

Theorem (2.5) Iff : $x \rightarrow y$ is fuzzy upper weakly semi-precontinuous for every fuzzy pre- semiopen set V in Y , $F(V) \dot{C} \text{SPint } F(\text{SCIV})$.

Theorem(2.6) If $f : x \rightarrow y$ is fuzzy lower weakly semi-precontinuous on X , Then $\text{SPCL } f(V) \dot{C} F(\text{SCLV})$ for any fuzzy open set V in Y .

Theorem (2.7) If $f : x \rightarrow y$ is fuzzy upper weakly semi-precontinuous on X , Then $\text{SPCL } f(V) \dot{C} F(\text{SCLV})$ for any fuzzy open set V in Y .

Theorem (2.8) Let $f : x \rightarrow y$ is fuzzy multifunction then following are equivalent :

- (a) F is lower weakly semi-precontinuous.
- (b) For any fuzzy open set V in Y , $F(V) \dot{C} \text{SP int } F(\text{SCLV})$ int $F(\text{SCLV})$ and $F(V) \dot{C} F(\text{SCLV})$.

Theorem (2.9) Let $f : x \rightarrow y$ is fuzzy lower weakly semi-precontinuous if for each fuzzy open V , $F(\text{SCLV})$ is fuzzy semi pre-open set.

Definition (2.2) For a fuzzy multifunction $f : x \rightarrow y$ the $F(A)$ and $F^+(A)$ of a fuzzy set λ in Y are defined as follows:
 $F(\lambda) = \{x \in X : F(x) \leq \lambda\}$
 $F^+(\lambda) = \{x \in X : F(x) \leq \lambda\}$

Definition (2.3) A fuzzy multifunction $f : (x, \tau) \rightarrow (y, \sigma)$ is said to be :

- (a) Fuzzy upper continuous at a point x of X for any fuzzy open set λ of Y such that $F(x) \leq \lambda$ there exist $u \in \tau$ containing x such that $F(u) \leq \lambda$ for all $u \in U$.
- (b) Fuzzy upper continuous at a point x of X for any fuzzy open set λ of Y such that $F(x) \leq \lambda$, there exist $u \in \tau$ containing x such that $F(u) \leq \lambda$ for all $u \in U$.
- (c) For upper (resp. fuzzy lower) continuous if it is fuzzy upper (resp. lower) continuous at every point of X .

Definition (2.4): A fuzzy multifunction $f : x \rightarrow y$ is called:

- (a) A fuzzy lower weakly α -continuous at a point $x \in X$ if for every fuzzy open set λ in Y with $x \in F(\lambda)$. There exist a nbd u of x_0 in X such that $U \dot{C} F^-(\alpha(\text{cl}(\lambda)))$.
- (b) A fuzzy upper weakly α -continuous at a point $x \in X$ if for every fuzzy open set λ in Y with $x \in F^+(\lambda)$. There exist a nbd u of x_0 in X such that $U \dot{C} F^+(\alpha(\text{cl}(\lambda)))$.

4. Lower And Upper Weakly α -Continuous Fuzzy Multifunctions :

Definition (3.1): For a fuzzy multifunction $f : x \rightarrow y$ is called:

- (a) Fuzzy lower weakly α -continuous at a point $x \in X$ if for every fuzzy open set λ in Y with $x \in F(\lambda)$. There exist a α -nbd u of x_0 in X such that $U \dot{C} F^-(\alpha(\text{cl}(\lambda)))$.
- (b) Fuzzy lower weakly α -continuous at a point $x \in X$ if for every fuzzy openset λ in Y with $x_0 \in F^+(\lambda)$. There exist a α -nbd u of x_0 in X such that $U \dot{C} F^+(\alpha(\text{cl}(\lambda)))$.
- (c) Fuzzy lower weakly α -continuous on X if it is respectively so as each $x_0 \in X$.

(d) Fuzzy weakly α -continuous on X if it is fuzzy lower weakly α - continuous and fuzzy upper weakly continuous.

Theorem (3.1) Let $f : x \rightarrow y$ is fuzzy multifunction, Then following are equivalent:

- (a) F is fuzzy weakly α -continuous.
- (b) For any fuzzy open set in Y , $F(\lambda) \dot{C} \alpha \text{ int } F^-(\alpha(\text{cl}(\lambda)))$.

Proof: Evident.

Theorem (3.2): Let $f : x \rightarrow y$ is fuzzy lower weakly α -continuous if for each fuzzy open set λ , $F^-(\text{cl}(\lambda))$ is fuzzy α -open set.

Proof: Straight forward.

References

- [1] Ajamal N and Sharma R.D. Fuzzy subcontinuity inverse fuzzy subcontinuity and a new category of fuzzy topological spaces. Fuzzy sets and systems, 73(1995), 13-24.
- [2] Chang C.L. Fuzzy topological spaces J. Math. Anal. 24(1968), 182-190.
- [3] Ekici. E. On some types of continuous functions, Appl. Math. E-Not 4(2004), 21-25.
- [4] Ewert J. On normal fuzzy topological spaces, Mathematics, 31(54)(1989), 39-45.
- [5] Ewert J. Fuzzy valued maps, Math. Nachr, 137(1998), 79-87.
- [6] Mukherjee, M.N. and Malakar, S., On almost continuous and weakly continuous fuzzy multifunctions, Fuzzy sets and Systems, 41(1991), 113-125.
- [7] Nanda S. On Fuzzy topological spaces, Fuzzy Sets Systems 42(1991), 259-262.
- [8] Papageorgiou, N.S. Fuzzy topology and fuzzy multifunctions, Jour. Math. Anal. Appl, 109(1985), 397-425..
- [9] Thakur S.S. and Malviya R, Pairwise fuzzy irresolute mappings, Math Bohemica 121(3)(1996), 273-280.
- [10] Zadeh A. Fuzzy sets, Inform and Control, 8(1965), 338-358.