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$S_{ft}\beta^*$- Continuous Function in Soft Topological Spaces

P.Anbarasi Rodrigo[1] S.Maheswari [2,*]
[1]Assistant Professor, [2]Research Scholar (Full Time),
Department of Mathematics, St. Mary's College (Autonomous),
Thoothukudi . Affiliated by Manonmaniam Sundaranar University,
Abishekapatti, Tirunelveli, India

Abstract:- We discussed about $S_{ft}\beta^*$-continuous, $S_{ft}\beta^* -$ irresolute , Strongly $S_{ft}\beta^* -$ continuous and Perfectly $S_{ft}\beta^* -$ continuous in S_{ft} topological spaces. Additionally we relate the properties of these functions with other functions in S_{ft} topological spaces.

***Keywords**:- $S_{ft}\beta^* -$ continuous , $S_{ft}\beta^* -$ irresolute, Strongly $S_{ft}\beta^* -$ continuous, Perfectly $S_{ft}\beta^* -$ continuous .*

1. INTRODUCTION

Molodtsov[15] introduced new idea of S_{ft} set theory . It will solve the problems related to vagueness and uncertainity. Metin Akdag and Alkan Ozkan[1,3] introduced $S_{ft}\alpha -$ continuous and $S_{ft}\beta -$ continuous . From $S_{ft}\beta -$ continuous [3], we define a new definition $S_{ft}\ \beta^*$- continuous .

II. PRELIMINARIES

Definition 2.1:[15] Let Ӿ be an initial universe and $\mathbb{P}$ be a set of parameters. Let P(Ӿ) denote the power set of Ӿ and Ⱥ be a non-empty subset of $\mathbb{P}$. A pair (Ƒ, Ⱥ) denoted by $Ƒ_{Ⱥ}$ is called a soft set over Ӿ, where Ƒ is a mapping given by Ƒ : Ⱥ → P(Ӿ).

Definition 2.2:[1] Let $\tau_{S_{ft}}$ be the collection of S_{ft} sets over Ӿ , then $\tau_{S_{ft}}$ is said to be S_{ft} topology on Ӿ if it satisfies the following axioms:

(1) $\emptyset$ and $\widetilde{Ӿ}$ belong to τ,

(2) the union of any number of S_{ft} sets in $\tau_{S_{ft}}$ belongs to $\tau_{S_{ft}}$,

(3) the intersection of any two S_{ft} sets in $\tau_{S_{ft}}$ belongs to $\tau_{S_{ft}}$.

The triplet $(Ӿ, \tau_{S_{ft}}, \mathbb{P})$ is $S_{ft}TS$ over Ӿ.

Definition 2.3:[4] A S_{ft} set $(Ƒ, \mathbb{P})$ of $S_{ft}TS\left(Ӿ, \tau_{S_{ft}}, \mathbb{P}\right)$ is $S_{ft}\ \beta^* - CS$ if $S_{ft}int\left(S_{ft}cl^*\left(S_{ft}int\big((Ƒ, \mathbb{P})\big)\right)\right) \cong (Ƒ, \mathbb{P})$.

III. $S_{ft}\beta^*$ - CONTINUOUS

Definition 3.1: A S_{ft} function $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ is $S_{ft}\ \beta^*$- continuous if the inverse image of each $S_{ft} - CS$ in $(Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ is $S_{ft}\ \beta^* - CS$ in $(Ӿ, \tau_{S_{ft}}, \mathbb{P})$. (ie) ${f_{S_{ft}}}^{-1}((Ƒ, \mathbb{P}))$ is a $S_{ft}\ \beta^* - CS$ in $(Ӿ, \tau_{S_{ft}}, \mathbb{P})$, for every $S_{ft} - CS$ $(Ƒ, \mathbb{P})$ in $(Ɏ, \sigma_{S_{ft}}, \mathbb{P})$.

Theorem 3.2: Every $S_{ft} -$ continuous[8]

is $S_{ft}\ \beta^* -$ continuous , but not conversely .

Proof : Let $(Ƒ, \mathbb{P})$ be $S_{ft} - CS$ of $(Ɏ, \sigma_{S_{ft}}, \mathbb{P})$. Given $f_{S_{ft}}$ is a $S_{ft} -$ continuous , then ${f_{S_{ft}}}^{-1}((Ƒ, \mathbb{P}))$ is $S_{ft} - CS$ in $(Ӿ, \tau_{S_{ft}}, \mathbb{P})$ $\Rightarrow$ ${f_{S_{ft}}}^{-1}((Ƒ, \mathbb{P}))$ is a $S_{ft}\beta^* - CS$ in $(Ӿ, \tau_{S_{ft}}, \mathbb{P}) \Rightarrow f_{S_{ft}}$ is $S_{ft}\ \beta^* -$ continuous .

Example 3.3: Let $Ӿ = Ɏ = \{x_1 , x_2\}$, $\tau_{S_{ft}} = \{Ƒ_9, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_6, Ƒ_{13}, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_9$, $f_{S_{ft}}(Ƒ_2) = Ƒ_2$, $f_{S_{ft}}(Ƒ_3) = Ƒ_3$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_6$, $f_{S_{ft}}(Ƒ_6) = Ƒ_5$, $f_{S_{ft}}(Ƒ_7) = Ƒ_8$, $f_{S_{ft}}(Ƒ_8) = Ƒ_7$, $f_{S_{ft}}(Ƒ_9) = Ƒ_1$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_2 , Ƒ_3 , Ƒ_9 , Ƒ_{15} , Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not S_{ft} continuous.

Theorem 3.4: Every $S_{ft}\beta$ −continuous[3] is $S_{ft}\beta^*$ −continuous, but not conversely .

Example 3.5: Let $Ӿ = Ɏ = \{x_1 , x_2\}$, $\tau_{S_{ft}} = \{Ƒ_1, Ƒ_8, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_7, Ƒ_{13}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_2$, $f_{S_{ft}}(Ƒ_2) = Ƒ_1$, $f_{S_{ft}}(Ƒ_3) = Ƒ_3$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_5$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_8) = Ƒ_9$, $f_{S_{ft}}(Ƒ_9) = Ƒ_8$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_7$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_1 , Ƒ_{10} , Ƒ_{15} , Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}\beta$ −continuous.

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Theorem 3.6: Every $S_{ft}b$ −continuous[2] is $S_{ft}\beta^*$ −continuous, but not conversely .

Example 3.7: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_2, Ƒ_4, Ƒ_9, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_5, Ƒ_{10}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_6$, $f_{S_{ft}}(Ƒ_3) = Ƒ_4$, $f_{S_{ft}}(Ƒ_4) = Ƒ_3$, $f_{S_{ft}}(Ƒ_5) = Ƒ_5$, $f_{S_{ft}}(Ƒ_6) = Ƒ_2$, $f_{S_{ft}}(Ƒ_7) = Ƒ_9$, $f_{S_{ft}}(Ƒ_8) = Ƒ_8$, $f_{S_{ft}}(Ƒ_9) = Ƒ_7$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_9, Ƒ_{12}, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}b$ −continuous .

Theorem 3.8: Every $S_{ft}\alpha$ −continuous[1] is $S_{ft}\beta^*$ −continuous, but not conversely .

Example 3.9: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_1, Ƒ_2, Ƒ_3, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_3, Ƒ_{11}, Ƒ_{12}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_4$, $f_{S_{ft}}(Ƒ_2) = Ƒ_2$, $f_{S_{ft}}(Ƒ_3) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_4) = Ƒ_1$, $f_{S_{ft}}(Ƒ_5) = Ƒ_6$, $f_{S_{ft}}(Ƒ_6) = Ƒ_5$, $f_{S_{ft}}(Ƒ_7) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_8) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_9) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_7$, $f_{S_{ft}}(F_{11}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_3$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_8$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_1, Ƒ_5, Ƒ_6, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}\alpha$ −continuous.

Theorem 3.10: Every $S_{ft}S -$ continuous[11] is $S_{ft}\beta^* -$ continuous, but not conversely.

Example 3.11: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_2, Ƒ_{10}, Ƒ_{11}, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_9, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_2) = Ƒ_3$, $f_{S_{ft}}(Ƒ_3) = Ƒ_2$, $f_{S_{ft}}(Ƒ_4) = Ƒ_5$, $f_{S_{ft}}(Ƒ_5) = Ƒ_4$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_8) = Ƒ_8$, $f_{S_{ft}}(Ƒ_9) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_1$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_7$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_8, Ƒ_{10}, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}S -$ continuous .

Theorem 3.12: Every $S_{ft}P -$ continuous[1] is $S_{ft}\beta^* -$ continuous , but not conversely .

Example 3.13: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_2, Ƒ_4, Ƒ_9, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_1, Ƒ_8, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_9$, $f_{S_{ft}}(Ƒ_3) = Ƒ_3$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_5$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_8) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_9) = Ƒ_2$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_7$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_8$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_2, Ƒ_{13}, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}P -$ continuous.

Theorem 3.14: Every $S_{ft}g -$ continuous[12] is $S_{ft}\beta^* -$ continuous , but not conversely.

Example 3.15: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_3, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_5, Ƒ_{10}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_3) = Ƒ_7$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_3$, $f_{S_{ft}}(Ƒ_8) = Ƒ_8$, $f_{S_{ft}}(Ƒ_9) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_2$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_5$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_3, F_{11}, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}g -$ continuous.

Theorem 3.16: Every $S_{ft}r -$ continuous[7] is $S_{ft}\beta^* -$ continuous, but not conversely.

Example 3.17: Let $Ӿ = Ɏ = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{F_6, F_{13}, F_{14}, F_{15}, F_{16}\}$ and $\sigma_{S_{ft}} = \{F_3, F_{11}, F_{12}, F_{15}, F_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(F_1) = F_4$, $f_{S_{ft}}(F_2) = F_{10}$, $f_{S_{ft}}(F_3) = F_3$, $f_{S_{ft}}(F_4) = F_1$, $f_{S_{ft}}(F_5) = F_7$, $f_{S_{ft}}(F_6) = F_{11}$, $f_{S_{ft}}(F_7) = F_5$, $f_{S_{ft}}(F_8) = F_{14}$, $f_{S_{ft}}(F_9) = F_{13}$, $f_{S_{ft}}(F_{10}) = F_2$, $f_{S_{ft}}(F_{11}) = F_6$, $f_{S_{ft}}(F_{12}) = F_{12}$, $f_{S_{ft}}(F_{13}) = F_9$, $f_{S_{ft}}(F_{14}) = F_8$, $f_{S_{ft}}(F_{15}) = F_{15}$, $f_{S_{ft}}(F_{16}) = F_{16} \Rightarrow F_1, F_7, F_{11}, F_{15}, F_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}r -$ continuous .

Theorem 3.18: Every S_{ft} $S^*g -$ continuous[12] is $S_{ft}\beta^* -$ continuous , but not conversely .

Example 3.19: Let $X = Y = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{Ƒ_3, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_9, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_3$, $f_{S_{ft}}(Ƒ_3) = Ƒ_2$, $f_{S_{ft}}(Ƒ_4) = Ƒ_7$, $f_{S_{ft}}(Ƒ_5) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_6) = Ƒ_8$, $f_{S_{ft}}(Ƒ_7) = Ƒ_4$, $f_{S_{ft}}(Ƒ_8) = Ƒ_6$, $f_{S_{ft}}(Ƒ_9) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_5$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow Ƒ_1, Ƒ_6, Ƒ_{15}, Ƒ_{16}$ are in $S_{ft}\beta^* - C(Ӿ)$, so $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not S_{ft} $S^*g -$ continuous .

Theorem 3.20: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, \mathbb{P}) \to (Ɏ, \sigma_{S_{ft}}, \mathbb{P})$ be a S_{ft} function from $S_{ft}TS$ $(Ӿ, \tau_{S_{ft}}, \mathbb{P})$ to $S_{ft}TS$ $(Ɏ, \sigma_{S_{ft}}, \mathbb{P})$. Then the following statements are true .

(1) $f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous .

(2) Inverse image of each $S_{ft}-OS$ in $\left(Ұ,\sigma_{S_{ft}},\mathbb{P}\right)$ is $S_{ft}\beta^{*}-OS$ in $(Ӿ,\tau_{S_{ft}},\mathbb{P})$.

(3) $f_{S_{ft}}\left(S_{ft}cl\left(S_{ft}int^{*}(S_{ft}cl((Ⱥ,\mathbb{P})))\right)\right)\cong\!\!\!\!\!\supseteq S_{ft}int(f((Ⱥ,\mathbb{P})))$ for each S_{ft} set $(Ⱥ,\mathbb{P})$ in $(Ӿ,\tau_{S_{ft}},\mathbb{P})$.

(4) $S_{ft}cl\left(S_{ft}int^{*}\left(S_{ft}cl\left({f_{S_{ft}}}^{-1}((Ƀ,Ȼ))\right)\right)\right)\cong\!\!\!\!\!\supseteq {f_{S_{ft}}}^{-1}\left(S_{ft}int((Ƀ,Ȼ))\right)$ for each S_{ft} set $(Ƀ,Ȼ)$ in $\left(Ұ,\sigma_{S_{ft}},\mathbb{P}\right)$.

Corollary 3.21: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $S_{ft}\beta^{*}-$ continuous. Then

(1) $f_{S_{ft}}\left(S_{ft}cl((Ⱥ,\mathbb{P}))\right)\cong\!\!\!\!\!\supseteq S_{ft}int\left(f_{S_{ft}}((Ⱥ,\mathbb{P}))\right)$ for each $(Ⱥ,\mathbb{P})\in S_{ft}S^{*}-C(Ӿ)$;

(2) $S_{ft}cl\left({f_{S_{ft}}}^{-1}((Ƀ,Ȼ))\right)\cong\!\!\!\!\!\supseteq {f_{S_{ft}}}^{-1}\left(S_{ft}int((Ƀ,Ȼ))\right)$ for each $(Ƀ,Ȼ)\in S_{ft}S^{*}-C(Ұ)$.

Theorem 3.22: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $S_{ft}\beta^{*}-$ continuous and $g_{S_{ft}}:(Ұ,\sigma_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ be $S_{ft}-$ continuous , then $g_{S_{ft}}of_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$ continuous .

Remark 3.23: Composition of two $S_{ft}\beta^{*}-$ continuous need not be $S_{ft}\beta^{*}-$ continuous .

Example 3.24: Let $Ӿ=Ұ=Z=\{x_1,x_2\}$, $\tau_{S_{ft}}=\{Ꞙ_6,Ꞙ_{13},Ꞙ_{14},Ꞙ_{15},Ꞙ_{16}\}$, $\sigma_{S_{ft}}=\{Ꞙ_7,Ꞙ_{13},Ꞙ_{15},Ꞙ_{16}\}$ and $\eta_{S_{ft}}=\{Ꞙ_9,Ꞙ_{14},Ꞙ_{15},Ꞙ_{16}\}$. Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $f_{S_{ft}}(Ꞙ_1)=Ꞙ_8$, $f_{S_{ft}}(Ꞙ_2)=Ꞙ_9$, $f_{S_{ft}}(Ꞙ_3)=Ꞙ_4$, $f_{S_{ft}}(Ꞙ_4)=Ꞙ_3$, $f_{S_{ft}}(Ꞙ_5)=Ꞙ_{10}$, $f_{S_{ft}}(Ꞙ_6)=Ꞙ_6$, $f_{S_{ft}}(Ꞙ_7)=Ꞙ_7$, $f_{S_{ft}}(Ꞙ_8)=F_1$, $f_{S_{ft}}(F_9)=F_2$, $f_{S_{ft}}(Ꞙ_{10})=Ꞙ_5$, $f_{S_{ft}}(Ꞙ_{11})=Ꞙ_{11}$, $f_{S_{ft}}(Ꞙ_{12})=Ꞙ_{12}$, $f_{S_{ft}}(Ꞙ_{13})=Ꞙ_{14}$, $f_{S_{ft}}(Ꞙ_{14})=Ꞙ_{13}$, $f_{S_{ft}}(Ꞙ_{15})=Ꞙ_{15}$, $f_{S_{ft}}(Ꞙ_{16})=Ꞙ_{16}$ $\Rightarrow$ ${f_{S_{ft}}}^{-1}(Ꞙ_2)=Ꞙ_9$, ${f_{S_{ft}}}^{-1}(Ꞙ_{10})=Ꞙ_5$, ${f_{S_{ft}}}^{-1}(Ꞙ_{15})=Ꞙ_{15}$, ${f_{S_{ft}}}^{-1}(Ꞙ_{16})=Ꞙ_{16}$ $\Rightarrow Ꞙ_5,Ꞙ_9,Ꞙ_{15},Ꞙ_{16}$ are in $S_{ft}\beta^{*}-C(Ӿ)$, so $f_{S_{ft}}$ is $S\beta^{*}-$ continuous . Let $g_{S_{ft}}:(Ұ,\sigma_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ be $g_{S_{ft}}(Ꞙ_1)=Ꞙ_9$, $g_{S_{ft}}(Ꞙ_2)=Ꞙ_2$, $g_{S_{ft}}(Ꞙ_3)=Ꞙ_{12}$, $g_{S_{ft}}(Ꞙ_4)=Ꞙ_8$, $g_{S_{ft}}(Ꞙ_5)=Ꞙ_{11}$, $g_{S_{ft}}(Ꞙ_6)=Ꞙ_6$, $g_{S_{ft}}(Ꞙ_7)=Ꞙ_{10}$, $g_{S_{ft}}(Ꞙ_8)=Ꞙ_4$, $g_{S_{ft}}(Ꞙ_9)=Ꞙ_1$, $g_{S_{ft}}(Ꞙ_{10})=Ꞙ_7$, $g_{S_{ft}}(Ꞙ_{11})=Ꞙ_5$, $g_{S_{ft}}(Ꞙ_{12})=Ꞙ_3$, $g_{S_{ft}}(Ꞙ_{13})=Ꞙ_{13}$, $g_{S_{ft}}(Ꞙ_{14})=Ꞙ_{14}$, $g_{S_{ft}}(Ꞙ_{15})=Ꞙ_{15}$, $g_{S_{ft}}(Ꞙ_{16})=Ꞙ_{16}$ $\Rightarrow$ ${g_{S_{ft}}}^{-1}(Ꞙ_1)=Ꞙ_9$, ${g_{S_{ft}}}^{-1}(Ꞙ_8)=Ꞙ_4$, ${g_{S_{ft}}}^{-1}(Ꞙ_{15})=Ꞙ_{15}$, ${g_{S_{ft}}}^{-1}(Ꞙ_{16})=Ꞙ_{16}$ $\Rightarrow$ $Ꞙ_4,Ꞙ_9,Ꞙ_{15},Ꞙ_{16}$ are in $S_{ft}\beta^{*}-C(Ұ)$, so $g_{S_{ft}}$ is $S_{ft}\beta^{*}-$ continuous $\Rightarrow g_{S_{ft}}of_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ is not $S_{ft}\beta^{*}-$ continuous .

IV. $S_{ft}\beta^{*}$ - IRRESOLUTE

Definition 4.1: A S_{ft} function $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$ irresolute if the inverse image of every $S_{ft}\beta^{*}-CS$ in $(Ұ,\sigma_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-CS$ in $(Ӿ,\tau_{S_{ft}},\mathbb{P})$.

Theorem 4.2: A S_{ft} function $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$ irresolute iff the inverse image of every $S_{ft}\beta^{*}-OS$ in $(Ұ,\sigma_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-OS$ in $(Ӿ,\tau_{S_{ft}},\mathbb{P})$.

Theorem 4.3: Every $S_{ft}\beta^{*}-$irresolute is $S_{ft}\beta^{*}-$continuous , but not conversely .

Example 4.4: Let $Ӿ=Ұ=\{x_1,x_2\}$, $\tau_{S_{ft}}=\{Ꞙ_6,Ꞙ_{13},Ꞙ_{14},Ꞙ_{15},Ꞙ_{16}\}$ and $\sigma_{S_{ft}}=\{Ꞙ_3,Ꞙ_{15},Ꞙ_{16}\}$. Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $f_{S_{ft}}(Ꞙ_1)=Ꞙ_{10}$, $f_{S_{ft}}(Ꞙ_2)=Ꞙ_4$, $f_{S_{ft}}(Ꞙ_3)=Ꞙ_3$, $f_{S_{ft}}(Ꞙ_4)=Ꞙ_2$, $f_{S_{ft}}(Ꞙ_5)=Ꞙ_8$, $f_{S_{ft}}(Ꞙ_6)=Ꞙ_{13}$, $f_{S_{ft}}(Ꞙ_7)=Ꞙ_{14}$, $f_{S_{ft}}(Ꞙ_8)=Ꞙ_5$, $f_{S_{ft}}(Ꞙ_9)=Ꞙ_{12}$, $f_{S_{ft}}(Ꞙ_{10})=Ꞙ_1$, $f_{S_{ft}}(Ꞙ_{11})=Ꞙ_{11}$, $f_{S_{ft}}(Ꞙ_{12})=Ꞙ_9$, $f_{S_{ft}}(Ꞙ_{13})=Ꞙ_6$, $f_{S_{ft}}(Ꞙ_{14})=Ꞙ_7$, $f_{S_{ft}}(Ꞙ_{15})=Ꞙ_{15}$, $f_{S_{ft}}(Ꞙ_{16})=Ꞙ_{16}$ $\Rightarrow$ $f_{S_{ft}}$ is $S_{ft}\beta^{*}-$continuous $\Rightarrow f_{S_{ft}}$ is not $S_{ft}\beta^{*}-$irresolute.

Theorem 4.5: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $S_{ft}-$ continuous and $S_{ft}-CS$. Then $f_{S_{ft}}$ is $S_{ft}\beta^{*}-$irresolute .

Theorem 4.6: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be an $S_{ft}\beta^{*}-$irresolute map and $g:(Ұ,\sigma_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ be an $S_{ft}\beta^{*}-$continuous , then the composition $gof_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$continuous .

Theorem 4.7: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be any two S_{ft} functions , then

(1) $g_{S_{ft}}of_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$continuous , if $g_{S_{ft}}$ is soft continuous and $f_{S_{ft}}$ is $S_{ft}\beta^{*}-$continuous .

(2) $g_{S_{ft}}of_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Z,\eta_{S_{ft}},\mathbb{P})$ is $S_{ft}\beta^{*}-$irresolute , if both $f_{S_{ft}}$ and $g_{S_{ft}}$ is $S_{ft}\beta^{*}-$irresolute .

Theorem 4.8: Let $f_{S_{ft}}:(Ӿ,\tau_{S_{ft}},\mathbb{P})\rightarrow(Ұ,\sigma_{S_{ft}},\mathbb{P})$ be $S_{ft}\beta^{*}-$irresolute iff for every soft set $(Ꞙ,\mathbb{P})$ of $Ӿ$, $f_{S_{ft}}\left(S_{ft}\beta^{*}-cl((Ꞙ,\mathbb{P}))\right)\cong\!\!\!\!\!\subseteq S_{ft}\beta^{*}-cl\left(f_{S_{ft}}(Ꞙ,\mathbb{P})\right)$.

Theorem 4.9: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $S_{ft}\beta^*$ −irresolute iff for all S_{ft} sets $(Ƒ.ℙ)$ of Ɏ , then $S_{ft}\beta^* - cl\left(f_{S_{ft}}{}^{-1}((Ƒ, ℙ))\right) \widetilde{\subseteq} f_{S_{ft}}{}^{-1}\left(S_{ft}\beta^* - cl((Ƒ, ℙ))\right)$.

V. STRONGLY $S_{ft}\beta^*$ - CONTINUOUS

Definition 5.1: A S_{ft} function $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ is strongly $S_{ft}\beta^* -$ continuous if the inverse image of every $S_{ft}\beta^* - CS$ in $(Ɏ, \sigma_{S_{ft}}, ℙ)$ is $S_{ft} - CS$ in $(Ӿ, \tau_{S_{ft}}, ℙ)$.

Theorem 5.2: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^* -$ continuous , then it is $S_{ft} -$ continuous , but not conversely .

Proof: Let $(Ƒ, ℙ)$ be a $S_{ft} - CS$ in $(Ɏ, \sigma_{S_{ft}}, ℙ) \Rightarrow (Ƒ, ℙ)$ is $S_{ft}\beta^* - CS$ in $(Ɏ, \sigma_{S_{ft}}, ℙ)$. Given $f_{S_{ft}}$ is strongly $S_{ft}\beta^*$ −continuous , $f_{S_{ft}}{}^{-1}((Ƒ, ℙ))$ is $S_{ft} - CS$ in $(Ӿ, \tau_{S_{ft}}, ℙ) \Rightarrow f_{S_{ft}}$ is $S_{ft} -$ continuous .

Example 5.3: Let $X = Y = \{x_1 , x_2\}$, $\tau = \{Ƒ_5 , Ƒ_{10} , Ƒ_{15} , Ƒ_{16}\}$ and $\sigma = \{Ƒ_9 , Ƒ_{14} , Ƒ_{15} , Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_2) = Ƒ_2$, $f_{S_{ft}}(Ƒ_3) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_6$, $f_{S_{ft}}(Ƒ_6) = Ƒ_5$, $f_{S_{ft}}(Ƒ_7) = Ƒ_8$, $f_{S_{ft}}(Ƒ_8) = Ƒ_7$, $f_{S_{ft}}(Ƒ_9) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_3$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_1$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow f_{S_{ft}}$ is $S_{ft} -$ continuous $\Rightarrow f_{S_{ft}}$ is not strongly $S_{ft}\beta^*$ −continuous .

Theorem 5.4: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^*$ −continuous iff the inverse image of every $S_{ft}\beta^* - OS$ in $(Ɏ, \sigma_{S_{ft}}, ℙ)$ is $S_{ft} - OS$ in $(Ӿ, \tau_{S_{ft}}, ℙ)$.

Theorem 5.5: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft} -$ continuous[10] , then it is strongly $S_{ft}\beta^*$ −continuous , but not conversely .

Example 5.6: Let $Ӿ = Ɏ = \{x_1 , x_2\}$, $\tau_{S_{ft}} = \{Ƒ_1, Ƒ_2, Ƒ_3, Ƒ_4, Ƒ_5, Ƒ_6, Ƒ_7, Ƒ_8, Ƒ_{10}, Ƒ_{12}, Ƒ_{13}, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_3 , Ƒ_{11}, Ƒ_{12}, Ƒ_{15} , Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_2$, $f_{S_{ft}}(Ƒ_3) = Ƒ_5$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_3$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_7$, $f_{S_{ft}}(Ƒ_8) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_9) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_9$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_8$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow f_{S_{ft}}$ is strongly $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not strongly S_{ft} −continuous.

Theorem 5.7: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^* -$ continuous, then it is $S_{ft}\beta^* -$ continuous , but not conversely .

Example 5.8: Let $Ӿ = Y = \{x_1 , x_2\}$, $\tau_{S_{ft}} = \{Ƒ_2 , Ƒ_4 , Ƒ_9 , Ƒ_{15} , Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_2 , Ƒ_{10} , Ƒ_{11} , Ƒ_{15} , Ƒ_{16}\}$. Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_2$, $f_{S_{ft}}(Ƒ_2) = Ƒ_1$, $f_{S_{ft}}(Ƒ_3) = Ƒ_3$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_5$, $f_{S_{ft}}(Ƒ_6) = Ƒ_6$, $f_{S_{ft}}(Ƒ_7) = Ƒ_7$, $f_{S_{ft}}(Ƒ_8) = Ƒ_9$, $f_{S_{ft}}(Ƒ_9) = Ƒ_8$, $f_{S_{ft}}(Ƒ_{10}) = Ƒ_{14}$, $f_{S_{ft}}(Ƒ_{11}) = Ƒ_{11}$, $f_{S_{ft}}(Ƒ_{12}) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_{13}) = Ƒ_{13}$, $f_{S_{ft}}(Ƒ_{14}) = Ƒ_{10}$, $f_{S_{ft}}(Ƒ_{15}) = Ƒ_{15}$, $f_{S_{ft}}(Ƒ_{16}) = Ƒ_{16} \Rightarrow f_{S_{ft}}$ is $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not strongly $S_{ft}\beta^*$ −continuous .

Theorem 5.9: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^*$ −continuous and $g_{S_{ft}} : (Ɏ, \sigma_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ be $S\beta^*$ −continuous , then $g_{S_{ft}} o f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ is $S_{ft} -$ continuous .

Theorem 5.10: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^*$ −continuous and $g_{S_{ft}} : (Ɏ, \sigma_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ be $S_{ft}\beta^*$ −irresolute , then $g_{S_{ft}} o f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ is strongly $S_{ft}\beta^*$ −continuous .

Theorem 5.11: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $S_{ft}\beta^*$ −continuous and $g_{S_{ft}} : (Ɏ, \sigma_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ be strongly $S_{ft}\beta^*$ −continuous , then $g_{S_{ft}} o f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ is $S_{ft}\beta^* -$ irresolute .

Theorem 5.12: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be strongly $S_{ft}\beta^*$ −continuous and $g_{S_{ft}} : (Ɏ, \sigma_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ be strongly $S_{ft}\beta^*$ −continuous , then $g_{S_{ft}} o f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ is strongly $S_{ft}\beta^*$ −continuous.

Theorem 5.13: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $S_{ft} -$ continuous and $g_{S_{ft}} : (Ɏ, \sigma_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ be strongly $S_{ft}\beta^*$ −continuous , then $g_{S_{ft}} o f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Z, \eta_{S_{ft}} , ℙ)$ is strongly $S_{ft}\beta^*$ −continuous.

VI. PERFECTLY $S_{ft}\beta^*$ - CONTINUOUS

Definition 6.1: A $S_{ft} -$ function $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ is perfectly $S_{ft}\beta^*$ −continuous if the inverse image of every $S_{ft}\beta^* - CS$ in $(Ɏ, \sigma_{S_{ft}}, ℙ)$ is both $S_{ft} - OS$ and $S_{ft} - CS$ in $(Ӿ, \tau_{S_{ft}}, ℙ)$.

Theorem 6.2: Let $f_{S_{ft}} : (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be perfectly $S_{ft}\beta^* -$ continuous , then it is strongly $S_{ft}\beta^* -$ continuous , but not conversely .

Example 6.3: Let $Ӿ = Ɏ = \{x_1 , x_2\}$, $\tau_{S_{ft}} = \{Ƒ_1, Ƒ_2, Ƒ_3, Ƒ_4, Ƒ_5, Ƒ_6, Ƒ_7, Ƒ_8, Ƒ_{10}, Ƒ_{12}, Ƒ_{13}, Ƒ_{14}, Ƒ_{15}, Ƒ_{16}\}$ and $\sigma_{S_{ft}} = \{Ƒ_2 , Ƒ_{10}, Ƒ_{11} , Ƒ_{15} , Ƒ_{16}\}$. Let $f_{S_{ft}}: (Ӿ, \tau_{S_{ft}}, ℙ) \to (Ɏ, \sigma_{S_{ft}}, ℙ)$ be $f_{S_{ft}}(Ƒ_1) = Ƒ_1$, $f_{S_{ft}}(Ƒ_2) = Ƒ_{12}$, $f_{S_{ft}}(Ƒ_3) = Ƒ_5$, $f_{S_{ft}}(Ƒ_4) = Ƒ_4$, $f_{S_{ft}}(Ƒ_5) = Ƒ_3$,

$f_{S_{ft}}(F_6) = F_6$, $f_{S_{ft}}(F_7) = F_7$, $f_{S_{ft}}(F_8) = F_{11}$, $f_{S_{ft}}(F_9) = F_9$, $f_{S_{ft}}(F_{10}) = F_{13}$, $f_{S_{ft}}(F_{11}) = F_8$, $f_{S_{ft}}(F_{12}) = F_2$, $f_{S_{ft}}(F_{13}) = F_{10}$, $f_{S_{ft}}(F_{14}) = F_{14}$, $f_{S_{ft}}(F_{15}) = F_{15}$, $f_{S_{ft}}(F_{16}) = F_{16} \Rightarrow f_{S_{ft}}$ is strongly $S_{ft}\beta^* -$ continuous $\Rightarrow f_{S_{ft}}$ is not perfectly $S_{ft}\beta^* -$continuous .

Theorem 6.4: Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be perfectly $S_{ft}\beta^* -$ continuous , then it is perfectly $S_{ft} -$ continuous[10] , but not conversely .

Example 6.5: Let $X = Y = \{x_1, x_2\}$, $\tau_{S_{ft}} = \{F_1, F_2, F_3, F_4, F_5, F_6, F_7, F_8, F_{10}, F_{12}, F_{13}, F_{14}, F_{15}, F_{16}\}$ and $\sigma_{S_{ft}} = \{F_6, F_{13}, F_{14}, F_{15}, F_{16}\}$. Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be defined by $f_{S_{ft}}(F_1) = F_1$, $f_{S_{ft}}(F_2) = F_{12}$, $f_{S_{ft}}(F_3) = F_6$, $f_{S_{ft}}(F_4) = F_4$, $f_{S_{ft}}(F_5) = F_7$, $f_{S_{ft}}(F_6) = F_3$, $f_{S_{ft}}(F_7) = F_5$, $f_{S_{ft}}(F_8) = F_{11}$, $f_{S_{ft}}(F_9) = F_9$, $f_{S_{ft}}(F_{10}) = F_{13}$, $f_{S_{ft}}(F_{11}) = F_8$, $f_{S_{ft}}(F_{12}) = F_2$, $f_{S_{ft}}(F_{13}) = F_{10}$, $f_{S_{ft}}(F_{14}) = F_{14}$, $f_{S_{ft}}(F_{15}) = F_{15}$, $f_{S_{ft}}(F_{16}) = F_{16} \Rightarrow f_{S_{ft}}$ is perfectly $S_{ft} -$ continuous $\Rightarrow f_{S_{ft}}$ is not perfectly $S_{ft}\beta^* -$continuous .

Theorem 6.6: Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be perfectly $S_{ft}\beta^* -$ continuous iff ${f_{S_{ft}}}^{-1}((F, \mathbb{P}))$ is both $S_{ft} - OS$ and $S_{ft} - CS$ in $(X, \tau_{S_{ft}}, \mathbb{P})$ for every $S_{ft}\beta^* - OS$ in $(Y, \sigma_{S_{ft}}, \mathbb{P})$.

Theorem 6.7: Let $(X, \tau_{S_{ft}}, \mathbb{P})$ be a $S_{ft} -$ discrete topological space and $(Y, \sigma_{S_{ft}}, \mathbb{P})$ be any $S_{ft}TS$. Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be $S_{ft} -$ function , then the following statements are true .

(1) $f_{S_{ft}}$ is strongly $S_{ft}\beta^* -$continuous .

(2) $f_{S_{ft}}$ is perfectly $S_{ft}\beta^* -$continuous .

Theorem 6.8: Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ and $g_{S_{ft}} : (Y, \sigma_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ are perfectly $S_{ft}\beta^* -$ continuous , then $g_{S_{ft}} o f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ is perfectly $S_{ft}\beta^* -$ continuous.

Theorem 6.9: Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be $S_{ft} -$ continuous and $g_{S_{ft}} : (Y, \sigma_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ is perfectly $S_{ft}\beta^* -$continuous , then $g_{S_{ft}} o f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ is strongly $S_{ft}\beta^* -$ continuous .

Theorem 6.10: Let $f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Y, \sigma_{S_{ft}}, \mathbb{P})$ be perfectly $S_{ft}\beta^* -$ continuous and $g_{S_{ft}} : (Y, \sigma_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ is strongly $S_{ft}\beta^* -$ continuous , then $g_{S_{ft}} o f_{S_{ft}} : (X, \tau_{S_{ft}}, \mathbb{P}) \to (Z, \eta_{S_{ft}}, \mathbb{P})$ is perfectly $S_{ft}\beta^* -$ continuous .

VII.CONCLUSION

We are discussed in this paper $S_{ft}\beta^* -$ continuous , $S_{ft}\beta^* -$ irresolute , Strongly $S_{ft}\beta^* -$ continuous, perfectly $S_{ft}\beta^* -$continuous . The further definitions related to $S_{ft}\beta^* -$ continuous will be discussed in my future paper.

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