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Characteristics of Soft α-Compact Maps

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Abstract— *The aim of this study is to initiate a new map known soft α-compact map and to discuss its relationships with certain types of soft α-compact map. Moreover, we composite this map with these maps under various conditions. Numerous examples are given to explain the different results.*

Keywords— soft α-compact map; almost soft α-compact map; mildly soft α-compact map.

1. INTRODUCTION

Molodtsov proposed uncertain information soft sets at the end of the 20th century [1]. Subsequently, Magee et al. [2] demonstrated many new generalities for case equivalence, subsets and complements of soft sets. In 2010, Babitha and Sunil proposed the concepts of soft set relations and functions, and explained the composition of functions [4]. Shabir and Naz [5] started studying soft topology in 2011 and demonstrated some characteristics of soft separation axioms. Aygünoğlu and Aygün [8] established the generality of soft compact spaces. Hida [9] provides an explanation of soft compact spaces that is as long as space than in [8]. Al-Khafaj and Mahmood [11] introduced soft connected spaces and soft disconnected spaces. Al-Khafaj and Mahmood [12] defined and studied some properties of soft connected spaces and soft compact spaces. Alshami et al. et al. [13] studied an unprecedented form of feature coverage called near-soft α-compact. Kharal and Ahmad [6] characterized soft maps and introduced key features. Then, Zorlutuna and Çakir [7] studied the concept of soft continuous mapping. Noori and Yousif [16] defined new separation axioms in soft topological spaces and studied the concept of soft simple compactness. Mahmood [15] defined soft set constraints and studied soft mapping constraints. Addis et al continued their work. et al. In 2022, a new definition of soft map was proposed and its characteristics were studied [14]. Shamkhi and Hassan [18] initiated some types of soft compact cards. Shamkhi and Hassan [19] created soft semi-compact maps. Shamkhi and Hassan [20] studied soft preload cards. The main goal of this work is to construct a the correlation between the $\mathbb{S}\,\alpha-\mathbb{C}$ map and to investigate its $\mathbb{S}\,\alpha-\mathbb{C}$ maps, almost $\mathbb{S}\,\alpha-\mathbb{C}$ maps, $\not{f}-$ almost $\mathbb{S}\,\alpha-\mathbb{C}$ maps, $\not{f}^*$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ maps, mildly $\mathbb{S}\,\alpha-\mathbb{C}$ maps, $\not{f}$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ maps besides $\not{f}^*-$ mildly $\mathbb{S}\,\alpha-\mathbb{C}$ maps which are utilized from the relationship between their spaces under conditions or unconditionally. Therefor, the composition factors of $\mathbb{S}\,\alpha-\mathbb{C}$ maps with $\mathbb{S}\,\alpha-\mathbb{C}$ maps, almost $\mathbb{S}\,\alpha-\mathbb{C}$ maps, and mildly $\mathbb{S}\,\alpha-\mathbb{C}$maps, $\not{f}$-almost $\mathbb{S}\,\alpha-\mathbb{C}$maps, $\not{f}$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ maps are studied basisd on the virus association between them. Many examples are given to explain the relationship between the topologies and relations of the soft sets.

2. PRELIMINARIES

In this section, we present the prefaces for soft sets.

2.1 Definition [1]: Let $\mathfrak{B}$ be an initial universal set, $\mathfrak{E}$ be a set of parameters, and let $\mathcal{P}(\mathfrak{B})$ denote the power set. A pair $(\mathfrak{S},\mathfrak{E})$ is called a soft set over $\mathfrak{B}$ concerning $\mathfrak{E}$ which is denoted $\mathfrak{S}_{\mathfrak{E}}$ for short, where $\mathfrak{S}$ is a map $\mathfrak{S}:\mathfrak{E}\longrightarrow\mathcal{P}(\mathfrak{B})$ that is given by $\mathfrak{S}_{\mathfrak{E}}=\{\mathfrak{S}(\mathbb{e})\in\mathcal{P}(\mathfrak{B}),\ \forall\ \mathbb{e}\in\mathfrak{E}\}$.

2.2 Definition [3]:

1)If $\mathfrak{S}_{\mathfrak{E}}$, $\mathfrak{D}_{\mathfrak{E}}$ be a soft set then, $\mathfrak{S}_{\mathfrak{E}}\cup\mathfrak{D}_{\mathfrak{E}}=\{(\mathbb{e},\mathfrak{S}(\mathbb{e})\cup\mathfrak{D}(\mathbb{e}))\}$ for each $\mathbb{e}\in\mathfrak{E}$.

2)If $\mathfrak{S}_{\mathfrak{E}}$, $\mathfrak{D}_{\mathfrak{E}}$ be a soft set then, $\mathfrak{S}_{\mathfrak{E}}\cap\mathfrak{D}_{\mathfrak{E}}=\{(\mathbb{e},\mathfrak{S}(\mathbb{e})\cap\mathfrak{D}(\mathbb{e}))\}$ for each $\mathbb{e}\in\mathfrak{E}$.

2.3 Definition [5]: Let $\mathbb{T}$ be a family of soft sets over $\mathfrak{B}$, and $\mathbb{E}$ be a set of parameters. So $\mathbb{T}$ is known as a soft topology on $\mathfrak{B}$ as long as the subsequent is satisfied:

1) $\tilde{\phi}$, $\widetilde{\mathfrak{B}}$ ∈ $\mathbb{T}$.

2) If $\mathfrak{S}_{\mathfrak{E}}$, $\mathfrak{D}_{\mathfrak{E}} \in \mathbb{T}$,then $\mathfrak{S}_{\mathfrak{E}} \cap \mathfrak{D}_{\mathfrak{E}} \in \mathbb{T}$.

3)If $\mathfrak{S}_{\mathfrak{E}}^{i} \in \mathbb{T}, i \in l$, the, $\cup_{i \in l} \mathfrak{S}_{\mathfrak{E}}^{i} \in \mathbb{T}, \forall i \in l$.

The triple $(\mathfrak{B}, \mathbb{T}, \mathfrak{E})$ is known as a soft topological space ($\mathbb{STS}$ for short) over $\mathfrak{B}$. The members of $\mathbb{T}$ are known as the soft open sets in $\mathfrak{B}$.

2.4 Definition [5]: Let $\mathfrak{D}_{\mathfrak{E}}$ be a non-null soft subset of $\mathfrak{B}$ subsequently $\mathbb{T}_{\mathbb{F}}$={$\mathfrak{D}_{\mathfrak{E}} \cap \mathfrak{S}_{\mathfrak{E}}$, $\forall \mathfrak{S}_{\mathfrak{E}} \in \mathbb{T}$} is known as relative $\mathbb{STS}$ on $\mathfrak{D}_{\mathfrak{E}}$ and $(\mathfrak{D}_{\mathfrak{E}}, \mathbb{T}_{\mathfrak{D}}, \mathfrak{E})$ is known as a soft subspace of $(\mathfrak{B}, \mathbb{T}, \mathfrak{E})$.

2.5Theorem [7]: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be soft continues map then for each soft open(closed) $\mathfrak{S}_{\mathfrak{E}}$ in $\mathfrak{A}$, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is soft (closd) open in $\mathfrak{B}$.

2.6 Definition [7]: Let $\mathfrak{B}$ be a $\mathbb{STS}$ over $\widetilde{\mathfrak{B}}$ and let $\mathfrak{D}_{\mathfrak{E}}$ be a soft set, then int $\mathfrak{D}_{\mathfrak{E}}$= $\mathfrak{D}_{\mathfrak{E}}{}^{\circ}$= ∪{$\mathfrak{S}_{\mathfrak{E}}$:$\mathfrak{S}_{\mathfrak{E}}$ is a soft open set and $\mathfrak{S}_{\mathfrak{E}} \subseteq \mathfrak{D}_{\mathfrak{E}}$}. So, int$\mathfrak{S}_{\mathfrak{E}}$ is the largest soft open set contained in $\mathfrak{D}_{\mathfrak{E}}$.

2.7 Definition [5]: Let $\mathfrak{B}$ be a $\mathcal{STS}$ over $\widetilde{\mathfrak{B}}$, and let $\mathfrak{D}_{\mathfrak{E}}$ be a soft set. The soft closure of $\mathfrak{D}_{\mathfrak{E}}$is the soft set cl($\mathfrak{D}_{\mathfrak{E}}$)= $\overline{\mathfrak{D}_{\mathfrak{E}}}$={∩ $\mathfrak{S}_{\mathfrak{E}}$: $\mathfrak{S}_{\mathfrak{E}}$ be soft closed set such that $\mathfrak{D}_{\mathfrak{E}} \subseteq \mathfrak{S}_{\mathfrak{E}}$)}. So, cl($\mathfrak{D}_{\mathfrak{E}}$) is the smallest soft closed set containing $\mathfrak{D}_{\mathfrak{E}}$.

2.8 Definition [10]: A soft subset $\mathfrak{D}_{\mathfrak{E}}$of $\mathfrak{B}$ is known as soft α-open as long as $\mathfrak{D}_{\mathfrak{E}} \cong int(cl(int(\mathfrak{D}_{\mathfrak{E}})))$ with its relative complement known as soft α-closed.

2.9Definition [10]: The soft subset $\mathfrak{D}_{\mathfrak{E}}$ of $\mathbb{STS}$ $\mathfrak{B}$ is said to be a soft α-clopen, provided that it is soft α-open and soft α-closed.

2.10 Definition [13]:

1) The set of soft α-open set $\{(\mathfrak{D}_{\mathfrak{E}}{}^{i}: i \in I\}$ is known the soft α-open cover of $\mathbb{STS}$ $\mathfrak{B}$ as long as $\widetilde{\mathfrak{B}} = \cup_{i \in I} \mathfrak{D}_{\mathfrak{E}}{}^{i}$.

2)As $\mathbb{STS}$ $\mathfrak{B}$ is known as a soft α-compact ($\mathbb{S}\ \alpha - \mathbb{C}$ .for short) space as long as each soft α-open cover of $\widetilde{\mathfrak{B}}$ has a finite subcover of $\mathfrak{B}$.

2.11 Definition [13]: An $\mathbb{STS}$ $\mathfrak{B}$is known as an almost $\mathcal{S}\alpha\mathcal{C}$ space as whenever every soft α-open cover of $\widetilde{\mathfrak{B}}$ has a finite subcover such that its members cover the soft α-closuor of $\mathfrak{B}$.

2.12 Definition [13]: An $\mathbb{STS}$ $\mathfrak{B}$ is known as a mildly $\mathbb{S}\ \alpha - \mathbb{C}$ space as long as each soft α-clopen coverig of $\widetilde{\mathfrak{B}}$ has a finite soft subcovering $\mathbb{W}$.

2.13Theorem [13]: Each $\mathbb{S}\ \alpha - \mathbb{C}$ space is almost an $\mathbb{S}\ \alpha - \mathbb{C}$ space.

2.14 Theorem [13]: Each almost $\mathbb{S}\ \alpha - \mathbb{C}$ space is a mildly $\mathbb{S}\ \alpha - \mathbb{C}$ space.

2.15 Theorem [13]: Assume $\mathfrak{B}$ with soft α-basis consisting of soft α-clopen sets. then, $\mathfrak{B}$is $\mathbb{S}\ \alpha - \mathbb{C}$ as long as and only as long as it is mildly $\alpha - \mathbb{C}$.

2.16 Theorem [13]: As long as $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\ \alpha - \mathbb{C}$ subset of $\widetilde{\mathfrak{B}}$and $\mathfrak{S}_{\mathfrak{E}}$is a soft α-closed subset of $\mathfrak{B}$then $\mathfrak{S}_{\mathfrak{E}} \cap \mathfrak{D}_{\mathfrak{E}}$ is $\alpha - \mathbb{C}$.

2.17 Theorem [13]: As long as $\mathfrak{S}_{\mathfrak{E}}$ is an almost (or. a mildly) $\mathbb{S}\ \alpha - \mathbb{C}$ subset of $\widetilde{\mathfrak{B}}$,and $\mathfrak{D}_{\mathfrak{E}}$ is a soft α-clopen subset of $\mathfrak{B}$, then $\mathfrak{S}_{\mathfrak{E}} \cap \mathfrak{D}_{\mathfrak{E}}$is an almost (or. a mildly) $\mathbb{S}\ \alpha - \mathbb{C}$.

2.18 Proposition [8]: Assume $\mathfrak{B}$ be an $\mathbb{STS}$ and $\mathfrak{D}_{\mathfrak{E}}$ be any soft set on $\widetilde{\mathfrak{B}}$. Let β is the open basis of $\mathbb{T}$ then $\beta_{\mathfrak{D}_{\mathfrak{E}}}$ = {$\mathfrak{D}_{\mathfrak{E}}$ $\tilde{\cap}$:$\mathfrak{S}_{\mathfrak{E}}$∈ β} the open basis of $\mathbb{T}_{\mathfrak{D}_{\mathfrak{E}}}$.

2.19 Definition [13]: The set β of soft α-open sets is called a soft basis of $\mathfrak{B}$ as long as every soft α-open subset of $\mathfrak{B}$ can be written as a soft union its members.

2. 20 Theorem [9]: Assume $\mathfrak{B}$ is a $\mathbb{STS}$ every soft open set is a soft α-open set.

3. $\mathcal{S}\alpha\mathcal{C}$ map

This section aimed to introduce new types $\mathbb{S}\ \alpha - \mathbb{C}$ map under certain conditions.

3.1Definition: A map $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ is known as:

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(1) a $\mathbb{S}\,\alpha-\mathbb{C}$ if every $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is an $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(2) a almost $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any almost $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is an almost $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(3) a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any mildly $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(4) $\not{f}$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any almost $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(5) $\not{f}^*$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is an almost $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(6) $\not{f}$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any mildly $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

(7) $\not{f}^*$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ if pre-image of any $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{A}$ is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ subset of $\mathfrak{B}$.

3.2Example: Let $\mathfrak{B}=\mathbb{Z}$, $\mathfrak{E}=\{\mathbb{e}_1,\mathbb{e}_2\}$ is a set of parameters and supposing that $\mathbb{T}=\{\tilde{\Phi},\tilde{\mathfrak{B}},\ \mathfrak{D}_{\mathfrak{E}},\mathfrak{S}_{\mathfrak{E}}\}$ such that $\mathfrak{D}_{\mathfrak{E}}$={($\mathbb{e}_1$, $\mathbb{Z}^+$), ($\mathbb{e}_2$, $\mathbb{Z}^+$)}, $\mathfrak{S}_{\mathfrak{E}}$={($\mathbb{e}_1$, $\mathbb{Z}^-$), ($\mathbb{e}_2$, $\mathbb{Z}^-$)}. A map $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{B}$ which is defined by $\mathfrak{F}(x)=x+2$, for all $x\in\mathbb{Z}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map.

3.3Example: Let $\mathfrak{B}=\mathbb{N}^+$, and $\mathfrak{E}=\{\mathbb{e}_1,\mathbb{e}_2\}$ a set of parameters. Supposing that $\mathbb{T}=\{\tilde{\Phi}\ ,\tilde{\mathfrak{B}},\mathfrak{D}_{\mathfrak{E}},\mathfrak{S}_{\mathfrak{E}}\}$ such that $\mathfrak{D}_{\mathfrak{E}}$={($\mathbb{e}_1$, $\mathbb{N}_O^+$), ($\mathbb{e}_2$, $\mathbb{N}_O^+$)}, $\mathfrak{S}_{\mathfrak{E}}$={($\mathbb{e}_1$, $\mathbb{N}_e^+$), ($\mathbb{e}_2$, $\mathbb{N}_e^+$)}. A map $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{B}$ which is defined by $\mathfrak{F}(1_{\mathbb{e}1})=2_{\mathbb{e}1}$, and $\mathfrak{F}(x_{\mathbb{e}_1})=x_{\mathbb{e}_1}$, for all $x\in\mathbb{N}$ such that $x>1$ and $\mathfrak{F}(x_{\mathbb{e}_2})=x_{\mathbb{e}_2}$, for all $x\in\mathbb{N}^+$ is a $\not{f}$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map.

3.4Example: Let $\mathfrak{B}=\mathbb{Z}$ and $\mathfrak{E}=\{\mathbb{e}_1,\mathbb{e}_2\}$ is a set of parameters. Supposing that $\mathbb{T}=\{\tilde{\Phi},\tilde{\mathfrak{B}},\mathfrak{D}_{\mathfrak{E}}\}$ such that $\mathfrak{D}_{\mathfrak{E}}$={($\mathbb{e}_1$, $\mathbb{Z}^+$), ($\mathbb{e}_2$, $\mathbb{Z}^+$)}. A soft map $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{B}$ which is defined by $\mathfrak{F}(x)=2x+1$, for all $x\in\mathbb{Z}$ is an $\not{f}^*$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ map.

3.5Theorem: If a domain has soft α-basis consisting of soft α-clopen sets ,then every mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map is an a $\mathbb{S}\,\alpha-\mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{A}$ be a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map. Suppose that $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$. Then according to Proposition1.14and Proposition1.15 $\mathfrak{S}_{\mathfrak{E}}$ is mildly $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$. Thereafter, $\mathfrak{S}_{\mathfrak{E}}$ is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$by Proposition 1.14 and Proposition 1.15. Thereupon $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$owing to $\mathfrak{F}$ is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map. Since $\mathfrak{B}$ has an α-basis consisting of soft α-clopen sets, thereupon that $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ has an α-basis consisting of soft α-clopen sets by Theorem 2.22. By Theorem 1.16, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map. ■

3.6Corollary: If the domain has α-basiss from soft α-clopen set, then any mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map is an almost $\mathbb{S}\,\alpha-\mathbb{C}$ map.

3.7Corollary: If the domain has α-basiss consisting of soft α-clopen sets, then any almost $\mathbb{S}\,\alpha-\mathbb{C}$ map is a $\mathbb{S}\,\alpha-\mathbb{C}$ map.

3.8Theorem: Each $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map is a $\mathbb{S}\,\alpha-\mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{A}$ be an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. To verify that $\mathfrak{F}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$by Theorem 2.14(or. Theorem 2.14and Theorem 2.15) $\mathfrak{S}_{\mathfrak{E}}$ is almost (or. a mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. Therefore, $\mathfrak{F}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map.■

3.9Theorem: If the domain with soft α-basis consisting of a soft α-clopen set then, each $\not{f}^*$-almost (or. $\not{f}^*$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map is a $\mathbb{S}\,\alpha-\mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{A}$ be a $\not{f}^*$-almost (or. $\not{f}^*$-mildly)$\mathbb{S}\,\alpha-\mathbb{C}$ map. To verify that $\mathfrak{F}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is almost (or. a mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ is an $\not{f}^*$-almost (or. $\not{f}^*$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. By Proposition 2.22, Theorem 2.15and Theorem 2.16 (or. Theorem 2.16) $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ map. ■

3.10Theorem: If the domain has an α-basis of soft α-clopen sets then,every $\not{f}^*$-mildly $\mathcal{S}\alpha\mathcal{C}$ map is an $\not{f}^*-$ almost $\mathbb{S}\,\alpha-\mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{A}$ be an $\not{f}^*-$ mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map. To verify that $\mathfrak{F}$is an$\not{f}^*$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$. Thereafter $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a mildly $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ owing to $\mathfrak{F}$ being an $\not{f}^*$-mildly $\mathbb{S}\,\alpha-\mathbb{C}$ map. Proposition 2.22 and Theorem 2.16, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ by Theorem 2.14, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$ is an $\not{f}^*$-almost $\mathbb{S}\,\alpha-\mathbb{C}$ map. ■

3.11Theorem: If the domain with soft α-basis consisting of soft α-clopen sets, every almost (or. mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map .

Proof: Let $\mathfrak{F}:\mathfrak{B}\longrightarrow\mathfrak{A}$ be an almost (or. mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. Take ($\mathfrak{S}_{\mathfrak{E}}$)is an almost (or. mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost (or. mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ due to $\mathfrak{F}$ being an almost (or. mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha-\mathbb{C}$ set in $\mathfrak{B}$ by Theorem 2.15and Theorem 2.16 (or. Theorem 2.16). Therefore, $\mathfrak{F}$ is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map. ■

3.12Theorem: Each $\not{f}$-almost (orp. $\not{f}$-mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map is an $\not{f}^*$-almost (or. $\not{f}^*-$ mildly) $\mathbb{S}\,\alpha-\mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. To verify that $\mathfrak{F}$ is an $\not{f}^*$-almost (or. $\not{f}^* -$ mildly) $\mathcal{S}\alpha\mathcal{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$be a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. By Theorem 2.14(or. Theorem 2.14and Theorem 2.15) $\mathfrak{S}_{\mathfrak{E}}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. By Theorem 2.14(or. Theorem 2.14and Theorem 2.15) $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$is an $\not{f}^*$-almost (or. $\not{f}^* -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.■

3.13Theorem: If $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be a map and $\mathfrak{A}$ with soft α-basis consisting of soft α-clopen sets,then each $\mathbb{S}\,\alpha - \mathbb{C}$ map is an almost$\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Take $\mathfrak{S}_{\mathfrak{E}}$ is an almost $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. By Proposition 2.15, Proposition 2.22, and, Theorem 2.16 $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in . Subsequently, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ due to $\mathfrak{F}$ being a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Theorem 2.14implies that $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$is an almost $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$is an almost $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

3.14Corollary: If the co-domain with soft α-basis consisting of soft α-clopen sets then,each (or. almost) $\mathbb{S}\,\alpha - \mathbb{C}$ map is a mildly $\mathbb{S}\,\alpha - \mathbb{C}$ map.

3.15Theorem: If the co-domain with soft α-basis consisting of soft α-clopen sets then, each $\mathbb{S}\,\alpha - \mathbb{C}$ map is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. By Proposition 2.15, Proposition 2.22, and Theorem 2.16 (or. Proposition 2.22 and Theorem 2.16) $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. Subsequently, $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ due to $\mathfrak{B}$ being a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Therefore, $\mathfrak{F}$ is an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

3.16Theorem: Each $\mathbb{S}\,\alpha - \mathbb{C}$ map is an $\not{f}^*$-almost (or. $\not{f}^* -$ mildly) a $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. By Theorem 2.14(or. Theorem 2.14 and Theorem 2.15) $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$ is an $\not{f}^*$-almost (or. $\not{f}^* -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.■

3.17Theorem: Every $\not{f}^* -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map is an $\not{f}^* -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ be an $\not{f}^* -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ is a soft $\not{f}^* -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map. Now $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a mildly $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ by Proposition 2.15. Therefore, $\mathfrak{F}$ is an $\not{f}^* -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

3.18Theorem: Every $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be an $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. Now $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ soft $\not{f}$-almost (or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map, now $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set by Theorem 2.14(or. Theorem 2.14and Theorem 2.15). Therefore, $\mathfrak{F}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

3.19Theorem: If the domain and co-domain have a soft α-basis consisting of a soft α-clopen set, then every $\not{f}^*$-almost (or. $\not{f}^*$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map is an $\not{f}$-almost(or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be an $\not{f}^*$-almost (or. $\not{f}^*$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. Take $\mathfrak{S}_{\mathfrak{E}}$ be an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. By Theorem 2.15and Theorem 2.16 (orp. Theorem 2.16) $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$.$\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ is an $\not{f}^*$-almost (or. $\not{f}^*$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. By Theorem 2.15and Theorem 2.16 (orp. Theorem 2.16) $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{F}$ is an $\not{f}$-almost(or. $\not{f}$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

4. RESTRICTION oF $\mathbb{S}\,\alpha - \mathbb{C}$ MAPS

In this section, we study the restriction of certain forms of $\mathbb{S}\,\alpha - \mathbb{C}$ maps.

4.1Theorem: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be a $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{T}_{\mathfrak{E}}$ be an α-closed subset of $\mathfrak{B}$, then the restriction$\mathfrak{G}$: $\mathfrak{T}_{\mathfrak{E}} \to \mathfrak{A}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Suppose that $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{A}$. $\mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ since $\mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Subsequently, $\mathfrak{T}_{\mathfrak{E}} \cap \mathfrak{F}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ in relative soft topology on $\mathfrak{T}_{\mathfrak{E}}$ and a $\mathbb{S}\,\alpha - \mathbb{C}$ set by Theorem, 2.17. Therefore, $\mathfrak{G}$: $\mathfrak{T}_{\mathfrak{E}} \to \mathfrak{A}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

4.2Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{A}$ be an almost (or. a mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{T}_{\mathfrak{E}}$ be a soft α-clopen subset of $\mathfrak{B}$. Then, the restriction $\mathfrak{G}$: $\mathfrak{T}_{\mathfrak{E}} \to \mathfrak{A}$ is an almost (or. a mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

4.3Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ be an $\nexists$-almost(or. $\nexists$-mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{T}_{\mathfrak{E}}$ be a soft α-closed subset of $\mathfrak{B}$. Then, the restriction $\mathfrak{G}$: $\mathfrak{T}_{\mathfrak{E}} \rightarrow \mathfrak{U}$ is an $\nexists -$ almost(or. $\nexists -$ mildly) map.

4.4Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ be an $\nexists^* -$ almost (or. $\nexists^* -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{T}_{\mathfrak{E}}$ be a soft α-clopen subset of $\mathfrak{B}$. Then, the restriction $\mathfrak{G}$: $\mathfrak{T}_{\mathfrak{E}} \rightarrow \mathfrak{U}$ is an $\nexists^* -$ almost (or. $\nexists^* -$ mildly)$\mathbb{S}\,\alpha - \mathbb{C}$ map.

5. COMPOSITION oF $\mathbb{S}\,\boldsymbol{\alpha} - \mathbb{C}$ MAPS

In this section, we investigate the composition operation on the $\mathbb{S}\,\alpha - \mathbb{C}$ maps in various cases.

5.1Theorem: The composition of $\mathbb{S}\,\alpha - \mathbb{C}$ maps is also a $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ be two $\mathbb{S}\,\alpha - \mathbb{C}$ maps. Take $\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{U}$. (To show that $(\mathfrak{K} \circ \mathfrak{F})^{-1}\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. We have $\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{U}$ since $\mathfrak{K}$is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Subsequently, $\mathfrak{F}^{-1}(\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}}))$is $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ because $\mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. We have $(\mathfrak{K} \circ \mathfrak{F})^{-1}\mathfrak{S}_{\mathfrak{E}}$= $\mathfrak{F}^{-1}(\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}}))$. so $(\mathfrak{K} \circ \mathfrak{F})^{-1}$is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{K} \circ \mathfrak{F}$ is also a $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

5.2Corollary: The composition of almost(or.mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ maps is also an almost(or.mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.3Corollary: The composition of $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map is also $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.4Theorem: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. Then, $\mathfrak{F} \circ \mathfrak{K}$ is an $\nexists -$ almost(or. $\nexists -$ mildly)$\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: Taking $\mathfrak{S}_{\mathfrak{E}}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{Q}$. (To show that $(\mathfrak{K} \circ \mathfrak{F})^{-1}\mathfrak{S}_{\mathfrak{E}}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. We have $\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}})$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{U}$ since $\mathfrak{K}$is an $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. Subsequently, $\mathfrak{F}^{-1}(\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}}))$is $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$ because $\mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. We have $(\mathfrak{K} \circ \mathfrak{F})^{-1}\mathfrak{S}_{\mathfrak{E}}$= $\mathfrak{F}^{-1}(\mathfrak{K}^{-1}(\mathfrak{S}_{\mathfrak{E}}))$. so $(\mathfrak{K} \circ \mathfrak{F})^{-1}$is a $\mathbb{S}\,\alpha - \mathbb{C}$ set in $\mathfrak{B}$. Therefore, $\mathfrak{K} \circ \mathfrak{F}$ is an $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. ■

5.5Theorem: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists -$ almost(or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map. Then, $\mathfrak{K} \circ \mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map.

Proof: By Theorem 5.1 and Theorem 3.8■

5.6Theorem: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists -$ almost (or. $\nexists -$mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map. Then, $\mathfrak{K} \circ \mathfrak{F}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map.

Proof: By Theorem 5.1 and Theorem 3.17. ■

5.7Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists -$ almost (or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$map. Then, $\mathfrak{K} \circ \mathfrak{F}$ is an $\nexists^* -$ almost (or.$\nexists^* -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.8Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists -$ almost (or. $\nexists -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists^* -$ almost (or. $\nexists^* -$ mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map then, $\mathfrak{K} \circ \mathfrak{F}$ is a $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.9Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists^* -$ almost (or. $\nexists^* -$ mildly)$\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists -$ almost(or. $\nexists -$mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map. Then, $\mathfrak{K} \circ \mathfrak{F}$ is an almost (or. mildly) $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.10Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$map then, $\mathfrak{K} \circ \mathfrak{F}$ is an $\nexists -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$ map.

5.11Corollary: Let $\mathfrak{F}:\mathfrak{B} \longrightarrow \mathfrak{U}$ is an $\nexists -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$map, and $\mathfrak{K}:\mathfrak{U} \longrightarrow \mathfrak{Q}$ is an $\nexists -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map. Then, $\mathfrak{K} \circ \mathfrak{F}$ is an $\nexists -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ map.

6.CONCLUSION

To sum up, we create in this paper a map and investigate its associations with maps, , almost $\mathbb{S}\,\alpha - \mathbb{C}$ maps, $\nexists -$ almost $\mathbb{S}\,\alpha - \mathbb{C}$ maps, $\nexists^*$-almost $\mathbb{S}\,\alpha - \mathbb{C}$ maps, mildly $\mathbb{S}\,\alpha - \mathbb{C}$ maps, $\nexists$-mildly $\mathbb{S}\,\alpha - \mathbb{C}$ maps besides $\nexists^* -$ mildly $\mathbb{S}\,\alpha - \mathbb{C}$ maps which are utilized from the relationship between their spaces under conditions or unconditionally. Therefor, the composition factors of $\mathbb{S}\,\alpha - \mathbb{C}$ maps with $\mathbb{S}\,\alpha - \mathbb{C}$ maps, almost $\mathbb{S}\,\alpha - \mathbb{C}$ maps, and mildly $\mathbb{S}\,\alpha - \mathbb{C}$maps, $\nexists$-almost $\mathbb{S}\,\alpha - \mathbb{C}$maps, $\nexists$-mildly $\mathbb{S}\,\alpha - \mathbb{C}$ maps are studied basisd on the virus association between them.

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