Abstracts of MMA2009, May 27 - 30, 2009, Daugavpils, Latvia

γ-AGOPS AND SOME ASPECTS OF GENERALIZED AGGREGATION PROBLEM

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We explore questions related to the aggregation problem. For the basic concepts of the aggregation theory a reader can refer e.g. to [1].
First we recall the definition of an aggregation operator (hereinafter - agop), and then we introduce a special class of agops, called γ- agops where $\gamma \in (0, 1]$:

DEFINITION 1. $A : \cup_{n\in N}[0, 1]^n \to [0, 1]$ is a γ-agop on the unit interval if the following conditions hold:
(A1) $A(0, ..., 0) = 0$, (A2) $A(1, ..., 1) = 1$
(A_γ) if $(\forall i = \overline{1, n}, \gamma \in (0, 1])$ $(\varphi_\gamma(x_i) \le \varphi_\gamma(y_i))$ then $A(x_1, ...x_n) \le A(y_1, ..., y_n)$, where
$\varphi_\gamma : [0, 1] \to \{0\} \cup [\gamma, 1]$, $\varphi_\gamma(x) = \begin{cases} 0, & \text{if } x < \gamma, \\ x, & \text{if } x \ge \gamma \end{cases}$

(A1), (A2) are known as boundary conditions of an aggregation operator and (A_γ) is a modification of the monotonicity property. Further we give examples of γ-agops and study properties of γ-agops. The second part of our talk is devoted to the generalization of the problem of aggregation: for such generalization we use the notion of pointwise extension introduced in [2]:

DEFINITION 2. Let $F(X)$, $\prec$ and A be correspondingly the set of fuzzy subsets of X, an order relation on $F(X)$ and an ordinary aggreagation operator on the unit interval.
$P_1, ..., P_n \in F(X)$, $\tilde{A} : \cup_{n\in N}F(X) \to F(X)$, then $\tilde{A}$ is a pointwise extension of A if the following holds:

$$\forall x \in X, \mu_{\tilde{A}(P_1,...,P_n)}(x) = A(\mu_{P_1}(x), ..., \mu_{P_n}(x).$$

We study pointwise extension of γ-agops w.r.t. different order relations. Some new results are obtained.

REFERENCES

[1] T. Calvo, G. Mayor, R. Mesiar (editors). *Aggregation Operators: New Trends and Applications (Studies in Fuzziness and Soft Computing)*. Springer Berlin / Heidelberg, 2002.

[2] A. Takaci . General aggregation operators acting on fuzzy numbers induced by ordinary aggregation operators . *Novi Sad J. Math.* , **Vol. 33,** No. 2, 2003, 67-76.