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FUZZY rh-SUPER IRRESOLUTE MAPPING

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Abstract: In this paper the concept of fuzzy rh -super irresolute mappings have been introduced and explore some of its basic properties in fuzzy Topological Space.

Keywords: fuzzy topology, fuzzy super closure, Fuzzy Super Interior fuzzy rh - super closed sets and fuzzy rh - super open sets, fuzzy rh -super continuous and fuzzy rh -super irresolute mappings

I.INTRODUCTION

Let Y be a non empty set and I= [0,1]. A fuzzy set on Y is a mapping from Y in to I. The null fuzzy set 0 is the mapping from X in to I which assumes only the value is 0 and whole fuzzy sets 1 is a mapping from Y on to I which takes the values 1 only. The union (resp. intersection) of a family $\{A_\alpha: \alpha\in\Lambda\}$of fuzzy sets of X is defined by to be the mapping sup P_α (resp. inf P_α) . A fuzzy set P of Y is contained in a fuzzy set R of Y if P(y) ≤ Q(y) for each x≠y. A fuzzy point y_α in Y is a fuzzy set defined by x_β (x)=α for y=x and y(x) =0 for x≠y, α α ∈[0,1] and x∈ y .A fuzzy point y_α is said to be quasi-coincident with the fuzzy set P denoted by $x_{\alpha q}$P if and only if α+ P(y) > 1. A fuzzy set P is quasi coincident with a fuzzy set R denoted by $P_q Q$ if and only if there exists a point y∈Y such that P(y) + R(y) > 1 .P ≤ R if and only if ($P_q R^c$).A family τ of fuzzy sets of y is called a fuzzy topology [2] on Y if 0,1 belongs to τ and τ is super closed with respect to arbitrary union and finite intersection .The members of τ are called fuzzy super open sets and their complement are fuzzy super closed sets. For any fuzzy set P of Y the closure of P (denoted by cl(P)) is the intersection of all the fuzzy super closed super sets of P and the interior of P (denoted by int(P))is the union of all fuzzy super open subsets of P.

Definition1.1 [5,10,11,12]: Let (Y, τ) fuzzy topological space and P≤Y then

1. Fuzzy Super closure scl(P)={y∈Y:cl(U)∩P≠ϕ}
2. Fuzzy Super interior sint(P) ={y∈Y:cl(U)≤P≠ϕ}

Definition 1.2[5, 10,11,12]: A fuzzy set P of a fuzzy topological space (Y,τ) is called:
(a) Fuzzy super closed if scl(P) ≤ P.
(b) Fuzzy super open if 1-P is fuzzy super closed sint(P)=P

Remark 1.1[5, 10,11,12]: Every fuzzy closed set is fuzzy super closed but the converses may not be true. **Remark 1.2[5, 10,11,12]:** Let P and Q are two fuzzy super closed sets in a fuzzy topological space (Y,$\Im$), then P ∪ Q is fuzzy super closed.

Remark 1.3[5]: The intersection of two fuzzy super closed sets in a fuzzy topological space (Y,$\Im$) may not be fuzzy super closed.

Definition 1.3: A fuzzy set P of an fuzzy topological space (Y, $\Im$) is said to be :-
(a) fuzzy regular super open if P = int(cl(P)) [7].
(b) fuzzy h-super closed if cl(P)≤O whenever P≤O and O is an fuzzy super open set.[14]
(c) fuzzy h-super open if P^c is fuzzy g-closed.[14]
(d) fuzzy rh-super closed if cl(P) ≤O whenever P≤O and O is an fuzzy regular super open set.[16]
(e) fuzzy rh-super open if P^c is fuzzy mg-closed.[16]

Remark 1.3: Every fuzzy super closed set is fuzzy h-super closed and every fuzzy h-super closed set is fuzzy rh-super closed but the converse may not be true.[14,16]

Definition 1.4: A mapping f : (Y,$\Im$) → (X,μ) is said to be :

1. Fuzzy h-super continuous if the pre image of every fuzzy super closed set of X is fuzzy h-super closed inY.[15].
2. Fuzzy rh-super continuous if the pre image of every fuzzy super closed set of X is fuzzy rh-super closedin Y. [17]

Remark 1.4: Every fuzzy super continuous mapping is fuzzy h-super continuous and every fuzzy h-super continuous mapping is fuzzy rh-super continuous but the converse may not be true.[17]

Definition 1.5: A collection $\{F_\beta:\beta\in\wedge\}$.of fuzzy mg-super open sets in a fuzzy topological space (Y,$\Im$) is called a fuzzy rh-super open cover of an fuzzy set P of Y if P $\le\cup\{F_\beta:\beta\in\wedge\}$.[16]

Definition 1.6: A fuzzy topological space (Y,$\Im$) is said to be fuzzy rh - super compact if every fuzzy rh-super open cover of Y has a finite subcover.[16]

Definition 1.7: An fuzzy set A of an fuzzy topological space (Y,$\Im$) is said to be fuzzy rh- super compact relative to Y if every collection $\{F_\beta:\beta\in\wedge\}$ of fuzzy rh-super open subsets of Y such that P $\le\cup\{F_\beta:\beta\in\wedge\}$ there exists a finite subset $\wedge_0$ such that A $\le\cup\{F\beta_j: \alpha_j\in\wedge_0\}$.[16]

Definition 1.8: A fuzzy topological space Y is fuzzy rh-connected if there is no proper fuzzy set of Y which is both fuzzy rh-super open and fuzzy mg-closed.[17]

II.FUZZY RH -SUPER IRRESOLUTE MAPPINGS

Definition 2.1: A mapping f from a fuzzy topological space (Y,$\Im$) to another fuzzy topological space (x,μ) is said to be fuzzy rh -super irresolute if the pre image of every fuzzy rh-super closed set of X is fuzzy rh -super closed in Y.

Theorem 2.1: A mapping f : (Y,$\Im$)$\to$((X, μ)is fuzzy rh -super irresolute if and only if the pre image of every fuzzy rh -super open set in X is fuzzy rh -super open in Y.

Proof: It is obvious because $f^{-1}(U^c) = (f^{-1}(U))^c$, for every fuzzy set U of Y.

Remark 2.1: Every fuzzy h-super closed set is fuzzy rh -super closed it is clear that every fuzzy rh -super irresolute mapping is fuzzy rh -super continuous but the converse may not be true.

Definition 2.2: A mapping f : (Y,$\Im$)$\to$((X, μ)is said to be fuzzy regular super open if the image of every fuzzy regular super open set of X is fuzzy regular super open set in Y.

Theorem 2.2: Let f f: (Y,$\Im$)$\to$(X, μ)is bijective fuzzy regular super open and fuzzy rh-super continuous then f is fuzzy rh -super irresolute.

Proof: Let P be a fuzzy mg-super closed set in X and let $f^{-1}(P) \le F$ where F is fuzzy regular super open set in Y. Then P $\le$ f(F). Since f is fuzzy regular super open and P is fuzzy rh-super closed in X, cl(P) $\le$ f(F) and $f^{-1}(cl(P)) \le F$. Since f is fuzzy mg-super continuous and cl(P) is fuzzy super closed in X, $cl(f^{-1}(cl(P))) \le F$. And so $cl(f^{-1}(P)) \le F$. Therefore $f^{-1}(P)$ is fuzzy rh-super closed in Y. Hence f is fuzzy rh -irresolute.

Theorem 2.3: Let f : (Y,$\Im$)$\to$ (X, μ) and g: (X, μ)$\to$(Z,η) be two fuzzy rh -super irresolute mappings, then gof : (Y,$\Im$)$\to$(Z, η) is fuzzy rh - super irresolute.

Proof : Obvious.

Theorem 2.4: Let f : (Y,$\Im$)$\to$(X, μ) is fuzzy rh -super irresolute mapping, and if Q is fuzzy rh- super compact relative to Y, then the image f(Q) is fuzzy rh - super compact relative to X.

Proof : Let $\{P_i: i\in\wedge\}$be any collection of fuzzy rh-super open set of X such that f(Q) $\le\cup\{P_i: i\in\wedge\}$. Then Q $\le\cup\{f^{-1}(P_i): i\in\wedge\}$. By using the assumption, there exists a finite subset $\wedge_0$ of $\wedge$ such that Q $\le\cup\{f^{-1}(P_i): i\in\wedge_0\}$. Therefore, f(Q) $\le\{P_i: i\in\wedge_0\}$. Which shows that f(Q) is fuzzy rh- super compact relative to X

Theorem 2.5: A fuzzy rh-super irresolute image of a fuzzy rh- super compact space is fuzzy rh-compact.

Proof: Obvious.

Theorem 2.6: If the product space (YxX, $\Im$xμ) of two non- empty fuzzy topological spaces (Y,$\Im$)and (X, μ)is fuzzy rh -super compact, then each factor space is fuzzy rh- super compact.

Proof: Obvious.

Theorem: 2.7: Let f : (Y,$\Im$)$\to$ (X, μ) is a fuzzy rh -super irresolute surjection and (Y,$\Im$) is fuzzy rh - super connected, then (X, μ) is fuzzy rh - super connected.

Proof : Suppose Y is not fuzzy rh - connected then there exists a proper fuzzy set G of Y which is both fuzzy rh -super open and fuzzy rh -closed, therefore $f^{-1}(G)$ is a proper fuzzy set of X, which is both fuzzy rh -super open and fuzzy rh -closed, because f is fuzzy rh -super continuous surjection. Therefore X is not fuzzy rh - connected, which is a contradiction. Hence Y is fuzzy rh - super connected.

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