International Research Journal of Education and Technology
ISSN 2581-7795

MICRO GENERALIZED CLOSED SETS AND MICRO GENERALIZED CONTINUOUS IN MICRO TOPOLOGICAL SPACES

[1]P. HERIN WISE BELL, [2]S. GANESAN AND [3]S. JEYASHRI

[1]Assistant Professor, Department of Mathematics,
Vivekananda College, Agasteeswaram, Kanyakumari-629701, Tamil Nadu, India.
e-mail : herinwisebellp@gmail.com

[2]Assistant Professor, PG & Research Department of Mathematics,
Raja Doraisingam Government Arts College, Sivagangai-630561, Tamil Nadu, India.
(Affiliated to Alagappa University, Karaikudi, Tamil Nadu, India)
e-mail : sgsgsgsgsg77@gmail.com

[3]Assistant Professor, Department of Mathematics,
Mother Teresa Women's University, Kodaikanal-624102, Tamil Nadu, India.
e-mail : balasri127@gmail.com

Abstract. The aim of this paper, we offer a new class of sets called mg-closed sets in micro topological spaces and we study some of its basic properties. We introduced a new class of continuous maps called mg-continuous and to discuss some of its properties in terms of mg-closed. mg-closed sets in micro topological spaces which is the extension of micro closed sets introduced by S. Chandrasekar [1].

keywords : micro closed sets, mg-closed sets, mg-open sets, mg-continuous map and mg-irresolute map.

[0]IRJEdT Volume: 04, Issue: 01, Jan (2022), Pages: 156 - 167

International Research Journal of Education and Technology
ISSN 2581-7795

1. INTRODUCTION

Lellis Thivagar and Carmel Richard [4] introduced and studied nano semi-open, nano α-open, nano-preopen and nano regular open respectively. S. Chandrasekar [1] introduced and studied micro Pre-open, micro semi open, micro pre-continuous and micro semi-continuous in micro topological spaces. S. Chandrasekar [2] micro α-open sets and micro α-continuity respectively. S. Ganesan et al. [3] introduced and studied micro regular open, micro π-open in micro topological spaces. The aim of this paper, we introduce and study some basic properties of mg-closed sets and mg-continuous map.

2. PRELIMINARIES

Definition 2.1. [4] *Let U be a non-empty finite set of objects called the universe and R be an equivalence relation on U named as the indiscernibility relation. Elements belonging to the same equivalence class are said to be indiscernible with one another. The pair (U, R) is said to be the approximation space. Let $X \subseteq U$.*

(1) *The lower approximation of X with respect to R is the set of all objects, which can be for certain classified as X with respect to R and it is denoted by $L_R(X)$.*
$L_R(X) = \bigcup_{x\epsilon U}\{R(X): R(X) \subseteq X\}$ *where $R(x)$ denotes the equivalence class determined by X.*

(2) *The upper approximation of X with respect to R is the set of all objects, which can be possibly classified as X with respect to R and it is denoted by $U_R(X)$.*
$U_R(X) = \bigcup_{x\epsilon U}\{R(X): R(X) \cap X \neq \phi\}$

(3) *The boundary region of X with respect to R is the set of all objects, which can be neither in nor as not-X with respect to R and it is denoted by $B_R(X)$ and $B_R(X) = U_R(X) - L_R(X)$*

International Research Journal of Education and Technology
ISSN 2581-7795

Property 2.2. [4] *If (U, R) is an approximation space and X, Y ⊆ U, then*

(1) $L_R(X) \subseteq X \subseteq U_R(X)$.

(2) $L_R(\phi) = U_R(\phi) = \phi$, $L_R(U) = U_R(U) = U$.

(3) $U_R(X \cup Y) = U_R(X) \cup U_R(Y)$.

(4) $U_R(X \cap Y) \subseteq U_R(X) \cap U_R(Y)$.

(5) $L_R(X \cup Y) \supseteq L_R(X) \cup L_R(Y)$.

(6) $L_R(X \cap Y) = L_R(X) \cap L_R(Y)$.

(7) $L_R(X) \subseteq L_R(Y)$ *and* $U_R(X) \subseteq U_R(Y)$, *whenever* $X \subseteq Y$.

(8) $U_R(X^c) = [L_R(X)]^c$ *and* $L_R(X^c) = [U_R(X)]^c$.

(9) $U_R(U_R(X)) = L_R(U_R(X)) = U_R(X)$.

(10) $L_R(L_R(X)) = U_R(L_R(X)) = L_R(X)$.

Definition 2.3. [4] *Let U be an universe, R be an equivalence relation on U and* $\tau_R(X) = \{U, \phi , L_R(X), U_R(X), B_R(X)\}$ *where* $X \subseteq U$. *Then by Property 2.2,* $\tau_R(X)$ *satisfies the following axioms*

(1) $U , \phi \in \tau_R(X)$.

(2) *The union of the elements of any sub-collection of* $\tau_R(X)$ *is in* $\tau_R(X)$.

(3) *The intersection of the elements of any finite sub collection of* $\tau_R(X)$ *is in* $\tau_R(X)$.

Then $\tau_R(X)$ *is called the nano topology on U with respect to X.*

The space $(U, \tau_R(X))$ *is the nano topological space. The elements of are called nano open sets.*

Definition 2.4. [4]

If $(U, \tau_R(X))$ *is the nano topological space with respect to X where* $X \subseteq U$ *and if* $A \subseteq U$, *then*

International Research Journal of Education and Technology
ISSN 2581-7795

(1) *The nano interior of the set A is defined as the union of all nano open subsets contained in A and it is denoted by nint(A). That is, nint(A) is the largest nano open subset of A.*

(2) *The nano closure of the set A is defined as the intersection of all nano closed sets containing A and it is denoted by ncl(A). That is, ncl(A) is the smallest nano closed set containing A.*

Definition 2.5. [1] *Let (U, $\tau_R(X)$) be a nano topological space. Then, $\mu_R(X) = \{N \cup (\acute{N} \cap \mu) : N, \acute{N} \in \tau_R(X)$ and $\mu \notin \tau_R(X)\}$ is called the micro topology on U with respect to X. The triplet (U, $\tau_R(X)$, $\mu_R(X)$) is called micro topological space and the elements of $\mu_R(X)$ are called micro open sets and the complement of a micro open set is called a micro closed set.*

Definition 2.6. [1] *The micro topology $\mu_R(X)$ satises the following axioms*

(1) *U, $\phi \in \mu_R(X)$.*

(2) *The union of the elements of any sub-collection of $\mu_R(X)$ is in $\mu_R(X)$.*

(3) *The intersection of the elements of any finite sub collection of $\mu_R(X)$ is in $\mu_R(X)$.*

Then $\mu_R(X)$ is called the micro topology on U with respect to X. The triplet (U, $\tau_R(X)$, $\mu_R(X)$) is called micro topological spaces and The elements of $\mu_R(X)$ are called micro open sets and the complement of a micro open set is called a micro closed set.

Definition 2.7. [1] *For any two micro sets A and B in a micro topological space (U, $\tau_R(X)$, $\mu_R(X)$),*

(1) *A is a micro closed set if and only if Mic-cl(A) = A.*

(2) *A is a micro open set if and only if Mic-int(A) = (A).*

International Research Journal of Education and Technology
ISSN 2581-7795

(3) $A \subseteq B$ *implies Mic-int(A)* $\subseteq$ *Mic-int(B) and Mic-cl(A)* $\subseteq$ *Mic-cl(B).*

(4) *Mic-cl(Mic-cl(A)) = Mic-cl(A) and Mic-int(Mic-int(A)) = Mic-int(A).*

(5) *Mic-cl* $(A \cup B) \supseteq$ *Mic-cl(A)* $\cup$ *Mic-cl(B).*

(6) *Mic-cl*$(A \cap B) \subseteq$ *Mic-cl(A)* $\cap$ *Mic-cl(B).*

(7) *Mic-int*$(A \cup B) \supseteq$ *Mic-int(A)* $\cup$ *Mic-int(B).*

(8) *Mic-int*$(A \cap B) \subseteq$ *Mic-int(A)* $\cap$ *Mic-int(B).*

(9) *Mic-cl*$(\mathcal{A}^C) = [Mic - int(A)]^C$.

(10) *Mic-int*$(\ A^C) = [Mic - cl(A)]^C$

Definition 2.8. *A map f : $(U, \tau_R(X), \mu_R(X)) \to (L, \tau'_R(Y), \mu'_R(Y))$ is called micro-continuous if $f^{-1}(V)$ is a micro closed set of $(U, \tau_R(X), \mu_R(X))$ for every micro closed set V of $(L, \tau'_R(Y), \mu'_R(Y))$.*

3. mg-CLOSED AND mg-OPEN SETS

Definition 3.1. *A subset A of a space $(U, \tau_R(X), \mu_R(X))$ is called micro generalized closed (briefly mg-closed) set if mcl(A) $\subseteq T$ whenever $A \subseteq T$ and T is micro open in $(U, \tau_R(X), \mu_R(X))$. The complement of mg-closed set is called mg-open set.*

Proposition 3.2. *Every micro closed set is mg-closed.*

Proof. Let A be a micro closed set and T be any micro open set containing A. Since A is micro closed, we have mclo(A) = A $\subseteq$ T. Hence A is mg-closed. □

The converse of Proposition 3.2 need not be true as seen from the following example.

Example 3.3. *Let $U = \{1, 2, 3\}$ with $U/R = \{\{3\}, \{1, 2\}, \{2, 1\}\}$ and $X = \{1, 2\}$. The nano topology $\tau_R(X) = \{\phi, \{1, 2\}, U\}$. Take $\mu = \{3\}$. The micro topology $\mu_R(X) = \{\phi, \{3\}, \{1, 2\}, U\}$. Then mg-closed sets are $= \{\phi, \{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}, U\}$. Here, $H = \{2, 3\}$ is mg-closed set but not micro closed.*

International Research Journal of Education and Technology
ISSN 2581-7795

Proposition 3.4. *If S and G are mg-closed sets, then $S \cup G$ is also a mg-closed set in (U, $\tau_R(X)$, $\mu_R(X)$).*

Proof. If S ∪ G ⊆ T and T is micro open, then S ⊆ T and G ⊆ T. Since S and G are mg-closed, mcl(S) ⊆ T and mcl(G) ⊆ T and hence mcl(S ∪ G) = mcl(S) ∪ mcl(G) ⊆ T. Thus S ∪ G is mg-closed set in (U, $\tau_R(X)$, $\mu_R(X)$). □

Remark 3.5. *If K and L are mg-closed sets, then $K \cap L$ is not mg-closed set.*

Example 3.6. *Let U = {1, 2, 3} with U/ R= {{2}, {3}} and X= {1}. The nano topology $\tau_R(X)$ = {ϕ, U}. Take μ = {1}. The micro topology $\mu_R(X)$ = {ϕ, {1}, U}. Then mg-closed sets are = {ϕ, {2}, {3}, {1, 2}, {1, 3}, {2, 3}, U}. Here, K = {1, 2} and L = {1, 3} are mg-closed sets but $K \cap L$ = {1} is not mg-closed.*

Proposition 3.7. *If A subset A of (U, $\tau_R(X)$, $\mu_R(X)$) is a mg-closed then mcl(A) − A contains no nonempty micro closed set in (U, $\tau_R(X)$, $\mu_R(X)$).*

Proof. Suppose that A is mg-closed. Let S be a micro closed subset of mcl(A) − A. Then A ⊆ S^c . But A is mg-closed, therefore mcl(A) ⊆ S^c . Consequently, S ⊆ $(mcl(A))^c$. We already have S ⊆ mcl(A). Thus S ⊆ mcl(A) ∩ $(mcl(A))^c$ = ϕ. Therefore S is empty. □

Proposition 3.8. *If A is mg-closed in (U, $\tau_R(X)$, $\mu_R(X)$) and A ⊆ B ⊆ mcl(A), then B is also a mg-closed in (U, $\tau_R(X)$, $\mu_R(X)$).*

Proof. Let T be a micro open set of (U, $\tau_R(X)$, $\mu_R(X)$) such that B ⊆ T. Then A ⊆ T. Since A is mg-closed, we get, mcl(A) ⊆ T. Now mcl(B) ⊆ mcl(mcl(A)) = mcl(A) ⊆ T. Therefore, B is also a mg-closed in (U, $\tau_R(X)$, $\mu_R(X)$). □

Proposition 3.9. *Let A ⊆ L ⊆ U and suppose that A is mg-closed in (U, $\tau_R(X)$, $\mu_R(X)$). Then A is mg-closed relative to L.*

International Research Journal of Education and Technology
ISSN 2581-7795

Proof. Let A ⊆ L ∩ T, where T is micro open in (U, $\tau_R(X)$, $\mu_R(X)$). Then A ⊆ T and hence mcl(A) ⊆ T. This implies that L ∩ mcl(A) ⊆ L ∩ T. Thus A is mg-closed relative to L. □

Definition 3.10. *The intersection of all micro open subsets of (U, $\tau_R(X)$, $\mu_R(X)$) containing A is called the micro-kernel of A and denoted by m-ker(A).*

Lemma 3.11. *A subset A of (U, $\tau_R(X)$, $\mu_R(X)$) is mg-closed if and only if mcl(A) ⊆ m-ker(A).*

Proof. Suppose that A is mg-closed. Then mcl(A) ⊆ U whenever A ⊆ U and U is micro open. Let x ∈ mcl(A). If x ∉ m-ker(A), then there is a micro open set U containing A such that x ∉ U. Since U is a micro open set containing A, we have x ∉ mcl(A) and this is a contradiction.

Conversely, let mcl(A) ⊆ m-ker(A). If U is any micro open set containing A, then mcl(A) ⊆ m-ker(A) ⊆ U. Therefore, A is mg-closed. □

Definition 3.12. *A subset A of (U, $\tau_R(X)$, $\mu_R(X)$) is said to be mg-open if A^C is mg-closed.*

Proposition 3.13. *Every micro open set is mg-open set but not conversely.*

Proof. Omitted. □

Proposition 3.14. *A subset A of a micro topological space U is said to mg-open if and only if P ⊆ mint(A) whenever M ⊇ P and P is micro closed in U.*

Proof. Suppose that A is mg-open in U and M ⊇ P, where P is micro closed in U. Then $A^c \subseteq P^c$, where P^c is micro open in U. Hence we get mcl (A^c) ⊆ P^c implies $(mint(A))^c \subseteq P^c$. Thus, we have mint(A) ⊇ P.

International Research Journal of Education and Technology
ISSN 2581-7795

conversely, suppose that $A^c \subseteq$ T and T is micro open in U then A $\supseteq T^c$ and T^c is micro closed then by hypothesis mint(A) $\supseteq T^c$ implies ($mint(A))^c \subseteq$ T. Hence mcl $(A^c) \subseteq$ T gives A^c is mg-closed. □

Proposition 3.15. *In a micro topological space U, for each $u \in U$, either $\{u\}$ is micro closed or $\{u\}^c$ is mg-closed in U.*

Proof. Suppose that {u} is not micro closed in U. Then $\{u\}^c$ is not micro open and the only micro open set containing $\{u\}^C$ is the space U itself. That is $\{u\}^c \subseteq$ U. Therefore, mcl $(\{u\}^C) \subseteq$ U and so $\{u\}^C$ is mg-closed. □

4. mg-CONTINUOUS MAPS

Definition 4.1. *A map f : $(U, \tau_R(X), \mu_R(X)) \to (L, \tau'_R(Y), \mu'_R(Y))$ is called micro generalized-continuous (briefly, mg-continuous) if $f^{-1}(V)$ is a mg-closed set of $(U, \tau_R(X), \mu_R(X))$ for every micro closed set V of $(L, \tau'_R(Y), \mu'_R(Y))$.*

Theorem 4.2. *Every micro continuous is mg-continuous but not conversely.*

Proof. Follows from Proposition 3.2. □

Example 4.3. *Let U, $\tau_R(X)$, μ and $\mu_R(X)$ as in the Example 3.3. Let L = {1, 2, 3} with L/ R= {{1}, {2, 3}} and Y= {1}. The nano topology $\tau'_R(Y) = \{\phi, \{1\}, L\}$. Take $\mu = \{1, 2\}$. The micro topology $\mu'_R(Y) = \{\phi, \{1\}, \{1, 2\}, L\}$. Define f : $(U, \tau_R(X), \mu_R(X)) \to (L, \tau'_R(Y), \mu'_R(Y))$ be the identity map. Then f is mg-continuous but not micro continuous, since $f^{-1}(\{2, 3\}) = \{2, 3\}$ is not micro closed in $(U, \tau_R(X), \mu_R(X))$.*

Remark 4.4. *The composition of two mg-continuous maps need not be mg-continuous and this is shown from the following example.*

International Research Journal of Education and Technology
ISSN 2581-7795

Example 4.5. *Let $U = \{1, 2, 3\}$ with $U/R = \{\{1\}, \{2, 3\}\}$ and $X = \{1\}$. The nano topology $\tau_R(X) = \{\phi, \{1\}, U\}$. Take $\mu = \{2\}$. The micro topology $\mu_R(X) = \{\phi, \{1\}, \{2\}, \{1, 2\}, U\}$. Let L, $\tau'_R(Y)$, μ, $\mu'_R(Y)$ and f as in the Example 4.3. Let $Q = \{1, 2, 3\}$ with $Q/R = \{\{3\}, \{1, 2\}\}$ and $X = \{3\}$. The nano topology $\tau'_R(Z) = \{\phi, \{3\}, Q\}$. Take $\mu = \{2, 3\}$. The micro topology $\mu'_R(Z) = \{\phi, \{3\}, \{2, 3\}, Q\}$. Then mg-closed sets are $= \{\phi, \{3\}, \{1, 3\}, \{2, 3\}, U\}$, mg-closed sets are $= \{\phi, \{1\}, \{1, 2\}, \{1, 3\}, L\}$. Define $g : (L, \tau'_R(Y), \mu'_R(Y)) \to (Q, \tau^*_R(Z), \mu^*_R(Z))$ be the identity map. Clearly f and g are mg-continuous but their $g \circ f : (U, \tau_R(X), \mu_R(X)) \to (Q, \tau^*_R(Z), \mu^*_R(Z))$ is not mg-continuous, because $V = \{1, 2\}$ is micro closed in $(Q, \tau^*_R(Z), \mu^*_R(Z))$ but $(g \circ f^{-1}(\{1, 2\}) = f^{-1}(g^{-1}(\{1, 2\})) = f^{-1}(\{1, 2\}) = \{1, 2\}$, which is not mg-closed in $(U, \tau_R(X), \mu_R(X))$.*

Theorem 4.6. *A map $f : (U, \tau_R(X), \mu_R(X)) \to (L, \tau'_R(Y), \mu'_R(Y))$ is mg-continuous if and only if $f^{-1}(U)$ is mg-open in $(U, \tau_R(X), \mu_R(X))$ for every micro open set U in $(L, \tau'_R(Y), \mu'_R(Y))$.*

Proof. Let f : (U, $\tau_R(X)$, $\mu_R(X)$) $\to$ (L, $\tau'_R(Y)$, $\mu'_R(Y)$) be mg-continuous and U be an micro open set in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Then U^c is micro closed in (L, $\tau'_R(Y)$, $\mu'_R(Y)$) and since f is mg-continuous, $f^{-1}(U^c)$ is mg-closed in (U, $\tau_R(X)$, $\mu_R(X)$) . But $f^{-1}(U^c) = f^{-1}((U))^c$ and so $f^{-1}(U)$ is mg-open in (U, $\tau_R(X)$, $\mu_R(X)$).
Conversely, assume that $f^{-1}(U)$ is mg-open in (U, $\tau_R(X)$, $\mu_R(X)$) for each micro open set U in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Let F be a micro closed set in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Then F^c is micro open in (L, $\tau'_R(Y)$, $\mu'_R(Y)$) and by assumption, $f^{-1}(F^c)$ is mg-open in (U, $\tau_R(X)$, $\mu_R(X)$). Since $f^{-1}(F^c) = f^{-1}((F))^c$, we have $f^{-1}(F)$ is micro closed in (U, $\tau_R(X)$, $\mu_R(X)$) and so f is mg-continuous. □

International Research Journal of Education and Technology
ISSN 2581-7795

Definition 4.7. *A map f: (U, $\tau_R(X)$, $\mu_R(X)$) $\rightarrow$ (L, $\tau'_R(Y)$, $\mu'_R(Y)$) is called mg-irresolute if $f^{-1}(V)$ is a mg-closed set of (U, $\tau_R(X)$, $\mu_R(X)$)for every mg-closed set V of (L, $\tau'_R(Y)$, $\mu'_R(Y)$).*

Theorem 4.8. *Every mg-irresolute map is mg-continuous but not conversely.*

Proof. Let f: (U, $\tau_R(X)$, $\mu_R(X)$) $\rightarrow$ (L, $\tau'_R(Y)$, $\mu'_R(Y)$) be a mg-irresolute map. Let V be a micro closed set of (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Then by the Proposition 3.2, V is mg-closed. Since f is mg-irresolute, then f^{-1}(V) is a mg-closed set of (U, $\tau_R(X)$, $\mu_R(X)$). Therefore f is mg-continuous. □

Example 4.9. *Let U, $\tau_R(X)$, μ, $\mu_R(X)$, L, $\tau'_R(Y)$, μ, $\mu'_R(Y)$ and f as in the Example 4.5. It is clear that {1, 2} is mg-closed set of (L, $\tau'_R(Y)$, $\mu'_R(Y)$) but f^{-1}({1, 2}) ={1, 2} is not a mg-closed set of (U, $\tau_R(X)$, $\mu_R(X)$). Thus f is not mg-irresolute map. However f is mg-continuous map.*

Theorem 4.10. *Let f: (U, $\tau_R(X)$, $\mu_R(X)$) $\rightarrow$ (L, $\tau'_R(Y)$, $\mu'_R(Y)$) and g : (L, $\tau'_R(Y)$, $\mu'_R(Y)$) $\rightarrow$ (Q, $\tau^*_R(Z)$, $\mu^*_R(Z)$) be any two maps. Then*

(1) *$g \circ f$ is mg-continuous if g is micro-continuous and f is mg-continuous.*
(2) *$g \circ f$ is mg-irresolute if both f and g are mg-irresolute.*
(3) *$g \circ f$ is mg-continuous if g is mg-continuous and f is mg-irresolute.*

Proof. (1) Since g is a micro-continuous from (L, $\tau'_R(Y)$, $\mu'_R(Y)$) $\rightarrow$ (Q, $\tau^*_R(Z)$, $\mu^*_R(Z)$), for any micro closed set q as a subset of Q, we get g^{-1}(q) = G is a micro closed set in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). As f is a mg-continuous map. We get $(g \circ f)^{-1}$(q)= $f^{-1}(g^{-1}(q))$ = f^{-1}(G) = S and S is a mg-closed set in (U, $\tau_R(X)$, $\mu_R(X)$). Hence ($g \circ f$) is a mg-continuous map.

(2) Consider two mg-irresolute maps, f: (U, $\tau_R(X)$, $\mu_R(X)$) $\rightarrow$ (L, $\tau'_R(Y)$, $\mu'_R(Y)$)

International Research Journal of Education and Technology
ISSN 2581-7795

and g : (L, $\tau'_R(Y)$, $\mu'_R(Y)$) $\rightarrow$ (Q, $\tau^*_R(Z)$, $\mu^*_R(Z)$) is a mg-irresolute maps. As g is consider to be a mg-irresolute map, by Definition 4.7, for every mg-closed set q $\subseteq$ (Q, $\tau^*_R(Z)$, $\mu^*_R(Z)$), $g^{-1}(q) = G$ is a mg-closed in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Again since f is mg-irresolute, $(g \circ f)^{-1}(q) = f^{-1}(g^{-1}(q)) = f^{-1}(G) = S$ and S is a mg-closed set in (U, $\tau_R(X)$, $\mu_R(X)$). Hence $(g \circ f)$ is a mg-irresolute map.

(3) Let g be a mg-continuous map from (L, $\tau'_R(Y)$, $\mu'_R(Y)$) $\rightarrow$ (Q, $\tau^*_R(Z)$, $\mu^*_R(Z)$) and q subset of Q be a micro closed set. Therefore $g^{-1}(q) = G$ is a mg closed set in (L, $\tau'_R(Y)$, $\mu'_R(Y)$). Also since f is mg-irresolute, we get $(g \circ f)^{-1}(q) = f^{-1}(g^{-1}(q)) = f^{-1}(G) = S$ and S is a mg-closed set in (U, $\tau_R(X)$, $\mu_R(X)$). Hence $(g \circ f)$ is a mg-continuous map. □

Conclusion

General topology plays vital role in many fields of applied sciences as well as in all branches of mathematics. In reality it is used in data mining, computational topology for geometric design and molecular design, computer-aided design, computer-aided geometric design, digital topology, information systems, particle physics and quantum physics etc. In this paper, we have defined and studied some basic properties of mg-closed sets and mg-continuous map. In future, we have extend this work in various micro topological fields with some applications.

5. Acknowledgement

The authors would like to thank the editors and the anonymous reviewers for their valuable comments and suggestions which have helped immensely in improving the quality of the paper.

International Research Journal of Education and Technology
ISSN 2581-7795

References

[1] S. Chandrasekar, On micro topological spaces, Journal of New Theory, 26(2019), 23-31.

[2] S. Chandrasekar and G. Swathi, micro α-open sets in micro Topological Spaces, International Journal of Research in Advent Technology, 6(10), October (2018), 2633-2637.

[3] S. Ganesan, P. Herin Wise Bell and S. Jeyashri, New concepts of micro topological spaces via micro ideals, International Research Journal of Education and Technology, 4(1), Jan (2022), 168-191.

[4] M. LellisThivagar and Carmel Richard, On Nano forms of weakly open sets, International Journal of Mathematics and Statistics Invention, 1(1)(2013), 31-37.