International Journal of Applied Research 2016; 2(10): 451-456

ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(10): 451-456
www.allresearchjournal.com
Received: 05-08-2016
Accepted: 06-09-2016

T Muthu Priya
Research Scholar, Department of Mathematics, Nirmala College for Women, Coimbatore, Tamil Nadu, India

A Francina Shalini
Assistant Professor, Department of Mathematics, Nirmala College for Women, Coimbatore, Tamil Nadu, India

Correspondence
T Muthu Priya
Research Scholar, Department of Mathematics, Nirmala College for Women, Coimbatore, Tamil Nadu, India

Soft Čech MP-closed sets and continuous functions in Soft čech closure spaces

T Muthu Priya and A Francina Shalini

Abstract
In this paper, we introduce soft čech MP-closed sets in soft čech closure spaces which are defined over an universe with a fixed set of parameters. Also we investigate the behavior relative to union, intersection and soft čech subspaces of soft čech MP-closed sets as well as soft čech MP-open sets. In the study of soft čech MP-closed sets, axiom.

Keywords: Soft set, soft čech MP – closed set, soft čech MP – continuous

1. Introduction
In 1970, N. Levine [8] initiated the study of generalized closed sets in topological space in order to extend some important properties of closed sets to a larger family of sets. E. čech [1] introduced the concept of closure spaces. In 1999, D. Molodtsov [10] introduced the concept of soft set theory to solve complicated problems in economics, engineering, and environment. Kannan [7] introduced soft generalized closed and open sets in soft topological spaces which are defined over an initial universe with a fixed set of parameters. Generalized closed sets in čech closed spaces were introduced by Chawalit Boonpok [4]. Čech MP-closed sets in Čech closure spaces were introduced by T. Muthu priya and A. Francina Shalini [9]. R. Gowri and G. Jegadeesan [5] introduced and studied the concept of lower separation axioms in soft čech closure spaces and also studied the concept of soft generalized closed sets in soft čech closure spaces. In this paper, we introduce soft čech MP-closed sets in soft čech closure spaces. Also we investigate the behavior relative to union, intersection and soft čech subspaces of soft MP-closed sets.

2. Preliminaries
2.1 Definition: Let X be an initial universe set, A be a set of parameters. Then the function k: $P(X_{F_A}) \longrightarrow P(X_{F_A})$ defined from a soft power set $P(X_{F_A})$ to itself over X is called soft čech closure operator if it satisfies the following axioms:
$k(\emptyset_A) = \emptyset_A$
$F_A \subseteq k(F_A)$
$k(F_A \cup G_A) = k(F_A) \cup k(G_A)$.
Then (X, k, A) or (F_A, k) is called a soft čech closure space.

2.2 Definition: A soft subset U_A of a soft čech closure space (F_A, k) is said to be soft čech closed if $k(U_A) = U_A$.

2.3 Definition: A soft subset U_A of a soft čech closure space (F_A, k) is said to be soft čech open if $k(U_A^C) = U_A^C$.

2.4 Definition: A soft subset U_A in a soft čech closure space (F_A, k) is called soft neighbourhood of e_F if $e_F \in Int(U_A)$.

2.5 Definition: If (F_A, k) be a soft čech closure space, then the associate soft topology on F_A is $\tau = \{U_A^C : k(U_A) = U_A\}$.

2.6 Definition: Let (F_A, k) be a soft čech closure space. A soft čech closure space (G_A, k^*) is called a soft subspace of (F_A, k) if $G_A \subseteq F_A$ and $k^*(U_A) = k(U_A) \cap G_A$, for each soft čech subset $U_A \subseteq G_A$.

2.7 Definition: Let (X, u, A) and (Y, v, A) be two soft čech topological space and f: (X, u, A) ⟶ (Y, v, A) be a function. Then the function f is
Soft čech continuous if $f^{-1}(U_A)$ is soft čech closed in (X, u, A) for every soft čech closed set U_A of (Y, v, A).

2.8 Definition: Let (X, u, A) and (Y, v, A) be two soft čech topological space and f: (X, u, A) ⟶ (Y, v, A) be a function. Then the function f is
Soft čech open (closed) if $f(U_A)$ is soft čech open in (Y, v, A) for every soft open (closed) set U_A of (X, u, A).

3. Soft ČEch Mp-Closed Sets

3.1 Definition: Let (F_A, k) be a soft čech closure space. A soft čech subset $U_A \subseteq F_A$ is called a soft čech MP-closed set, if $k_\beta(U_A) \subseteq G_A$ whenever G_A is an soft čech π-open subset of (F_A, k) with $U_A \subseteq G_A$. Where $k_\beta(U_A)$ is the smallest β-closed set containing U_A. A soft čech subset $U_A \subseteq F_A$ is called a soft čech MP-open set, if its complement is soft čech MP-closed.

3.2 Example: Let the initial universe set X = $\{u_1, u_2\}$ and E = $\{x_1, x_2, x_3\}$ be the parameters. Let A = $\{x_1, x_2\} \subseteq$ E and F_A = $\{(x_1, \{u_1, u_2\}), (x_2, \{u_1, u_2\})\}$. Then $P(X_{F_A})$ are
$F_{1A} = \{(x_1, \{u_1\})\}$, $F_{2A} = \{(x_1, \{u_2\})\}$,
$F_{3A} = \{(x_1, \{u_1, u_2\})\}$, $F_{4A} = \{(x_2, \{u_1\})\}$,
$F_{5A} = \{(x_2, \{u_2\})\}$, $F_{6A} = \{(x_2, \{u_1, u_2\})\}$,
$F_{7A} = \{(x_1, \{u_1\}), (x_2, \{u_1\})\}$, $F_{8A} = \{(x_1, \{u_1\}), (x_2, \{u_2\})\}$,
$F_{9A} = \{(x_1, \{u_2\}), (x_2, \{u_1\})\}$, $F_{10A} = \{(x_1, \{u_2\}), (x_2, \{u_2\})\}$,
$F_{11A} = \{(x_1, \{u_1\}), (x_2, \{u_1, u_2\})\}$, $F_{12A} = \{(x_1, \{u_2\}), (x_2, \{u_1, u_2\})\}$,
$F_{13A} = \{(x_1, \{u_1, u_2\}), (x_2, \{u_1\})\}$, $F_{14A} = \{(x_1, \{u_1, u_2\}), (x_2, \{u_1\})\}$,
$F_{15A} = F_A$, $F_{16A} = \emptyset_A$.
An operator k: $P(X_{F_A}) \longrightarrow P(X_{F_A})$ is defined from soft power set $P(X_{F_A})$ to itself over X as follows.
$K(F_{1A}) = k(F_{13A}) = F_{13A}$, $k(F_{2A}) = k(F_{3A}) = k(F_{5A}) = k(F_{14A}) = F_{14A}$,
$k(F_{4A}) = k(F_{6A}) = F_{6A}$, $k(F_{7A}) = k(F_{8A}) = k(F_{9A}) = k(F_{10A}) = k(F_{11A}) = k(F_{12A}) = k(F_A) = F_A$, $k(\emptyset_A) = \emptyset_A$.
Here the soft čech MP-closed sets are $\emptyset_A$, F_A, F_{1A}, F_{2A}, ………, F_{14A}.

3.3 Theorem: Every soft čech closed set is soft čech MP-closed set.

Proof: The proof is obvious.

3.4 Remark: Every soft čech closed sets are soft čech MP-closed, but the converse is not true as shown in the following example.

3.5 Example: In the example 3.2, F_{1A}, F_{2A}, F_{3A} are soft čech MP-closed, but not soft čech closed.

3.6 Theorem: Let (F_A, k) be a soft čech closure space. If U_A and V_A are soft čech MP - closed subsets of (F_A, k), then $U_A \cup V_A$ is soft čech MP - closed.

Proof: Let G_A be a soft čech π - open subset of (F_A, k) such that $U_A \cup V_A \subseteq G_A$. Then $U_A \subseteq G_A$ and $V_A \subseteq G_A$. Since, U_A and V_A are soft čech MP - closed, $k_\beta[U_A] \subseteq G_A$ and $k_\beta[V_A] \subseteq G_A$. Then, $k_\beta[U_A \cup V_A] = k_\beta[U_A] \cup k_\beta[V_A] \subseteq G_A$. Therefore, $U_A \cup V_A$ is soft čech MP-closed.

3.7 Result: The following example shows that, the intersection of two soft čech MP - closed sets need not be a soft čech MP - closed set.

3.8 Example: Let us consider the soft čech subsets F_A that are given in example 3.2. An operator k: $P(X_{F_A}) \longrightarrow P(X_{F_A})$ is defined from soft power set $P(X_{F_A})$ to itself over X as follows.
$k(F_{1A}) = k(F_{7A}) = k(F_{8A}) = k(F_{11A}) = F_{11A}$, $k(F_{2A}) = F_{10A}$,
$k(F_{5A}) = k(F_{4A}) = k(F_{6A}) = F_{6A}$, $k(F_{3A}) = k(F_{13A}) = k(F_{14A}) = k(F_A) = F_A$, $k(F_{9A}) = k(F_{10A}) = k(F_{12A}) = F_{12A}$, $k(\emptyset_A) = \emptyset_A$.
Here, take the soft čech MP-closed sets, $U_A = F_{13A}$ and $V_A = F_{14A}$. Then $U_A \cap V_A = F_{3A}$, which is not a soft čech MP - closed set.

3.9 Theorem: Let (F_A, k) be a soft čech closure space. If U_A is soft čech MP - closed and V_A is soft čech π - closed in F_A, then $U_A \cap V_A$ is soft čech MP - closed.

Proof: Let G_A be a soft čech π - open subset of (F_A, k) such that $U_A \cap V_A \subseteq G_A$. Then $U_A \subseteq G_A \cup V_A^C$ and $k_\beta[U_A] \subseteq G_A \cup V_A^C$. That is, $k_\beta[U_A] \subseteq G_A \cup (F_A - V_A)$ and $k_\beta[U_A] \subseteq G_A \cup (F_A - V_A)$. Then, $k_\beta[U_A] \cap V_A \subseteq G_A$. Since, V_A is soft čech π - closed. Therefore, $k_\beta[U_A \cap V_A] \subseteq G_A$. Hence, $U_A \cap V_A$ is soft čech MP - closed.

3.10 Theorem: Let (H_A, k^*) be a soft čech closed subspace of (F_A, k). If V_A is a soft čech MP-closed subset of (H_A, k^*), then V_A is a soft čech MP - closed subset of (F_A, k).

Proof: Let G_A be a soft čech π - open subset of (F_A, k) such that $V_A \subseteq G_A$. Then, $V_A \subseteq G_A \cap H_A$. Since, V_A is soft čech MP - closed and $G_A \cap H_A$ is soft čech π - open in (H_A, k^*). Therefore, $k_\beta[V_A] \cap H_A = k_\beta^*[V_A] \subseteq G_A$. But H_A is a soft čech closed subset of (F_A, k) and $k_\beta[V_A] \subseteq G_A$. Hence, V_A is a soft čech MP-closed subset of (F_A, k).

3.11 Theorem: Let (F_A, k) be a soft čech closure space and let $U_A \subseteq F_A$. If U_A is both soft čech π - open and soft čech MP-closed, then U_A is soft čech β - closed.

Proof: It is obvious.

3.12 Theorem: Let (F_A, k) be a čech closure space and let $U_A \subseteq F_A$. If U_A is soft čech MP-closed, then $k_\beta[U_A] - U_A$ has no non empty soft čech π - closed subset.

Proof: Suppose that U_A is soft čech MP-closed. Let V_A be a soft čech π - closed subset of $k_\beta[U_A] - U_A$. Then $V_A \subseteq k_\beta[U_A] \cap (F_A - U_A)$ and so $U_A \subseteq F_A - V_A$. Consequently, $V_A \subseteq F_A - k_\beta[U_A]$. Since, $V_A \subseteq k_\beta[U_A]$, $V_A \subseteq k_\beta[U_A] \cap (F_A - k_\beta[U_A]) = \emptyset_A$. Thus $V_A = \emptyset_A$. Therefore, $k_\beta[U_A] - U_A$ contains no non-empty soft čech π - closed set.

3.13 Remark: The converse of the above theorem 3.12 is not true as shown in the following example.

3.14 Example: Let us consider the soft čech subsets of F_A that are given in example 3.2. An operator k: $P(X_{F_A}) \longrightarrow P(X_{F_A})$ is defined from soft power set $P(X_{F_A})$ to itself over X as follows.
$K(F_{1A}) = k(F_{5A}) = F_{8A}$, $k(F_{3A}) = k(F_{9A}) = k(F_{13A}) = F_{13A}$, $k(F_{2A}) = F_{3A}$, $k(F_{4A}) = F_{4A}$,
$k(F_{6A}) = k(F_{8A}) = k(F_{11A}) = F_{11A}$, $k(F_{7A}) = F_{7A}$, $k(F_{10A}) = F_{14A}$, $k(F_{14A}) = k(F_{12A}) = k(F_A) = F_A$, $k(\emptyset_A) = \emptyset_A$.
Here, take $U_A = F_{10A}$. Then, $k_\beta[U_A] - U_A = F_{7A}$, which does not contain non-empty soft čech π - closed subset. But, F_{10A} is not soft čech MP - closed.

3.15 Corollary: Let (F_A, k) be a soft čech closure space and let U_A be a soft čech MP - closed subset of (F_A, k). Then U_A is soft čech β - closed if and only if $k_\beta[U_A] - U_A$ is soft čech π - closed.

Proof: Let U_A be a soft čech MP-closed subset of (F_A, k). If U_A is soft čech β - closed, then $k_\beta[U_A] - U_A = \emptyset_A$. Since, $\emptyset_A$ is soft čech π - closed. Therefore, $k_\beta[U_A]$-U_A is also soft čech π - closed. Conversely, Suppose that $k_\beta[U_A] - U_A$ is soft čech π - closed. Since, U_A is soft čech MP - closed, by theorem 3.12, $k_\beta[U_A] - U_A = \emptyset_A$. This implies, $k_\beta[U_A] = U_A$. Hence, U_A is soft čech β - closed.

3.16 Theorem: Let (F_A, k) be a soft čech closure space. A soft set $U_A \subseteq F_A$ is soft čech MP - open if and only if $V_A \subseteq F_A - k_\beta[F_A - U_A]$ whenever V_A is soft čech π - closed and $V_A \subseteq U_A$.

Proof: Suppose that U_A is soft čech MP - open and V_A be a soft čech π - closed subset of (F_A, k) such that $V_A \subseteq U_A$. Then $F_A - U_A \subseteq F_A - V_A$. But, $F_A - U_A$ is soft čech MP - closed and $F_A - V_A$ is soft čech π - open. This implies that, $k_\beta[F_A - U_A] \subseteq F_A - V_A$. Therefore, $V_A \subseteq F_A - k_\beta[F_A - U_A]$. Conversely, Let G_A be a soft čech π - open subset of (F_A, k) such that $F_A - U_A \subseteq G_A$. Then $F_A - G_A \subseteq U_A$. Since, $F_A - G_A$ is soft čech π - closed, $F_A - G_A \subseteq F_A - k_\beta[F_A - U_A]$. This implies, $k_\beta[F_A - U_A] \subseteq G_A$. Therefore, $F_A - U_A$ is soft čech MP-closed. Hence, U_A is soft čech MP - open.

3.17 Remark: The following example shows that, the union of two soft čech MP - open sets need not be a soft čech MP - open.

3.18 Example: In example 3.8, take soft čech MP - open sets $U_A = F_{4A}$ and $V_A = F_{5A}$. Then, $U_A \cup V_A = F_{6A}$ which is not soft čech MP - open.

3.19 Theorem: Let (F_A, k) be a soft čech closure space. If U_A is soft čech MP - open and V_A is soft čech π - open in F_A, then $U_A \cup V_A$ is soft čech MP - open.

Proof: Let G_A be a soft čech π - closed subset of (F_A, k) such that $G_A \subseteq U_A \cup V_A$. Then $F_A - (U_A \cup V_A) \subseteq F_A - G_A$. Hence, $(F_A - U_A) \cap (F_A - V_A) \subseteq F_A - G_A$. By theorem 3.9, $(F_A - U_A) \cap (F_A - V_A)$ is soft čech MP - closed. Therefore, $k_\beta[(F_A - U_A) \cap (F_A - V_A)] \subseteq F_A - G_A$. Consequently, $G_A \subseteq F_A - k_\beta[(F_A - U_A) \cap (F_A - V_A)] = F_A - k_\beta[F_A - (U_A \cup V_A)]$. By theorem 3.16, $U_A \cup V_A$ is soft čech MP - open.

3.20 Theorem: Let (F_A, k) be a soft čech closure space. If U_A and V_A are soft čech MP - open subsets of (F_A, k), then $U_A \cap V_A$ is soft čech MP - open.

Proof: Let G_A be a soft čech π - closed subset of (F_A, k) such that $G_A \subseteq U_A \cap V_A$. Then $F_A - (U_A \cap V_A) \subseteq F_A - G_A$. Consequently, $(F_A - U_A) \cup (F_A - V_A) \subseteq F_A - G_A$. By theorem 3.6, $(F_A - U_A) \cup (F_A - V_A)$ is soft čech MP - closed. Thus, $k_\beta[(F_A - U_A) \cup (F_A - V_A)] \subseteq F_A - G_A$. Hence, $G_A \subseteq F_A - k_\beta[(F_A - U_A) \cup (F_A - V_A)] = F_A - k_\beta[F_A - (U_A \cap V_A)]$. By theorem 3.16, $U_A \cap V_A$ is soft čech MP - open.

3.21 Theorem: Let (F_A, k) be a soft čech closure space. If U_A is a soft čech MP - open subset of F_A, then $G_A = F_A$ whenever G_A is soft čech π - open and $(F_A - k_\beta[F_A - U_A]) \cup (F_A - U_A) \subseteq G_A$.

Proof: Assume that U_A is soft čech MP - open. Let G_A be a soft čech π - open subset of (F_A, k) such that $(F_A - k_\beta[F_A - U_A]) \cup (F_A - U_A) \subseteq G_A$. Then $(F_A - G_A) \subseteq F_A - ((F_A - k_\beta[(F_A - U_A) \cup (F_A - U_A))$. Therefore, $F_A - G_A \subseteq k_\beta[F_A - U_A] \cap U_A$ or equivalently, $F_A - G_A \subseteq k_\beta[F_A - U_A] - (F_A - U_A)$. But, $F_A - G_A$ is soft čech π - closed and $F_A - U_A$ is soft čech MP - closed. By theorem 3.12, $F_A - G_A = \emptyset_A$. Consequently, $F_A = G_A$.

3.22 Remark: The converse of the above theorem 3.19 is not true as shown in the following example.

3.23 Example: In Example 3.8, take $U_A = F_{6A}$. Then, $(F_A - k_\beta[F_A - U_A]) \cup (F_A - U_A) = F_A \subseteq G_A$, whenever G_A is soft čech π - open. This implies, $G_A = F_A$, but U_A is not soft čech MP - open.

3.24 Theorem: Let (F_A, k) be a soft čech closure space and let $U_A \subseteq F_A$. If U_A is a soft čech MP - closed, then $k_\beta[U_A] - U_A$ is soft čech MP - open.

Proof: Suppose that U_A is soft čech MP - closed. Let G_A be a soft čech π - closed subset of (F_A, k) such that $G_A \subseteq k_\beta[U_A] - U_A$. By theorem 3.16, $G_A = \emptyset_A$ and hence $G_A \subseteq F_A - k_\beta[F_A - (k_\beta[U_A] - U_A)]$. By theorem 3.14, $k_\beta[U_A] - U_A$ is soft čech MP - open.

4. Soft ČEch Mp - Continuous and Irresolute Functions

4.1 Definition: Let (X, u, A) and (Y, v, A) be two soft čech topological space and f: (X, u, A) ⟶ (Y, v, A) be a function. Then the function f is
Soft čech MP-continuous if $f^{-1}(U_A)$ is soft čech MP-closed in (X, u, A) for every soft čech closed set U_A of (Y, v, A).
Soft čech MP - irresolute if $f^{-1}(U_A)$ is soft čech MP-closed in (X, u, A) for every soft čech MP - closed set U_A of (Y, v, A).

4.2 Definition: Let (X, u, A) and (Y, v, A) be two soft čech topological space and f: (X, u, A) ⟶ (Y, v, A) be a function. Then the function f is
Soft čech MP – open (closed) if f(U_A) is soft čech MP - open in (Y, v, A) for every soft open (closed) set U_A of (X, u, A).

4.3 Theorem: Every soft čech continuous function is soft čech MP - continuous.
Proof: Let (X, u, A) be a soft čech topological space, f: (X, u, A) ⟶ (Y, v, A) be a soft čech continuous function and U_A be a soft čech closed set over Y. Since f is soft čech continuous, $f^{-1}(U_A)$ is soft čech closed over X. But Every soft čech closed set is soft čech MP - closed set over X, $f^{-1}(U_A)$ is a soft čech MP - closed set over X. Hence f is soft čech MP - continuous.

4.4 Remark: The converse of the above theorem is not true as shown in the following example.

4.5 Example: Let the initial universe set X = $\{u_1, u_2\}$ and E = $\{x_1, x_2, x_3\}$ be the parameters. Let A = $\{x_1, x_2\} \subseteq$ E and $F_A = \{(x_1, \{u_1, u_2\}), (x_2, \{u_1, u_2\})\}$. Then $P(X_{F_A})$ are
$F_{1A} = \{(x_1, \{u_1\})\}$, $F_{2A} = \{(x_1, \{u_2\})\}$,
$F_{3A} = \{(x_1, \{u_1, u_2\})\}$, $F_{4A} = \{(x_2, \{u_1\})\}$,
$F_{5A} = \{(x_2, \{u_2\})\}$, $F_{6A} = \{(x_2, \{u_1, u_2\})\}$,
$F_{7A} = \{(x_1, \{u_1\}), (x_2, \{u_1\})\}$, $F_{8A} = \{(x_1, \{u_1\}), (x_2, \{u_2\})\}$,
$F_{9A} = \{(x_1, \{u_2\}), (x_2, \{u_1\})\}$, $F_{10A} = \{(x_1, \{u_2\}), (x_2, \{u_2\})\}$,
$F_{11A} = \{(x_1, \{u_1\}), (x_2, \{u_1, u_2\})\}$, $F_{12A} = \{(x_1, \{u_2\}), (x_2, \{u_1, u_2\})\}$,
$F_{13A} = \{(x_1, \{u_1, u_2\}), (x_2, \{u_1\})\}$, $F_{14A} = \{(x_1, \{u_1, u_2\}), (x_2, \{u_1\})\}$,
$F_{15A} = F_A$, $F_{16A} = \emptyset_A$.
An operator k: $P(X_{F_A}) \longrightarrow P(X_{F_A})$ is defined from soft power set $P(X_{F_A})$ to itself over X as follows.
$u(F_{1A}) = u(F_{5A}) = F_{8A}$, $u(F_{3A}) = u(F_{9A}) = u(F_{13A}) = F_{13A}$, $u(F_{2A}) = F_{3A}$, $u(F_{4A}) = F_{4A}$, $u(F_{6A}) = u(F_{8A}) = u(F_{11A}) = F_{11A}$, $u(F_{7A}) = F_{7A}$, $u(F_{10A}) = F_{14A}$, $u(F_{12A}) = u(F_{14A}) = u(F_A) = F_A$, $u(\emptyset_A) = \emptyset_A$.
Let the initial universe set Y = $\{v_1, v_2\}$ and E = $\{x_1, x_2, x_3\}$ be the parameters. Let A = $\{x_1, x_2\} \subseteq$ E and $F_A = \{(x_1, \{v_1, v_2\}), (x_2, \{v_1, v_2\})\}$. Then $P(Y_{F_A})$ are
$F_{1A} = \{(x_1, \{v_1\})\}$, $F_{2A} = \{(x_1, \{v_2\})\}$,
$F_{3A} = \{(x_1, \{v_1, v_2\})\}$, $F_{4A} = \{(x_2, \{v_1\})\}$,
$F_{5A} = \{(x_2, \{v_2\})\}$, $F_{6A} = \{(x_2, \{v, v_2\})\}$,
$F_{7A} = \{(x_1, \{v_1\}), (x_2, \{v_1\})\}$, $F_{8A} = \{(x_1, \{v_1\}), (x_2, \{v_2\})\}$,
$F_{9A} = \{(x_1, \{v_2\}), (x_2, \{v_1\})\}$, $F_{10A} = \{(x_1, \{v_2\}), (x_2, \{v_2\})\}$,

F_{11A} = {(x_1, {v_1}), (x_2, {v_1, v_2})}, F_{12A} = {(x_1, {v_2}), (x_2, {v_1, v_2})},
F_{13A} = {(x_1, {v_1, v_2}), (x_2, {v_1})}, F_{14A} = {(x_1, {v_1, v_2}), (x_2, {v_1})},
F_{15A} = F_A, F_{16A} = $\emptyset_A$.
An operator k: P(Y_{F_A}) ⟶ P(Y_{F_A}) is defined from soft power set P(Y_{F_A}) to itself over Y as follows.
V(F_{1A}) = v(F_{13A}) = F_{13A}, v(F_{2A}) = v(F_{3A}) = v(F_{5A}) = v(F_{14A}) = F_{14A}, v(F_{4A}) = v(F_{6A}) = F_{6A}, v(F_{7A}) = v(F_{8A}) = v(F_{9A}) = v(F_{10A}) = v(F_{11A}) = v(F_{12A}) = v(F_A) = F_A.
Let f: X ⟶ Y be an identity map. Here the inverse image of the soft čech closed set U_A = {(y_1, {v_1, v_2}), (y_2, {v_2})} in Y is not soft čech closed set in X.

4.6 Theorem: Let f: (X, u, A) ⟶ (Y, v, A) be a soft čech function, then the following statements are equivalent.
1. f is soft čech MP-continuous
2. The inverse image of every soft čech open set in Y is also soft čech MP - open in X.

Proof: (1 ⇒ 2) Let U_A be a soft čech open subset in Y, then (Y – U_A) is soft čech closed in Y. Since f is soft čech MP – continuous, f^{-1}(Y – U_A) is soft čech MP - closed in X. Hence X – (f^{-1}(U_A)) is soft čech MP - closed set in X. Then f^{-1}(U_A) is soft čech MP - closed set in X.
(2 ⇒1) Follows from the definition.

4.7 Theorem:: Let f: (X, u, A) ⟶ (Y, v, A) be soft čech MP - continuous and g: (Y, v, A) ⟶ (Z, w, A) is soft čech continuous, then gof: (X, u, A) ⟶ (Z, w, A) is soft čech MP - continuous.

Proof: Let U_A be soft closed in (Z, w, A). Since g is soft čech continuous, g^{-1}(U_A) is soft čech closed in (Y, v, B). Since f is soft čech MP - continuous, f^{-1}(g^{-1}(U_A)) is soft čech MP – closed in (X, u, A). $(gof)^{-1}$(U_A) is soft čech MP - closed in (X, u, A). Hence gof is soft čech MP - continuous.

4.8 Theorem: Let f: (X, u, A) ⟶ (Y, v, A) and g: (Y, v, A) ⟶ (Z, w, A) be soft čech functions. Then
1. Let f be soft čech MP - irresolute and g is soft čech MP - continuous. Then gof is soft čech MP - continuous.
2. If f be soft čech MP - irresolute and g is soft čech MP - irresolute, then gof is soft čech MP-irresolute.
3. Let (Y, v, A) be a soft čech MP-space. If f is soft čech MP-continuous and g is soft čech MP - continuous then gof is soft čech continuous.

Proof: (1) Let U_A be a soft čech closed subset of (Z, w, A). Since g is soft čech MP - continuous, then g^{-1}(U_A) is soft čech MP - closed subset of (Y, v, A). Since f is soft čech MP - irresolute, then $(gof)^{-1}$(U_A) = f^{-1}(g^{-1}(U_A)) is soft čech MP - closed subset of (X, u, A). Hence gof is soft čech MP - continuous.
(2) Let U_A be a soft čech MP - closed subset of (Z, w, A). Since g is soft čech MP - irresolute, then g^{-1}(U_A) is soft čech closed subset of (Y, v, A). Since f is soft čech MP - irresolute, then $(gof)^{-1}$(U_A) = f^{-1}(g^{-1}(U_A)) is soft čech MP - closed subset of (X, u, A). Hence gof is soft čech MP - irresolute.
(3) Let U_A be a soft čech closed subset of (Z, w, A). Since g is soft čech MP - continuous, then g^{-1}(U_A) is soft čech MP-closed subset of (Y, v, A). Since f is a soft čech MP - space, then $(gof)^{-1}$(U_A) = f^{-1}(g^{-1}(U_A)) is soft čech closed subset of (X, u, A). Hence gof is soft čech continuous.

4.9 Theorem: Every soft čech MP-irresolute function is soft čech MP-continuous.

Proof: Assume that f is soft čech MP - irresolute. Let V_A be a soft čech closed set in Y. Every soft čech closed set is soft čech MP - closed. That implies V_A be a soft čech MP - closed set in Y. Since f is soft čech MP - irresolute, f^{-1}(V_A) is soft čech MP - closed set in X. Thus f^{-1}(V_A) is soft čech MP - closed set in X, ∀ soft čech closed set V_A in Y. That implies f is soft čech MP - continuous.

4.10 Remark: The converse of the above theorem is need not be true by the following example.

4.11 Example: Let the initial universe set X = {u_1, u_2} and E = {x_1, x_2, x_3} be the parameters. Let A = {x_1, x_2} ⊆ E and F_A = {(x_1, {u_1, u_2}), (x_2, {u_1, u_2})}. Then P(X_{F_A}) are
F_{1A} = {(x_1, {u_1})}, F_{2A} = {(x_1, {u_2})},
F_{3A} = {(x_1, {u_1, u_2})}, F_{4A} = {(x_2, {u_1})},
F_{5A} = {(x_2, {u_2})}, F_{6A} = {(x_2, {u_1, u_2})},
F_{7A} = {(x_1, {u_1}), (x_2, {u_1})}, F_{8A} = {(x_1, {u_1}), (x_2, {u_2})},
F_{9A} = {(x_1, {u_2}), (x_2, {u_1})}, F_{10A} = {(x_1, {u_2}), (x_2, {u_2})},
F_{11A} = {(x_1, {u_1}), (x_2, {u_1, u_2})}, F_{12A} = {(x_1, {u_2}), (x_2, {u_1, u_2})},
F_{13A} = {(x_1, {u_1, u_2}), (x_2, {u_1})}, F_{14A} = {(x_1, {u_1, u_2}), (x_2, {u_1})},
F_{15A} = F_A, F_{16A} = $\emptyset_A$.
An operator k: P(X_{F_A}) ⟶ P(X_{F_A}) is defined from soft power set P(X_{F_A}) to itself over X as follows.
u(F_{1A}) = u(F_{5A}) = F_{8A}, u(F_{3A}) = u(F_{9A}) = u(F_{13A}) = F_{13A}, u(F_{2A}) = F_{3A}, u(F_{4A}) = F_{4A}, u(F_{6A}) = u(F_{8A}) = u(F_{11A}) = F_{11A}, u(F_{7A}) = F_{7A}, u(F_{10A}) = F_{14A}, u(F_{12A}) = u(F_{14A}) = u(F_A) = F_A, u($\emptyset_A$) = $\emptyset_A$.

Let the initial universe set Y = $\{v_1, v_2\}$ and E = $\{x_1, x_2, x_3\}$ be the parameters. Let A = $\{x_1, x_2\} \subseteq$ E and $F_A = \{(x_1, \{v_1, v_2\}), (x_2, \{v_1, v_2\})\}$. Then P (Y_{F_A}) are
$F_{1A} = \{(x_1, \{v_1\})\}$, $F_{2A} = \{(x_1, \{v_2\})\}$,
$F_{3A} = \{(x_1, \{v_1, v_2\})\}$, $F_{4A} = \{(x_2, \{v_1\})\}$,
$F_{5A} = \{(x_2, \{v_2\})\}$, $F_{6A} = \{(x_2, \{v, v_2\})\}$,
$F_{7A} = \{(x_1, \{v_1\}), (x_2, \{v_1\})\}$, $F_{8A} = \{(x_1, \{v_1\}), (x_2, \{v_2\})\}$,
$F_{9A} = \{(x_1, \{v_2\}), (x_2, \{v_1\})\}$, $F_{10A} = \{(x_1, \{v_2\}), (x_2, \{v_2\})\}$,
$F_{11A} = \{(x_1, \{v_1\}), (x_2, \{v_1, v_2\})\}$, $F_{12A} = \{(x_1, \{v_2\}), (x_2, \{v_1, v_2\})\}$,
$F_{13A} = \{(x_1, \{v_1, v_2\}), (x_2, \{v_1\})\}$, $F_{14A} = \{(x_1, \{v_1, v_2\}), (x_2, \{v_1\})\}$,
$F_{15A} = F_A$, $F_{16A} = \emptyset_A$.
An operator k: $P(Y_{F_A}) \longrightarrow P(Y_{F_A})$ is defined from soft power set $P(Y_{F_A})$ to itself over Y as follows.
$V(F_{1A}) = v(F_{7A}) = v(F_{8A}) = v(F_{11A}) = F_{11A}$, $v(F_{2A}) = F_{10A}$, $v(F_{4A}) = v(F_{5A}) = v(F_{6A}) = F_{6A}$, $v(F_{9A}) = v(F_{10A}) = v(F_{12A}) = F_{12A}$, $v(F_{3A}) = v(F_{13A}) = v(F_{14A}) = v(F_A) = F_A$, $v(\emptyset_A) = \emptyset_A$.
Let f: X $\longrightarrow$ Y be an identity map. Here f is soft čech MP - continuous. But the inverse image of the soft čech closed set $U_A = \{(x_1, \{v_2\}), (x_2, \{v_2\})\}$ is not soft čech MP - closed set in X. Therefore f is not soft čech MP - irresolute.

References

1. Čech E. Topological spaces, Inter Science Publishers, John Wiley and Sons, New York, 1996.
2. Chandrasekhara Rao K, Gowri R. On Biclosure Spaces, Bulletin of pure and Applied Sciences. 2006; 25E(1):171-175.
3. Chandrasekhara Rao, k, Gowri R, Swaminathan V. Some Separation Axioms in Bi čech Closure Spaces, Antarctica J Math. 2007; 4(2):167-173.
4. Chawalit Boonpok. Generalized closed sets in čech closed spaces, Acta Universitatis Apulensis. 2010; 22:133-140.
5. Gowri R, Jegadeesan G. On Soft čech Closure Spaces, International Journal of Mathematics Trends and Technology. 2014; 9:32-37.
6. Gowri R, Jegadeesan G. soft Generalized closed sets in soft čech closure space, Global Journal of Pure and Applied Mathematics. 2016; 12(1):909-916.
7. Janaki C, Sreeja D. On soft πgb-continuous function in soft topological spaces, International journal of mathematics trends and technology. 2014; 10(1).
8. Kannan K. Journal of Theoretical and Applied Information Technology. 2012, 37.
9. Levine N, Generalized closed sets in topology, Rend. Circ. Mat. Palermo. 1970; 19:89-96.
10. Muthu Priya T, Francina Shalini A. Čech MP-closed sets in closure spaces. International Advanced Research Journal in Science Engineering and Technology.
11. Molodtsov DA. Soft set theory first results, comput. Math. Appl. 1999, 37:19-31.
12. Molodtsov DA. The theory of soft sets (in Russian), URSS Publishers, Moscow, 2004.
13. Shabir M, Naz M. On Soft Topological Spaces, Comput. Math. Appl. 2011, 61:1786-1799.