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Introduction to Dynamic Operators: Lprt-Elements and Applications to Physics and Other their Applications

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Abstract
There is a need to develop an instrumental mathematical base for new technologies. The task of the work is to create new approaches for this by introducing new concepts and methods. Significance of the article: in a new qualitatively different approach to the study of complex processes through new mathematical, hierarchical, dynamic structures, fuzzy hierarchical dynamic structures, in particular those processes that are dealt with by Synergistics. In the articles [1-14] new mathematical structures and operators are constructed through one action - "containment". Here, the construction of new mathematical structures and operators is carried out with generalization to any actions.In the articles [1-14] new mathematical structures and operators are constructed through one action - "containment". Here, the construction of new mathematical structures and operators is carried out with generalization to any fuzzy actions.

Keywords: MHierarchical Structure (Dynamic Operator), Lprt-Elements, TLpr- Elements, Self-Type Lprt-Structure),Flprt-Elements, TFLpr- Elements, Self-Type FLprt-Structure

1. Lprt – Elements, Self-type Lprt-Structures

We consider dynamic operator

$$\begin{array}{ccc} C & & \tilde{\tilde{A}} \\ \uparrow & & \uparrow \\ \bar{P} & \text{Lprt} & \bar{Q} \\ \uparrow & & \uparrow \\ \tilde{\tilde{R}} & & B \end{array} \quad (1.1),$$

where $\tilde{\tilde{A}}, \tilde{\tilde{R}}$-upper levels of A and R respectively, Q¯,P¯- average levels of Q and P respectively, B goes to the middle level of Q - Q¯, Q¯goes to the upper level of A - $\tilde{\tilde{A}}, \tilde{\tilde{R}}$ goes to the middle level of P - P¯, P¯goes to the lower level of C simultaneously. The result of this process will be described by the expression

$$\begin{array}{ccc} C & & \tilde{\tilde{A}} \\ \uparrow & & \uparrow \\ \bar{P} & \text{Lrt} & \bar{Q} \\ \uparrow & & \uparrow \\ \tilde{\tilde{R}} & & B \end{array} (1.2).$$

Definition 1.1. The dynamic operator (1.1) we shall call Lprt – element of the first type, (1.2) we shall call Lrt – element of the first type.

Remark 1.1 Can considerLprt – elements use the Banach space.

It's allowed to add Lprt – elements:

$$\begin{array}{ccccccccccc} C & & \tilde{\tilde{A}}_1 & & C & & \tilde{\tilde{A}}_2 & & C & & \tilde{\tilde{A}}_1 \cup \tilde{\tilde{A}}_2 \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \bar{P} & \text{Lprt} & \bar{Q} & + & \bar{P} & \text{Lprt} & \bar{Q} & = & \bar{P} & \text{Lprt} & \bar{Q} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \tilde{\tilde{R}} & & B & & \tilde{\tilde{R}} & & B & & \tilde{\tilde{R}} & & B \end{array} \quad (1.2.1),$$

$$\begin{array}{ccccccccccc} C & & \tilde{\tilde{A}} & & C & & \tilde{\tilde{A}} & & C & & \tilde{\tilde{A}} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \bar{P} & \text{Lprt} & \bar{Q} & + & \bar{P} & \text{Lprt} & \bar{Q} & = & \bar{P} & \text{Lprt} & \bar{Q} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \tilde{\tilde{R}} & & B_1 & & \tilde{\tilde{R}} & & B_2 & & \tilde{\tilde{R}} & & B_1 \cup B_2 \end{array} \quad (1.2.2),$$

$$\begin{array}{ccccccccccc} C_1 & & \tilde{\tilde{A}} & & C_2 & & \tilde{\tilde{A}} & & C_1 \cup C_2 & & \tilde{\tilde{A}} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \bar{P} & \text{Lprt} & \bar{Q} & + & \bar{P} & \text{Lprt} & \bar{Q} & = & \bar{P} & \text{Lprt} & \bar{Q} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \tilde{\tilde{R}} & & B & & \tilde{\tilde{R}} & & B & & \tilde{\tilde{R}} & & B \end{array} (1.2.3),$$

$$\begin{array}{ccccccccccc} C & & \tilde{\tilde{A}} & & C & & \tilde{\tilde{A}} & & C & & \tilde{\tilde{A}} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \bar{P} & \text{Lprt} & \bar{Q} & + & \bar{P} & \text{Lprt} & \bar{Q} & = & \bar{P} & \text{Lprt} & \bar{Q} \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \tilde{\tilde{R}}_1 & & B & & \tilde{\tilde{R}}_2 & & B & & \tilde{\tilde{R}}_1 \cup \tilde{\tilde{R}}_2 & & B \end{array} (1.2.4),$$

$$\begin{array}{c} C\\ \uparrow\\ \bar{P}_1\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}+\begin{array}{c} C\\ \uparrow\\ \bar{P}_2\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array} = \begin{array}{c} C\\ \uparrow\\ (\bar{P}_1 \cup \bar{P}_2)\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}(1.2.5),$$

$$\begin{array}{c} C\\ \uparrow\\ \bar{P}\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}_1\\ \uparrow\\ B\end{array}+\begin{array}{c} C\\ \uparrow\\ \bar{P}\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}_2\\ \uparrow\\ B\end{array}=\begin{array}{c} C\\ \uparrow\\ \bar{P}\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ (\bar{Q}_1 \cup \bar{Q}_2)\\ \uparrow\\ B\end{array}(1.2.6).$$

We consider the following self-type Lprt-structureof the first type:

$$\begin{array}{c} Q\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{Q}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{Q}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ Q\end{array}(1.3),$$

denote $L_1 f Q$.

$$\begin{array}{c} Q\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{A}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ Q\end{array}(1.4),$$

denote $L_2 f A; Q$.

$$\begin{array}{c} B\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{A}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}(1.5),$$

denote $L_3 f A; Q; B$.

$$\begin{array}{c} A\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{A}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ A\end{array}(1.6),$$

denote $L_4 f A; Q$.

$$\begin{array}{c} a\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{A}\end{array}\text{Lprt}\begin{array}{c}str\,\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ a\end{array}\quad(1.6.1),$$

denote $L_5 f A; Q; a, a \subset \text{A}$,

$$\begin{array}{c} strA\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{a}\end{array}\ \text{Lprt}\ \begin{array}{c}\overset{\frown}{a}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ strA\end{array}\quad(1.6.2),$$

denote $L_6 f a; Q; A, a \subset \text{A}$,

$$\begin{array}{c} B\\ \uparrow\\ \bar{Q}\\ \uparrow\\ \overset{\frown}{B}\end{array}\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}(1.7),$$

and any other possible options of self for (1.1) etc.
It can be considered a simpler version of the dynamic operator

$$\text{Lprt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}(1.8)$$

where $\overset{\frown}{A}$ - upper levels of A, Q¯ - average levels of Q, B goes to the middle level of Q - Q¯, Q¯ goes to the upper level of A - $\overset{\frown}{A}$ simultaneously, the result of this process will be described by the expression

$$\text{Lrt}\begin{array}{c}\overset{\frown}{A}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}(1.9)$$

or

$$\begin{array}{c} C\\ \uparrow\\ \bar{P}\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lprt}\ (1.10)$$

where $\overset{\frown}{R}$- upper levels of R, P¯- average levels of P, $\overset{\frown}{R}$ goes to the middle level of P - P¯, P¯ goes to the lower level of C simultaneously, the result of this process will be described by the expression

$$\begin{array}{c} C\\ \uparrow\\ \bar{P}\\ \uparrow\\ \overset{\frown}{R}\end{array}\text{Lrt}\ (1.11)$$

Definition 1,2. The dynamic operator (1.8) we shall call Lprt – element of the second type, (1.9) we shall call Lrt – element of the second type.

It's allowed to add Lprt – elements of the second type:

$$\begin{matrix} & \widetilde{A_1} & & \widetilde{A_2} & & \widetilde{A_1}\cup\widetilde{A_2} & \\ & \uparrow & & \uparrow & & \uparrow & \\ \text{Lprt} & \bar{Q} & +\text{Lprt} & \bar{Q} & =\text{Lprt} & \bar{Q} & (1.12), \\ & \uparrow & & \uparrow & & \uparrow & \\ & B & & B & & B & \end{matrix}$$

$$\begin{matrix} & \widetilde{A} & & \widetilde{A} & & \widetilde{A} & \\ & \uparrow & & \uparrow & & \uparrow & \\ \text{Lprt} & \bar{Q} & +\text{Lprt} & \bar{Q} & =\text{Lprt} & \bar{Q} & (1.13), \\ & \uparrow & & \uparrow & & \uparrow & \\ & B_1 & & B_2 & & B_1\cup B_2 & \end{matrix}$$

$$\begin{matrix} & \widetilde{A} & & \widetilde{A} & & \widetilde{A} & \\ & \uparrow & & \uparrow & & \uparrow & \\ \text{Lprt} & \overline{Q_1} & +\text{Lprt} & \overline{Q_2} & =\text{Lprt} & (\overline{Q_1}\cup\overline{Q_2}) & (1.13.1), \\ & \uparrow & & \uparrow & & \uparrow & \\ & B & & B & & B & \end{matrix}$$

We consider the following self-type Lprt-structuresof the second type:

$$\begin{matrix} & \widetilde{A} & \\ & \uparrow & \\ \text{Lprt} & \bar{Q} & (1.14), \\ & \uparrow & \\ & A & \end{matrix}$$

$$\begin{matrix} & str\,\widetilde{A} & \\ & \uparrow & \\ \text{Lprt} & \bar{Q} & (1.14.1), \\ & \uparrow & \\ & a & \end{matrix}$$

denote $L_7 f A; Q; a, a \subset \text{A}$,

$$\begin{matrix} & a & \\ & \uparrow & \\ \text{Lprt} & \bar{Q} & (1.15), \\ & \uparrow & \\ & strA & \end{matrix}$$

denote $L_8 f a; Q; A, a \subset \text{A}$,

$$\begin{matrix} & \widetilde{A} & \\ & \uparrow & \\ \text{Lprt} & \bar{Q} & (1.16), \\ & \uparrow & \\ & Q & \end{matrix}$$

and any other possible options of self for (1.8) etc.

Definition 1.3. The dynamic operator (1.10) we shall call tprL – element, (1.11) we shall call trL – element.
It's allowed to addtprL – elements:

$$\begin{matrix} C_1 & & C_2 & & C_1\cup C_2 & \\ \uparrow & & \uparrow & & \uparrow & \\ \bar{P} & \text{Lprt} + & \bar{P} & \text{Lprt} = & \bar{P} & \text{Lprt (1.17),} \\ \uparrow & & \uparrow & & \uparrow & \\ \widetilde{R} & & \widetilde{R} & & \widetilde{R} & \end{matrix}$$

$$\begin{matrix} C & & C & & C & \\ \uparrow & & \uparrow & & \uparrow & \\ \bar{P} & \text{Lprt} + & \bar{P} & \text{Lprt} = & \bar{P} & \text{Lprt (1.18),} \\ \uparrow & & \uparrow & & \uparrow & \\ \widetilde{R_1} & & \widetilde{R_2} & & \widetilde{R_1}\cup\widetilde{R_2} & \end{matrix}$$

$$\begin{matrix} C & & C & & C & \\ \uparrow & & \uparrow & & \uparrow & \\ \overline{P_1} & \text{Lprt} + & \overline{P_2} & \text{Lprt} = & (\overline{P_1}\cup\overline{P_2}) & \text{Lprt (1.18.1).} \\ \uparrow & & \uparrow & & \uparrow & \\ \widetilde{R} & & \widetilde{R} & & \widetilde{R} & \end{matrix}$$

We consider the following self-type tprL-structures:

$$\begin{matrix} R & \\ \uparrow & \\ \bar{P} & \text{Lprt (1.19)} \\ \uparrow & \\ \widetilde{R} & \end{matrix}$$

$$\begin{matrix} strD & \\ \uparrow & \\ \bar{P} & \text{Lprt (1.19.1),} \\ \uparrow & \\ \widetilde{d} & \end{matrix}$$

denote $L_9 f d; Q; D, d \subset \text{D}$,

$$\begin{matrix} d & \\ \uparrow & \\ \bar{P} & \text{Lprt (1.20),} \\ \uparrow & \\ str\,\widetilde{D} & \end{matrix}$$

denote $L_{10} f D; Q; d, d \subset \text{D}$,

$$\begin{matrix} P & \\ \uparrow & \\ \bar{P} & \text{Lprt (1.21)} \\ \uparrow & \\ \widetilde{R} & \end{matrix}$$

and any other possible options of self for (1.10) etc.

2. Dynamic Lprt – Elements, Self-type Dynamic Lprt-Structures

We considered Lprt – elements earlier. Here we consider dynamicLprt – elements.We consider dynamic operator whose elements change over time

$$\begin{matrix} C(t) & & \widetilde{A(t)} & \\ \uparrow & & \uparrow & \\ \overline{P(t)} & \text{Lprt(t)} & \overline{Q(t)} & (2.1), \\ \uparrow & & \uparrow & \\ \widetilde{R(t)} & & B(t) & \end{matrix}$$

where $\widetilde{A(t)}$, $\widetilde{R(t)}$ - upper levels of A(t) and R(t) respectively, $\overline{(Q(t))}$, $\overline{(P(t))}$ - average levels of Q(t) and P(t) respectively, B(t) goes to the middle level of Q(t) - $\overline{Q(t)}$, $\overline{Q(t)}$ goes to the upper level of A(t)- $\widetilde{A(t)}$, $\widetilde{R(t)}$ goes to the middle level of P(t) - $\overline{P(t)}$, $\overline{(P(t))}$ goes to the lower level of C(t) simultaneously. The result of this process will be described by the expression

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lrt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}\quad(2.2).$$

Definition 2.1. The dynamic operator (2.1) we shall call dynamicLprt – element of the first type, (2.2) we shall call dynamicLrt – element of the first type.

It's allowed to add dynamicLprt – elements:

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A_1(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}+\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A_2(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}=\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A_1(t)}\cup\widetilde{A_2(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}\quad(2.2.1),$$

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_1(t)\end{array}+\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_2(t)\end{array}=\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_1(t)\cup B_2(t)\end{array}\quad(2.2.2),$$

$$\begin{array}{c}C_1(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}+\begin{array}{c}C_2(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}=\begin{array}{c}C_1(t)\cup C_2(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.2.3),$$

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R_1(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}+\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R_2(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}=\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R_1(t)}\cup\widetilde{R_2(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.2.4),$$

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P_1(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}+\begin{array}{c}C(t)\\ \uparrow\\ \overline{P_2(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}=\begin{array}{c}C(t)\\ \uparrow\\ \overline{P_1(t)}\cup\overline{P_2(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.2.5)$$

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q_1(t)}\\ \uparrow\\ B(t)\end{array}+\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q_2(t)}\\ \uparrow\\ B(t)\end{array}=\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q_1(t)}\cup\overline{Q_2(t)}\\ \uparrow\\ B(t)\end{array}(2.2.6).$$

We consider the followingself-type dynamicLprt-structuresof the first type:

$$\begin{array}{c}Q(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{Q(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{Q(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ Q(t)\end{array}(2.3),$$

$$\begin{array}{c}Q(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{A(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ Q(t)\end{array}(2.4),$$

$$\begin{array}{c}B(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{A(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.5),$$

$$\begin{array}{c}A(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{A(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ A(t)\end{array}(2.6),$$

$$\begin{array}{c}a(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ str\,\widetilde{A(t)}\end{array}\text{Lprt(t)}\begin{array}{c}str\,\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ a(t)\end{array}\quad(2.6.1),$$

denote $L_{11}(t)fA(t);Q(t);a(t),a(t)\subset$ A(t),

$$\begin{array}{c}strA(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{a(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{a(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ strA(t)\end{array}\quad(2.6.2),$$

denote $L_{12}(t)fa(t);Q(t);A(t),a(t)\subset$ A(t),

$$\begin{array}{c}B(t)\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ \widetilde{B(t)}\end{array}\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.7),$$

and any other possible options of self for (2.1) etc.
It can be considered a simpler version of the dynamic operator

$$\text{Lprt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.8)$$

where $\widetilde{A(t)}$ - upper levels of A(t), $\overline{Q(t)}$ - average levels of Q(t), B(t) goes to the middle level of Q(t) - $\overline{Q(t)}$, $\overline{Q(t)}$ goes to the upper level of A(t) - $\widetilde{A(t)}$ simultaneously,the result of this process will be described by the expression

$$\text{Lrt(t)}\begin{array}{c}\widetilde{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t)\end{array}(2.9),$$

or

$$\begin{array}{c}C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \widetilde{R(t)}\end{array}\text{Lprt(t)}(2.10),$$

where $\widetilde{R(t)}$ - upper levels of R(t), $\overline{P(t)}$ - average levels of P(t), $\widetilde{R(t)}$ goes to the middle level of P(t) - $\overline{P(t)}$, $\overline{P(t)}$ goes to the lower level of C(t) simultaneously, the result of this process will be described by the expression

$$\begin{array}{c} C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lrt(t)(2.11),}$$

Definition 2.2. The dynamic operator (2.8) we shall call dynamicLprt – element of the second type, (2.9) we shall call dynamicLrt – element of the second type.

It's allowed to add dynamicLprt – elements of the second type:

$$\text{Lprt(t)}\begin{array}{c} \overbrace{A_1(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t) \end{array} + \text{Lprt(t)}\begin{array}{c} \overbrace{A_2(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t) \end{array} = \text{Lprt(t)}\begin{array}{c} \overbrace{A_1(t)} \cup \overbrace{A_2(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B(t) \end{array} \quad (2.12),$$

$$\text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_1(t) \end{array} + \text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_2(t) \end{array} = \text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ B_1(t) \cup B_2(t) \end{array} \quad (2.13),$$

$$\text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q_1(t)}\\ \uparrow\\ B(t) \end{array} + \text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q_2(t)}\\ \uparrow\\ B(t) \end{array} = \text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q_1(t)} \cup \overline{Q_2(t)}\\ \uparrow\\ B(t) \end{array}(2.13.1).$$

We consider the followingself-type dynamicLprt-structuresof the second t type:

$$\text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ A(t) \end{array}(2.14),$$

$$\text{Lprt(t)}\begin{array}{c} str\,\overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ a(t) \end{array}\quad (2.14.1),$$

denote $L_{13}(t) f A(t); Q(t); a(t), a(t) \subset$ A(t),

$$\text{Lprt(t)}\begin{array}{c} \overbrace{a(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ strA(t) \end{array}\quad (2.15),$$

denote $L_{14}(t) f a(t); Q(t); A(t), a(t) \subset$ A(t),

$$\text{Lprt(t)}\begin{array}{c} \overbrace{A(t)}\\ \uparrow\\ \overline{Q(t)}\\ \uparrow\\ Q(t) \end{array}(2.16),$$

and any other possible options of self for (2.8) etc.

Definition 2.3. The dynamic operator (2.10) we shall call dynamictprL – element, (2.11) we shall call dynamictrL – element.

It's allowed to adddynamic tprL – elements:

$$\begin{array}{c} C_1(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)} + \begin{array}{c} C_2(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)} = \begin{array}{c} C_1(t) \cup C_2(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\quad\text{Lprt(t)(2.17),}$$

$$\begin{array}{c} C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R_1(t)} \end{array}\text{Lprt(t)} + \begin{array}{c} C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R_2(t)} \end{array}\text{Lprt(t)} = \begin{array}{c} C(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R_1(t)} \cup \overbrace{R_2(t)} \end{array}\quad\text{Lprt(t) (2.18),}$$

$$\begin{array}{c} C(t)\\ \uparrow\\ \overline{P_1(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)} + \begin{array}{c} C(t)\\ \uparrow\\ \overline{P_2(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)} = \begin{array}{c} C(t)\\ \uparrow\\ \overline{P_1(t)} \cup \overline{P_2(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t) (2.18.1).}$$

We consider the followingself-type dynamictprL-structures:

$$\begin{array}{c} R(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)(2.19)}$$

$$\begin{array}{c} strD(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{d(t)} \end{array}\quad\text{Lprt(t)(2.19.1),}$$

denote $L_{15}(t) f d(t); \overline{P(t)}; D(t), d(t) \subset$ D(t),

$$\begin{array}{c} d(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ str\,\overbrace{D(t)} \end{array}\quad\text{Lprt(t)(2.20)}$$

denote $L_{16}(t) f D(t); \overline{P(t)}; d(t), d(t) \subset$ D(t),

$$\begin{array}{c} P(t)\\ \uparrow\\ \overline{P(t)}\\ \uparrow\\ \overbrace{R(t)} \end{array}\text{Lprt(t)(2.21)}$$

and any other possible options of self for (2.10) etc.

New mathematical structures and operators is carried out with generalization it to any structures with any actions. For example,

1) $$\begin{array}{ccc} f_{11} & \cdots & f_{1k} \\ \cdots & \cdots & \cdots \\ (q_{j1})^{-1} & \cdots & (q_{jk})^{-1} \\ \cdots & \cdots & \cdots \\ f_{l1} & \cdots & f_{lk} \end{array} \mathrm{LLprt} \begin{array}{ccc} q_{11} & \cdots & q_{1n} \\ & \cdots & \\ q_{m1} & \cdots & q_{mn} \end{array} \quad (*),$$

f_{ij}, q_{ij} – any objects, actions etc.

2) $$\begin{array}{c} g_{11} \\ (w_{j1})^{-1} \\ g_{31} \end{array} \begin{array}{c} g_{12} \\ g_{22} \\ (w_{j2})^{-1} \\ \cdots \\ g_{k2} \end{array} \begin{array}{c} g_{13} \\ (w_{j3})^{-1} \end{array} \mathrm{LGprt} \begin{array}{ccccc} w_{11} & w_{12} & & w_{1n} & \\ \cdots & \cdots & & w_{2n} & \\ & & & \cdots & \\ & & & \cdots & \\ w_{m1} & w_{m2} & \cdots & w_{sn} & w_{ml} \end{array} \quad (*_1),$$

w_{ij}, g_{ij} – any objects, actions etc.

3)

$$\begin{array}{ccc} a & b & g \\ c & ALrq(\mu) & w(*_2), \\ d & q & r \end{array}$$

where ALrq is virtual structure or virtual operator, which can take any form of action;a, c, d, q, r, w, g, b, μ – any objects, actions etc. Accordingly, we can consider all sorts of self-type structures for 1) – 3). And any other possible structures and operators etc.

3. FLprt – Elements, Self-type FLprt-Structures

We consider fuzzy dynamic operator

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} \quad (3.11),$$

where $\overset{\frown}{A}$, $\overset{\frown}{R}$- upper levels of fuzzy A and fuzzy R respectively, $\bar{Q}$,$\bar{P}$ average levels of fuzzy Q and fuzzy P respectively, fuzzy B goes to the middle level of fuzzy Q - $\bar{Q}$,$\bar{Q}$ goes to the upper level of fuzzy A - $\overset{\frown}{A}$,$\overset{\frown}{R}$ goes to the middle level of fuzzy P - $\bar{P}$, $\bar{P}$ goes to the lower level of fuzzy C simultaneously. The result of this process will be described by the expression

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,F\mathrm{Lrt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} (3.12).$$

Definition 3.11. The fuzzy dynamic operator (3.11) we shall call FLprt – element of the first type, (3.12) we shall call FLrt – element of the first type.

Remark 3.11 Can consider FLprt – elements use the Banach space. It's allowed to add FLprt – elements:

$$\begin{array}{cc} C & \overset{\frown}{A_1} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} + \begin{array}{cc} C & \overset{\frown}{A_2} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} = \begin{array}{cc} C & \overset{\frown}{A_1} \cup \overset{\frown}{A_2} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} \quad (3.12.1),$$

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B_1 \end{array} + \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B_2 \end{array} = \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B_1 \cup B_2 \end{array} \quad (3.12.2),$$

$$\begin{array}{cc} C_1 & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} + \begin{array}{cc} C_2 & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} = \begin{array}{cc} C_1 \cup C_2 & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} (3.12.3),$$

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R_1} & B \end{array} + \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R_2} & B \end{array} = \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R_1} \cup \overset{\frown}{R_2} & B \end{array} (3.12.4),$$

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \overline{P_1}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} + \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \overline{P_2}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} = \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ (\overline{P_1} \cup \overline{P_2})\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} (3.12.5),$$

$$\begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \overline{Q_1} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} + \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & \overline{Q_2} \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} = \begin{array}{cc} C & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{P}\,\mathrm{FLprt} & (\overline{Q_1} \cup \overline{Q_2}) \\ \uparrow & \uparrow \\ \overset{\frown}{R} & B \end{array} (3.12.6).$$

We consider the following self-type FLprt-structure of the first type:

$$\begin{array}{cc} Q & \overset{\frown}{Q} \\ \uparrow & \uparrow \\ \bar{Q}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{Q} & Q \end{array} (3.13),$$

denote $FL_1 f Q$.

$$\begin{array}{cc} Q & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{Q}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{A} & Q \end{array} (3.14),$$

denote $FL_2 f A; Q$.

$$\begin{array}{cc} B & \overset{\frown}{A} \\ \uparrow & \uparrow \\ \bar{Q}\,\mathrm{FLprt} & \bar{Q} \\ \uparrow & \uparrow \\ \overset{\frown}{A} & B \end{array} \quad (3.15),$$

denote $FL_3 f A; Q; B$.

denote $FL_3 f A; Q; B$.

$$\begin{array}{ccc} A & & \overset{\frown}{A} \\ \uparrow & & \uparrow \\ \bar{Q} & \text{FLprt} & \bar{Q} \\ \uparrow & & \uparrow \\ \overset{\frown}{A} & & A \end{array} \quad (3.16),$$

denote $FL_4 f A; Q$.

$$\begin{array}{ccc} a & & str\,\overset{\frown}{A} \\ \uparrow & & \uparrow \\ \bar{Q} & \text{FLprt} & \bar{Q} \\ \uparrow & & \uparrow \\ \overset{\frown}{A} & & a \end{array} \quad (3.16.1),$$

denote $FL_5 f A; Q; a, a \subset$ A.

$$\begin{array}{ccc} strA & & \overset{\frown}{a} \\ \uparrow & & \uparrow \\ \bar{Q} & \text{FLprt} & \bar{Q} \\ \uparrow & & \uparrow \\ \overset{\frown}{a} & & strA \end{array} \quad (3.16.2),$$

denote $FL_6 f a; Q; A, a \subset$ A,

$$\begin{array}{ccc} B & & \overset{\frown}{A} \\ \uparrow & & \uparrow \\ \bar{Q} & \text{FLprt} & \bar{Q} \\ \uparrow & & \uparrow \\ \overset{\frown}{B} & & B \end{array} \quad (3.17),$$

and any other possible options of self for (3.11) etc.
It can be considered a simpler version of the fuzzy dynamic operator

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B \end{array} \quad (3.18)$$

where $\overset{\frown}{A}$- upper levels of fuzzy A,$\bar{Q}$ - average levels of fuzzy Q, fuzzy B goes to the middle level of fuzzy Q - $\bar{Q}$,$\bar{Q}$ goes to the upper level of fuzzy A -$\overset{\frown}{A}$ simultaneously, the result of this process will be described by the expression

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLrt}\,\bar{Q} \\ \uparrow \\ B \end{array} \quad (3.19)$$

or

$$\begin{array}{c} C \\ \uparrow \\ \bar{P}\,\text{FLprt} \\ \uparrow \\ \overset{\frown}{R} \end{array} \quad (3.110)$$

where $\overset{\frown}{R}$- upper levels of fuzzy R, $\bar{P}$- average levels of fuzzy P, $\overset{\frown}{R}$goes to the middle level of fuzzy P -$\bar{P}$, $\bar{P}$ goes to the lower level of fuzzy C simultaneously, the result of this process will be described by the expression

$$\begin{array}{c} C \\ \uparrow \\ \bar{P}\,\text{FLrt} \\ \uparrow \\ \overset{\frown}{R} \end{array} \quad (3.111)$$

Definition 1,2. The fuzzy dynamic operator (3.18) we shall call FLprt – element of the second type, (3.19) we shall call FLrt – element of the second type.

It's allowed to add FLprt – elements of the second type:

$$\begin{array}{c} \overset{\frown}{A_1} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B \end{array} + \begin{array}{c} \overset{\frown}{A_2} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B \end{array} = \begin{array}{c} \overset{\frown}{A_1} \cup \overset{\frown}{A_2} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B \end{array} \quad (3.112),$$

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B_1 \end{array} + \begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B_2 \end{array} = \begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ B_1 \cup B_2 \end{array} \quad (3.113),$$

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\overline{Q_1} \\ \uparrow \\ B \end{array} + \begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\overline{Q_2} \\ \uparrow \\ B \end{array} = \begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}(\overline{Q_1} \cup \overline{Q_2}) \\ \uparrow \\ B \end{array} (3.113.1),$$

We consider the following self-type FLprt-structuresof the second type:

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ A \end{array} (3.114),$$

$$\begin{array}{c} str\,\overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ a \end{array} \quad (3.114.1),$$

denote $FL_7 f A; Q; a, a \subset$ A,

$$\begin{array}{c} a \\ \uparrow \\ \text{FLprt}\,\bar{Q} \\ \uparrow \\ strA \end{array} \quad (3.115),$$

denote $FL_8 f a; Q; A, a \subset$ A,

$$\begin{array}{c} \overset{\frown}{A} \\ \uparrow \\ \text{FLprt}\bar{Q}\ (3.116), \\ \uparrow \\ Q \end{array}$$

and any other possible options of self for (3.18) etc.

Definition 3.13. The fuzzy dynamic operator (3.110) we shall call tprFL – element, (3.111) we shall call trFL – element.

It's allowed to addtprFL – elements:

$$\begin{array}{ccc} C_1 & C_2 & C_1\cup C_2 \\ \uparrow & \uparrow & \uparrow \\ \bar{P}\ \text{FLprt+} & \bar{P}\ \text{FLprt=} & \bar{P}\quad \text{FLprt(3.117),} \\ \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R} & \overset{\frown}{R} & \overset{\frown}{R} \end{array}$$

$$\begin{array}{ccc} C & C & C \\ \uparrow & \uparrow & \uparrow \\ \bar{P}\ \text{FLprt+} & \bar{P}\ \text{FLprt=} & \bar{P}\quad \text{FLprt(3.118),} \\ \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R_1} & \overset{\frown}{R_2} & \overset{\frown}{R_1}\cup\overset{\frown}{R_2} \end{array}$$

$$\begin{array}{ccc} C & C & C \\ \uparrow & \uparrow & \uparrow \\ \overline{P_1}\text{FLprt+} & \overline{P_2}\text{FLprt =} & (\overline{P_1}\cup\overline{P_2})\text{FLprt(3.118.1).} \\ \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R} & \overset{\frown}{R} & \overset{\frown}{R} \end{array}$$

We consider the following self-type tprFL-structures:

$$\begin{array}{l} R \\ \uparrow \\ \bar{P}\text{FLprt(3.119)} \\ \uparrow \\ \overset{\frown}{R} \end{array}$$

$$\begin{array}{l} strD \\ \quad\uparrow \\ \quad\bar{P}\quad \text{FLprt(3.119.1),} \\ \quad\uparrow \\ \quad\overset{\frown}{d} \end{array}$$

denote $FL_9 fd; Q; D, d \subset \mathrm{D}$,

$$\begin{array}{l} \quad d \\ \quad\uparrow \\ \quad\bar{P}\quad \text{FLprt(3.120),} \\ \quad\uparrow \\ str\ \overset{\frown}{D} \end{array}$$

denote $FL_{10} fD; Q; d, d \subset \mathrm{D}$,

$$\begin{array}{l} P \\ \uparrow \\ \bar{P}\text{FLprt(3.121)} \\ \uparrow \\ \overset{\frown}{R} \end{array}$$

and any other possible options of self for (3.110) etc.

4. Dynamic FLprt – Elements, Self-Type Dynamic FLprt-Structures

We considered FLprt – elements earlier. Here we consider dynamic FLprt – elements.We consider fuzzy dynamic operator whose elements change over time

$$\begin{array}{cc} C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow \\ \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)}\ \ (4.1), \\ \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) \end{array}$$

where $\overset{\frown}{A(t)}$, $\overset{\frown}{R(t)}$ - upper levels of fuzzy A(t) and fuzzy R(t) respectively, $\overline{Q(t)}, \overline{P(t)}$- average levels of fuzzy Q(t) and fuzzy P(t) respectively, fuzzy B(t) goes to the middle level of fuzzy Q(t) - $\overline{Q(t)}$, $\overline{Q(t)}$ goes to the upper level of fuzzy A(t)-$\overset{\frown}{A(t)}$, $\overset{\frown}{R(t)}$ goes to the middle level of fuzzy P(t) -$\overline{P(t)}$, $\overline{P(t)}$ goes to the lower level of fuzzy C(t) simultaneously. The result of this process will be described by the expression

$$\begin{array}{cc} C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow \\ \overline{P(t)}\text{Lrt(t)} & \overline{Q(t)}\ \ (4.2). \\ \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) \end{array}$$

Definition 4.1. The fuzzy dynamic operator (4.1) we shall call dynamic FLprt – element of the first type, (4.2) we shall call dynamic FLrt – element of the first type.

It's allowed to add dynamic FLprt – elements:

$$\begin{array}{cccccc} C(t) & \overset{\frown}{A_1(t)} & C(t) & \overset{\frown}{A_2(t)} & C(t) & \overset{\frown}{A_1(t)}\cup\overset{\frown}{A_2(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)}\ + & \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)} = & \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)}\quad (4.2.1), \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) \end{array}$$

$$\begin{array}{cccccc} C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)} + & \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)} = & \overline{P(t)}\text{FLprt(t)} & \overline{Q(t)}\quad (4.2.2), \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B_1(t) & \overset{\frown}{R(t)} & B_2(t) & \overset{\frown}{R(t)} & B_1(t)\cup B_2(t) \end{array}$$

$$\begin{array}{cccccc} C_1(t) & \overset{\frown}{A(t)} & C_2(t) & \overset{\frown}{A(t)} & C_1(t)\cup C_2(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P(t)}\ \text{FLprt(t)} & \overline{Q(t)}+ & \overline{P(t)}\ \text{FLprt(t)} & \overline{Q(t)}= & \overline{P(t)}\quad \text{FLprt(t)} & \overline{Q(t)}(4.2.3), \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) \end{array}$$

$$\begin{array}{cccccc} C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P(t)}\ \text{FLprt(t)} & \overline{Q(t)}+ & \overline{P(t)}\ \text{FLprt(t)} & \overline{Q(t)}= & \overline{P(t)}\quad \text{FLprt(t)} & \overline{Q(t)}(4.2.4), \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R_1(t)} & B(t) & \overset{\frown}{R_2(t)} & B(t) & \overset{\frown}{R_1(t)}\cup\overset{\frown}{R_2(t)} & B(t) \end{array}$$

$$\begin{array}{cccccc} C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P_1(t)}\text{FLprt(t)} & \overline{Q(t)}+ & \overline{P_2(t)}\text{FLprt(t)} & \overline{Q(t)} = & \overline{P_1(t)}\cup\overline{P_2(t)}\text{FLprt(t)} & \overline{Q(t)}(4.2.5), \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) \end{array}$$

$$\begin{array}{cccccc} C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} & C(t) & \overset{\frown}{A(t)} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overline{P(t)}\text{FLprt(t)} & \overline{Q_1(t)}+ & \overline{P(t)}\text{FLprt(t)} & \overline{Q_2(t)}= & \overline{P(t)}\text{FLprt(t)} & \overline{Q_1(t)}\cup\overline{Q_2(t)}(4.2.6). \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) & \overset{\frown}{R(t)} & B(t) \end{array}$$

We consider the followingself-type dynamicFLprt-structuresof the first type:

$$\begin{array}{c} Q(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{Q(t)} \end{array} \text{FLprt(t)} \begin{array}{c} \overset{\frown}{Q(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ Q(t) \end{array} \text{ (4.3),}$$

$$\begin{array}{c} Q(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{A(t)} \end{array} \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ Q(t) \end{array} \text{ (4.4),}$$

$$\begin{array}{c} B(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{A(t)} \end{array} \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} \text{ (4.5),}$$

$$\begin{array}{c} A(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{A(t)} \end{array} \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ A(t) \end{array} \text{ (4.6)}$$

$$\begin{array}{c} a(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ str\,\overset{\frown}{A(t)} \end{array} \text{ FLprt(t) } \begin{array}{c} str\,\overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ a(t) \end{array} \quad \text{(4.6.1),}$$

denote $FL_{11}(t)fA(t); Q(t); a(t), a(t) \subset$ A(t),

$$\begin{array}{c} strA(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{a(t)} \end{array} \text{ FLprt(t) } \begin{array}{c} \overset{\frown}{a(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ strA(t) \end{array} \quad \text{(4.6.2),}$$

denote $FL_{12}(t)fa(t); Q(t); A(t), a(t) \subset$ A(t),

$$\begin{array}{c} B(t) \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ \overset{\frown}{B(t)} \end{array} \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} \text{ (4.7),}$$

and any other possible options of self for (4.1) etc.

It can be considered a simpler version of the fuzzy dynamic operator

$$\text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} \text{ (4.8)}$$

where $\overset{\frown}{A(t)}$ - upper levels of fuzzy A(t), $\overline{Q(t)}$ - average levels of fuzzy Q(t), fuzzy B(t) goes to the middle level of fuzzy Q(t) - $\overline{Q(t)}$, goes to the upper level of fuzzy A(t)- $\overset{\frown}{A(t)}$ simultaneously, the result of this process will be described by the expression

$$\text{Lrt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} \text{ (4.9),}$$

or

$$\begin{array}{c} C(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \overset{\frown}{R(t)} \end{array} \text{FLprt(t)(4.10),}$$

where $\overset{\frown}{R(t)}$- upper levels of fuzzy R(t), $\overline{P(t)}$ - average levels of fuzzy P(t), $\overset{\frown}{R(t)}$ goes to the middle level of fuzzy P(t) - $\overline{P(t)}$, $\overline{P(t)}$ goes to the lower level of fuzzy C(t) simultaneously, the result of this process will be described by the expression

$$\begin{array}{c} C(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \overset{\frown}{R(t)} \end{array} \text{FLrt(t)(4.11),}$$

Definition 4.2. The dynamic operator (4.8) we shall call dynamic FLprt – element of the second type, (4.9) we shall call dynamic FLrt – element of the second type.

It's allowed to add dynamic FLprt – elements of the second type:

$$\text{FLprt(t)} \begin{array}{c} \overset{\frown}{A_1(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} + \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A_2(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} = \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A_1(t)} \cup \overset{\frown}{A_2(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B(t) \end{array} \quad \text{(4.12),}$$

$$\text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B_1(t) \end{array} + \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B_2(t) \end{array} = \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ B_1(t) \cup B_2(t) \end{array} \quad \text{(4.13),}$$

$$\text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q_1(t)} \\ \uparrow \\ B(t) \end{array} + \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q_2(t)} \\ \uparrow \\ B(t) \end{array} = \text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q_1(t)} \cup \overline{Q_2(t)} \\ \uparrow \\ B(t) \end{array} \text{(4.13.1).}$$

We consider the followingself-type dynamicFLprt-structuresof the second t type:

$$\text{FLprt(t)} \begin{array}{c} \overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ A(t) \end{array} \text{ (4.14),}$$

$$\text{FLprt(t)} \begin{array}{c} str\,\overset{\frown}{A(t)} \\ \uparrow \\ \overline{Q(t)} \\ \uparrow \\ a(t) \end{array} \quad \text{(4.14.1),}$$

denote $FL_{13}(t) f A(t); Q(t); a(t), a(t) \subset$ A(t),

$$\begin{array}{c} \widetilde{a(t)} \\ \uparrow \\ \text{FLprt(t)} \ \overline{Q(t)} \ (4.15), \\ \uparrow \\ strA(t) \end{array}$$

denote $FL_{14}(t) f a(t); Q(t); A(t), a(t) \subset$ A(t),

$$\begin{array}{c} \widetilde{A(t)} \\ \uparrow \\ \text{FLprt(t)} \overline{Q(t)} \ (4.16), \\ \uparrow \\ Q(t) \end{array}$$

and any other possible options of self for (4.8) etc.

Definition 4.3. The fuzzy dynamic operator (4.10) we shall call dynamic tprFL – element, (4.11) we shall call dynamic trFL – element.

It's allowed to add dynamic tprFL – elements:

$$\begin{array}{c} C_1(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \text{FLprt(t)} + \begin{array}{c} C_2(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \text{FLprt(t)} = \begin{array}{c} C_1(t) \cup C_2(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \quad \text{FLprt(t)(4.17)},$$

$$\begin{array}{c} C(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R_1(t)} \end{array} \text{FLprt(t)} + \begin{array}{c} C(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R_2(t)} \end{array} \text{FLprt(t)} = \begin{array}{c} C(t) \\ \uparrow \\ \overline{P(t)} \\ \uparrow \\ \widetilde{R_1(t)} \cup \widetilde{R_2(t)} \end{array} \quad \text{FLprt(t) (4.18)},$$

$$\begin{array}{c} C(t) \\ \uparrow \\ \overline{P_1(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \text{FLprt(t)} + \begin{array}{c} C(t) \\ \uparrow \\ \overline{P_2(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \text{FLprt(t)} = \begin{array}{c} C(t) \\ \uparrow \\ \overline{P_1(t)} \cup \overline{P_2(t)} \\ \uparrow \\ \widetilde{R(t)} \end{array} \text{FLprt(t) (4.18.1)}.$$

We consider the followingself-type dynamictprFL-structures:

$$\begin{array}{c} R(t) \\ \uparrow \\ \overline{P(t)} \text{FLprt(t)(4.19)} \\ \uparrow \\ \widetilde{R(t)} \end{array}$$

$$\begin{array}{c} strD(t) \\ \uparrow \\ \overline{P(t)} \quad \text{FLprt(t)(4.19.1)}, \\ \uparrow \\ \widetilde{d(t)} \end{array}$$

denote $FL_{15}(t) f d(t); \overline{P(t)}; D(t), d(t) \subset$ D(t),

$$\begin{array}{c} d(t) \\ \uparrow \\ \overline{P(t)} \quad \text{FLprt(t)(4.20)} \\ \uparrow \\ str\ \widetilde{D(t)} \end{array}$$

denote $FL_{16}(t) f D(t); \overline{P(t)}; d(t), d(t) \subset$ D(t),

$$\begin{array}{c} P(t) \\ \uparrow \\ \overline{P(t)} \text{FLprt(t)(4.21)} \\ \uparrow \\ \widetilde{R(t)} \end{array}$$

and any other possible options of self for (4.10) etc.

New mathematical structures and operators is carried out with generalization it to any structures with any actions. For example,

$$1) \begin{array}{ccc} f_{11} & \cdots & f_{1k} \\ \cdots & \cdots & \cdots \\ (q_{j1})^{-1} & \cdots & (q_{jk})^{-1} \\ \cdots & \cdots & \cdots \\ f_{l1} & \cdots & f_{lk} \end{array} \text{LFLprt} \begin{array}{ccc} q_{11} & \cdots & q_{1n} \\ & \cdots & \\ q_{m1} & \cdots & q_{mn} \end{array} \quad (*_4),$$

f_{ij}, q_{ij} – any fuzzy objects, fuzzy actions etc.

$$2) \begin{array}{c} g_{11} \\ (w_{j1})^{-1} \\ g_{31} \end{array} \begin{array}{c} g_{12} \\ g_{22} \\ (w_{j2})^{-1} \\ \cdots \\ g_{k2} \end{array} \begin{array}{c} g_{13} \\ (w_{j3})^{-1} \end{array} \text{FLGprt} \begin{array}{ccccc} w_{11} & w_{12} & & w_{1n} & \\ \cdots & \cdots & & w_{2n} & \\ & & & \cdots & \\ & & & \cdots & \\ w_{m1} & w_{m2} & \cdots & w_{sn} & w_{ml} \end{array} \quad (*_{4.1}),$$

w_{ij}, g_{ij} – any fuzzy objects, fuzzy actions etc.

3)

$$\begin{array}{ccc} a & b & g \\ c & ALrq(\mu) & w(*_{4.2}), \\ d & q & r \end{array}$$

whereALrq is fuzzy virtual structure or fuzzy virtual operator, which can take any form of fuzzy action; a, c, d, q, r, w, g, b, μ – any fuzzy objects, fuzzy actions etc.

Accordingly, we can consider all sorts of self-type fuzzy structures for 1) – 3). And any other possible fuzzy structures and fuzzy operators etc.

5. Elements of the Theory of Variables of Fuzzy Hierarchical Fuzzy Dynamic Operators: FLprt

In contrast to the classical one-attribute fuzzy set theory, where only its contents are taken as a set, we consider a two-attribute fuzzy set theory with a fuzzy set as a fuzzy capacity and separately with its contents. We simply use a convenient form to represent the singularity of a fuzzy set. Articles [1]-[12] use the following methodology for permanent structures:

1. Cancellation of the axiom of regularity.
4. 2 attributes for the fuzzy set: fuzzy capacity and its content.
3. Fuzzy compression of a fuzzy set, for example, to a point.
4. "turning out" from one another, particularly from a fuzzy capacity, we pull out another fuzzy capacity, for example, itself, as its element.
5. The simultaneity of one (fuzzy compression) and the other ("eversion").
6. Own fuzzy capacities.
7. Qualitatively new fuzzy programming and fuzzy Networks.

Here we will consider variable fuzzy structures (models), both discrete and continuous: a) with variable connections, b) with the variable backbone for links, c) generalized version; in particular, in variable fuzzy structures (models), for example,

$$\begin{matrix} C \\ \uparrow \\ \bar{P}\mathrm{FLprt(t)} \\ \uparrow \\ \widetilde{\widetilde{D}} \end{matrix} \begin{matrix} \widetilde{\widetilde{A}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ B \end{matrix} = \begin{cases} \begin{matrix} C \\ \uparrow \\ (\bar{P}\mathrm{FLprt}, q_2 \ge t \ge q_1)|\mu_1 \\ \uparrow \\ \widetilde{\widetilde{D}} \end{matrix} \\ (\underset{D}{\overset{B}{\mu_7}}\mathrm{ffS}^1\mathrm{prt}\underset{B}{\overset{A}{\mu_6}}, q_3 \ge t > q_2)|\mu_2 \\ \begin{matrix} C & \widetilde{\widetilde{A}} \\ \uparrow & \uparrow \\ (\bar{P}\mathrm{FLprt} & \bar{Q}, q_4 \ge t > q_3)|\mu_3 \\ \uparrow & \uparrow \\ \widetilde{\widetilde{D}} & B \end{matrix} \\ \begin{matrix} \widetilde{\widetilde{A}} \\ \uparrow \\ (\mathrm{FLprt}\ \bar{Q}, q_5 \ge t > q_4)|\mu_4 \\ \uparrow \\ B \end{matrix} \\ \begin{matrix} \{\} \\ \uparrow \\ (\bar{P}\mathrm{FLprt}, t > q_5)|\mu_5 \\ \uparrow \\ \widetilde{\widetilde{D}} \end{matrix} \\ \dots \end{cases} \quad (*_{D.1}),$$

μ_i - measures of fuzziness, i = 1, ..., 5. In particular, $\underset{D}{\overset{B}{\mu_7}}\mathrm{ffS}^1\mathrm{prt}\underset{B}{\overset{A}{\mu_6}}$ can be interpreted as a fuzzy game: player 1 fuzzy with measures of fuzziness μ_6 fits fuzzy A into fuzzy B, and the other fuzzy with measures of fuzziness μ_7 pushes fuzzy D out of fuzzy B at the same time.

In what follows, we will denote variable fuzzy structure (model) through VFL(t), qself-variable fuzzy structures (models) through FLqFVS(t), qself is self for *action Q*, and oqself-variable fuzzy structures (models) through OqVFL(t), qoself is oself for *action Q*. Singular fuzzy structures (models) are not confused with fuzzy structures (models) with singularities. $\underset{D}{\overset{B}{\mu_7}}\mathrm{ffS}^1\mathrm{prt}\underset{B}{\overset{A}{\mu_6}}$ -2-hierarchical fuzzy structure: 1-level - elements A, B, C, D; level 2 - connections between them.

2-Examples: a) discrete variable fuzzy structure with μ_i - measures of fuzziness, i = 1, ..., 8.

$$\begin{matrix} a|\mu_1 & b|\mu_8 & g|\mu_7 \\ c|\mu_2 & VFL(t) & w|\mu_6 \\ d|\mu_3 & q|\mu_4 & r|\mu_5 \end{matrix}$$

Figure 1

c) continuous variable fuzzy structure

$$\boxed{\mathrm{VFL(t)}}$$

Figure 2

Where a continuous fuzzy set represents the rim of the Fig.2. We introduce the notation m_{fVLS_N} – the number of elements, N - the number of connections between them in the discrete variable 2-hierarchical fuzzy structure VFL(t). We introduce the notation q_{fVLS_R} – any, R - connections in q_{fVLS_R} in the variable 2-hierarchical fuzzy structure VFL(t), in particular, q_{fVLS_R} , R can be fuzzy sets both discrete and continuous and discrete-continuous. We consider the functional c(Q), which gives a numerical value for the fuzzy structurability of Q from the interval [0,1], where 0 corresponds to "no fuzzy structure"," and 1 corresponds to the value " fuzzy structure". Then for joint A, B: c(A+B)=c(A)+c(B)-c(A*B)+cS(D), D- self-(fuzzy structure) from A*B, cS(x)- the value of self-(fuzzy structure) for self-(fuzzy structure) x; for dependent fuzzy structures: c(A*B)=ca(A)*c(B/A)=c(B)*c(A/B), where c(B/A)- conditional fuzzy structurability of the fuzzy structure B at the fuzzy structure A, c(A/B)- conditional fuzzy structure of the fuzzy structure A at the fuzzy structure B. Adding inconsistent fuzzy structures: c(A+B) =c(A)+ +c(B). The formula of complete fuzzy structure: c(A)=$\sum_{k=1}^{n} c(B_k) * c(A/B_k)$, B_1, B_2,.., Bn-full group of fuzzy hypotheses- actions: $\sum_{k=1}^{n} c(B_k)$ =1(“fuzzy structure”). Fuzzy Lprt- structure for fuzzy set of fuzzy structures $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, …, $x_n|\mu_{\tilde{x}}(x_n)$):

$$\mathrm{fDprt}\ \underset{B}{\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{action\ Q}}\ .\ \mathrm{FLprt}$$

$$\begin{matrix} \overbrace{\{c(x_1)|\mu_{c(\widetilde{x})}c(x_1)|\mu_{c(\widetilde{x})}c(x_2), \dots, c(x_n)|\mu_{c(\widetilde{x})}c(x_n)\}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ B \end{matrix}$$

- fuzzy Lprt- structurability for these fuzzy structures. It is possible to consider the self-(fuzzy structure) $FL_8 f\,\widetilde{x_w}; Q; \tilde{x}, \widetilde{x_w} \subset \tilde{x}$. The same for self-(fuzzy structurability): $FL_8 f\,C_w(\tilde{x}); Q; \widetilde{C(x)}$, where $\widetilde{C(x)} = \{ c(x_1)|\mu_{c(\widetilde{x})}c(x_1), c(x_2)|\mu_{c(\widetilde{x})}c(x_2), \dots, c(x_n)|\mu_{c(\widetilde{x})}c(x_n)\}, C_w(\tilde{x}) \subset \widetilde{C(x)}$.

Can be considered N-hierarchical fuzzy structure: 1-level - elements; level 2 - connections between them, level 3 - relationships between elements of level 2, etc. up to level N+1. N-hierarchical fuzzy structure: 1-level - A; 2-level -B, 3-level - C, etc. up to (N+!)- level, where A, B, C, … can be any in particular, by fuzzy actions, fuzzy sets, and others.

Can be considered discrete fuzzy hierarchical fuzzy structure, continuous fuzzy hierarchical fuzzy structure, and discrete-continuous hierarchical fuzzy structure.

The example

$$
\text{QHFL}=\ _{\text{HFLprt}}\left[\!\left[\begin{array}{c}
\left(^{\text{F}}\text{Lprt}\ \overbrace{\begin{array}{c}\text{N}-\text{level of hierarchical structure}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}}\ \right)\mu_N\\
\ldots\\
\left(^{\text{F}}\text{Lprt}\ \overbrace{\begin{array}{c}\text{i}-\text{level of hierarchical structure}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}}\ \right)\mu_i\\
\ldots\\
\left(^{\text{F}}\text{Lprt}\ \overbrace{\begin{array}{c}1-\text{level of hierarchical structure}\\ \uparrow\\ \bar{Q}\\ \uparrow\\ B\end{array}}\ \right)\mu_1
\end{array}\right]\!\right]\text{-fuzzy N-hierarchical}
$$

$\underset{B}{\bar{Q}}$ fuzzy structure compressioninto fuzzy B, μ_i- measures offuzziness, i = 1, ..., N.

Let flg(N, QHFL)= $\left.\text{QHFL}^{\text{QHFL}^{\text{QHFL}^{\cdots^{\text{QHFL}}}}}\right\}$-N levels

It can be considered self- QHFL, flg(y, QHFL) for any y, flg(QHFL, QHFL).

Compression fuzzy Hierarchy Examples:

$$
1)\ \ \text{Lprt}\ \begin{array}{c}
\overbrace{\text{Lprt}\ \begin{array}{c}\widetilde{\{\,\}}\\ \uparrow\\ \overline{\{\,\}}\\ \uparrow\\ \{\,\}\end{array}}\\
\uparrow\\
\hline
\text{Lprt}\ \begin{array}{c}\widetilde{\{\,\}}\\ \uparrow\\ \overline{\{\,\}}\\ \uparrow\\ \{\,\}\end{array}\\
\uparrow\\
\text{Lprt}\ \begin{array}{c}\widetilde{\{\,\}}\\ \uparrow\\ \overline{\{\,\}}\\ \uparrow\\ \{\,\}\end{array}
\end{array}
$$

2) $\begin{matrix} & () & () & & () & () \\ C+ & \mu_2 \mathrm{ffS_1prt}\mu_1 & & A+ & \mu_2 \mathrm{ffS_1prt}\mu_1 & \\ & () & () & & () & () \\ & \mu_2 & \mathrm{ffS_1prt} & & \mu_1 & \\ & () & () & & () & () \\ D+ & \mu_2 \mathrm{ffS_1prt}\mu_1 & & B+ & \mu_2 \mathrm{ffS_1prt}\mu_1 & \\ & () & () & & () & () \end{matrix} = \begin{pmatrix} () & () & () & () \\ \mu_2 \mathrm{ffS_1prt}\mu_1 & & \mu_2 \mathrm{ffS_1prt}\mu_1 & \\ () & () & () & () \\ \mu_2 & \mathrm{ffS_1prt} & \mu_1 & \\ () & () & () & () \\ \mu_2 \mathrm{ffS_1prt}\mu_1 & & \mu_2 \mathrm{ffS_1prt}\mu_1 & \\ () & () & () & () \\ & C & A & \\ & \mu_2 \mathrm{ffS_1prt}\mu_1 & & \\ & D & B & \end{pmatrix},$

where μ_i- measures of fuzziness, i = 1, 2.

Let's consider two versions: 1) fuzzy containment is interpreted through the concept of fuzzy containment, and 2) fuzzy capacity is interpreted through the concept of fuzzy containment as a rest point of fuzzy containment. Self-(fuzzy containment) is interpreted as a rest point of self-(fuzzy containment). Let A self-(fuzzy compress) into B, D self-(fuzzy displace) from C in $\overset{C}{\underset{D}{\mu_2}}\mathrm{ffVS_1prt}\overset{A}{\underset{B}{\mu_1}}$.

We consider the functional ca(Q), which gives a numerical value for the accommodation of fuzzy Q from the interval [0,1], where 0 corresponds to " fuzzy action" and one corresponds to the value " fuzzy result of action". Then for joint fuzzy A, B: ca(A+B)=ca(A)+ca(B)-ca(A*B)+caS(D), D- self-(fuzzy action) for A*B, caS(x)- the value of self-(fuzzy result of action) for self-(fuzzy action) of x; for dependent fuzzy actions: ca(A*B)=ca(A)*ca(B/A)=ca(B)*ca(A/B), where ca(B/A)- conditional accommodation of the fuzzy action B at the fuzzy action A, ca(A/B)- conditional fuzzy result of action of the fuzzy action A at the fuzzy action B. Adding the fuzzy capacity values of inconsistent fuzzy action s: ca(A+B)=ca(A)+ca(B). The formula of complete fuzzy result of action: ca(A)=$\sum_{k=1}^{n} ca(B_k)*ca(A/B_k)$, B_1, B_2, ..., Bn-full group of fuzzy hypotheses-actions: $\sum_{k=1}^{n} ca(B_k)$ =1(“fuzzy result of action”). FLprt-(fuzzy action) for $\tilde{x}=(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2),\ldots,x_n|\mu_{\tilde{x}}(x_n))$: FLprt $\overbrace{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \ldots, x_n|\mu_{\tilde{x}}(x_n))}^{\uparrow \bar{Q} \uparrow w}$, x - fuzzy set of fuzzy actions. FLpr $\overbrace{\{ca(x_1)|\mu_{ca(\tilde{x})}ca(x_1)|\mu_{ca(\tilde{x})}ca(x_2), \ldots, ca(x_n)|\mu_{ca(\tilde{x})}ca(x_n)\}}^{\uparrow \bar{Q} \uparrow w}$ t - FLprt- accommodation for these fuzzy actions x_i, i = 1, ..., n. It is possible to consider the self-(fuzzy action) $FL_8 f \widetilde{x_w}; Q; \tilde{x}, \widetilde{x_w} \subset \tilde{x}$. The same for self-(fuzzy accommodation):$FLf\,Ca_w(\tilde{x}); Q; \widetilde{Ca(x)}$, where $Ca_w(\tilde{x}) = \{ca(x_1)|\mu_{ca(\tilde{x})}ca(x_1), ca(x_2)|\mu_{ca(\tilde{x})}ca(x_2), \ldots, ca(x_n)|\mu_{ca(\tilde{x})}ca(x_n)\} \subset \widetilde{Ca(x)}$. Consider a variable fuzzy hierarchy (we will denote it by flVH).

We consider the functional h(Q), which gives a numerical value for the hierarchization of fuzzy Q from the interval [0,1], where 0 corresponds to "no fuzzy hierarchy," and 1 corresponds to the value " fuzzy hierarchy. " Then for joint fuzzy hierarchies A, B: h(A+B)=h(A)+h(B)-h(A*B)+hS(D), D- self-(fuzzy hierarchy) from A*B, hS(x)- the value of self-(fuzzy hierarchy) for self-(fuzzy hierarchy) x; for dependent fuzzy hierarchies: h(A*B)=ha(A)*h(B/A)=h(B)*h(A/B), where h(B/A)- conditional hierarchization of the fuzzy hierarchy B at the fuzzy hierarchy A, h(A/B)- conditional fuzzy hierarchy of the fuzzy hierarchy A at the fuzzy hierarchy B. Adding the fuzzy hierarchy values of inconsistent fuzzy hierarchies: h(A+B)=h(A)+h(B). The formula of complete fuzzy hierarchy: $h(A)=\sum_{k=1}^{n} h(B_k)*h(A/B_k)$, B_1, B_2,..,B_n-full group of fuzzy hypotheses- hierarches: $\sum_{k=1}^{n} h(B_k)=1$ (“fuzzy hierarchy”).

FLprt- structure for fuzzy set of hierarches $\tilde{x}=(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \ldots, x_n|\mu_{\tilde{x}}(x_n))$: FLprt $\overbrace{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \ldots, x_n|\mu_{\tilde{x}}(x_n))}^{\uparrow \bar{Q} \uparrow w}$.

FLprt $\overbrace{\{h(x_1)|\mu_{h(\tilde{x})}h(x_1)|\mu_{h(\tilde{x})}h(x_2), \ldots, h(x_n)|\mu_{h(\tilde{x})}h(x_n)\}}^{\uparrow \bar{Q} \uparrow w}$ - FLprt- hierarchization for these fuzzy hierarches. It is possible to consider the self-(fuzzy hierarchy) $FL_8 f \widetilde{x_w}; Q; \tilde{x}, \widetilde{x_w} \subset \tilde{x}$. The same for self- hierarchization $FL_8 f \widetilde{hx_w}; Q; \widetilde{hx}$, $\widetilde{hx}_w \subset \widetilde{hx}, \widetilde{hx} = \{h(x_1)|\mu_{h(\tilde{x})}h(x_1), h(x_2)|\mu_{h(\tilde{x})}h(x_2), \ldots, h(x_n)|\mu_{h(\tilde{x})}h(x_n)\}$.

Can be considered FLprt $\overbrace{\{ca(x), c(x), h(x)\}}^{\uparrow \bar{Q} \uparrow B}$.

Very interesting next fuzzy structure type:

$$\begin{array}{c} \underline{\text{fuzzy structure A}} \\ \uparrow \\ \text{fuzzy structure A} \\ \uparrow \\ \overbrace{\text{fuzzy structure A}} \end{array} \text{ FLprt } \begin{array}{c} \overbrace{\text{fuzzy structure}A} \\ \uparrow \\ \overline{\text{fuzzy structure A}} \\ \uparrow \\ \text{fuzzy structure A} \end{array}$$

You can enter special operator FLCprt to work with fuzzy structures A, Q, B, R, P, C: $C:\begin{array}{c} C \\ \uparrow \\ \bar{P} \\ \uparrow \\ \overset{\frown}{\widetilde{R}} \end{array} \text{ FLCprt } \begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ B \end{array}$.

Very interesting next fuzzy hierarchy type:

$$\begin{array}{c} \underline{\text{fuzzy hierarchy A}} \\ \uparrow \\ \text{fuzzy hierarchy A} \\ \uparrow \\ \overbrace{\text{fuzzy hierarchy A}} \end{array} \text{ FLprt } \begin{array}{c} \overbrace{\text{fuzzy hierarchy }A} \\ \uparrow \\ \overline{\text{fuzzy hierarchy }A} \\ \uparrow \\ \text{fuzzy hierarchy A} \end{array}$$

You can enter special operator FLHprt to work with fuzzy hierarches A, Q, B, R, P, C: $\begin{array}{c} C \\ \uparrow \\ \bar{P} \\ \uparrow \\ \overset{\frown}{\widetilde{R}} \end{array} \text{ FLHprt } \begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ B \end{array}$.

6. Introduction to Fuzzy Program Operators Flprt, tprFL, FL1epr, FLeprt$_1$

Here it is supposed to use a symbiosis of parallel actions and conventional calculations through sequential actions. This must be done through FLprt-Networks - fuzzy analogue of Sit-Networks in one of the central departments of which a conventional computer system is located. The parallel processor is itself fdeprogram - fuzzy analogue of eprogram with direct parallel computing not through serial computing [1,6, 12].

Using conventional coding by a computer system, through a Target-block with a fuzzy Lprt -program operator - FLprt $\begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ activation\ g \end{array}$,

where fuzzy A with measure of fuzziness μ_A fuzzy acts Q with measure of fuzziness μ_Q to fuzzy activation with measure of fuzziness $\mu_{activation}$, Q is any fuzzy action, it will be possible to obtain the fuzzy execution with measure of fuzziness $\mu_{activation}$ of a parallel fuzzy action A with the desired target weight g or the execution with measure of fuzziness $\mu_{activation}$ of a parallel action A with the desired fuzzy target weight g with measure of fuzziness μ_g or both. Each code for a neural network from a conventional computer we "bind" (match) to the corresponding value of current (or voltage). For FLprt-coding and FLprt-translation may be use alternating current of ultrahigh frequency or high-intensity ultra-short optical pulses laser of Nobel laureates 2018-year Gerard Mourou, Donna Strickland, or a combination of them. For the desired action, for example, using the direct parallel fdprogram of operator fDprt $\begin{array}{c} \{\text{UHF AC} := R\} \\ action\ Q \\ activation \end{array}$ with the specified measures of fuzziness, we simultaneously enter the desired fuzzy set of codes R with measure of fuzziness μR using a microwave current with minimal amplitude and maximum frequency or high-intensity ultra-short optical pulses laser in Target-block.

In a conventional computer, the process of sequential calculation takes a certain time interval, in a directly parallel calculation by a neural network, the calculation is instantaneous, but it occupies a certain region of the space of calculation objects.

Consider the types of direct parallel fuzzy fdprogram operators:

1) fuzzy Lprt-program operators (designation FLprt-program operators)

2) fuzzy tprL-program operators (designation tprFL-program operators)

3) fuzzy L1epr - program operators (designation FL1epr -program operators)

4) fuzzy Leprt1- program operators (designation FLeprt1-program operators)

Examples:

1) $\text{Lprt} \quad \begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ then\ \bar{Q} \\ \uparrow \\ IF\{\{B\}\{f\}\} \end{array}$

2) $\begin{array}{c} C \\ \uparrow \\ \bar{P} \\ \uparrow \\ \overset{\frown}{\widetilde{R}} \end{array} \text{Lprt } \begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ then\ \bar{Q} \\ \uparrow \\ IF\{\{B\}\{f\}\} \end{array} :\equiv$

3) $\begin{array}{c} C \\ \uparrow \\ \bar{P} \\ \uparrow \\ \overset{\frown}{\widetilde{R}} \end{array} \text{Lprt } \begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ \bar{Q} \\ \uparrow \\ B := \end{array} :\equiv$

One example is pattern recognition: Lprt $\begin{array}{c} \overset{\frown}{\widetilde{A}} \\ \uparrow \\ then\ \bar{Q} \\ \uparrow \\ IF\{\{B\}\{f\}\} \end{array}$

6.1 Applications to Physics

To construct pseudo-living energies, it is necessary to take or form from energy A with an amplitude proportional (to the square of the frequency of energy A) self-energy. And then through activation SmnSprt in order to obtain the necessary pseudo-living energy from this self-energy, do this. Moreover self(A) ||| self(B) = (A|||A)|||(B|||B) = A|||B.

Remark 1. The installation of the "paradox: TN is everything, NG is everything else" creates a field for the creation of new abstractions in theoretical science and thereby significantly expands its boundaries.

In our opinion, one of the laws of physics should be the law of induction: any change (motion) induces a change (field) "perpendicular to it" This especially applies to flow. It's just that the physical characteristics of "perpendicular" fields during ordinary not very large changes (movements) are so small. In particular, an electric current induces a magnetic field "perpendicular to it" and vice versa, a fluid flow induces a vortex field "perpendicular to it". Only the specifics inherent in each will differ. Induction, as it were, balances (compensates) the movement. This is the result of resistance to the singularity of "emptiness" (order).

The next law of physics should be the law of "clotting": obtaining potential energy by "clotting"(up to ||| (identification) the elements of space-time, objects [14]. Moreover, e.g., a uniform movement in a straight line does not give potential energy, and uniform movement in a circle gives potential energy through centripetal acceleration $a = v^2/R$. There is there "clotting" the element of space - a direct line to circle. For example, in the case $R \rightarrow 0$, $v^2 = d^*R$ we get one of the options of self-energy. The operators $\begin{array}{ccc} C & & \tilde{A} \\ \uparrow & & \uparrow \\ \tilde{P} & \text{Lprt} & \tilde{Q} \\ \uparrow & & \uparrow \\ \tilde{R} & & B \end{array}$ considered above are examples of such operators of "clotting". Electron orbital in atoms is also "clotting". In particular, "clotting" allows to get some options of self-energy. Another option for obtaining self-energy through manifestations of higher levels. For example, A|||B can give a manifestation of the species self(A) = A|||A.

The next law of physics should be the law of the evolution of energies: the first stage of the evolution of energies - to "clotting", the second stage of the evolution of energies – to self-energies, the third stage of the evolution of energies - up to ||| (identification) of energies; and also the law of the involution (manifestations) of energies: from A|||B to A|||A = self(A) and B|||B = self(B) and further to A and B.

Remark 2. Any self -use can be used to design pseudo -proof energies if the amplitude of the action is inversely proportional to the square of the frequency of action.

Remark 3. In strings theory, to more correctly accept self -action as a string (in private., Self -school), which generates this self -object - an elementary particle.

Remark 4. To construct pseudo-living energies, it is necessary to take or form from energy A with an amplitude proportional (to the square of the frequency of energy A) self-energy. And then through activation SmnSprt in order to obtain the necessary pseudo-living energy from this self-energy, do this [13].

Remark 5. Any created self of object A creates the possibility of using a double from self(A), moreover this double of object self(A) is actually formed only through the upper level of self(A) and is not directly connected with the lower level of A, i.e., with the level of its objectivity. By manipulating the double, it is possible to perform all sorts of actions that are not available to the original due to the "absence" of the objectivity inherent in the original. All this follows from the nature of self(A), since self(A) is a structure containing A twice: the original and, as it were, a virtual copy of the original (the potency of the double). All this applies to any: both to the natural and to the theoretical, in particular, to the self -equation, the self –(boundary value) problem; the implementation will only be its own specific.

Remark 6. The 2022 Nobel laureates' experiments with the spin of bound electrons show the need for parallel physics, which specializes in studying the parallelism of processes.

Competing interest

There are no competing interests. All sections of the article are executed jointly.

Authors' contributions

The contribution of the authors is the same, we will not separate.

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