
(ii) ⇒ (iii) Consider (U_E) is s-closed set in (G, τ_E). Then $(U_E)^c$ is s-open set in (G, τ_E). By hypothesis, $m((U_E)^c) = \left(m(U_E)\right)^c$ is S-J^Copen set in (H, σ_K). Therefore, $m(U_E)$ is S-J^C closed set in (H, σ_K). Hence, m is S-J^Cclosed map.
(iii) ⇒ (i) Consider (V_E) is s-open set in (G, τ_E). Then $(V_E)^c$ is s-closed set in (G, τ_E). By hypothesis, $m((V_E)^c) = \left(m(V_E)\right)^c$ is S-J^Cclosed set in (H, σ_K). Therefore, $m(V_E)$ is S-J^C open set in (H, σ_K). Hence, m is S-J^Copen map.

Theorem 3.7: Every S-J^Chomeomorphism from a S-T_{J^C} space into another S-T_{J^C} space is S-homeomorphism.

Proof: Consider a s-map $m: (G, \tau_E) \to (H, \sigma_K)$ is S-J^Chomeomorphism and (L_E) be a s-open set in (G, τ_E). Since m is S-J^Copen and (H, σ_K) is a S-T_{J^C} space, $m(L_E)$ is s-open set in (H, σ_K). Thus, m is a s-open map. Since m is S-J^Ccontinuous and (G, τ_E) is a S-T_{J^C} space, $m^{-1}(L_E)$ is s-closed in (G, τ_E). Therefore, m is s-continuous. Hence, m is s-homeomorphism.

Theorem 3.8: Consider (G, τ_E) be a S-topological space, then $SJ^C h(G, \tau_E)$ is a group under the composition of maps.

Proof: Let us define a binary operation $*: SJ^C h(G, \tau_E) \times SJ^C h(G, \tau_E)$ by $m * n = (n \circ m)$ for all $m, n \,\tilde{\in}\, SJ^C h(G, \tau_E)$ and $\circ$ is the usual operation of composition of maps. Then $(n \circ m) \,\tilde{\in}\, SJ^C h(G, \tau_E)$. We know that the composition of maps is associative, also the identity map $I: (G, \tau_E) \longrightarrow (G, \tau_E)$ belonging to $SJ^C h(G, \tau_E)$ serves as the identity element. For every $m \,\tilde{\in}\, SJ^C h(G, \tau_E)$, $m \circ m^{-1} = m^{-1} \circ m = I$. Therefore the inverse exists for each element of $SJ^C h(G, \tau_E)$. Hence, $SJ^C h(G, \tau_E)$ forms a group under the operation of composition of maps.

Theorem 3.9: If $m : (G, \tau_E) \to (H, \sigma_K)$ is a S-J^Chomeomorphism. Then, m induces a S-isomorphism from the group $SJ^C h\ (G, \tau_E)$ onto the group $SJ^C h\ (G, \tau_E)$.

Proof: Suppose $m \,\tilde{\in}\, SJ^C h(G, \tau_E)$. We define a function $\psi m: SJ^C h(G, \tau_E) \to SJ^C h(G, \tau_E)$ by $\psi m = m \circ h \circ m^{-1}$ for every $h \,\tilde{\in}\, SJ^C h(G, \tau_E)$. Therefore m is a S-bijection. Now for all $n, h \,\tilde{\in}\, SJ^C h(G, \tau_E)$, we get $\psi m(n \circ h) = m \circ (n \circ h) \circ m^{-1} = (m \circ n \circ m^{-1}) \circ (m \circ h \circ m^{-1}) = \psi m(n) \circ \psi m(h)$.

Theorem 3.10: Consider $m : (G, \tau_E) \to (H, \sigma_K)$ be a S-J^Chomeomorphism and (U_E) be a S-J^Cclosed subset of (G, τ_E). Also, (V_K) be a s-closed subset of (H, σ_K) such that $m(U_E) =$

(V_K). Assume that $SJ^C C(G,\tau_E)$ is closed under any s-intersection. Then the restriction $m_{(U_E)}:\left((U_E),\tau_{(U_E),E}\right) \to \left((V_K),\sigma_{(V_K),K}\right)$ is a S-J^Chomeomorphism.

Proof:

i. Consider $m:(G,\tau_E) \to (H,\sigma_K)$ is a S-J^Chomeomorphism. Since m is S-1-1 and s-onto, $m_{(U_E)}$ is S-1-1 and $m_{(U_E)}(U_E) = (V_K)$ such that $m_{(U_E)}$ is s-onto. Hence, $m_{(U_E)}$ is s-bijection.

ii. Consider (L_E) be an s-open set of $\left((U_E),\tau_{(U_E),E}\right)$. $(L_E) = (U_E) \tilde{\cap} (A_E)$, for some s-open set (A_E) in (G,τ_E). Since, m is S-1-1 then $(L_E) = m\big((U_E) \tilde{\cap} (A_E)\big) = m(U_E) \tilde{\cap} m(A_E) = (V_K) \tilde{\cap} m(A_E)$. Since, m is S-$J^C$open and (A_E) is s-open set in (G,τ_E), then $m(A_E)$ is S-J^Copen in (H,σ_K). Therefore $m(A_E)$ is a S-J^Copen in $\left((V_K),\sigma_{(V_K),K}\right)$. Hence, $m_{(U_E)}$ is S-J^Copen map.

iii. Consider (S_K) be a s-closed in $\left((V_K),\sigma_{(V_K),K}\right)$. Then $(S_K) = (V_K) \tilde{\cap} (B_K)$ for some s-closed set (B_K) in (H,σ_K). Since (V_K) is a s-closed set in (H,σ_K), then (S_K) is a s-closed set in (H,σ_K). By hypothesis and assumption, $m^{-1}\big((S_K) \tilde{\cap} (X_K)\big) = (Y_E)$ (say) is a S-J^Cclosed set in (G,τ_E). Since $m_A^{-1}(S_K) = (Y_E)$, It is adequate to prove that (Y_E) is S-J^Cclosed in $\left((U_E),\tau_{(U_E),E}\right)$. Let (C_E) be S-$\hat{g}$-open set in $((A,E),\tau_{(A,E)},E)$ such that $(Y_E) \tilde{\cap} (C_E)$. Then by hypothesis and by relativity of S-$\hat{g}$-open set, (C_E) is S-$\hat{g}$-open set in (G,τ_E). Since (Y_E) is a S-J^Cclosed set in (G,τ_E), $s^*Cl_{\tilde{G}}(Y_E) \tilde{\subseteq} Int(C_E)$. Since (U_E) is S-open, $s^*Cl_{(U_E)}(Y_E) = s^*Cl_{\tilde{G}}(Y_E) \tilde{\cap} (U_E) \tilde{\subseteq} Int(C_E) \tilde{\cap} Int(U_E) = Int\big((C_E) \tilde{\cap} (U_E)\big) \tilde{\subseteq} Int(C_E)$ and so $(Y_E) = {m_A}^{-1}(S_K)$ is S-J^Cclosed in $\left((U_E),\tau_{(U_E),E}\right)$.

Therefore, $m_{(U_E)}$ is s-bijection, S-J^Ccontinuous and S-J^Copen map. Hence the restriction map $m_{(U_E)}:\left((U_E),\tau_{(U_E),E}\right) \to \left((V_K),\sigma_{(V_K),K}\right)$ is a S-J^CHomeomorphism.

Theorem 3.11: If $m:(G,\tau_E) \to (H,\sigma_K)$ is S-strongly J^Ccontinuous and $n:(H,\sigma_K) \to (W,\rho_R)$ be a S-J^Chomeomorphism then $n\ o\ m:(G,\tau_E) \to (W,\rho_R)$ is S-J^C homeomorphism.

Proof: Consider (D_E) be a s-open set in (G,τ_E). Since every s-open set is S-J^Copen set, $m(D_E)$ is a s-open set in (H,σ_K). Then $n\big(m(D_E)\big)$ is S-J^Copen set in (W,ρ_R). Also, consider (I_R) be a s-closed in (W,ρ_R), $n^{-1}(I_R)$ is a S-J^Cclosed set in (H,σ_K). Since m is S-strongly J^Ccontinuous and n is S-J^Ccontinuous, $m^{-1}\big(n^{-1}(I_R)\big)$ is S-J^Cclosed set in (G,τ_E). Thus $n\ o\ m$ is S-J^Copen map and S-J^Ccontinuous. Hence, $n\ o\ m$ is S-J^C homeomorphism.

IV. S-STRONGLY J^CHOMEOMORPHISM

Definition 4.1: A s-bijective map m from (G,τ_E) to (H,σ_K) is S-strongly J^C homeomorphism if m and m^{-1} are both S-J^Cirresolute.

Example 4.2: Consider $G = \{x_1,x_2\}, H = \{y_1,y_2\}, E = \{e_1,e_2\}, K = \{k_1,k_2\}$. Define $u: G \to H$ and $v: E \to K$ as $u(x_1) = y_1, u(x_2) = y_2$ and $v(e_1) = k_1, v(e_2) = k_2$. Consider the S-topologies $\tau = \{\tilde{\phi},\tilde{G},(S_{E1}),(S_{E2})\}$ where $S_1(e_1) = \{x_1\}$, $S_1(e_2) = \{x_1\}$, $S_2(e_1) = \{x_2\}, S_2(e_2) = \{x_2\}$ and $\sigma = \{\tilde{\phi},\widetilde{H},(T_{K1}),(T_{K2})\}$ where $T_1(k_1) = \{y_1\}$, $T_1(k_2) = \{y_2\}$,

$T_2(k_1) = \{y_2\}$, $T_2(k_2) = \{y_1\}$. Therefore the s-mapping $m:(G,\tau_E) \to (H,\sigma_K)$ is S-J^C irresolute also the s-mapping $m^{-1}:(H,\sigma_K) \to (G,\tau_E)$ is S-J^Cirresolute. Hence, m is S-strongly J^Chomeomorphism.

Theorem 4.3: If a s-map $m:(G,\tau_E) \to (H,\sigma_K)$ is S-strongly J^Chomeomorphism then m is a S-J^Chomeomorphism.

Proof: Consider $m:(G,\tau_E) \to (H,\sigma_K)$ be a S-strongly J^Chomeomorphism, then m and m^{-1} are S-J^Cirresolute. Since every S-J^Cirresolute map is S-J^Ccontinuous and m is S-J^Copen map if m^{-1} is S-J^Ccontinuous. Then m is S-J^Ccontinuous and S-J^Copen map. Hence, m is S-J^C homeomorphism.

Remark 4.4: The reverse implication of the above theorem is not true.

Example 4.5: Let $G = \{x_1, x_2\}$, $H = \{y_1, y_2\}, E = \{e_1, e_2\}, K = \{k_1, k_2\}$. Define $u : G \to H$ and $v : E \to K$ as $u(x_1) = y_1, u(x_2) = y_2$ and $v(e_1) = k_1, v(e_2) = k_2$. Consider the S-topologies $\tau = \{\tilde{\phi}, \tilde{G}, (B_E)\}$ where $B(e_1) = \phi, B(e_2) = \{x_2\}$ and $\sigma = \{\tilde{\phi}, \tilde{H}, (C_{K1}, C_{K2}, C_{K3})\}$ where $C_1(k_1) = \{y_2\}, C_1(k_2) = \{y_2\}, C_2(k_1) = \{y_2\}$, $C_2(k_2) = \{y_1, y_2\}, C_3(k_1) = \{y_1, y_2\}$, $C_3(k_2) = \{y_2\}$. Therefore the s-mapping $m:(G,\tau_E) \to (H,\sigma_K)$ is both S-J^Ccontinuous and S-J^Copen map, but m is S-J^Cirresolute and m^{-1} is not S-J^Cirresolute. Since, $(m^{-1})^{-1}(\gamma_E) = \{(e_1, y_2), (e_2, \phi)\}$ is not S-J^Cclosed set in (H,σ_K). Hence, m is not S-strongly J^C homeomorphism.

Theorem 4.6: If $m:(G,\tau_E) \to (H,\sigma_K)$ is a S-strongly J^Chomeomorphism, then $SJ^C cl(m(X_K)) = m(SJ^C cl(X_K))$ for every s-subset (X_K) of (H,σ_K).

Proof: Consider $m:(G,\tau_E) \to (H,\sigma_K)$ is a S-strongly J^Chomeomorphism, then m is S-strongly J^Ccontinuous. Since $SJ^C cl(m(X_K))$ is S-J^Cclosed set in (H,σ_K), $m^{-1}\left(SJ^C cl(m(X_K))\right)$ is S-J^Cclosed in (G,τ_E). Now, $m(X_K) \tilde{\subseteq} m(SJ^C cl(X_K))$ and so $J^C cl(m(X_K)) \tilde{\subseteq} m(SJ^C cl(X_K))$. Also, since m is a S-strongly J^Chomeomorphism, then m^{-1} is S-J^Cirresolute. Since $SJ^C cl(m(X_K))$ is S-J^Cclosed set in (G,τ_E), $(m^{-1})^{-1}\left(SJ^C cl(m(X_K))\right) = m\left(SJ^C cl(m(X_K))\right)$ is S-J^Cclosed in (H,σ_K). Now, $(X_K) \tilde{\subseteq} (m^{-1})^{-1}(m(X_K)) \tilde{\subseteq} (m^{-1})^{-1}\left(SJ^C cl(m(X_K))\right) = m\left(SJ^C cl(m(X_K))\right)$ then $J^C cl(X_K) \tilde{\subseteq} m^{-1}\left(SJ^C cl(m(X_K))\right)$.

Therefore, $(SJ^C cl(X_K)) \tilde{\subseteq} m\left(m^{-1}\left(SJ^C cl(m(X_K))\right)\right) \tilde{\subseteq} SJ^C cl(m(X_K))$.

Hence, $SJ^C cl(m(X_K)) = m(SJ^C cl(X_K))$.

Theorem 4.7: If $m:(G,\tau_E) \to (H,\sigma_K)$ is a S-strongly J^Chomeomorphism, then $SJ^C cl(m^{-1}(V_K)) = m^{-1}(SJ^C cl(V_K))$ for all $(V_K) \tilde{\subseteq} (H,\sigma_K)$.

Proof: Consider m is a S-strongly J^Chomeomorphism, then m is S-J^Cirresolute. Since $SJ^C cl(m(V_K))$ is a S-J^Cclosed set in (H,σ_K), $m^{-1}(SJ^C cl(V_K))$ is S-J^Cclosed set in (G,τ_E). Now, $m^{-1}(V_K) \tilde{\subseteq} m^{-1}(SJ^C cl(V_K))$ then $SJ^C cl(m^{-1}(V_K)) \tilde{\subseteq} m^{-1}(SJ^C cl(V_K))$. Also, since

m is a S-strongly J^Chomeomorphism, m^{-1} is S-J^Cirresolute. Since $SJ^C cl(m^{-1}(V_K))$ is S-J^C closed set in (G, τ_E), $(m^{-1})^{-1}(SJ^C cl(m^{-1}(V_K)) = m(SJ^C cl(m^{-1}(V_K))$ is S-J^Cclosed set in (H, σ_K). Now $(V_K) \widetilde{\subseteq} (m^{-1})^{-1}(m^{-1}(V_K)) \widetilde{\subseteq} (m^{-1})^{-1}\left(SJ^C cl(m^{-1}(V_K))\right)$ $= m\left(SJ^C cl(m^{-1}(V_K))\right)$, $J^C cl(V_K) \widetilde{\subseteq} m\left(SJ^C cl(m^{-1}(V_K))\right)$. Thus $m^{-1}(SJ^C cl(V_K)) \widetilde{\subseteq}$ $m^{-1}\left(m\left(SJ^C cl(m^{-1}(V_K))\right)\right) \widetilde{\subseteq} SJ^C cl\left(m^{-1}(V_K)\right)$ and hence the equality holds.

Theorem 4.8: The composition of two S-strongly J^Chomeomorphism is S-strongly J^Chomeomorphism.

Proof: Consider the s-mappings $m: (G, \tau_E) \to (H, \sigma_K)$ and $n: (H, \sigma_K) \to (W, \rho_R)$ be two S-strongly J^Chomeomorphism and (Y_R) be a S-J^Cclosed set in (W, ρ_R). Since m and n are S-J^C irresolute, $n^{-1}(Y_R) = m^{-1}(n^{-1}(Y_R))$ is S-J^Cclosed set in (G, τ_E). Thus $(n \circ m)$ is S-J^C irresolute. Now, consider (Z_E) is S-J^Cclosed set in (G, τ_E). Since m^{-1} and n^{-1} are S-J^C irresolute, $(m^{-1})^{-1}(Y_R) = (n^{-1})^{-1}[(m^{-1})^{-1}(Y_R)] = n(m(Y_R))$ is S-J^Cclosed set in (W, ρ_R). Therefore, $(n \circ m)^{-1}$ is S-J^Cirresolute. Hence, $(n \circ m)$ is S-strongly J^Chomeomorphism.

Theorem 4.9: Consider $m: (G, \tau_E) \to (H, \sigma_K)$ be a S-strongly J^Chomeomorphism and $n: (H, \sigma_K) \to (W, \rho_R)$ be a S-J^Chomeomorphism then $n\, o\, m: (G, \tau_E) \to (W, \rho_R)$ is S-J^C homeomorphism.

Proof: Consider (P_K) be a S-closed set in (W, ρ_R). Since, m is S-J^Cirresolute and n is S- J^C continuous. $m^{-1}(n^{-1}(P_K))$ is S-J^Cclosed set in (G, τ_E). Therefore, $n \circ m$ is S-J^Ccontinuous. Now, consider (Q_E) be a s-open set in (G, τ_E), $m(n(Q_E))$ is S-J^Copen set in (W, ρ_R). Since, m^{-1} is S-J^Cirresolute and n is S-J^Copen map. Thus $n \circ m$ is S-J^Copen map. Hence, $n \circ m$ is S-J^Chomeomorphism.

V. CONCLUSION

We have introduced S-J^Cclosed (open) maps with S-J^Cclosed (open) set in S-topological space. We have learned some of its properties and composition theorems. Then we have studied about S-strongly J^Cclosed maps and S-quasi J^Cclosed maps with some properties.

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