$rg^{**}b^{\mu}$-LOCALLY CLOSED SETS AND $rg^{**}b^{\mu}$-LOCALLY CONTINUOUS FUNCTIONS IN SUPRA TOPOLOGICAL SPACES

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Abstract: The aim of this paper is to introduce and investigate a new decomposition of sets namely supra $rg^{**}b$ - locally closed sets and a new decomposition of continuous maps called supra $rg^{**}b$ -locally continuous functions. This paper also discusses some of their properties and characteristics.

Keywords: supra $rg^{**}b$ -LC sets($rg^{**}b^{\mu}$-LC), supra $rg^{**}b$ –LC* sets($rg^{**}b^{\mu}$-LC*), supra $rg^{**}b$ –LC** sets($rg^{**}b^{\mu}$-LC**),$rg^{**}b^{\mu}$-LC-continuous,$rg^{**}b^{\mu}$-LC-irresolute.

1.Introduction: Palaniappan and Rao[11] defined a set called regular generalized closed set.Ganster and Reily[5] introduced and studied different notions of generalized continuity and gave a decomposition of sets and continuity. Arockiarani et al[1] introduced regular generalized locally closed sets and investigated the classes of regular generalized locally continuous functions in topological spaces.The notion of supra topological spaces was introduced by Mashhour et al[10] in 1983.Ravi et al[12] introduced supra rg-closed set. Dayana Mary and Nagaveni[2,3] introduced supra g-locally closed sets and supra rg-locally closed sets and studied their basic properties.In 2015,Jeyanthi and Janaki[6],introduced πg^{μ}R-Locally closed sets in supra topological spaces.In the year 2012,Krishnaveni and Vigneshwaran[8], introduced bT-locally closed sets and bT-locally continuous functions in supra topological spaces.In 2016,Ludi jancyjenifer and Indirani[9] introduced a new class of set called $rg^{**}b^{\mu}$ closed set in supra topological space.

In this paper, we introduce the concept of $rg^{**}b^{\mu}$ locally closed sets and study its basic properties. Further, the concept of $rg^{**}b^{\mu}$-LC continuous function and $rg^{**}b^{\mu}$-LC irresolute function are introduced and studied.

2.Preliminaries: Throughout this paper (X,τ) and (X,μ) represent the topological space and supra topological space respectively on which no separation axioms are assumed , unless explicitly stated.

Definition 2.1[10]: Let X be a non-empty set. The subfamily $\mu \subseteq P(X)$ is said to be a supra topology on X if $X \in \mu$ and $\emptyset \in \mu$ and μ is closed under arbitrary unions. The pair (X,μ) is called a supra topological space. The elements of μ are said to be supra open in (X,μ) and its complement is supra closed set. We call μ as supra topology associated with τ if $\tau \subset \mu$.

Definition 2.2[10]: Let A be a subset of (X, μ). Then

(i) The **supra closure** of a set A is denoted by **$cl^{\mu}(A)$** defined as **$cl^{\mu}(A) = \cap\{B : B$ is supra closed and $A \subset B\}$**

(ii) The **supra interior** of a set A is denoted by **$int^{\mu}(A)$** defined as **$int^{\mu}(A) = \cup\{B : B$ is supra open and $B \subset A\}$**

Definition 2.3[2,3]: Let A and B be subsets of X. Then A and B are said to be supra separated, if $A \cap cl^{\mu}(B) = B \cap cl^{\mu}(A) = \emptyset$.

Definition 2.4: Let (X, μ) be a supra topological space.

A subset A of X is called

(i) ***supra regular generalized star star b-closed set***[9](briefly $rg^{**}b^{\mu}$-closed set) if $rg^{*}bcl^{\mu}(A) \subseteq U$ whenever $A \subseteq U$ and U is supra open in X.

(ii) ***supra regular open***[5] if **$A = int^{\mu}(cl^{\mu}(A))$**and ***supra regular closed*** if **$A = cl^{\mu}(int^{\mu}(A))$.**

Definition 2.5: Let (X, τ) and (Y, σ) be two topological spaces and $\tau \subset \mu, \sigma \subset \lambda$.A mapf: (X, μ) → (Y, λ) is called

supra continuous[2] if f^{-1} (V) is a supra closed of (X,μ_1) for every supra closed set V of (Y,μ_2).

supra regular- continuous[4] if f^{-1} (V) is a supra -regular closed of (X,μ_1) for every supra closed set V of (Y,μ_2).

$rg^{**}b^{\mu}$-continuous[9] if f^{-1}(V) is $rg^{**}b^{\mu}$-closed set of (X,μ) for every closed set V of (Y,σ).

(i) ***$rg^{**}b^{\mu}$-irresolute***[9]if f^{-1}(V) is $rg^{**}b^{\mu}$-closed in X for every$rg^{**}b^{\mu}$-closed set V of Y.

supra R-map[5] ($R^{\mu}-map$) if f^{-1}(V) is supra regular closed in X for every supra regular closed in Y.

Definition 2.6:A space X is said to be **$rg^{**}b^{\mu}$-$T_{1/2}$** space if every $rg^{**}b^{\mu}$-closed set isR^{μ}-closed.

Definition 2.7: A subset S of a supra topological space X

1. ***supra locally closed***[7,12](briefly **LC^{μ}**-closed set) if $S = A \cap B$, where A is supra open and B is supra closed in X.

2.***supra regular locally closed***[3](briefly **R^{μ}-LC**) if $S = A \cap B$, where A is supra regular open and B is supra regular closed in X.

Definition 2.8: Let (X,τ) and (Y,σ) be two topological spaces , $\tau \subset \mu, \sigma \subset \lambda$.A mapf: (X,μ) → (Y,λ) is called

(i) ***supra LC continuous***[2]if the f^{1}(V) is supra locally closed in X for every supra closed set V in Y.

(ii) ***R^{μ}-LC continuous*** [4]if f^{1}(V) is R^{μ}-LC in X for every supra closed set V in Y.

(iii) ***R^{μ}-LC irresolute***[5](R^{μ}-LC map) if $f^{-1}(V)$ is R^{μ}-LC in X for every R^{μ}-LC set V in Y.

3. $rg^{**}b^{\mu}$-locally closed sets

Definition 3.1: A subset S of a supra topological space X is called

(i) **$rg^{**}b^{\mu}$-LC** set if S = A∩B, where A is $rg^{**}b^{\mu}$-open in X and B is $rg^{**}b^{\mu}$-closed in X.

(ii) **$rg^{**}b^{\mu}$-LC*-closed** if S = A∩B, where A is $rg^{**}b^{\mu}$-open in X and B is supra closed in X.

(iii) **$rg^{**}b^{\mu}$-LC**-closed** if S = A∩B, where A is supra open in X and B is $rg^{**}b^{\mu}$-closed in X.

The collection of all $rg^{**}b^{\mu}$-LC sets, $rg^{**}b^{\mu}$-LC* and $rg^{**}b^{\mu}$-LC** sets of X will be denoted by $rg^{**}b^{\mu}$-LC(X), $rg^{**}b^{\mu}$-LC*(X), $rg^{**}b^{\mu}$-LC**(X).

Proposition 3.2: Every $rg^{**}b^{\mu}$-closed set is $rg^{**}b^{\mu}$-LC set and every $rg^{**}b^{\mu}$-open set is $rg^{**}b^{\mu}$-LC set.

Proof: Follows from the definition.

Theorem 3.3: Let A be a subset of (X,μ). If A is supra locally regular closed, then A∈ $rg^{**}b^{\mu}$-LC*(X,μ) and A∈ $rg^{**}b^{\mu}$-LC**(X,μ) but not conversely.

Proof: obvious.

Example 3.4: Let X={a,b,c},μ ={X,∅{a,b},{b,c}}.Here the subset {c} ∈ $rg^{**}b^{\mu}$-LC* (X,μ) and $rg^{**}b^{\mu}$-LC** (X,μ) but {c}∉R^{μ}-LC set.

Theorem 3.5: Let A be a subset of (X,μ).If A ∈ $rg^{**}b^{\mu}$-LC* (X,μ) (or) $rg^{**}b^{\mu}$-LC** (X,μ) then A is $rg^{**}b^{\mu}$-LC (X,μ) but not conversely.

Proof: Given A∈ $rg^{**}b^{\mu}$-LC*(X,μ) (or) $rg^{**}b^{\mu}$-LC** (X,μ),by definition A= U∩V, where U is $rg^{**}b^{\mu}$-open set and V is supra closed set (or) U is supra open set and V is $rg^{**}b^{\mu}$ – closed set.Every supra closed set is $rg^{**}b^{\mu}$ – closed set , therefore V is $rg^{**}b^{\mu}$ – closed set (or) every supra open set is $rg^{**}b^{\mu}$ – open set, therefore U is $rg^{**}b^{\mu}$-open set. Then A is $rg^{**}b^{\mu}$-LC (X,μ).

Example 3.6: Let X= {a,b,c} and μ = {X,ϕ,{a,b},{a,c}}.In this (X,μ),{b,c}∈ $rg^{**}b^{\mu}$-LC (X,μ) but {b,c} ∉ $rg^{**}b^{\mu}$-LC* (X,μ) and $rg^{**}b^{\mu}$-LC** (X,μ).

Theorem 3.7: Let A be a subset of (X,μ) . If A∈ S-LC (X,μ) then A is $rg^{**}b^{\mu}$-LC (X,μ) but not conversely.

Proof: Given A∈ S-LC,by definition A = U∩V, where U is supra open set and V is supra closed set. Since every supra open set is $rg^{**}b^{\mu}$ – open set and every supra closed set is $rg^{**}b^{\mu}$– closed set. Then A ∈ $rg^{**}b^{\mu}$-LC (X,μ) .

Example 3.8: Let X= {a,b,c,d} and μ = {X,ϕ,{b},{c},{b,c},{c,d},{b,d},{b,c,d}}.In this (X,μ),{b,c} ∈ $rg^{**}b^{\mu}$-LC (X,μ) but {b,c}∉S-LC(X,μ).

Remark 3.9: The union of two $rg^{**}b^{\mu}$-LC*(X,μ) sets need not be $rg^{**}b^{\mu}$-LC*(X,μ).

Example 3.10: In example 3.4, let A = {a} and B={c}.Then A and B belongs to $rg^{**}b^{\mu}$-LC*(X,μ), but their union {a,c} ∉ $rg^{**}b^{\mu}$-LC*(X,μ).

Theorem 3.11: For a subset A of X, the following are equivalent.

(i) A ∈ $rg^{**}b^{\mu}$-LC*(X,μ).

(ii) A = U ∩cl^{μ}(A) for some supra $rg^{**}b$-open set U.

Proof: (i)⇒(ii):Let A ∈ $rg^{**}b^{\mu}$-LC*(X,μ). Then there exists a $rg^{**}b^{\mu}$-open set U and a supra closed set V such that A=U ∩ V. Since A ⊂ U and A⊂cl^{μ}(A) , A ⊂ U∩cl^{μ}(A).

Let A=U∩V and A ⊂ V, cl^{μ}(A) ⊂cl^{μ}(V) =V, since V is supra closed.

Now, A = U∩ V ⊃ U∩cl^{μ}(A) implies A⊃U∩cl^{μ}(A) and hence A=U∩cl^{μ}(A).

(ii) ⇒(i): Let A = U ∩cl^{μ}(A) for some $rg^{**}b^{\mu}$-open set U. clearly cl^{μ}(A) is supra closed and hence A ∈ $rg^{**}b^{\mu}$-LC*(X,μ).

Theorem 3.12: Let A be a subset of X and if A ∈ $rg^{**}b^{\mu}$-LC(X,μ),thenA = U∩ $rg^{**}b^{\mu}$-cl(A) for some $rg^{**}b^{\mu}$open set U.

Proof: Let A∈ $rg^{**}b^{\mu}$-LC(X,μ). Then there exists a $rg^{**}b^{\mu}$-open subset U and a $rg^{**}b^{\mu}$-closed subset V such that A=U∩V. Since A⊂U and A⊂ $rg^{**}b^{\mu}$-cl(A),A⊂U∩ $rg^{**}b^{\mu}$-cl(A).

Since A=U∩V and V is $rg^{**}b^{\mu}$-closed, $rg^{**}b^{\mu}$-cl(V)=V. Also, since A⊂V, $rg^{**}b^{\mu}$-cl(A)⊂ $rg^{**}b^{\mu}$-cl(V)=V. Therefore $rg^{**}b^{\mu}$-cl(A)⊂V.Now, let A =U∩ V, A⊃U∩ $rg^{**}b^{\mu}$-cl(A) and hence A = U∩ $rg^{**}b^{\mu}$-cl(A).

Proposition 3.13: Let X be a $rg^{**}b^{\mu}$-$T_{1/2}$-space. Then $rg^{**}b^{\mu}$-LC(X,μ) = R^{μ}-LC(X, μ)

Proof: Let A∈ $rg^{**}b^{\mu}$-LC(X,μ). Then there exists $rg^{**}b^{\mu}$-open set U and $rg^{**}b^{\mu}$-closed set V such that A = U ∩ V. Since X is a $rg^{**}b^{\mu}$-$T_{1/2}$-space, then U and V are supra regular open and supra regular closed respectively and hence A∈ R^{μ}-LC(X,μ).The above implies $rg^{**}b^{\mu}$-LC(X,μ) ⊂R^{μ}-LC(X,μ).

On the other hand, let A∈R^{μ}-LC(X,μ). Then A =U∩V, where U is R^{μ}-open and V is R^{μ} -closed. But everyR^{μ} - closed set is $rg^{**}b^{\mu}$- closed. Hence U is $rg^{**}b^{\mu}$-open and V is $rg^{**}b^{\mu}$-closed. The above implies R^{μ}-LC(X,μ)⊂ $rg^{**}b^{\mu}$-LC(X,μ). Hence $rg^{**}b^{\mu}$-LC(X,μ) = R^{μ}-LC(X,μ).

Proposition 3.14: If X is a supra $rg^{**}b$-$T_{1/2}$-space, then $rg^{**}b^{\mu}$-LC(X,μ)⊂ LC^{μ}(X,μ) .

Proof: Let A∈ $rg^{**}b^{\mu}$-LC(X,μ).Then there exists $rg^{**}b^{\mu}$-open set U and $rg^{**}b^{\mu}$-closed set V such that A = U∩V. Since X is a $rg^{**}b^{\mu}$-$T_{1/2}$-space, then U and V are R^{μ}-open and R^{μ}-closed respectively. Then U is supra open and V is supra closed. The above implies A is supra locally closed in X. Hence $rg^{**}b^{\mu}$-LC(X,μ)⊂ LC^{μ}(X,μ).

Proposition 3.15: If X is a $rg^{**}b^{\mu}$-$T_{1/2}$-space, then $rg^{**}b^{\mu}$-LC(X,μ)⊂ $rg^{**}b^{\mu}$-LC*(X,μ) and $rg^{**}b^{\mu}$-LC(X,μ)⊂ $rg^{**}b^{\mu}$-LC**(X,μ).

Proof: Let A∈ $rg^{**}b^{\mu}$-LC(X,μ). Then there exists $rg^{**}b^{\mu}$-open set U and $rg^{**}b^{\mu}$-closed set V such that A=U∩V.Since X is $rg^{**}b^{\mu}$-$T_{1/2}$-space, V is R^{μ} closed and hence A∈ $rg^{**}b^{\mu}$-LC*(X,μ). Hence

$rg^{**}b^{\mu}$-LC(X,μ)⊂ $rg^{**}b^{\mu}$-LC*(X,μ). Similarly, we prove $rg^{**}b^{\mu}$-LC(X,μ)⊂ $rg^{**}b^{\mu}$-LC**(X,μ).

Theorem 3.16: For a subset A of X, if A∈ $rg^{**}b^{\mu}$-LC**(X,μ), then there exists a supra open set U such that A=U∩ $rg^{**}b^{\mu}$-cl(A).

Proof: Let A∈ $rg^{**}b^{\mu}$-LC**(X,μ), then there exists a supra open set U and a $rg^{**}b^{\mu}$-closed set V such that A= U∩V. Since A ⊂ U and A⊂ $rg^{**}b^{\mu}$-cl(A),A ⊂U∩ $rg^{**}b^{\mu}$-cl(A).Now A⊂V, $rg^{**}b^{\mu}$-cl(A) ⊂ $rg^{**}b^{\mu}$-cl(V)=V, as V is $rg^{**}b^{\mu}$-closed. U ∩ $rg^{**}b^{\mu}$-cl(A)⊂U∩V = A. Thus U∩ $rg^{**}b^{\mu}$-cl(A) ⊂A and hence A = U∩ $rg^{**}b^{\mu}$-cl(A).

4.$rg^{**}b^{\mu}$-locally continuous functions

Definition 4.1: Let (X,τ) and (Y,σ) be two topological spaces and τ ⊆μ and σ ⊆λ. A function f: (X,μ)→(Y,λ) is

(i) ***$rg^{**}b^{\mu}$-LC continuous*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC(X,μ) for each A∈(Y,λ).

(ii) ***$rg^{**}b^{\mu}$-LC* continuous*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC*(X,μ) for each A∈(Y,λ).

(iii) ***$rg^{**}b^{\mu}$-LC**continuous*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC**(X,μ) for each A∈(Y,λ).

Definition 4.2: Let (X,τ) and (Y,σ) be two topological spaces and μ and λ be supra topologies associated with τ and σ respectively. A function f: (X,μ)→(Y,λ) is

(i) ***$rg^{**}b^{\mu}$-LC irresolute*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC(X,μ) for each A∈ $rg^{**}b^{\mu}$-LC(Y,λ).

(ii) ***$rg^{**}b^{\mu}$-LC* irresolute*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC*(X,μ) for each A∈ $rg^{**}b^{\mu}$-LC* (Y,λ).

(iii) ***$rg^{**}b^{\mu}$-LC** irresolute*** if f^{-1}(A) ∈ $rg^{**}b^{\mu}$ — LC**(X,μ) for each A∈ $rg^{**}b^{\mu}$-LC**(Y,λ).

Theorem 4.3: Every R^{μ}-LC continuous function is $rg^{**}b^{\mu}$-LC continuous.

Proof: Obvious.

Remark 4.4: Converse of the above need not be true as shown in the following example.

Example 4.5: Let X={a,b,c,d}=Y, μ={X,∅,{b},{c},{b,c},{c,d},{b,d},{b,c,d}}, λ={Y,∅,{b},{c},{a,b},{b,c},{a,c},{a,b,c}}. Let (X,μ)→(Y,λ) be an identity map. Here the inverse image of supra closed sets in Y are not R^{μ}-LC in X but $rg^{**}b^{\mu}$-LC in X. Hence $rg^{**}b^{\mu}$-LC continuous function need not be R^{μ} -LC continuous.

Theorem 4.6: If f: (X,μ)→(Y,λ) is $rg^{**}b^{\mu}$-LC continuous and X is $rg^{**}b^{\mu}$-$T_{1/2}$-space , then f is LC continuous

Proof: Let V be a supra open set of Y. Since f is $rg^{**}b^{\mu}$-LC continuous, f^{-1}(V) is $rg^{**}b^{\mu}$-LC in X. Since X is a $rg^{**}b^{\mu}$-$T_{1/2}$- space, every $rg^{**}b^{\mu}$-closed set ($rg^{**}b^{\mu}$-open set) in X is R^{μ}-closed(R^{μ}-open) in X and hence supra closed (supra open) in X. Then f^{-1}(V) is supra locally closed in Y and hence f is LC continuous.

We have the following theorem concerning the composition of functions.

Theorem 4.7: If f: (X,μ)→(Y,λ) and g: (Y,λ)→(Z,ξ) be two functions. Then

a) g∘f is $rg^{**}b^{\mu}$-LC irresolute if f and g are $rg^{**}b^{\mu}$-LC irresolute.

b) g∘f is $rg^{**}b^{\mu}$-LC* irresolute if f and g are $rg^{**}b^{\mu}$-LC* irresolute.

c) g∘f is $rg^{**}b^{\mu}$-LC** irresolute if f and g are $rg^{**}b^{\mu}$ -LC** irresolute.

d) g∘f is $rg^{**}b^{\mu}$-LC* continuous if f is $rg^{**}b^{\mu}$-LC* continuous and g is supra continuous.

e) g∘f is $rg^{**}b^{\mu}$-LC continuous if f is $rg^{**}b^{\mu}$-LC continuous and g is supra continuous.

f) g∘f is $rg^{**}b^{\mu}$-LC* continuous if f is $rg^{**}b^{\mu}$-LC* irresolute and g is $rg^{**}b^{\mu}$-LC* continuous.

g) g∘f is $rg^{**}b^{\mu}$-LC** continuous if f is $rg^{**}b^{\mu}$-LC** irresolute and g is $rg^{**}b^{\mu}$-LC** continuous.

h) g∘f is $rg^{**}b^{\mu}$-LC continuous if f is $rg^{**}b^{\mu}$-LC irresolute and g is $rg^{**}b^{\mu}$-LC continuous.

Proof: Obvious.

Theorem 4.8 Let (X,τ) and (Y,σ) be two topological spaces and μandλ be a supra topology associated with $\tau$and σ. Let f: $(X,\tau)\to(Y,\sigma)$ be a function. If f is $rg^{**}b^{\mu}$-LC* continuous (or) $rg^{**}b^{\mu}$-LC**-continuous, then it is $rg^{**}b^{\mu}$-LC- continuous.

Proof: Let f: $(X,\tau)\to(Y,\sigma)$ be a function. If f is $rg^{**}b^{\mu}$ -LC*- continuous (or) $rg^{**}b^{\mu}$-LC**- continuous, by definition f^{-1}(A)∈ $rg^{**}b^{\mu}$-LC*(X,μ), and f^{-1}(A) ∈ $rg^{**}b^{\mu}$-LC**(X,μ) for each A∈ σ.f^{-1}(A) ∈ $rg^{**}b^{\mu}$ -LC(X,μ). Then it is $rg^{**}b^{\mu}$-LC- continuous.

Theorem 4.9 Let (X,τ) and (Y,σ) be two topological spaces and μandλ be a supra topologies associated with τ and σ respectively. Let f: $(X,\tau)\to(Y,\sigma)$ be a function . If f is $rg^{**}b^{\mu}$-LC-irresolute(resp., $rg^{**}b^{\mu}$-LC*- irresolute, and $rg^{**}b^{\mu}$-LC**-irresolute) , then it is $rg^{**}b^{\mu}$-LC- continuous(resp., $rg^{**}b^{\mu}$-LC*-continuous, and $rg^{**}b^{\mu}$-LC**- continuous).

Proof: Let f: $(X,\tau)\to(Y,\sigma)$ be a function . Let A is supra closed of Y. By theorem, every supra closed set is $rg^{**}b^{\mu}$-closed set, therefore A is $rg^{**}b^{\mu}$– closed set. Since f is $rg^{**}b^{\mu}$-LC-irresolute(resp., $rg^{**}b^{\mu}$-LC*- irresolute, and $rg^{**}b^{\mu}$-LC**-irresolute), f^{-1}(A) is $rg^{**}b^{\mu}$-LC set. Therefore f is $rg^{**}b^{\mu}$-LC-continuous (resp., $rg^{**}b^{\mu}$-LC*- continuous, and $rg^{**}b^{\mu}$-LC**- continuous).

Theorem 4.10: If f: (X,μ)→(Y,λ) is supra locally irresolute and g: (Y,λ)→(Z,ξ) is $rg^{**}b^{\mu}$-LC-continuous and Y is $rg^{**}b^{\mu}$-$T_{1/2}$-space,then their composition (g ∘f) : (X,μ)→(Z,ξ) is supra locally continuous .

Proof: Let V be a supra closed set of Z. Since g is $rg^{**}b^{\mu}$-LC-continuous, g^{-1}(V) is $rg^{**}b^{\mu}$-LC in Y .Since Y is $rg^{**}b^{\mu}$-$T_{1/2}$-space, g^{-1}(V) is supra locally regular closed in Y and hence supra locally closed in Y. Since f is supra locally irresolute, then $f^{-1}(g^{-1}(V))$ is supra locally closed in X. Therefore, $(g \circ f)^{-1}$(V) is supra locally closed in X and hence g ∘ f is supra locally continuous.

Theorem 4.11: If f: (X,μ)→(Y,λ) is $rg^{**}b^{\mu}$-LC continuous and g: (Y,λ)→(Z,ξ) is $rg^{**}b^{\mu}$-LC irresolute and Y is $rg^{**}b^{\mu}$-$T_{1/2}$-space, then their composition (g ∘f) : (X,μ)→(Z,ξ) is $rg^{**}b^{\mu}$-LC irresolute.

Proof: Let V be a $rg^{**}b^{\mu}$-LC set of Z. Since g is $rg^{**}b^{\mu}$-L-irresolute, $g^{-1}(V)$ is $rg^{**}b^{\mu}$-LC in Y. Since Y is $rg^{**}b^{\mu}$-$T_{1/2}$-space,$g^{-1}(V)$ is supra locally regular closed in Y and hence supra locally closed in Y. Since f is $rg^{**}b^{\mu}$-LCcontinuous, $f^{-1}(g^{-1}(V))$ is $rg^{**}b^{\mu}$-LC in X. Therefore, $(g \circ f)^{-1}(V)$ is $rg^{**}b^{\mu}$-LC in X and hence g ∘f is $rg^{**}b^{\mu}$-LCirresolute.

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