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Introduction to Dynamic Operators: Rprt-Elements and Their Applications. Rprt-Networks. Variable Fuzzy Hierarchical Dynamic Fuzzy Structures (Models, Operators) for Dynamic, Singular, Hierarchical Fuzzy Sets. Fuzzy Program Operators fRprt, ftprR, ffR1epr, ffRepr1

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Abstract

There is a need to develop an instrumental mathematical base for new technologies, in particular for a fundamentally new type of neural network with parallel computing, in particular for creating ***artificial intelligence****, but this is not the main task of a neural network, and not with the usual parallel computing through sequential computing. The task of the work is to create new approaches for this by introducing new concepts and methods. Our mathematics is unusual for a mathematician, because here the fulcrum is the action, and not the result of the action as in classical mathematics. Therefore, our mathematics is adapted not only to obtain results, but also to directly control actions, which will certainly show its benefits on a fundamentally new type of neural networks with directly parallel calculations, for which it was created. Any action has much greater potential than its result. Significance of the article: in a new qualitatively different approach to the study of complex processes through new mathematical, hierarchical, Parallel dynamic structures, in particular those processes that are dealt with by Synergetics. Our approach is not based on deterministic equations that generate self-organization, which is very difficult to study and gives very small results for a very limited class of problems and does not provide the most important thing - the structure of self-organization. We are just starting from the assumed structure of self-organization, since we are interested not so much in the numerical calculation of this as in the structure of self-organization itself, its formation (construction) for the necessary purposes and its management. Although we are also interested in numerical calculations. Nobel laureates in physics 2023 Ferenc Kraus and his colleagues Pierre Agostini and Anna Lhuillier used a short-pulse laser to generate attosecond pulses of light to study the dynamics of electrons in matter. According to our Theory of singularities of the type synthesizing, its action corresponds to singularity* $\uparrow I\downarrow_{h}^{q}$*, which allows one to reach the upper level of subtle energies to manipulate lower levels. In April 2023 [1], we proposed using a short-pulse laser to achieve the desired goals by a directly parallel neural network. We then proposed the fundamental development of this directly parallel neural network. In the articles new mathematical structures and operators are constructed through one action - "containment" [1-14]. Here, the construction of new mathematical structures and operators is carried out with generalization to any actions. The significance of our articles is in the formation of the presumptive mathematical structure of subtle energies, this is being done for the first time in science, and the presumptive classification of the mathematical structures of subtle energies for the first time. The experiments of the 2022 Nobel laureates Asle Ahlen, John Clauser, Anton Zeilinger and the experiments in chemistry Nazhipa Valitov eloquently demonstrate that we are right and that these studies are necessary. The purpose of the article is to create new fuzzy fprogram operators for a fundamentally new type of neural network with parallel computing, and not with the usual parallel computing through sequential computing. The article aims to create new constructive hierarchical mathematical objects for new technologies.*

Keywords: Hierarchical Structure (Dynamic Operator), Rprt-Elements, tRpr- Elements, self-Type Rprt-Structures, Fuzzy Rprt-Program Operators (fRprt-Program Operators), Fuzzy tprR-Program Operators (ftprR- Program Operators), Fuzzy fR1epr- Program Operators (fR1epr-Program Operators), Fuzzy Reprt1- Program Operators (fReprt1-Program Operators), Fuzzy Hierarchical Fuzzy Structure (Operator), Fuzzy Dynamic Fuzzy Set, Fuzzy Rprt-Elements (fRprt-Elements), Fuzzy Capacity, fuzzy tRpr- Elements (ftRpr- Elements), Fuzzy S1pre – Elements (fS1pre –Elements), fuzzy Seprt1- Elements (fSeprt1- Elements).

1. Rprt – Elements, Self-Type Rprt-Structures

We consider dynamic operator

$\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.1),

where A acts Q to B, D acts P out from C; A, B, C, D may be fuzzy with corresponding fuzzy measures; Q and P are any *actions*, in particular, fuzzy *actions*, simultaneously. The result of this process will be described by the expression

$\underset{D}{\overset{C}{action\ P}}$ Rrt $\underset{B}{\overset{A}{action\ Q}}$ (1.2).

We consider the measure: μ**($\underset{D}{\overset{B}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$)$=\frac{\mu(A)\mu(Q)}{\mu(D)\mu(P)}$, where μ(A), μ(D), μ(Q), μ(P) –usual measures or fuzzy measures of A, D, Q, P.

1.1 Definition 1.1

The dynamic operator (1.1) we shall call Rprt – element of the first type or fRprt – element of the first type for fuzzy dynamic operator, (1.2) we shall call Rrt – element of the first type or fRrt – element of the first type for fuzzy dynamic operator.

Remark 1.1

$\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ - the analogue of ${}_{D}^{C}Sprt_{B}^{A}$ [14] as a special case of (1.1), where $action\ Q$ is "contain", $action\ P$ is Q^{-1}.

Remark 1.1.1

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

$\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A_1}{action\ Q}}$ + $\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A_2}{action\ Q}}$ = $\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A_1 \cup A_2}{action\ Q}}$ (1.2.1),

$\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B_1}{\overset{A}{action\ Q}}$ + $\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B_2}{\overset{A}{action\ Q}}$ = $\underset{D}{\overset{C}{action\ P}}$ Rprt $\underset{B_1 \cup B_2}{\overset{A}{action\ Q}}$ (1.2.2),

$\underset{D}{\overset{C_1}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ + $\underset{D}{\overset{C_2}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ = $\underset{D}{\overset{C_1 \cup C_2}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.2.3),

$\underset{D_1}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ + $\underset{D_2}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ = $\underset{D_1 \cup D_2}{\overset{C}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.2.4).

Likewise for fuzzy dynamic operator $\underset{D}{\overset{C}{action\ P}}$ fRprt $\underset{B}{\overset{A}{action\ Q}}$.

We consider the following self-type Rprt-structures of the first type:

$\underset{action\ Q}{\overset{action\ Q}{(action\ Q)^{-1}}}$Rprt $\underset{action\ Q}{\overset{action\ Q}{action\ Q}}$ (1.3),

denote $R_1 f Q$.

$\underset{A}{\overset{action\ Q}{(action\ Q)^{-1}}}$Rprt $\underset{action\ Q}{\overset{A}{action\ Q}}$ (1.4),

denote $R_2 f A; Q$.

$\underset{A}{\overset{B}{(action\ Q)^{-1}}}$Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.5), denote $R_3 f A; Q; B$.

$(\underset{A}{\overset{A}{action\ Q}})^{-1}$Rprt $\underset{A}{\overset{A}{action\ Q}}$ (1.6),

denote $R_4 f A; Q$.

$(\underset{strA}{\overset{a}{action\ Q}})^{-1}$Rprt $\underset{a}{\overset{strA}{action\ Q}}$ (1.6.1),

denote $R_5 f A; Q; a$, $a \subset$ A and structure of A acts Q to a and acts Q out from a simultaneously.

$(\underset{a}{\overset{StrA}{action\ Q}})^{-1}$Rprt $\underset{StrA}{\overset{a}{action\ Q}}$ (1.6.2),

denote $R_6 f a; Q; A$, $a \subset$ A and acts Q to structure of A and acts Q out from structure of A simultaneously,

$(\underset{B}{\overset{B}{action\ Q}})^{-1}$Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.7),

$(\underset{B}{\overset{B}{action\ Q}})^{-1}$Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.8),

$\underset{A}{\overset{B}{action\ P}}$ Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.9),

$\underset{A}{\overset{B}{action\ P}}$ Rprt $\underset{B}{\overset{B}{action\ Q}}$ (1.10),

$\underset{A}{\overset{A}{action\ P}}$ Rprt $\underset{A}{\overset{A}{action\ Q}}$ (1.11),

and any other possible options of self for (1.1) etc.

Likewise for fuzzy dynamic operator $\underset{D}{\overset{C}{action\ P}}$ fRprt $\underset{B}{\overset{A}{action\ Q}}$.

It can be considered a simpler version of the dynamic operator

Rprt $\underset{B}{\overset{A}{action\ Q}}$ (1.12),

where A acts Q to B, Q is any $action$, the result of this process will be described by the expression

Rrt $\underset{B}{\overset{A}{action\ Q}}$ (1.13)

or

$\underset{D}{\overset{C}{action\ P}}$ Rprt (1.14)

where D acts P out from C, P is any $action$, the result of this process will be described by the expression

$\underset{D}{\overset{C}{action\ P}}$ Rrt (1.15)

1.2 Definition 1. 2

The dynamic operator (1.12) we shall call Rprt – element of the second type or fRprt – element of the second type for fuzzy dynamic operator, (1.13) we shall call Rrt – element of the second type or fRrt – element of the second type for fuzzy dynamic operator.

Remark 1.2. Rprt $\underset{B}{\overset{A}{action\ Q}}$- the analogue of $Sprt_B^A$ [14] as a special case of (1.8), where $action\ Q$ is “contain”. In this case

$Sprt_{action\ Q}^{action\ Q}$ = Rprt $\underset{action\ Q}{\overset{action\ Q}{action\ Q}}$ – self-containment and unlike usual self has higher level self(contain): self$^{\frac{3}{2}}$. That's why self-containment can generate, modify and perform other actions with self-capacities, because they have lower level = self.

It’s allowed to add Rprt – elements of the second type:

Rprt $\underset{B}{\overset{A_1}{action\ Q}}$ + Rprt $\underset{B}{\overset{A_2}{action\ Q}}$ = Rprt $\underset{B}{\overset{A_1 \cup A_2}{action\ Q}}$ (1.16),

Rprt $\underset{B_1}{\overset{A}{action\ Q}}$ + Rprt $\underset{B_2}{\overset{A}{action\ Q}}$ =Rprt $\underset{B_1 \cup B_2}{\overset{A}{action\ Q}}$ (1.17).

Likewise for fuzzy dynamic operator fRprt $\underset{B}{\overset{A}{action\ Q}}$.

We consider the following self-type Rprt-structures of the second t type:

Rprt $\underset{A}{\overset{A}{action\ Q}}$ (1.18),

Rprt $\underset{a}{\overset{strA}{action\ Q}}$ (1.18.1),

denote $R_7 f A; Q; a, a \subset$ A and structure of A acts Q to a,

Rprt $\underset{strA}{\overset{a}{action\ Q}}$ (1.18.2),

denote $R_8 f a; Q; A, a \subset$ A and acts Q to structure of A,

Rprt $\underset{action\ Q}{\overset{action\ Q}{action\ Q}}$ (1.19),

Rprt $\underset{action\ Q}{\overset{A}{action\ Q}}$ (1.20),

and any other possible options of self for (1.12) etc. Likewise for fuzzy dynamic operator fRprt $\underset{B}{\overset{A}{action\ Q}}$.

1.3 Definition 1.3

The dynamic operator (1.14) we shall call tprR – element or ftprR – element for fuzzy dynamic operator, (1.15) we shall call trR – element or ftrR – element for fuzzy dynamic operator.

Remark 1.3

$(\underset{D}{\overset{C}{action\ Q}})^{-1}$Rprt - the analogue of ${}_D^C Sprt$ [14] as a special case of (1.14), where $action\ Q$ is “contain”.

It’s allowed to add tprR – elements:

$\underset{D}{\overset{C_1}{action\ P}}$ Rprt + $\underset{D}{\overset{C_2}{action\ P}}$ Rprt = $\underset{D}{\overset{C_1 \cup C_2}{action\ P}}$ Rprt (1.21),

$\underset{D_1}{\overset{C}{action\ P}}$ Rprt + $\underset{D_2}{\overset{C}{action\ P}}$ Rprt = $\underset{D_1 \cup D_2}{\overset{C}{action\ P}}$ Rprt (1.22).

Likewise for fuzzy dynamic operator $\underset{D}{\overset{C}{action\ P}}$ fRprt.

We consider the following self-type tprR-structures:

$\overset{D}{\underset{D}{action\ P}}$ Rprt (1.23)

$\overset{strD}{\underset{d}{action\ P}}$ Rprt (1.23.1),

denote $R_9 f d; Q; D$, $d \subset$ D and d acts Q out from structure of D,

$\overset{d}{\underset{strD}{action\ P}}$ Rprt (1.23.2),

denote $R_{10} f D; Q; d$, $d \subset$ D and structure of D acts Q out from d,

$\overset{action\ Q}{\underset{D}{(action\ Q)^{-1}}}$Rprt (1.24)

$\overset{action\ Q}{\underset{action\ Q}{(action\ Q)^{-1}}}$Rprt (1.25)

and any other possible options of self for (1.14) etc. Likewise for fuzzy dynamic operator $\overset{C}{\underset{D}{action\ P}}$ fRprt.

2. Dynamic Rprt – Elements, Self-Type Dynamic Rprt-Structures

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

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ (2.1),

where A(t) acts Q(t) to B(t), D(t) acts P(t) out from C(t) simultaneously; A(t), B(t), C(t), D(t) may be fuzzy with corresponding fuzzy measures; Q(t), P(t) are any $actions$, in particular, fuzzy $actions$. The result of this process will be described by the expression

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rrt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ (2.2).

2.1 Definition 2.1

The dynamic operator (2.1) we shall call dynamic Rprt– element of the first type or dynamic fRprt– element of the first type for fuzzy dynamic operator, (2.2) we shall call dynamic Rrt– element of the first type or dynamic fRrt– element of the first type for fuzzy dynamic operator.

Remark 2.1

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ - the analogue of ${}^{C(t)}_{D(t)}Sprt(t)^{A(t)}_{B(t)}$ [14] as a special case of (2.1), where $action\ Q(t)$ is "contain", $action\ P(t)$ is $Q(t)^{-1}$.

It's allowed to add dynamic Rprt – elements:

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A_1(t)}{\underset{B(t)}{action\ Q(t)}}$ + $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A_2(t)}{\underset{B(t)}{action\ Q(t)}}$ = $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A_1(t) \cup A_2(t)}{\underset{B(t)}{action\ Q(t)}}$ (2.2.1),

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B_1(t)}{action\ Q(t)}}$ + $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B_2(t)}{action\ Q(t)}}$ = $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B_1(t) \cup B_2(t)}{action\ Q(t)}}$ (2.2.2),

$\overset{C_1(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ + $\overset{C_2(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ = $\overset{C_1(t) \cup C_2(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$ (2.2.3),

$\underset{D_1(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}} +$ $\underset{D_2(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}} =$ $\underset{D_1(t)\cup D_2(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.2.4).

Likewise for fuzzy dynamic operator $\underset{D(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$.

We consider the following self-type dynamic Rprt-structures of the first type:

$\left(\underset{action\ Q(t)}{\overset{action\ Q(t)}{action\ Q(t)}}\right)^{-1}$Rprt(t) $\underset{action\ Q(t)}{\overset{action\ Q(t)}{action\ Q(t)}}$ (2.3),

$\left(\underset{A(t)}{\overset{action\ Q(t)}{action\ Q(t)}}\right)^{-1}$Dprt(t) $\underset{action\ Q(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.4),

$\left(\underset{A(t)}{\overset{B(t)}{action\ Q(t)}}\right)^{-1}$Drt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.5),

$\left(\underset{A(t)}{\overset{A(t)}{action\ Q(t)}}\right)^{-1}$Drt(t) $\underset{A(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.6),

$\left(\underset{strA(t)}{\overset{a(t)}{action\ Q(t)}}\right)^{-1}$Drt(t) $\underset{a(t)}{\overset{strA(t)}{action\ Q(t)}}$ (2.6.1),

denote $D_{11}(t) f A(t); Q(t); a(t), a(t) \subset$ A(t) and structure of A(t) acts Q(t) to $a(t)$ and acts Q(t) out from $a(t)$ simultaneously.

$\left(\underset{a(t)}{\overset{strA(t)}{action\ Q(t)}}\right)^{-1}$Drt(t) $\underset{strA(t)}{\overset{a(t)}{action\ Q(t)}}$ (2.6.2),

denote $D_{12}(t) f a(t); Q(t); A(t), a(t) \subset$ A(t) and acts Q(t) to structure of A(t) and acts Q(t) out from structure of A(t) simultaneously.

$\left(\underset{B(t)}{\overset{B(t)}{action\ Q(t)}}\right)^{-1}$Drt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.7),

$\underset{A(t)}{\overset{B(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.8),

$\underset{B(t)}{\overset{B(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.9),

$\underset{A(t)}{\overset{B(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{B(t)}{action\ Q(t)}}$ (2.10),

$\underset{B(t)}{\overset{B(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{B(t)}{action\ Q(t)}}$ (2.11),

and any other possible options of self for (2.1) etc. Likewise for fuzzy dynamic operator $\underset{D(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$.

It can be considered a simpler version of the dynamic operator

Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$, (2.12) where A(t) acts Q(t) to B(t), the result of this process will be described by the expression

Rrt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.13),

or

$\underset{D(t)}{\overset{C(t)}{action\ P(t)}}$ Rprt(t) (2.14),

where D(t) acts Q(t) out from C(t), Q(t) is any $action$, the result of this process will be described by the expression

$\underset{D(t)}{\overset{C(t)}{action\ P(t)}}$ Rrt(t) (2.15),

2.2 Definition 2.2

The dynamic operator (2.12) we shall call dynamic Rprt – element of the second type or dynamic fRprt – element of the second type for fuzzy dynamic operator, (2.13) we shall call dynamic Rrt – element of the second type or dynamic fRrt – element of the second type for fuzzy dynamic operator.

Remark 2.2. Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$- the analogue of $St(t)_{B(t)}^{A(t)}$ [1], [6], [12] as a special case of (2.12), where $action\ Q(t)$ is "contain". In this case

$Sprt(t)_{action\ Q(t)}^{action\ Q(t)}$ = Rprt(t) $\underset{action\ Q(t)}{\overset{action\ Q(t)}{action\ Q(t)}}$ – self-containment and unlike usual self has higher level self(contain) $self^{\frac{3}{2}}$. That's why self-containment can generate, modify and perform other actions with self-capacities, because they have lower level = self.

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

Rprt(t) $\underset{B(t)}{\overset{A_1(t)}{action\ Q(t)}}$ + Rprt(t) $\underset{B(t)}{\overset{A_2(t)}{action\ Q(t)}}$ = Rprt(t) $\underset{B(t)}{\overset{A_1(t)\cup A_2(t)}{action\ Q(t)}}$ (2.16),

Rprt(t) $\underset{B_1(t)}{\overset{A(t)}{action\ Q(t)}}$ + Rprt(t) $\underset{B_2(t)}{\overset{A(t)}{action\ Q(t)}}$ = Rprt(t) $\underset{B_1(t)\cup B_2(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.17).

Likewise for fuzzy dynamic operator Rprt(t) $\underset{B(t)}{\overset{A(t)}{action\ Q(t)}}$.

We consider the following self-type dynamic Dprt-structures of the second t type:

Rprt(t) $\underset{A(t)}{\overset{A(t)}{action\ Q(t)}}$ (2.18),

Rprt(t) $\underset{a(t)}{\overset{strA(t)}{action\ Q(t)}}$ (2.18.1),

denote $R_{13}(t)fA(t);Q(t);a(t)$, $a(t)\subset$ A(t) and structure of A(t) acts Q(t) to $a(t)$,

Rprt(t) $\underset{strA(t)}{\overset{a(t)}{action\ Q(t)}}$ (2.18.2),

denote $R_{14}(t)fa(t);Q(t);A(t), a(t)\subset$ A(t) and acts Q(t) to structure of A(t),

Rprt(t) $\underset{action\ Q(t)}{\overset{action\ Q(t)}{action\ Q(t)}}$ (2.19),

$$\text{Rprt(t)} \overset{A(t)}{\underset{action\ Q(t)}{action\ Q(t)}} \text{ (2.20),}$$

and any other possible options of self for (2.12) etc. Likewise for fuzzy dynamic operator Rprt(t) $\overset{A(t)}{\underset{B(t)}{action\ Q(t)}}$.

2.3 Definition 2.3

The dynamic operator (2.14) we shall call dynamic tprR – element or dynamic ftprR – element for fuzzy dynamic operator, (2.15) we shall call dynamic trR – element or dynamic ftprR – element for fuzzy dynamic operator.

Remark 2.3

$\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t) - the analogue of ${}^{C(t)}_{D(t)}St(t)$ [1,6,12] as a special case of (2.14), $action\ P(t)$ is $Q(t)^{-1}$, where $Q(t)$ is "contain".

It's allowed to add dynamic tprR – elements:

$$\overset{C_1(t)}{\underset{D(t)}{action\ P(t)}} \text{ Rprt(t)} + \overset{C_2(t)}{\underset{D(t)}{action\ P(t)}} \text{ Rprt(t)} = \overset{C_1(t) \cup C_2(t)}{\underset{D(t)}{action\ P(t)}} \text{ Rprt(t) (2.21),}$$

$$\overset{C(t)}{\underset{D_1(t)}{action\ P(t)}} \text{ Rprt(t)} + \overset{C(t)}{\underset{D_2(t)}{action\ P(t)}} \text{ Rprt(t)} = \overset{C(t)}{\underset{D_1(t) \cup D_2(t)}{action\ P(t)}} \text{ Rprt(t) (2.22).}$$

Likewise for fuzzy dynamic operator $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t).

We consider the following self-type dynamic tprR-structures:

$$\overset{D(t)}{\underset{D(t)}{(action\ Q(t))^{-1}}} \text{Rprt(t) (2.15)}$$

$$\overset{strD(t)}{\underset{d(t)}{(action\ Q(t))^{-1}}} \text{Rprt(t) (2.15.1),}$$

denote $R_{15}(t) f d(t); Q(t); D(t), d(t) \subset$ D(t) and d(t) acts Q(t) out from structure of D(t),

$$\overset{d(t)}{\underset{strD(t)}{(action\ Q(t))^{-1}}} \text{Rprt(t) (2.15.2)}$$

denote $R_{16}(t) f D(t); Q(t); d(t), d(t) \subset$ D(t) and structure of D(t) acts Q(t) out from d(t),

$$\overset{action\ Q(t)}{\underset{D(t)}{(action\ Q(t))^{-1}}} \text{Rprt(t) (2.16)}$$

$$\overset{action\ Q(t)}{\underset{action\ Q(t)}{(action\ Q(t))^{-1}}} \text{Rprt(t) (2.17)}$$

and any other possible options of self for (2.14) etc. Likewise for fuzzy dynamic operator $\overset{C(t)}{\underset{D(t)}{action\ P(t)}}$ Rprt(t).

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

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

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

$$2)\quad \begin{matrix} f_{11} & \cdots & f_{1k} \\ \cdots & \cdots & \cdots \\ (q_{j1})^{-1} & \cdots & (q_{jk})^{-1} \\ \cdots & \cdots & \cdots \\ f_{l1} & \cdots & f_{lk} \end{matrix} \text{fDDprt} \begin{matrix} q_{11} & \cdots & q_{1n} \\ & \cdots & \\ q_{m1} & \cdots & q_{mn} \end{matrix} \quad (*),$$

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

$$3)\quad \begin{matrix} g_{11} \\ (w_{j1})^{-1} \\ g_{31} \end{matrix} \begin{matrix} g_{12} \\ g_{22} \\ (w_{j2})^{-1} \\ \cdots \\ g_{k2} \end{matrix} \begin{matrix} g_{13} \\ (w_{j3})^{-1} \end{matrix} \text{DGprt} \begin{matrix} w_{11} & w_{12} & & w_{1n} & \\ \cdots & \cdots & & w_{2n} & \\ & & & \cdots & \\ w_{m1} & w_{m2} & \cdots & \cdots & w_{ml} \\ & & & w_{sn} & \end{matrix} \quad (*_1),$$

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

$$4)\quad \begin{matrix} g_{11} \\ (w_{j1})^{-1} \\ g_{31} \end{matrix} \begin{matrix} g_{12} \\ g_{22} \\ (w_{j2})^{-1} \\ \cdots \\ g_{k2} \end{matrix} \begin{matrix} g_{13} \\ (w_{j3})^{-1} \end{matrix} \text{fDGprt} \begin{matrix} w_{11} & w_{12} & & w_{1n} & \\ \cdots & \cdots & & w_{2n} & \\ & & & \cdots & \\ w_{m1} & w_{m2} & \cdots & \cdots & w_{ml} \\ & & & w_{sn} & \end{matrix} \quad (*_1),$$

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

$$5)\quad \begin{matrix} a & b & g \\ c & ASrq(\mu) & w \\ d & q & r \end{matrix} \quad (*_2),$$

where *ASrq* 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.

$$6)\quad \begin{matrix} a & b & g \\ c & fASrq(\mu) & w \\ d & q & r \end{matrix} \quad (*_2),$$

where *fASrq* is fuzzy virtual fuzzy structure or fuzzy virtual operator, which can take any fuzzy form of action; a, c, d, q, r, w, g, b, μ – any fuzzy objects, fuzzy actions etc.
Accordingly, we can consider all sorts of self-structures for 1) – 6). And any other possible structures and operators etc.

3. Generalization of Variables of Fuzzy Hierarchical Dynamic Fuzzy Operators

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 [15,16]. We simply use a convenient form to represent the singularity of a fuzzy set. Articles use the following methodology for permanent structures [1-14]:
1. Cancellation of the axiom of regularity.
2. 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,

$$\underset{D}{\overset{C}{action\ P}}\ \text{fRprt(t)}\underset{B}{\overset{A}{action\ Q}} = \begin{cases} (\underset{D}{\overset{C}{action\ P}}\ \text{fDprt},\ q_2 \geq t \geq q_1)|\mu_1 \\ (\underset{D}{\overset{B}{\mu_7}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_6}},\ q_3 \geq t > q_2)|\mu_2 \\ (\underset{D}{\overset{C}{action\ P}}\ \text{fRprt}\ \underset{B}{\overset{A}{action\ Q}},\ q_4 \geq t > q_3)|\mu_3 \\ (\text{fDprt}\ \underset{B}{\overset{A}{action\ Q}},\ q_5 \geq t > q_4)|\mu_4 \\ (\underset{D}{\overset{\{\}}{action\ Q}})^{-1}\text{fDprt},\ t > q_5)|\mu_5 \\ \ldots \end{cases} \quad (*_{D.1}),$$

μ_i- measures of fuzziness, i = 1, ..., 5. In particular, $\underset{D}{\overset{B}{\mu_7}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_6}}$ 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 fVR(t), qself-variable fuzzy structures (models) through RqfFVS(t), qself is self for $action\ Q$, and oqself-variable fuzzy structures (models) through OqfVR(t), qoself is oself for $action\ Q$. Singular fuzzy structures (models) are not confused with fuzzy structures (models) with singularities. $\underset{D}{\overset{B}{\mu_7}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_6}}$ -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.

$a|\mu_1$	$b|\mu_8$	$g|\mu_7$
$c|\mu_2$	$ffVR(t)$	$w|\mu_6$
$d|\mu_3$	$q|\mu_4$	$r|\mu_5$

Figure 1:

c) continuous variable fuzzy structure

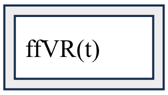


Figure 2:

Where a continuous fuzzy set represents the rim of the Figure 2.

We introduce the notation m_{fVS_N}– the number of elements, N - the number of connections between them in the discrete variable 2-hierarchical fuzzy structure fVR(t). We introduce the notation q_{fVS_R}– any, R - connections in q_{fVS_R} in the variable 2-hierarchical fuzzy structure fVR(t), in particular, q_{fVS_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,.., B_n-full group of fuzzy hypotheses- actions: $\sum_{k=1}^{n} c(B_k)$=1("fuzzy structure"). Fuzzy Rprt- structure for fuzzy set of fuzzy structures $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$):

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

$$\text{fRprt} \underset{B}{\overset{\{c(x_1)|\mu_{\widetilde{c(x)}}c(x_1)|\mu_{\widetilde{c(x)}}c(x_2), \dots, c(x_n)|\mu_{\widetilde{c(x)}}c(x_n)\}}{action\ Q}}$$ - fuzzy Rprt-

structurability for these fuzzy structures. It is possible to consider the self-(fuzzy structure) $fR_8 f\widetilde{x_w}; Q; \tilde{x}$, $\widetilde{x_w} \subset \tilde{x}$. The same for self-(fuzzy structurability): $fR_8 f C_w(\tilde{x}); Q; \widetilde{C(x)}$, where $\widetilde{C(x)} = \{ c(x_1)|\mu_{\widetilde{c(x)}}c(x_1), c(x_2)|\mu_{\widetilde{c(x)}}c(x_2), \dots, c(x_n)|\mu_{\widetilde{c(x)}}c(x_n)\}$, $C_w(\tilde{x}) \subset \widetilde{C(x)}$.

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.

$$\underset{D}{\overset{C}{(action\ Q)^{-1}}} \text{fRprt} \underset{B}{\overset{A}{action\ Q}} : \left\langle \begin{matrix} A \to B \\ A, B \end{matrix} \middle| \begin{matrix} D \leftarrow C \\ C, D \end{matrix} \right\rangle \to \left(\begin{matrix} fself(A \to B)\mu_{13} \\ A, B \end{matrix} \right)$$

$$\underset{D}{\overset{C}{(action\ Q)^{-1}}} \text{fRprt} \underset{B}{\overset{A}{action\ Q}} : \left\langle \begin{matrix} A \to B \\ A, B \end{matrix} \middle| \begin{matrix} D \leftarrow C \\ C, D \end{matrix} \right\rangle \to \left(\begin{matrix} foself(D \leftarrow C)\mu_{14} \\ C, D \end{matrix} \right)$$

Can be considered discrete fuzzy hierarchical fuzzy structure, continuous fuzzy hierarchical fuzzy structure, and discrete-continuous hierarchical fuzzy structure, $\text{fRprt} \underset{B}{\overset{\text{N} - \text{hierarchical fuzzy structure}}{action\ Q}}$.

The example

Let $\text{fRprt} \underset{B}{\overset{\text{i} - \text{level of hierarchical structure}}{action\ Q}}$, then fQHR= $\text{fHRprt} \underset{B}{\overset{\left[\!\left[\begin{matrix} (\text{fRprt} \underset{B}{\overset{\text{N} - \text{level of hierarchical structure}}{action\ Q}})\mu_N \\ \dots \\ (\text{fRprt} \underset{B}{\overset{\text{i} - \text{level of hierarchical structure}}{action\ Q}})\mu_i \\ \dots \\ (\text{fRprt} \underset{B}{\overset{\text{1} - \text{level of hierarchical structure}}{action\ Q}})\mu_1 \end{matrix} \right]\!\right]}{action\ Q}}$ - fuzzy N-hierarchical fuzzy

structure compression into B, μ_i- measures of fuzziness, i = 1, ..., N.

Let frg(N, fQHR)= $fQHR^{fQHR^{fQHR^{\dots^{fQHR}}}}$ }-N levels

It can be considered self- fQHR, frg(y, fQHR) for any y, frg(fQHR, fQHR).

Compression fuzzy Hierarchy Examples:

1) fRprt $\begin{matrix} () \\ \text{fRprt}\ action\ () \\ () \\ () \\ () \\ \text{fRprt}\ action\ () \\ () \end{matrix}$ = $\begin{pmatrix} () \\ \text{fRprt}\ action\ () \\ () \\ \text{fRprt}\ () \\ () \\ () \\ \text{fRprt}\ action\ () \\ () \\ () \\ () \\ \text{fRprt}\ action\ () \\ \text{fRprt}\ () \\ () \\ () \end{pmatrix}$

2) $\begin{matrix} () & () \\ C + & \mu_2\text{ffS}_1\text{prt}\mu_1 \\ () & () \\ & \mu_2 \\ () & () \\ D + \mu_2\text{ffS}_1\text{prt}\mu_1 & \\ () & () \end{matrix}$ ffS$_1$prt $\begin{matrix} () & () \\ A + & \mu_2\text{ffS}_1\text{prt}\mu_1 \\ () & () \\ & \mu_1 \\ () & () \\ B + \mu_2\text{ffS}_1\text{prt}\mu_1 & \\ () & () \end{matrix}$ = $\begin{pmatrix} () \ () & & () \ () \\ \mu_2\text{ffS}_1\text{prt}\mu_1 & & \mu_2\text{ffS}_1\text{prt}\mu_1 \\ () \ () & & () \ () \\ \mu_2 & \text{ffS}_1\text{prt} & \mu_1 \\ () \ () & & () \ () \\ \mu_2\text{ffS}_1\text{prt}\mu_1 & & \mu_2\text{ffS}_1\text{prt}\mu_1 \\ () \ () & & () \ () \\ & C \quad A & \\ & \mu_2\text{ffS}_1\text{prt}\mu_1 & \\ & D \quad B & \end{pmatrix}$,

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 $\begin{matrix} C & A \\ \mu_2\text{ffVS}_1\text{prt}\mu_1 & \\ D & B \end{matrix}$.

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, .., B_n-full group of fuzzy hypotheses- action s: $\sum_{k=1}^{n} ca(B_k)$=1("fuzzy result of action"). Rprt-(fuzzy action) for

$\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, …, $x_n|\mu_{\tilde{x}}(x_n)$): fRprt $\begin{matrix} (x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n)) \\ action\ Q \\ w \end{matrix}$,

$\tilde{x}$ - fuzzy set of fuzzy actions. fRprt $\begin{matrix} \{ ca(x_1)|\mu_{\widetilde{ca(x)}}ca(x_1)|\mu_{\widetilde{ca(x)}}ca(x_2), \dots, ca(x_n)|\mu_{\widetilde{ca(x)}}ca(x_n) \\ action\ Q \\ w \end{matrix}$ - fRprt- accommodation for these fuzzy actions x_i, i = 1, ..., n. It is possible to consider the self-(fuzzy action) $fR_8f\widetilde{x_w}; Q; \tilde{x}$, $\widetilde{x_w} \subset \tilde{x}$. The same for self-(fuzzy accommodation): $fR_8fCa_w(\tilde{x}); Q; \widetilde{Ca(x)}$, where $Ca_w(\tilde{x}) = \{ ca(x_1)|\mu_{\widetilde{ca(x)}}ca(x_1), ca(x_2)|\mu_{\widetilde{ca(x)}}ca(x_2), \dots, ca(x_n)|\mu_{\widetilde{ca(x)}}ca(x_n)\} \subset \widetilde{Ca(x)}$.

Consider a variable fuzzy hierarchy (we will denote it by frVH).
The example of variable fuzzy hierarchy

$$
{}_{D}^{C}fSt(t)_{B}^{A}=\begin{cases} (\begin{Bmatrix} Q+{}_{D-D\cap C}^{\{\}}fSt \\ (C-D\cap C) \end{Bmatrix}, \ q_2 \ge t \ge q_1)|\mu_1 \\ ((\begin{matrix} fS{1^e}_0 fB * \\ {}_{Q-B}^{B}fS^1t_B^{A-B} \end{matrix}), q_3 \ge t > q_2)|\mu_2 \\ ((\begin{matrix} fS_{01}^{et}fB \\ {}_{C-B}^{C-B}fS_1t_B^{A-B} \\ {}_{D-C-B}^{C-B}fS_1t_B^{A-B} \end{matrix}), \ , q_4 \ge t > q_3)|\mu_3 \\ ((\begin{matrix} R \\ A\cup B - A\cap B \end{matrix}), q_5 \ge t > q_4)|\mu_4 \\ ({}_{D}^{\{\}}fSt, \ t > q_5)|\mu_5 \\ \dots \end{cases} \quad (*_{D.2}),
$$

where Q is oself-(fuzzy set) for fuzzy $(D \cap C)$ [4], R is self-(fuzzy set) for fuzzy $A \cap B$ [14], $fS_{01}^{et}fB$, ${}_{C-B}^{C-B}S_1t_B^{A-B}$, ${}_{D-C-B}^{C-B}fS_1t_B^{A-B}$ are considered in [4], μ_i- measures of fuzziness, i = 1, ..., 5 . Variable compression (designation fVS) of fuzzy $\tilde{A}$ into $\tilde{x}$(t): $fSt_{\tilde{x}(t)}^{\tilde{A}}$, where $\tilde{x}$(t)- any dynamical fuzzy object at time t.

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”).

Rprt- structure for fuzzy set of hierarches $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$): fRprt $\begin{matrix} (x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n)) \\ action\ Q \\ B \end{matrix}$.

fRprt $\begin{matrix} \{ h(x_1)|\mu_{h(\widetilde{x})}h(x_1)|\mu_{h(\widetilde{x})}h(x_2),\dots,h(x_n)|\mu_{h(\widetilde{x})}h(x_n)\} \\ action\ Q \\ B \end{matrix}$ - fRprt- hierarchization for these fuzzy hierarches. It is possible to consider the self-(fuzzy hierarchy) $fR_8f\widetilde{x_w};Q;\tilde{x}$, $\widetilde{x_w}\subset\ \tilde{x}$. The same for self- hierarchization $fR_8f\widetilde{hx_w};Q;\widetilde{hx}$, $\widetilde{hx_w}\subset\ \widetilde{hx}$, $\widetilde{hx} = \{ h(x_1)|\mu_{h(\widetilde{x})}h(x_1), h(x_2)|\mu_{h(\widetilde{x})}h(x_2),\dots,h(x_n)|\mu_{h(\widetilde{x})}h(x_n)\}$. Can be considered fCprt $\begin{matrix} \{ca(x), c(x), h(x)\} \\ action\ Q \\ B \end{matrix}$.

Very interesting next fuzzy hierarchy type:

$\left(\begin{matrix} \text{fuzzy hierarchy } A \\ action\ Q \\ \text{fuzzy hierarchy } A \end{matrix}\right)^{-1}$ fRprt $\begin{matrix} \text{fuzzy hierarchy } A \\ action\ Q \\ \text{fuzzy hierarchy } A \end{matrix}$. You can enter special operator fCprt to work with fuzzy structures: $\left(\begin{matrix} \text{fuzzy structure A} \\ action\ Q \\ \text{fuzzy structure } D \end{matrix}\right)^{-1}$ fCprt $\begin{matrix} \text{fuzzy structure C} \\ action\ Q \\ \text{fuzzy structure R} \end{matrix}$ fuzzy structures R by fuzzy Q with the fuzzy structure from C, unstructures fuzzy A by fuzzy action Q^{-1} by the fuzzy structure D simultaneously.

Very interesting next fuzzy structure type:

$\left(\begin{matrix} \text{fuzzy structure A} \\ action\ Q \\ \text{fuzzy structure } A \end{matrix}\right)^{-1}$ fCprt $\begin{matrix} \text{fuzzy structure A} \\ action\ Q \\ \text{fuzzy structure A} \end{matrix}$.

You can enter special operator fHt to work with fuzzy hierarches: $\left(\begin{matrix} \text{fuzzy hierarchy A} \\ action\ Q \\ \text{fuzzy hierarchy } B \end{matrix}\right)^{-1}$ fCprt $\begin{matrix} \text{fuzzy hierarchy D} \\ action\ Q \\ \text{fuzzy hierarchy R} \end{matrix}$ fuzzy hierarchizes R by fuzzy Q with the fuzzy hierarchy from D, unhierarchizes fuzzy A by fuzzy action Q^{-1} by the fuzzy hierarchy B simultaneously.

4. Introduction to Fuzzy Program Operators fRprt, ftprR, fR1epr, fReprt1

Here it is supposed to use a symbiosis of parallel actions and conventional calculations through sequential actions. This must be done through fRprt-Networks - fuzzy analogue of Sprt-Networks in one of the central departments of which a conventional computer system is located [14]. The parallel processor is itself freprogram - fuzzy analogue of eprogram with direct parallel computing not through serial computing [14].

Using conventional coding by a computer system, through a Target-block with a fuzzy Rprt -program operator - fRprt $\begin{matrix} Ag \\ action\ Q \\ activation \end{matrix}$, 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 fRprt-coding and fRprt-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 frprogram of operator fRprt $\begin{matrix} \{\text{UHF AC} := D\} \\ action\ Q \\ activation \end{matrix}$ with the specified measures of fuzziness, we simultaneously enter the desired fuzzy set of codes D with measure of fuzziness μ_R using a microwave current 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 fprogram operators:
1) fuzzy Rprt-program operators (designation fRprt-program operators)
2) fuzzy tprR-program operators (designation ftprR-program operators)

3) fuzzy R[1]epr - program operators (designation fR[1]epr -program operators)
4) fuzzy Reprt$_1$- program operators (designation fReprt$_1$-program operators)
fRprt-algorithm Example:

Simultaneous multiplication Q with measure of fuzziness μ_Q: fRprt$\underset{\tilde{y}}{\overset{\tilde{x}}{\text{multiplication } Q}}$, the notation of the fuzzy set B with elements

$$b_{i_1 i_2 \ldots i_n j_1 j_2 \ldots j_n} = (\text{fRprt} \underset{(\text{ffSprt} \underset{h}{\underset{\mu}{\left\{y_{1_{j_1}} * \mu_{\tilde{y}}\left(y_{1_{j_1}}\right), y_{2_{j_2}} * \mu_{\tilde{y}}\left(y_{2_{j_2}}\right), \ldots, y_{n_{j_m}} * \mu_{\tilde{y}}\left(y_{n_{j_m}}\right)\right\}}})_G}{\overset{(\text{ffSprt} \underset{q}{\underset{\mu}{\left\{x_{1_{i_1}} * \mu_{\tilde{x}}\left(x_{1_{i_1}}\right) *, x_{2_{i_2}} * \mu_{\tilde{x}}\left(x_{2_{i_2}}\right) *, \ldots, x_{n_{i_n}} * \mu_{\tilde{x}}\left(x_{n_{i_n}}\right)\right\}}})_R}{\text{multiplication } Q}})_V$$

for any $\{i_1, i_2, \ldots, i_n\}, \{j_1, j, \ldots, j_n\}$ without repetitions, q = ffSprt$\underset{w}{\overset{K}{\mu}}$, K-set of any $\{k_1 *, k_2 *, \ldots, k_n *\}$ without repeating them, k_i-any digit, i=1,2,…,n, R= ffSprt$\underset{w}{\overset{\{i_1+, i_2+, \ldots, i_n\}}{\mu}}$, R is the index of the lower discharge, h = ffSprt$\underset{w}{\overset{L}{\mu}}$, L-set of any $\{l_1 *, l_2 *, \ldots, l_m *\}$ without repeating them, l_i-any digit, i=1,2,…,m, G= ffSprt$\underset{w}{\overset{\{j_1+, j_2+, \ldots, j_m\}}{\mu}}$, G is the index of the lower discharge, V = ffSprt$\underset{w}{\overset{\{i_1+, i_2+, \ldots, i_n + j_1+, j_2+, \ldots, j_m\}}{\mu}}$ (we choose an index on the scale of discharges):

index	discharge
n	n
…	…
1	1
,	0
-1	1st digit to the right of the point
-2	2nd digit to the right of the point
...	...

Table 1: Index on the Scale of Discharges

Then ffSprt $\underset{w}{\overset{B+}{\mu}}$ gives the final result of simultaneous multiplication. Any system of calculus can be chosen, in particular binary. Here, in fact, sets of digits in the corresponding digits, representing numbers, are multiplied together simultaneously. The simplest functional scheme of the assumed arithmetic-logical device for fRprt-multiplication:

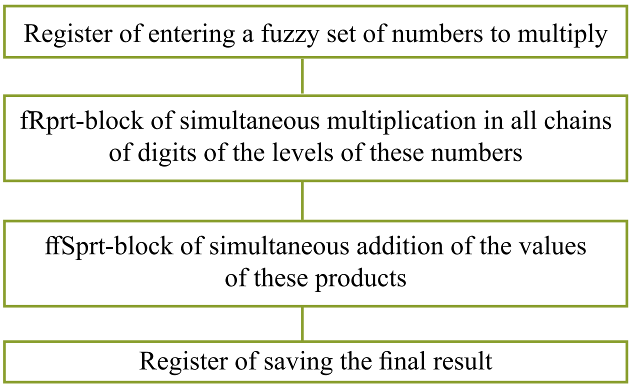


Figure 3: The Straightforward Functional Scheme of the Assumed Arithmetic-Logical Device for fRprt-Multiplication.

4.1 Remark 1

The algorithm for simultaneously fuzzy multiplication a fuzzy set of numbers can also be implemented as the simultaneous addition of elements of a simultaneously formed composite matrix: a triangular matrix in which the elements of the first row are represented by fuzzy multiplying the first number from the fuzzy set by the rest: each multiplication is represented by a matrix of multiplying the digits of 2 numbers, taking into account the bit depth, the elements of the second rows are represented by multiplying the second number from the fuzzy set by the ones following it, etc.

One example is pattern recognition: $\text{fRprt}\begin{matrix}\text{if ffSprt}\begin{matrix}\textit{image archive}\\ \mu\\ B\end{matrix}\ \text{э ffSprt}\begin{matrix}q\\ \mu\\ B\end{matrix}\\ \textit{give test result}\\ \textit{Name of } q\end{matrix}$

The example of frprt-program is $\text{fRprt}\ \{\ \text{fRprt}\begin{matrix}\{\{p\}\}\\ :=\\ \{\text{a}(x)\}\end{matrix}\ ,\ \text{fRprt}\begin{matrix}IF\{\{B\}\{f\}\}\\ \textit{give test result}\\ Q\\ \textit{action } H\\ x\end{matrix}\ ,\text{fprt}\begin{matrix}R\\ \textit{action } G\\ R\end{matrix}\ \}$.

Consider a third type of fuzzy fRprt-self structure - fuzzy analogue of fRprt-self structure [1]. For example, based on fRprt $\begin{matrix}\tilde{y}\\ \textit{action } Q\\ \tilde{x}\end{matrix}$,

where $\tilde{y}=(y_1|\mu_{\tilde{x}}(y_1), y_2|\mu_{\tilde{x}}(y_2), ..., y_m|\mu_{\tilde{x}}(y_m)) \subset \tilde{x}=(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), ..., x_n|\mu_{\tilde{x}}(x_n))$, we can consider the fRprt-self structure - $fD_8f\tilde{y}; Q; \tilde{y}$ with m elements from $\tilde{x}$, m<n, which is formed according to the form:

w_{mn}=(m,(n,1)) (4.1).

Form (4.1) can be generalized into the following forms:

$w^1_{m,n,k}$ = (k, ($\begin{matrix}(n_1, 1)\\ (\dots)\\ (n_m, 1)\end{matrix}$)) (4.1.1)

or

$w^2_{m,n,k}$ = (k, (l, $\begin{matrix}(n_1)\\ (\dots)\\ (n_m)\end{matrix}$)) (4.1.2)

$w^3_{m,n,k,l}$ = Q(($\begin{matrix}d_1\\ \dots\\ d_l\end{matrix}$), ($\begin{matrix}(n_1, 1)\\ (\dots)\\ (n_m, 1)\end{matrix}$)) (4.1.3),

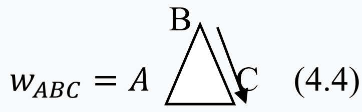
where Q(x, y) – any operator, which makes a match between set ($\begin{matrix}d_1\\ \dots\\ d_l\end{matrix}$) and set ($\begin{matrix}(n_1, 1)\\ (\dots)\\ (n_m, 1)\end{matrix}$) or

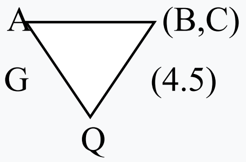
$w^4_{m,m_1,n_1,m_2,n_2,m_3,n_3}$ = (m, ((m_1, n_1), ((m_2, n_2), (m_3, n_3)))) (4.1.4),

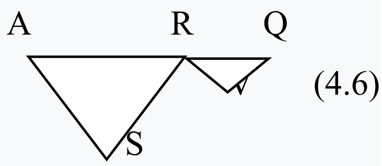
or
(Q, R) (4.1.5),
where Q – any, R – any structure, R could be anything can be anything, not just structure. In this case, (4.1.5) can be used as another type of transformation from Q to R. fRprt-self structures in themselves of the eighth type can be formed for any other structure, not necessarily fRprt, only by necessarily reducing the number of elements in the structure, in particular, using form

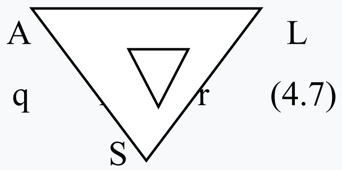
$w_{m_1\cdots m_n} = (m_1,(m_2,(\dots(m_n,1)\dots)))$ (4.2)

Structures more complex than $fRf\tilde{y};Q;\tilde{x}$ can be introduced. For example, through a forms that generalizes (1):
$w_{ABC} = (A,(B,C))$ (4.3)









where A is fuzzy compressed (fuzzy fits) in C in the fuzzy compression fuzzy structure B in C (i.e. in the fuzzy structure fDprtμ^{B}_{C}); or

through the more general forms that generalizes (4.2):

$w_{A_1 A_2 \dots A_n C} = (A_1,(A_2,(\dots(A_n,C)\dots)))$ (4.8)

and corresponding generalizations of (4.8) on (4.4) - (4.7), etc.
(4.3), (4.8) are represented through the usual 2-bond. Science is the discipline of 2-connections, since everything in science is carried out through 2-connected logic, quantum logic is also a projection of 3-connected logic onto 2-connected logic. (4.4) - (4.7) schematically interpret the fuzzy formation of fuzzy fRprt-self structure through a pseudo 3-connected form with a 2-connected form. The ideology of fRprt and $fD_8 f\tilde{y};Q;\tilde{x}$ can be used for programming.

4.2 Remark 2

Fuzzy self, in particular, according to a fuzzy form- fuzzy analogue of the form of type (1) [1]:

$(1|\mu_1, (2|\mu_2, 1|\mu_3)), (1^*)$

μ_i (i=1,2,3)– the fuzziness of the indicated positions. For example

1) fuzzy forming from element with fuzziness μ in the form (2,1): $(1|\mu, (2, 1))$
2) fuzzy forming from element in the form (2,1) with fuzziness μ: $(1, (2, 1)|\mu)$
3) fuzzy formation of partial self in the form (1) [1] with fuzziness μ: $(1, (2, 1))|\mu$
4) It is also possible to generalize the other remaining forms (4.1.1) – (4.8) to fuzzy forms
5) etc.

Here are some of the fuzzy fRprt-program operators.

1. Simultaneous fuzzy *action* Q of the expressions $\tilde{p}=(p_1|\mu_{\tilde{p}}(p_1), p_2|\mu_{\tilde{p}}(p_2), ..., p_n|\mu_{\tilde{p}}(p_n))$ to the variables $\tilde{x}=(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), ..., x_n|\mu_{\tilde{x}}(x_n))$. This is implemented via fRprt $\overset{\tilde{p}}{\underset{\{\tilde{x}\}}{Q}}$.
2. Simultaneous R = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}=(g_1|\mu_{\tilde{g}}(g_1), g_2|\mu_{\tilde{g}}(g_2), ..., g_n|\mu_{\tilde{g}}(g_n))$ for the fuzzy set of expressions $\tilde{B}=(B_1|\mu_{\tilde{B}}(B_1), B_2|\mu_{\tilde{B}}(B_2), ..., B_n|\mu_{\tilde{B}}(B_n))$. Implemented via fRprt$\overset{\tilde{B}}{\underset{\tilde{Q}}{R}}$, where $\tilde{Q}$ can be anything.
3. Similarly for fuzzy loop operators and others.

fR_8f– fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding fRprt-program operators in form (1), for more complex operators in forms (4.2) - (4.8), (1*) and analogs of forms (4.2) - (4.8) by type (1*).

For example, fRprt$\overset{S}{\underset{R}{g\{R, S\}}}$ is the fuzzy fRprt-self structure with measure of fuzziness μ of the second type if $g\{R, S\}$ is a frprogram capable of fuzzy generating R with measure of fuzziness μ from S.

The example of self-frprogram of the first type is

$$\text{fRprt}\underset{\underset{w}{action\ R}}{\left\{\text{fRprt}\overset{\tilde{p}}{\underset{\{\tilde{x}\}}{Q}}, \text{fRprt}\overset{\tilde{B}}{\underset{\tilde{Q}}{R}}, \text{fRprt}\overset{Q}{\underset{Q}{Q}}\right\}}.$$

The example of frprt-program for fRmnsprt- fuzzy analogue of SmnSprt [14]:

fRprt $\overset{\tilde{p}}{\underset{\{\tilde{x}\}}{Q}}$ - fuzzy *action* Q of $\tilde{p}$ to $\tilde{x}$.

fRprt $\overset{tw}{\underset{g}{P}}$, where P - fuzzy assigning target weight tw to fuzzy g with measure of fuzziness μ.

fRprt $\overset{\{q\}w}{\underset{f\text{Rmnsprt}\ activation}{S}}$, where S - fRmnsprt *activation* for fuzzy $\{q\}w$ with measure of fuzziness μ.

4.3 fRprt- Coding

fRprt-coding with measure of fuzziness μ: 1) fuzzy set A to fuzzy set B, 2) fuzzy set A to a point q, where the elements of the fuzzy sets A, B can be continuous. For example, fRprt$\overset{A}{\underset{B}{Q}}$, where Q - fRprt-coding.

There are fRprt-coding, fRprt-translation, fRprt-realize of freprograms and fprograms from the archives without extraction theirs

4.4 fRelf- Coding

fRelf-coding with measure of fuzziness μ: 1) fuzzy set A to set fuzzy A, i.e. fuzzy A on itself 2) fuzzy set A to a point q in form (1), where the elements of the fuzzy sets A, B can be continuous. For example, fRprt$\begin{matrix} A \\ Q \\ A \end{matrix}$,

One of the central departments of the control system should be a computer system of the usual type of the desired level. In symbiosis with fRprt-Networks, it will provide a holistic operation of the control system in three modes: conventional serial through a conventional type computer system, direct parallel through fRprt-Networks and series-parallel. Codes from a conventional type computer system will be used via fRprt -connectors in fRprt - coding, for example: fRprt $\begin{matrix} \{\text{UHF AC}\} \\ := Q \\ activation \end{matrix}$. UHF AC field activation is used.

4.5 Dynamic fRprt and fR_8 (t) f Programming

The ideology of dynamic fRprt and fR_8 (t) f can be used for programming:

1. Simultaneous fuzzy $action\ \widetilde{Q(t)}$ of the expressions $\widetilde{p(t)}$=($p_1(t)|\mu_{\widetilde{p(t)}}(p_1(t))$, $p_2(t)|\mu_{\widetilde{p(t)}}(p_2(t))$, ..., $p_n(t)|\mu_{\widetilde{p(t)}}(p_n(t))$) to the variables $\widetilde{x(t)}$=($x_1(t)|\mu_{\widetilde{x(t)}}(x_1(t))$, $x_2(t)|\mu_{\tilde{x}(t)}(x_2(t))$, ..., $x_n(t)|\mu_{\widetilde{x(t)}}(x_n(t))$). This is implemented via fRprt(t) $\begin{matrix} \widetilde{p(t)} \\ \widetilde{Q(t)} \\ \{\widetilde{x(t)}\} \end{matrix}$.
2. Simultaneous $\widetilde{R(t)}$ = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\widetilde{g(t)}$=($g_1(t)|\mu_{\widetilde{g(t)}}(g_1(t))$, $g_2(t)|\mu_{\tilde{g}(t)}(g_2(t))$, ..., $g_n(t)|\mu_{\widetilde{g(t)}}(g_n(t))$) for the fuzzy set of expressions $\widetilde{B(t)}$=($B_1(t)|\mu_{\widetilde{B(t)}}(B_1(t))$, $B_2(t)|\mu_{\tilde{B}(t)}(B_2(t))$, ..., $B_n(t)|\mu_{\widetilde{B(t)}}(B_n(t))$). Implemented via fRprt$(t)$$\begin{matrix} \widetilde{B(t)} \\ \widetilde{R(t)} \\ \widetilde{Q(t)} \end{matrix}$, where $\tilde{Q}$ can be anything.
3. Similarly for fuzzy loop operators and others.

$fR_8(t)f$ - fuzzy software operators will differ only just because aggregates $\widetilde{x(t)}, \widetilde{p(t)}, \widetilde{B(t)}, \widetilde{g(t)}$ will be formed from corresponding fRprt-program operators in form (1), for more complex operators in forms (4.2) - (4.8), (1*) and analogs of forms (4.2) - (4.8) by type (1*).

4.6 ftprR- Program Operators

The ideology of ftprR and $R_{16}f$ - fuzzy analogues of tS and t_{S_4f} from [8] can be used for programming. Here are some of the ftprR-program operators.

1. Simultaneous expelling fuzzy $action\ Q$ of the expressions $\tilde{p}$=($p_1|\mu_{\tilde{p}}(p_1)$, $p_2|\mu_{\tilde{p}}(p_2)$, ..., $p_n|\mu_{\tilde{p}}(p_n)$) from the variables $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$). This is implemented via $\begin{matrix} \tilde{x} \\ Q \\ \{\tilde{p}\} \end{matrix}$ fRprt.
2. Simultaneous expelling R = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=($g_1|\mu_{\tilde{g}}(g_1)$, $g_2|\mu_{\tilde{g}}(g_2)$, ..., $g_n|\mu_{\tilde{g}}(g_n)$) for the fuzzy set of expressions $\tilde{B}$=($B_1|\mu_{\tilde{B}}(B_1)$, $B_2|\mu_{\tilde{B}}(B_2)$, ..., $B_n|\mu_{\tilde{B}}(B_n)$). It's implemented through $\begin{matrix} \tilde{Q} \\ R \\ \tilde{B} \end{matrix}$ fRprt, where $\tilde{Q}$ can be anything.
3. Similarly for loop operators and others.

$fR_{16}f$ – fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding ftprD program operators in form (4.1), for more complex operators in forms (4.2) - (4.8), (1*) and analogs of forms (4.2) - (4.8) by type (1*).

Consider hierarchical ftprR-program operator

$$\begin{matrix} B \\ (action\ Q)^{-1}\text{Rprt} \\ A \end{matrix} = \left\{ \begin{matrix} & \{\,\} & \\ D + & \mu & \text{ffSprt} \\ & A - A \cap B & \\ & (B - A \cap B) & \end{matrix} \right\}$$, where D is oself-(fuzzy set) for fuzzy $(A \cap B)$, where action Q- contain.

4.7 Dynamic ftprR and fR$_{16}$ (t)f Programming at Time q

The ideology of ftprR and fR$_{16}$ f can be used for dynamic programming. Here are some of the ftprR-dynamic programming operators.

1. The process of simultaneous expelling fuzzy *action* $Q(t)$ of the expressions $\widetilde{p(t)}$=(p$_1$(t)|$\mu_{\widetilde{p(t)}}$(p$_1$(t)), p$_2$(t)|$\mu_{\widetilde{p(t)}}$(p$_2$(t)), ..., p$_n$(t)|$\mu_{\widetilde{p(t)}}$(p$_n$(t))) from the variables $\widetilde{x(t)}$=(x$_1$(t)|$\mu_{\widetilde{x(t)}}$(x$_1$(t)), x$_2$(t)|$\mu_{\tilde{x}(t)}$(x$_2$(t)), ..., x$_n$(t)|$\mu_{\widetilde{x(t)}}$(x$_n$(t))). This is implemented via $\overset{\widetilde{x(t)}}{\underset{\{\widetilde{p(t)}\}}{Q(t)}}$ fRprt(t).

2. The process of simultaneous expelling R(t) = fuzzy checking with fuzziness μ(t) by the fuzzy set of conditions $\widetilde{g(t)}$=(g$_1$(t)|$\mu_{\widetilde{g(t)}}$(g$_1$(t)), g$_2$(t)|$\mu_{\tilde{g}(t)}$(g$_2$(t)), ..., g$_n$(t)|$\mu_{\widetilde{g(t)}}$(g$_n$(t))) for the fuzzy set of expressions $\widetilde{B(t)}$=(B$_1$(t)|$\mu_{\widetilde{B(t)}}$(B$_1$(t)), B$_2$(t)|$\mu_{\tilde{B}(t)}$(B$_2$(t)), ..., B$_n$(t)|$\mu_{\widetilde{B(t)}}$(B$_n$(t))) is implemented through $\overset{\widetilde{Q(t)}}{\underset{\widetilde{B(t)}}{R(t)}}$fRprt(t), where $\widetilde{Q(t)}$ can be anything.

3.Similarly for loop operators and others.

fR$_{16}$(t)f – fuzzy software operators will differ only just because aggregates $\widetilde{x(t)}, \widetilde{p(t)}, \widetilde{B(t)}, \widetilde{g(t)}$ will be formed from corresponding processes ftprR(t) for above mentioned programming operators through form (4.1) or form (4.2) - (4.8), (1*) and analogs of forms (4.2) - (4.8) by type (1*) for more complex operators.

Consider hierarchical dynamic ftprR-program operator:

$$\overset{B(q)}{\underset{A(q)}{(action\ Q)^{-1}}}\text{fRprt(q)} = \left\{ \begin{matrix} fft(q)_{S_1 f(A(q)\cap B(q))} + \overset{\{\,\}}{\underset{A(q)-A(q)\cap B(q)}{\mu}} \text{ffSprt(q)} \\ (B(q)-A(q)\cap B(q)) \end{matrix} \right\}$$, where action Q- contain.

fR^{1}epr -program operators (form $\overset{B}{\underset{D}{action\ P}}$ fR^{1}prt $\overset{A}{\underset{B}{action\ Q}}$ - fuzzy analogue of ${}^B_D S^1 t^A_B$ [3]**)**

For example, $\overset{\tilde{x}}{\underset{\{\tilde{p}\}}{D}}$ fR^{1}prt$\overset{\tilde{B}}{\underset{\tilde{Q}}{R}}$, where simultaneous expelling fuzzy *action* D of the expressions $\tilde{p}$=(p$_1$|$\mu_{\tilde{p}}$(p$_1$), p$_2$|$\mu_{\tilde{p}}$(p$_2$), ..., p$_n$|$\mu_{\tilde{p}}$(p$_n$)) from the variables $\tilde{x}$=(x$_1$|$\mu_{\tilde{x}}$(x$_1$), x$_2$|$\mu_{\tilde{x}}$(x$_2$), ..., x$_n$|$\mu_{\tilde{x}}$(x$_n$)) and simultaneous R = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=(g$_1$|$\mu_{\tilde{g}}$(g$_1$), g$_2$|$\mu_{\tilde{g}}$(g$_2$), ..., g$_n$|$\mu_{\tilde{g}}$(g$_n$)) for the fuzzy set of expressions $\tilde{B}$=(B$_1$|$\mu_{\tilde{B}}$(B$_1$), B$_2$|$\mu_{\tilde{B}}$(B$_2$), ..., B$_n$|$\mu_{\tilde{B}}$(B$_n$)), $\tilde{Q}$ can be anything.

The examples:

$\overset{A}{\underset{A}{(action\ Q)^{-1}}}$fR^{1}prt$\overset{A}{\underset{A}{action\ Q}}$ can be interpreted as a $\binom{s^1elf}{os^1elf}$-fdprogram operator. $\overset{A}{\underset{A}{(action\ Q)^{-1}}}$fR^{1}prt$\overset{A}{\underset{A}{action\ Q}}$ sample $\binom{s^1elf}{os^1elf}$-frprogram structure example.

Consider hierarchical dynamic fR^{1}epr-program operator: (form $\begin{matrix} \overset{B}{\underset{A}{(action\ Q)^{-1}}}\text{fR}^1\text{prt}\ \overset{A}{\underset{B}{action\ Q}} * \\ \overset{B}{\underset{D-A}{(action\ Q)^{-1}}}\text{fR}^1\text{prt}\ \overset{A}{\underset{B}{action\ Q}} \end{matrix}$).

fReprt$_1$- program operators (form $\overset{C}{\underset{D}{(action\ Q)^{-1}}}fR_1prt\overset{A}{\underset{B}{action\ Q}}$ - fuzzy analogue of ${}^C_D S_1 t^A_B$ [4]**)**

1. $\overset{A}{\underset{A}{(action\ Q)^{-1}}}fR_1prt\overset{A}{\underset{A}{action\ Q}}$ - sample $\binom{r_1 self}{r_1 oself}$-frprogram structure example.

$fSt_{t_0}^{\left\{ {}^{q}({}^{a}_{a} fs_1 t^{a}_{a})_{W_q} fSt^{Eq}_{q({}^{a}_{a} fs_1 t^{a}_{a})},\ fSt^{\{El^{d_r}\}}_{d_r} \right\}}$ can be interpreted as a fprogram operator.

2. $(\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}}$ can be interpreted as $\begin{pmatrix} r_1 self \\ r_1 oself \end{pmatrix}$-frprogram operator,

hierarchical fuzzy Set$_1$-program operators:

1. $\left(\begin{matrix} fS_{01}^{et} fB \\ {}^{R-B}_{Q-B} fS_1 t_B^{A-B} \end{matrix} \right)$,

2. $\begin{pmatrix} fS_{21}^{et} f_A^B \\ {}^{R-A}_{Q-A} fS_1 t_B^A \end{pmatrix}$,

frprogram structure example, where the assemblage point d_r is the cursor, it is quite complex self—frprogram:

3. $$\text{fR}_1\text{prt}\left\{ \begin{matrix} {}^q\left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} \right) {}_{W_q} fR_1 prt_q^{E_q} \left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} - \right) \\ Q \\ V \end{matrix}, \ \text{fR}_1\text{prt} \begin{matrix} \{E^{ex} l^{d_r}\} \\ action\ Q \\ d_{r\left(E_{in} l^{d_r}\right)} \end{matrix} \right\}$$

4. $$\text{fR}_1\text{prt}\left\{ \begin{matrix} {}^q\left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} \right) {}_{W_q} fR_1 prt_q^{E_q} \left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} - \right) \\ Q \\ V \end{matrix}, \ \text{fR}_1\text{prt} \begin{matrix} \{E^{ex} l^{d_r}\} \\ action\ Q \\ d_{r\left(E_{in} l^{d_r}\right)} \end{matrix} \right\}$$ can be interpreted as a fRpt program operator.

Appendix

Remark. Energy of a living organism:

$$\text{fr}_1\text{g}(\text{r, a}(E_q)) = \text{fR}_1\text{prt}\left\{ \begin{matrix} {}^q\left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} \right) {}_{W_q} fD_1 prt_q^{E_q} \left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} - \right) \\ Q \\ V \end{matrix}, \ \text{fR}_1\text{prt} \begin{matrix} \{E^{ex} l^{d_r}\} \\ action\ Q \\ d_{r\left(E_{in} l^{d_r}\right)} \end{matrix} \right\} \quad (**)$$

Energy of a living organism of a person:

$$\text{fR}_1\text{prt}\left\{ \begin{matrix} {}^q\left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} \right) {}_{W_q} fR_1 prt_q^{E_q} \left((\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}} - \right) \\ Q \\ V \end{matrix}, \ \text{fR}_1\text{prt} \begin{matrix} \{E^{ex} l^{d_r}\} \\ action\ Q \\ d_{r\left(self\left(E_{in} l^{d_r}\right)\right)} \end{matrix} \right\} \quad (***)$$

$(\underset{A}{\overset{A}{action}}\ Q)^{-1}\text{fR}_1\text{prt}\underset{A}{\overset{A}{action\ Q}}$ -internal energy of a living organism, q- a gap in the energy cocoon of a living organism, r-the position of the assemblage point d_r on the energy cocoon of a living organism, W_q- energy prominences from the gap in the cocoon of a living organism, E_q-external energy entering the gap in the cocoon of a living organism, $E^{ex} l^{d_r}$ - a bundle of fibers of external energy self-capacities from outside the cocoon, collected at the point of assembly of the cocoon of a living organism, $E_{in} l^{d_r}$- a bundle of fibers of external energy self-capacities from inside the cocoon, collected at the point of assembly of the cocoon of a living organism in the same position r of the assemblage point d_r. d_r is the subject of identifying the energy fibers of the subtle energy of the Universe in position r both outside and inside the cocoon.

(**), (***) can be interpreted as the program operators.

Entire neural network as instantaneous simultaneous ffRAM in ffSprt-elements and fself- elements.$fself^{fself^{\dots fself}}$, $\text{ff1} \downarrow \text{I} \uparrow_{-1}^{1} ff_2{}^{\text{ff1}\downarrow\text{I}\uparrow_{-1}^{1} ff_2{}^{\dots \text{ff1}\downarrow\text{I}\uparrow_{-1}^{1} ff_2}}$ $fsin\infty^{fsin\infty^{\dots fsin\infty}}$.When activated in a neural network, the entire neural network becomes a working memory. Use of fself-energy as fuzzy activation or from outside. fdQ_0= fRprt $\begin{matrix} \text{ffSprt} \begin{matrix} ffS_{mnSprt} \\ \mu \\ activation \end{matrix} \\ Q \\ \text{ffSprt} \begin{matrix} ffS_{mnSprt} \\ \mu \\ activation \end{matrix} \end{matrix}$ → self-ffRAM,

ffQ_{00}= $\begin{matrix} \begin{matrix} fRS_{mnSprt} \\ D \\ activation \end{matrix} \text{fDprt} \\ Q \\ \begin{matrix} fRS_{mnSprt} \\ R \\ activation \end{matrix} \text{fDprt} \end{matrix}$ fdQ_0prt, ffQ_{01}= $\begin{matrix} \text{fDprt} \begin{matrix} fRS_{mnSprt} \\ C \\ activation \end{matrix} \\ \text{fDprt} \begin{matrix} fRS_{mnSprt} \\ H \\ activation \end{matrix} \end{matrix}$ fdQ_0.fdQ_0,fdQ_{00},fdQ_{01}-coding,translation,realization in freprograms, use fdQ_0,fdQ_{00},fdQ_{01}-frS_{mnSprt},frAssembler.

5. Rprt- Networks

A. Galushkin's comprehensive monograph covers all aspects of networks, but traditional approaches go through classical mathematics, mainly through the usual correspondence operators [17]. Here we consider a different approach - through a new mathematical process with containment operators, which, although they can be interpreted as the result of some correspondence operators, are not themselves correspondence operators. Containment operators are more convenient for networks. Also, the main emphasis was placed on using processors operating using triodes, which are generally not used in Rprt-networks. Rprt networks (SmnRprt) are a Rprt structure that can be built for the required weights, the implementation of which will be carried out using a short-pulse laser to generate attosecond pulses of light. Rprt-OS (Rprt operating system) uses Rprt-coding and Rprt-translation. In the first one, coding is carried out through a 2-dimensional matrix-row (a, b), where the number b is the code of the action, and the number a is the code of the object of this action. Rprt-coding (or self-coding) is implemented through a matrix consisting of 2 columns (in the continuous case, two intervals of numbers). Here, the source encoding is used for all matrix rows simultaneously. Rprt-translation is carried out by inversion. In this case, self-type coding and self- type translation by (1.6) or (1.11), (1.18) will be more stable. The set of the target weights f = (f_1, f_2, …, f_n) in Rprt $\begin{matrix} \{fx\} \\ action\ Q \\ D \end{matrix}$ are chosen for necessary tasks using a short-pulse laser to generate attosecond pulses of light to accomplish them, x= (x_1, x_2, ..., x_n), Q there is a containment operation there is a containment operation. We will not touch on the issues of applications, or network optimization. They are described in detail by Galushkin [17]. We will touch on the difference of this only for hierarchical complex networks. The same simple executing programs are in the cores of simple artificial neurons of type Rprt (designation - mnRprt) for simple information processing. More complex executing programs are used for mnRprt nodes. Rprt-threshold element – $\begin{matrix} b \\ action\ Q^{-1} \\ \{qy\} \end{matrix}$ Rprt(t) $\begin{matrix} \{ax\} \\ action\ Q \\ b \end{matrix}$, Q there is a containment operation there is a containment operation, b- artificial neurons of type Rprt (designation - mnRprt), x= (x_1, x_2, ..., x_n) are the values of the initial signals, a=(a_1,a_2,…,a_n) are the weights of Rprt-synapses and the values of the output signals The first level of mnRprt consists of simple mnRprt. The second level of mnRprt consists of Rprt $\begin{matrix} \{mnRprt\} \\ action\ Q \\ D \end{matrix}$ – Rprt-node of mnRprt in range D, D- capacity for mnRprt node. The third level of mnRprt consists of

Rprt $\begin{matrix} \{\text{Rprt} \begin{matrix} \{mnRprt\} \\ action\ Q \\ D \end{matrix} \} \\ action\ Q \\ D \end{matrix}$ - Rprt^2- node of mnRprt in range D, thus D becomes capacity of itself in itself as an element for mnRprt. For our networks, it is sufficient to use Rprt^2- nodes of mnRprt, but self-level is higher in living organisms, particularly Rprt^n-, n≥3. The target structure or the corresponding program enters the target unit using a short-pulse laser to generate attosecond pulses of light.. After that, all networks or parts of them are activated according to the indicative goal. It may appear that we are leaving the network ideology, but these networks are a complex hierarchy of different levels, like living organisms.

5.1 Remark

Traditional scientific approaches through classical mathematics make it possible to describe only at the usual energy level. Here we consider an approach that makes describing processes with finer energies possible. mnRprt contains

Rprt $\underset{\text{mnRprt}}{\overset{\{reprogram\}}{action\ Q}}$, $r$eprogram −executing program in Rprt-OS. Rprt-OS (or Self-type of Rprt OS) is based on Rprt-assembly language (or Self-type of Rprt assembly language), which is based on assembly language through Rprt-approach in turn, if the base of elements of Rprt-networks is sufficient. The reprograms are in Rprt-programming environments (or Self-type of Rprt programming environments), but this question and Rprt-networks base will be considered in the following articles. In particular, reprograms may contain Rprt- programming operators. In mnRprt cores, the constant memory Rprt with correspondent reprograms depending on mnRprt.

The OS (operating system) and the principles and modes of operation of the Rprt-networks for this programming are interesting. But this is already the material for the next publications.

Here is developed a helicopter model without a main and tail rotors based on Rprt – physics and special neural networks with artificial neurons operating in normal and Rprt-modes. Let's denote this model through SmnRprt. To do this, it's proposed to use mnRprt of different levels; for example, for the usual mode, mnRprt serves for the initial processing of signals and the transfer of information to the second level, etc., to the nodal center, then checked. In case of an anomaly - local Rprt–mode with the desired "target weight" is realized in this section, etc., to the center. In the case of a monster during the test, SmnRprt is activated with the desired "target weight" using a short-pulse laser to generate attosecond pulses of light. Here are realized other tasks also. To reach the self-energy level, the mode Rprt $\underset{\text{SmnRprt}}{\overset{\text{SmnRprt}}{action\ Q}}$, is used. In normal mode, it's planned to carry out the movement of SmnRprt on jet propulsion by converting the energy of the emitted gases into a vortex to obtain additional thrust upwards. For this purpose, a spiral-shaped chute (with "pockets") is arranged at the bottom of the SmnRprt for the gases emitted by the jet engine, which first exit through a straight chute connected to the spiral one. There is drainage of exhaust gases outside the SmnRprt. SmnRprt is represented by a neural network that extends from the center of one of the main clusters of Rprt - artificial neurons to the shell, turning into the body itself. Above the operator's cabin is the central core of the neural network and the target block, responsible for performing the "target weights" and auxiliary blocks, the functions and roles of which we will discuss further. Next is the space for the movement of the local vortex. The unit responsible for SmnRprt's actions is below the operator's cab. In Rprt – mode, the entire network or its sections are Rprt – activated to perform specific tasks, in particular, with "target weights" using a short-pulse laser to generate attosecond pulses of light. In the target, block used Rprt -coding, Rprt-translation for activation of all networks to "target weights" simultaneously, then –the reset of this Rprt-coding after activation using a short-pulse laser to generate attosecond pulses of light.

Unfortunately, triodes are not suitable for Rprt -neural networks. In the most primitive case, usual separators with corresponding resistances and cores for reprograms may be used instead triodes since there is no necessity to unbend the alternating current to direct. The Rprt-operative memory belt is disposed around a central core of SmnRprt. There are Rprt-coding, Rprt-translation, and Rprt-realize of reprograms and the programs from the archives without extraction, Rprt-coding and Rprt-translation may be used in high-intensity, ultra-short optical pulses laser of Nobel laureates 2018-year Gerard Mourou, Donna, Strickland. Rprt – structure or an reprogram if one is present of needed «target weight» are taken in target block at Rprt – activation of the networks. Rprt $\underset{activation}{\overset{\text{SmnRprt}, \text{f}}{action\ Q}}$ derives SmnRprt to the self-level boundary with target weight f. Activation of the entire network is implemented to perform "target weights" using a short-pulse laser to generate attosecond pulses of light.

You can also try to use higher frequency alternating current and ultraviolet light, which can work with Rprt– structures in Rprt–modes by its nature to activate the networks or some of its parts in Rprt–modes and locally using Rprt–mode to perform local tasks. Above high frequently alternating current go through mercury bearers. That's why overheating does not occur.

5.2 Remark

Hypothesis 1

Equations for real processes in a non-trivial form can be used to fully or partially interpret the self-level of the process, replacing the equal signs with identification signs, and solutions to these equations as a manifestation of this level on the level of objectivity and ordinary energies. That is, equations for real processes serve as a definition of the self-level of the process, the definition of self-values (self-characteristics) of the process through the identification sign, i.e., they are defined (expressed) through themselves. In particular, forms (4.1) - (4.8) can be used as forms of identification. Each such singularity creates its own field, the process, the object etc. Much more effective than science for working with these singularities will be special Dynamic programming, which we are currently working on to create. If we represent an amorphous body with a mathematical structure of self-object $Sprt_{A_0+E_s}^{A_0+E_s}$, where $Sprt_{A_0}^{A_0}$ - level of objectivity of an amorphous object, ($Sprt_{A_0+E_s}^{A_0}$+ $Sprt_{A_0}^{A_0+E_s}$) - the energy of connections between the level of subtle energy $Sprt_{E_s}^{E_s}$ and the level of objectivity.

Thus, one can try to conventionally represent the mathematical model of the energy structure of an amorphous object as a hierarchical dynamic operator

$$\begin{matrix} Sprt_{E_s}^{E_s} \\ (Sprt_{A_0+E_s}^{A_0} + Sprt_{A_0}^{A_0+E_s}) \\ Sprt_{A_0}^{A_0} \end{matrix} \quad (5.1)$$

Identification at the lower levels of a hierarchical dynamic structure of type (5.1) will lead to the upper level. Let us denote the upper level of A by $\overline{A}$, the upper level of P by $\overline{P}$. Then singularity $\overline{A} \to \overline{P}$ is the setting for the transformation of A into P. The field of the given structure tw is used for the activation of networks. The field can remain in effect until it is executed tw. Here all stages of the structure tw can be executed directly in parallel, in particular, an algorithm for solving the desired problem. We will call this field the operational activation field. This field will be created according to the structure tw. The pulse structure of a short-pulse laser for generating attosecond light pulses is close to $(a \uparrow \mathrm{I} \downarrow^{a}) \uparrow \mathrm{I} \downarrow (\downarrow_{a} \downarrow \mathrm{I}^{\uparrow a})$, i.e., type ${}_{a}^{a}St_{a}^{a}$, and upon activation it will be induction of same type self, which is necessary for the formation of a local assembly point d_r of external energy fibers El^{d_r}. Its locality (position of the assembly point r) will be determined by the structure of the magnetic induction of the short-pulse laser pulse for generating attosecond light generation through Targetblock SmnSprt [1 - 3], [8].Execution tw will be achieved through setting the assemblage point in the desired position r_1 to engage the appropriate external energy: $St_{{}_{d_r}^{r}St_{r1}^{d_r}}^{{}_{d_r}^{r}St_{r1}^{d_r}}$.

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Availability of data and material.

Competing Interest

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Appendix

Let us introduce the following notations:

A*B= $Sprt_B^A$, A^2 = Self A =Srt_A^A, $A^{\frac{3}{2}}$ = Rrt $\begin{matrix}A\\A\\A\end{matrix}$ = $self^{\frac{3}{2}}$ (A), A^3 = $Self^2$A, …,$A^{\frac{3n}{2}}$ = Rrt $\begin{matrix}A^n\\A^n\\A^n\end{matrix}$ = $self^{\frac{3n}{2}}$ (A), A^{n+1} = $Self^n$A, $self^{\min(n,m)}$(A) ϵ $Srt_{A^m}^{A^n}$ = $self^{\frac{n}{m}}$ (A), $self^{\min(n,m,k)}$(A) ϵ Rrt $\begin{matrix}A^n\\A^m\\A^k\end{matrix}$ = $self^{\frac{n+m+k}{2k}}$ (A), … etc.

There is no commutativity here: A*B ≠ B*A. We can consider operator functions: $e^A = 1 + \frac{A}{1!} + \frac{A^2}{2!} + \frac{A^3}{3!} + \cdots$, $(A+B)^n = \sum_{k=0}^{n} \binom{n}{k} A^k B^{n-k}$, $(1+A)^n = 1 + \frac{Ax}{1!} + \frac{n(n-1)A^2}{2!} + \cdots$, etc.

You can consider a more "hard" option: A*B=$PSprt_B^A$, where $PSprt_B^A$ – operator, containing A in every element of B, A^2 = PSelf A =$PSrt_A^A$, A^3 = $PSelf^2$A, …, A^{n+1} = $PSelf^n$A, $PSelf^{\min(n,m)}$(A) ϵ $PSrt_{A^m}^{A^n}$ = $PSelf^{\frac{n}{m}}$ (A), …etc. There is no commutativity here: A*B ≠ B*A. We can consider operator functions: $e^A = 1 + \frac{A}{1!} + \frac{A^2}{2!} + \frac{A^3}{3!} + \cdots$, $(A+B)^n = \sum_{k=0}^{n} \binom{n}{k} A^k B^{n-k}$, $(1+A)^n = 1 + \frac{Ax}{1!} + \frac{n(n-1)A^2}{2!} + \cdots$, etc.

Let's introduce $\sqrt{self}$ as the result of the decision of the equation Srt_x^x = self, that is x = $\sqrt{self}$, $\sqrt[3]{self}$ as the result of the decision of the equation Rprt $\begin{matrix}x\\x\\x\end{matrix}$ = self, that is x = $\sqrt[3]{self}$, $\sqrt[n]{\text{self}^m}$ as the result of the decision of the equation $x^{\frac{n}{m}}$ = self, self$^\alpha$ as the result of the decision of the equation $x^{\frac{1}{\alpha}}$ = self, where α is any number , in particular, a negative number etc. The following equality is true:

self$^{-\alpha}$(self$^{\alpha}G$) =self$^{\alpha}$(self$^{-\alpha}G$) = G. In this way one can introduce self-level space.