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Introduction to Dynamic Operators: SDS-Elements, Self-type SDS -Structures and their Applications to Physics

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Introduction

We consider dynamic operator

$$\begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} \quad (D.1.1),$$

where $Subject\ of\ Q$ by A acts Q to B, $Subject\ of\ Q$ by D acts Q out from C simultaneously, Q is any $action$, in particular, fuzzy $action$; A, B, C, D may be fuzzy with corresponding fuzzy measures. The result of this process will be described by the expression

$$\begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDSr \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} \quad (D.1.2).$$

We consider the measure: $\mu^{**}\left(\left(\begin{matrix} B \\ action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix}\right) = \frac{\mu(A)}{\mu(D)}$, where μ(A),μ(D) –usual measures of A, D or fuzzy measures of A, D if A and D are fuzzy.

Definition D.1.1. The dynamic operator (D.1.1) we shall call SDS – element of the first type, (D.1.2) we shall call SDSr – element of the first type.

Remark D.1.1. $\begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix}$ - the analogue of ${}_{D}^{C}St_{B}^{A}$ [1- 3] as a special case of (D.1.1), where $action\ Q$ is "contain".

Remark D.1.1.1 Can consider SDS– elements use the Banach space. It's allowed to add SDS – elements:

$$\begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A_1 \\ action\ Q \\ B \end{matrix} + \begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A_2 \\ action\ Q \\ B \end{matrix} = \begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A_1 \cup A_2 \\ action\ Q \\ B \end{matrix} \quad (D.1.2.1),$$

$$\begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B_1 \end{matrix} + \begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B_2 \end{matrix} = \begin{matrix} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B_1 \cup B_2 \end{matrix} \quad (D.1.2.2),$$

$$\begin{matrix} C_1 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} + \begin{matrix} C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} = \begin{matrix} C_1 \cup C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} \quad (D.1.2.3),$$

$$\begin{matrix} C \\ (action\ Q)^{-1} \\ D_1 \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} + \begin{matrix} C \\ (action\ Q)^{-1} \\ D_2 \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} = \begin{matrix} C \\ (action\ Q)^{-1} \\ D_1 \cup D_2 \\ Subject\ of\ Q \end{matrix} SDS \begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix} \quad (D.1.2.4).$$

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

$$\begin{array}{c} Subject\ of\ Q \\ (action\ Q)^{-1} \\ Subject\ of\ Q \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ Subject\ of\ Q \\ action\ Q \\ Subject\ of\ Q \end{array} \quad \text{(D.1.3)},$$

denote $SD_1 f Q$,

$$\begin{array}{c} action\ Q \\ (action\ Q)^{-1} \\ action\ Q \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ action\ Q \\ action\ Q \\ action\ Q \end{array} \quad \text{(D.1.3.1)},$$

denote $SD_{1,1} f Q$,

$$\begin{array}{c} action\ Q \\ (action\ Q)^{-1} \\ A \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ action\ Q \end{array} \quad \text{(D.1.4)},$$

denote $SD_2 f A; Q$,

$$\begin{array}{c} B \\ (action\ Q)^{-1} \\ A \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{array} \quad \text{(D.1.5)},$$

denote $SD_3 f A; Q; B$.

$$\begin{array}{c} A \\ (action\ Q)^{-1} \\ A \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ A \end{array} \quad \text{(D.1.6)},$$

denote $SD_4 f A; Q$.

$$\begin{array}{c} a \\ (action\ Q)^{-1} \\ strA \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ strA \\ action\ Q \\ a \end{array} \quad \text{(D.1.6.1)},$$

denote $SD_5 f A; Q; a$, $a \subset$ A and structure of A acts Q to a and acts Q out from a simultaneously,

$$\begin{array}{c} StrA \\ (action\ Q)^{-1} \\ a \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ a \\ action\ Q \\ StrA \end{array} \quad \text{(D.1.6.2)},$$

denote $SD_6 f a; Q; A, a \subset$ A and acts Q to structure of A and acts Q out from structure of A simultaneously,

$$\begin{array}{c} B \\ (action\ Q)^{-1} \\ B \\ Subject\ of\ Q \end{array} \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{array} \quad \text{(D.1.7)},$$

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

It can be considered a simpler version of the dynamic operator

$$\text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{array} \quad \text{(D.1.8)}$$

where $Subject\ of\ Q$ by A acts Q to B; A, B may be fuzzy with corresponding fuzzy measures; Q is any $action$, in particular, fuzzy $action$, the result of this process will be described by the expression

$$\text{SDSr} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{array} \quad \text{(D.1.9)}$$

or

$$\begin{array}{c} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array} \text{SDS (D.1.10)}$$

where $Subject\ of\ Q$ by D acts Q out from C; C, D may be fuzzy with corresponding fuzzy measures; Q is any $action$, in particular, fuzzy $action$, the result of this process will be described by the expression

$$\begin{array}{c} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array} \text{SDSr (D.1.11)}$$

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

Remark D.1.2. SDS $\begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{array}$ - the analogue of St_B^A [1- 3] as a special case of (D.1.8), where $action\ Q$ is "contain". In this case

$Sprt_{action\ Q}^{action\ Q}$ = SDS $\begin{array}{c} Subject\ of\ Q \\ action\ Q \\ action\ Q \\ action\ Q \end{array}$ – self-containment and unlike usual self has higher

level self(contain): sel$f^{\frac{3}{2}}$. 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 SDS – elements of the second type:

$$\text{SDS} \begin{array}{c} Subject\ of\ Q \\ A_1 \\ action\ Q \\ B \end{array} + \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A_2 \\ action\ Q \\ B \end{array} = \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A_1 \cup A_2 \\ action\ Q \\ B \end{array}$$

(D.1.12),

$$\text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B_1 \end{array} + \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B_2 \end{array} = \text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ B_1 \cup B_2 \end{array}$$

(D.1.13),

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

$$\text{SDS} \begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ A \end{array} \quad \text{(D.1.14)},$$

$$\text{SDS} \begin{array}{c} Subject\ of\ Q \\ strA \\ action\ Q \\ a \end{array} \quad \text{(D.1.14.1)},$$

denote $SD_7 f A; Q; a$, $a \subset$ A and structure of A acts Q to a, SDS $\begin{array}{c} Subject\ of\ Q \\ a \\ action\ Q \\ strA \end{array}$ (D.1.14.2),

denote $SD_8 f a; Q; A, a \subset$ A and acts Q to structure of A,

SDS $\begin{array}{c} Subject\ of\ Q \\ Subject\ of\ Q \\ action\ Q \\ Subject\ of\ Q \end{array}$ (D.1.15),

SDS $\begin{array}{c} Subject\ of\ Q \\ action\ Q \\ action\ Q \\ action\ Q \end{array}$ (D.1.15.1),

SDS $\begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ action\ Q \end{array}$ (D.1.16),

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

Definition D.1.3. The dynamic operator (D.1.10) we shall call tSDS – element, (D.1.11) we shall call tSDSr – element.

Remark D.1.3. $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS is the analogue of ${}^{C}_{D}St$ [1- 3] as a special case of (D.1.10), where $action\ Q$ is "contain".

It's allowed to add tSDS – elements:

$\begin{array}{c} C_1 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS + $\begin{array}{c} C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS= $\begin{array}{c} C_1 \cup C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS

(D.1.17),

$\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_1 \\ Subject\ of\ Q \end{array}$ SDS + $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_2 \\ Subject\ of\ Q \end{array}$ SDS = SDS $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_1 \cup D_2 \\ Subject\ of\ Q \end{array}$ SDS

(D.1.18).

We consider the following self-type t SDS -structures:

$\begin{array}{c} D \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS (D.1.19)

$\begin{array}{c} strD \\ (action\ Q)^{-1} \\ d \\ Subject\ of\ Q \end{array}$ SDS (D.1.19.1),

denote $SD_9 f d; Q; D, d \subset$ D and d acts Q out from structure of D,

SDS $\begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ A \end{array}$ (D.1.14),

SDS $\begin{array}{c} Subject\ of\ Q \\ strA \\ action\ Q \\ a \end{array}$ (D.1.14.1),

denote $SD_7 f A; Q; a, a \subset$ A and structure of A acts Q to a,

$Subject\ of\ Q$

SDS $\begin{array}{c} a \\ action\ Q \\ strA \end{array}$ (D.1.14.2),

denote $SD_8 f a; Q; A, a \subset$ A and acts Q to structure of A,

SDS $\begin{array}{c} Subject\ of\ Q \\ Subject\ of\ Q \\ action\ Q \\ Subject\ of\ Q \end{array}$ (D.1.15),

SDS $\begin{array}{c} Subject\ of\ Q \\ action\ Q \\ action\ Q \\ action\ Q \end{array}$ (D.1.15.1),

SDS $\begin{array}{c} Subject\ of\ Q \\ A \\ action\ Q \\ action\ Q \end{array}$ (D.1.16),

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

Definition D.1.3. The dynamic operator (D.1.10) we shall call tSDS – element, (D.1.11) we shall call tSDSr – element.

Remark D.1.3. $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS is the analogue of ${}^{C}_{D}St$ [1- 3] as a special case of (D.1.10), where $action\ Q$ is "contain".

It's allowed to add tSDS – elements:

$\begin{array}{c} C_1 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS + $\begin{array}{c} C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS= $\begin{array}{c} C_1 \cup C_2 \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS

(D.1.17),

$\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_1 \\ Subject\ of\ Q \end{array}$ SDS + $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_2 \\ Subject\ of\ Q \end{array}$ SDS = SDS $\begin{array}{c} C \\ (action\ Q)^{-1} \\ D_1 \cup D_2 \\ Subject\ of\ Q \end{array}$ SDS

(D.1.18).

We consider the following self-type t SDS -structures:

$\begin{array}{c} D \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS (D.1.19)

$\begin{array}{c} strD \\ (action\ Q)^{-1} \\ d \\ Subject\ of\ Q \end{array}$ SDS (D.1.19.1),

denote $SD_9 f d; Q; D, d \subset$ D and d acts Q out from structure of D,

$\begin{array}{c} d \\ (action\ Q)^{-1} \\ strD \\ Subject\ of\ Q \end{array}$ SDS (D.1.19.2),

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

$\begin{array}{c} action\ Q \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{array}$ SDS (D.1.20)

$\begin{array}{c} action\ Q \\ (action\ Q)^{-1} \\ action\ Q \end{array}$ SDS (D.1.21)

$$\begin{array}{c}\mathit{Subject\ of\ Q}\end{array}$$

$$\begin{array}{c}\mathit{Subject\ of\ Q}\\ (\mathit{action\ Q})^{-1}\\ \mathit{Subject\ of\ Q}\\ \mathit{Subject\ of\ Q}\end{array}\mathrm{SDS}\ (\mathrm{D.1.21.1})$$

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

Dynamic SDS – elements, self-type dynamic SDS-structures.

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

$$\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (2.1),$$

where $\mathit{Subject\ of}\ Q(t)$ by A(t) acts Q(t) to B(t), $\mathit{Subject\ of}\ Q(t)$ by D(t) acts Q(t) out from C(t) simultaneously; A(t), B(t), C(t), D(t) may be fuzzy with corresponding fuzzy measures; Q(t) is any action, in particular, fuzzy action. The result of this process will be described by the expression

$$\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDSr(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (2.2).$$

Definition D.2.1. The dynamic operator (D.2.1) we shall call dynamic SDS – element of the first type, (D.2.2) we shall call dynamic SDSr – element of the first type.

Remark D.2.1. $\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}$ - the analogue of ${}^{C(t)}_{D(t)}St(t)^{A(t)}_{B(t)}$ [1- 3] as a special case of (D.2.1), where $\mathit{action}\ Q(t)$ is "contain".

It's allowed to add dynamic SDS – elements:

$$\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A_1(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}+\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A_2(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}=\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A_1(t)\cup A_2(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (\mathrm{D.2.2.1}),$$

$$\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B_1(t)\end{array}+\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B_2(t)\end{array}=\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B_1(t)\cup B_2(t)\end{array}\quad (\mathrm{D.2.2.2}),$$

$$\begin{array}{c}C_1(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}+\begin{array}{c}C_2(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}=\begin{array}{c}C_1(t)\cup C_2(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (\mathrm{D.2.2.3}),$$

$$\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D_1(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}+\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D_2(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}=\begin{array}{c}C(t)\\ (\mathit{action}\ Q(t))^{-1}\\ D_1(t)\cup D_2(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (\mathrm{D.2.2.4}).$$

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

$$\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ (\mathit{action}\ Q(t))^{-1}\\ \mathit{Subject\ of}\ Q(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ \mathit{Subject\ of}\ Q(t)\\ \mathit{action}\ Q(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\quad (\mathrm{D.2.3}),$$

$$\begin{array}{c}\mathit{action}\ Q(t)\\ (\mathit{action}\ Q(t))^{-1}\\ \mathit{action}\ Q(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ \mathit{action}\ Q(t)\\ \mathit{action}\ Q(t)\\ \mathit{action}\ Q(t)\end{array}\quad (\mathrm{D.2.3.1}),$$

$$\begin{array}{c}\mathit{action}\ Q(t)\\ (\mathit{action}\ Q(t))^{-1}\\ A(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ \mathit{action}\ Q(t)\end{array}\quad (\mathrm{D.2.4}),$$

$$\begin{array}{c}B(t)\\ (\mathit{action}\ Q(t))^{-1}\\ A(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ B(t)\end{array}\quad (\mathrm{D.2.5}),$$

$$\begin{array}{c}A(t)\\ (\mathit{action}\ Q(t))^{-1}\\ A(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ A(t)\\ \mathit{action}\ Q(t)\\ A(t)\end{array}\quad (\mathrm{D.2.6}),$$

$$\begin{array}{c}a(t)\\ (\mathit{action}\ Q(t))^{-1}\\ \mathit{str}A(t)\\ \mathit{Subject\ of}\ Q(t)\end{array}\mathrm{SDS(t)}\begin{array}{c}\mathit{Subject\ of}\ Q(t)\\ \mathit{str}A(t)\\ \mathit{action}\ Q(t)\\ a(t)\end{array}\quad (\mathrm{D.2.6.1}),$$

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

$$\begin{matrix} strA(t) \\ (action\ Q(t))^{-1} \\ a(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ a(t) \\ action\ Q(t) \\ strA(t) \end{matrix} \quad \text{(D.2.6.2)},$$

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

$$\begin{matrix} B(t) \\ (action\ Q(t))^{-1} \\ B(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B(t) \end{matrix} \quad \text{(D.2.7)},$$

and any other possible options of self for (D.2.1) etc.

It can be considered a simpler version of the dynamic operator

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B(t) \end{matrix} \quad \text{(D.2.8)},$$

where $Subject\ of\ Q(t)$ by A(t) acts Q(t) to B(t); A(t), B(t) may be fuzzy with corresponding fuzzy measures; Q(t) is any $action$, in particular, fuzzy $action$, the result of this process will be described by the expression

$$\text{SDSr(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B(t) \end{matrix} \quad \text{(D.2.9)},$$

or

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.10)},$$

where $Subject\ of\ Q(t)$ by D(t) acts Q(t) out from C(t); C(t), D(t) may be fuzzy with corresponding fuzzy measures; Q(t) is any $action$, in particular, fuzzy $action$, the result of this process will be described by the expression

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDSr(t)} \quad \text{(D.2.11)},$$

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

Remark D.2.2. SDS(t) $\begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B(t) \end{matrix}$ - the analogue of $St(t)^{A(t)}_{B(t)}$ [1- 3] as a special case of (D.2.8), where $action\ Q(t)$ is "contain". In this case

$$Sprt(t)^{action\ Q(t)}_{action\ Q(t)} = \text{Dprt(t)} \begin{matrix} action\ Q(t) \\ action\ Q(t) \\ action\ Q(t) \end{matrix}$$

– self-containment and unlike usual self has higher level self(contain) self$f^{\frac{3}{2}}$. 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 SDS – elements of the second type:

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A_1(t) \\ action\ Q(t) \\ B(t) \end{matrix} + \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A_2(t) \\ action\ Q(t) \\ B(t) \end{matrix} = \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A_1(t) \cup A_2(t) \\ action\ Q(t) \\ B(t) \end{matrix} \quad \text{(D.2.12)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B_1(t) \end{matrix} + \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B_2(t) \end{matrix} = \text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ B_1(t) \cup B_2(t) \end{matrix} \quad \text{(D.2.13)},$$

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

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ A(t) \end{matrix} \quad \text{(D.2.14)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ strA(t) \\ action\ Q(t) \\ a(t) \end{matrix} \quad \text{(D.2.14.1)},$$

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

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ a(t) \\ action\ Q(t) \\ strA(t) \end{matrix} \quad \text{(D.2.14.2)},$$

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

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ action\ Q(t) \\ action\ Q(t) \\ action\ Q(t) \end{matrix} \quad \text{(D.2.15)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ Subject\ of\ Q(t) \\ action\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \quad \text{(D.2.15.1)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \quad \text{(D.2.15.2)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \quad \text{(D.2.15.3)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ A(t) \\ action\ Q(t) \\ action\ Q(t) \end{matrix} \quad \text{(D.2.16)},$$

$$\text{SDS(t)} \begin{matrix} Subject\ of\ Q(t) \\ action\ Q(t) \\ action\ Q(t) \\ B(t) \end{matrix} \quad \text{(D.2.16.1)},$$

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

Definition D.2.3. The dynamic operator (D.2.10) we shall call dynamic tSDS – element, (D.2.11) we shall call dynamic tSDSr – element.

Remark D.2.3. $\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix}$ SDS(t) - the analogue of ${}^{C(t)}_{D(t)}St(t)$ [1- 3] as a special case of (D.2.10), where $action\ Q(t)$ is "contain".

It's allowed to add dynamic tSDS – elements:

$$\begin{matrix} C_1(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} + \begin{matrix} C_2(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} =$$

$$\begin{matrix} C_1(t) \cup C_2(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.17)},$$

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D_1(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} + \begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D_2(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} =$$

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ D_1(t) \cup D_2(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.18)}.$$

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

$$\begin{matrix} D(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.19)}$$

$$\begin{matrix} strD(t) \\ (action\ Q(t))^{-1} \\ d(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.19.1)},$$

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

$$\begin{matrix} d(t) \\ (action\ Q(t))^{-1} \\ strD(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.19.2)}$$

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

$$\begin{matrix} action\ Q(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.20)}$$

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ action\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.20.1)}$$

$$\begin{matrix} action\ Q(t) \\ (action\ Q(t))^{-1} \\ action\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.20.2)}$$

$$\begin{matrix} Subject\ of\ Q(t) \\ (action\ Q(t))^{-1} \\ Subject\ of\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.21)}$$

$$\begin{matrix} Subject\ of\ Q(t) \\ (action\ Q(t))^{-1} \\ D(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.21.1)}$$

$$\begin{matrix} C(t) \\ (action\ Q(t))^{-1} \\ Subject\ of\ Q(t) \\ Subject\ of\ Q(t) \end{matrix} \text{SDS(t)} \quad \text{(D.2.21.2)}$$

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

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

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

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

2) $$\begin{matrix} & g_{12} & \\ g_{11} & g_{22} & g_{13} \\ (w_{j1})^{-1} & (w_{j2})^{-1} & (w_{j3})^{-1} \\ g_{31} & \cdots & \\ & g_{k2} & \end{matrix}$$

$$\text{DGprt} \begin{matrix} w_{11} & w_{12} & & w_{1n} & \\ \cdots & \cdots & & w_{2n} & \\ & & & \cdots & \\ w_{m1} & w_{m2} & \cdots & \cdots\ w_{sn} & w_{ml} \end{matrix} \quad (*_{D.1}),$$

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

3)

$$\begin{matrix} a & b & g \\ c & ASrq(\mu) & w \\ d & q & r \end{matrix} \quad (*_{D.2}),$$

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.

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

Elements of the theory of variables of fuzzy hierarchical dynamic fuzzy SDS-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. We simply use a convenient form to represent the singularity of a fuzzy set. Articles [1 - 3]-[8 - 16] use the following methodology for permanent structures:

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,

$$\underset{\substack{D\\ Subject\ of\ Q}}{\overset{C}{(action\ Q)^{-1}}}\ \mathrm{SDS(t)}\ \underset{\substack{action\ Q\\ B}}{\overset{\substack{Subject\ of\ Q\\ A}}{}} =$$

$$\begin{cases} \left(\underset{\substack{D\\ Subject\ of\ Q}}{\overset{C}{(action\ Q)^{-1}}}\ \mathrm{SDS},\ q_2 \geq t \geq q_1\right)|\mu_1 \\ \left(\underset{D}{\overset{B}{\mu_7}}\mathrm{ffS}^1\mathrm{prt}\underset{B}{\overset{A}{\mu_6}},\ q_3 \geq t > q_2\right)|\mu_2 \\ \left(\underset{\substack{D\\ Subject\ of\ Q}}{\overset{C}{(action\ Q)^{-1}}}\ \mathrm{SDS}\ \underset{\substack{action\ Q\\ B}}{\overset{\substack{Subject\ of\ Q\\ A}}{}},\ q_4 \geq t > q_3\right)|\mu_3 \\ \left(\mathrm{SDS}\ \underset{\substack{action\ Q\\ B}}{\overset{\substack{Subject\ of\ Q\\ A}}{}},\ q_5 \geq t > q_4\right)|\mu_4 \\ \{\ \} \\ \left(\underset{\substack{D\\ Subject\ of\ Q}}{(action\ Q)^{-1}}\ \mathrm{SDS},\ t > q_5\right)|\mu_5 \\ \ldots \end{cases} \quad (*D.1),$$

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 fVSDS(t), qself-variable fuzzy structures (models) through SDqfFVS(t), qself is self for *action Q*, and oqself-variable fuzzy structures (models) through OqfVSDS(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.

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

Figure: D.1

c) continuous variable fuzzy structure

ffVSDS(t)

Figure: D.2

Where a continuous fuzzy set represents the rim of the Fig.D.2.

We introduce the notation m_{fVDS_N} – the number of elements, N - the number of connections between them in the discrete variable 2-hierarchical fuzzy structure fVSDS(t). We introduce the notation m_{fVDS_N} – any, R - connections in m_{fVDS_N} in the variable 2-hierarchical fuzzy structure fVSDS(t), in particular, m_{fVDS_N}, 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 SDS- structure for fuzzy set of fuzzy structures $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$):

$$\mathrm{SDS}\ \underset{\substack{action\ Q\\ B}}{\overset{Subject\ of\ Q}{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \ldots, x_n|\mu_{\tilde{x}}(x_n))}}.$$

$$\mathrm{SDS}\ \underset{\substack{action\ Q\\ B}}{\overset{Subject\ of\ Q}{\{c(x_1)|\mu_{c(\tilde{x})}c(x_1)|\mu_{c(\tilde{x})}c(x_2), \ldots, c(x_n)|\mu_{c(\tilde{x})}c(x_n)\}}}$$ - fuzzy

SDS- structurability for these fuzzy structures. It is possible to consider the self-(fuzzy structure) $fSD_8f\widetilde{x_w}; Q; \tilde{x}$, $\widetilde{x_w} \subset \tilde{x}$. The same for self-(fuzzy structurability): $fSD_8fC_w(\tilde{x}); Q; \overline{C(x)}$, where

$\overline{C(x)} =$
$\{ c(x_1)|\mu_{c(\bar{x})}c(x_1), c(x_2)|\mu_{c(\bar{x})}c(x_2), \ldots, c(x_n)|\mu_{c(\bar{x})}c(x_n)\}$,
$C_w(\tilde{x})\subset\overline{C(x)}$.

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 fQHSDS = HSDS

$$\left[\begin{array}{c} \underset{B}{\overset{Subject\ of\ Q}{(SDS\ \underset{action\ Q}{\overset{Subject\ of\ Q}{N-\text{level of hierarchical structure}}})_{\mu_N}}} \\ \ldots \\ \underset{B}{\overset{Subject\ of\ Q}{(SDS\ \underset{action\ Q}{i-\text{level of hierarchical structure}})_{\mu_i}}} \\ \ldots \\ \underset{B}{\overset{Subject\ of\ Q}{(SDS\ \underset{action\ Q}{1-\text{level of hierarchical structure}})_{\mu_1}}} \end{array}\right]\ \underset{B}{action\ Q}$$

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

Let fdg(N, fQHSDS)= $f\,QHSDS^{fQHSDS^{fQHSDS^{\cdots fQHSDS}}}\}$-N levels

It can be considered self- fQHSDS, fsdg(y, fQHSDS) for any y, fSdg(fQHSDS, fQHSDS).

Hierarchy Examples:

1)
$$SDS\ \begin{array}{c} Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{\overset{Subject\ of\ ()}{()}})\\ ()\\ action\ ()\\ Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{()})\\ () \end{array}$$

$$\left(SDS\ \begin{array}{c} Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{\overset{Subject\ of\ ()}{()}})\\ ()\\ action\ ()\\ Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{()})\\ () \end{array}\right)$$

2)
$$\left|\left(SDS\ \begin{array}{c} ()\\ Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{\overset{Subject\ of\ ()}{()}})\\ ()\\ action\ ()\\ Subject\ of\ ()\\ (SDS\ \underset{action\ ()}{()})\\ () \end{array}\right)\right|$$

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- actions: $\sum_{k=1}^{n} ca(B_k)$=1("fuzzy result of action"). SDS-(fuzzy action) for $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$): SDS

$$\underset{w}{\underset{action\ Q}{\overset{Subject\ of\ Q}{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \ldots, x_n|\mu_{\tilde{x}}(x_n))}}},$$

$\tilde{x}$ - fuzzy set of fuzzy actions.

$$SDS\ \underset{w}{\underset{action\ Q}{\overset{Subject\ of\ Q}{\{ ca(x_1)|\mu_{ca(\bar{x})}ca(x_1)|\mu_{ca(\bar{x})}ca(x_2), \ldots, ca(x_n)|\mu_{ca(\bar{x})}ca(x_n)}}}}\ -$$

SDS- accommodation for these fuzzy actions x_i, i = 1, ..., n. It is possible to consider the self-(fuzzy action) $fSD_8f\,\widetilde{x_w}; Q; \tilde{x}$, $\widetilde{x_w}\subset\tilde{x}$. The same for self-(fuzzy accommodation): $fSD_8f\,Ca_w(\tilde{x}); Q; \overline{Ca(x)}$, where $Ca_w(\tilde{x}) =$ $\{ ca(x_1)|\mu_{ca(\bar{x})}ca(x_1), ca(x_2)|\mu_{ca(\bar{x})}ca(x_2), \ldots, ca(x_n)|\mu_{ca(\bar{x})}ca(x_n)\}$ $\subset\overline{Ca(x)}$.

We will denote a variable fuzzy hierarchy by fdVH.

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").

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

SDS $\begin{matrix} Subject\ of\ Q \\ \{h(x_1)|\mu_{h(\tilde{x})}h(x_1)|\mu_{h(\tilde{x})}h(x_2), ..., h(x_n)|\mu_{h(\tilde{x})}h(x_n)\} \\ action\ Q \\ B \end{matrix}$- SDS-hierarchization for these fuzzy hierarches. It is possible to consider the self-(fuzzy hierarchy) $fSD_8 f\widetilde{x_w}; Q; \tilde{x}$, $\widetilde{x_w} \subset \tilde{x}$. The same for self- hierarchization $fSD_8 f \widetilde{hx_w}; Q; \widetilde{hx}$, $\widetilde{hx_w} \subset \widetilde{hx}$, $\widetilde{hx} = \{h(x_1)|\mu_{h(\tilde{x})}h(x_1), h(x_2)|\mu_{h(\tilde{x})}h(x_2), ..., h(x_n)|\mu_{h(\tilde{x})}h(x_n)\}$. Can be considered SDS $\begin{matrix} Subject\ of\ Q \\ \{ca(x), c(x), h(x)\} \\ action\ Q \\ B \end{matrix}$.

Very interesting next fuzzy hierarchy type:

$$\begin{matrix} \text{fuzzy hierarchy } A \\ (action\ Q)^{-1} \\ \text{fuzzy hierarchy } A \\ Subject\ of\ Q \end{matrix} \text{SDS} \begin{matrix} Subject\ of\ Q \\ \text{fuzzy hierarchy } A \\ action\ Q \\ \text{fuzzy hierarchy } A \end{matrix}$$

You can enter special operator SfCS to work with fuzzy structures:

$\begin{matrix} A \\ (action\ Q)^{-1} \\ D \\ Subject\ of\ Q \end{matrix}$ SfCS $\begin{matrix} Subject\ of\ Q \\ C \\ action\ Q \\ D \end{matrix}$ is the structuring of *Subject of Q* by fuzzy structures R by fuzzy Q with the fuzzy structure from C and expelling fuzzy structure D by fuzzy action Q^{-1} from the fuzzy structure A simultaneously.

Very interesting next fuzzy structure type:

$\begin{matrix} A \\ (action\ Q)^{-1} \\ A \\ Subject\ of\ Q \end{matrix}$ SfCS $\begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ A \end{matrix}$,

You can enter special operator SfHS to work with fuzzy hierarches:

$\begin{matrix} A \\ (action\ Q)^{-1} \\ B \\ Subject\ of\ Q \end{matrix}$ SfHS $\begin{matrix} Subject\ of\ Q \\ D \\ action\ Q \\ R \end{matrix}$ is the hierarchization of *Subject of Q* by fuzzy hierarchy R using fuzzy Q with fuzzy hierarchy from D and simultaneous elimination of fuzzy hierarchy B by fuzzy action Q^{-1} from fuzzy hierarchy A.

Introduction to FUZZY PROGRAM OPERATORS SDS, tSDS, fD^1epr, $fDeprt_1$.

Here it is supposed to use a symbiosis of parallel actions and conventional calculations through sequential actions. This must be done through SDS -Networks - fuzzy analogue of Sit-Networks [1 - 3] in one of the central departments of which a conventional computer system is located. The parallel processor is itself fsdeprogram - fuzzy analogue of eprogram [1 - 3] with direct parallel computing not through serial computing.

Using conventional coding by a computer system, through a Target-block with a fuzzy SDS -program operator - SDS $\begin{matrix} Subject\ of\ Q \\ Ag \\ action\ Q \\ activation \end{matrix}$, 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 SDS coding and SDS -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 fsdprogram of operator SDS $\begin{matrix} Subject\ of\ Q \\ \{UHF\ AC := R\} \\ action\ Q \\ activation \end{matrix}$ with the specified measures of fuzziness, we simultaneously enter the desired fuzzy set of codes R 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 fsdprogram operators:

1. fuzzy SDS-program operators
2. fuzzy tSDS -program operators
3. fuzzy D^1epr - program operators (designation fD^1epr - program operators)
4. fuzzy $Deprt_1$- program operators (designation $fDeprt_1$- program operators)

SDS -algorithm Example:

Simultaneous multiplication Q with measure of fuzziness μ_Q: SDS $\overset{\textit{Subject of } Q}{\underset{\bar{y}^{-}}{\overset{\bar{x}}{\text{multiplication } Q}}}$, the notation of the fuzzy set B with elements

$b_{i_1 i_2 \ldots i_n j_1 j_2 \ldots j_n} =$

$$(\text{SDS} \overset{\left(\text{ffSprt} \underset{\mu}{\overset{\textit{Subject of } Q}{\{x_{1_{i_1}} * \mu_{\bar{x}}(x_{1_{i_1}}) *, x_{2_{i_2}} * \mu_{\bar{x}}(x_{2_{i_2}}) *, \ldots, x_{n_{i_n}} * \mu_{\bar{x}}(x_{n_{i_n}})\}}}\right)_R}{\underset{\left(\text{ffSprt} \underset{\mu}{\{y_{1_{j_1}} * \mu_{\bar{y}}(y_{1_{j_1}}), y_{2_{j_2}} * \mu_{\bar{y}}(y_{2_{j_2}}), \ldots, y_{n_{j_m}} * \mu_{\bar{y}}(y_{n_{j_m}})\}}\right)_G}{\overset{q}{\text{multiplication } Q}}})_V$$

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):

Table D.1: 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
...	...

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 SDS-multiplication:

Register of entering a fuzzy set of numbers to multiply SDS -block of simultaneous multiplication in all chains of digits of the levels of these numbers ffSprt-block of simultaneous addition of the values of these products

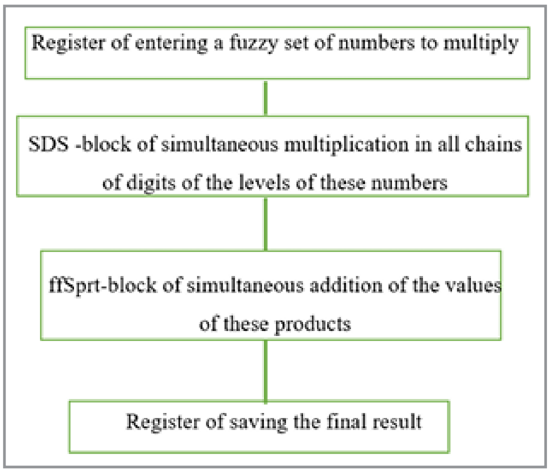

Figure D.3: The straightforward functional scheme of the assumed arithmetic-logical device for SDS -multiplication.

Remark D.2.4. 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: SDS $\overset{\textit{Subject of } Q}{\underset{\textit{Name of } q}{\textit{action } Q = \textit{give test result}}}$ if ffSprt $\underset{B}{\overset{\textit{image archive}}{\mu}} \ni$ ffSprt$\underset{B}{\overset{q}{\mu}}$

The example of SDS -program is

$$\text{SDS}\left\{\text{fDprt} \underset{\{a(x)\}}{\overset{\{(p)\}}{:=}}, \text{fDprt} \overset{\textit{Subject of } Q}{\underset{\underset{B}{\textit{action } Q}}{\overset{IF\{\{B\}\{f\}\}}{\underset{H}{\textit{give test result}}}}}, \text{fDprt} \underset{R}{\overset{R}{\textit{action } G}}\right\}.$$

For example, based on SDS $\overset{\textit{Subject of } Q}{\underset{\bar{x}}{\overset{\bar{y}}{\textit{action } Q}}}$, where $\bar{y}$=($y_1|\mu_{\bar{x}}(y_1)$, $y_2|\mu_{\bar{x}}(y_2)$, ..., $y_m|\mu_{\bar{x}}(y_m)$) ⊂ $\bar{x}$=($x_1|\mu_{\bar{x}}(x_1)$, $x_2|\mu_{\bar{x}}(x_2)$, ..., $x_n|\mu_{\bar{x}}(x_n)$), we can consider self-type SDS -structure - $fSD_8 f\bar{y}; Q; \bar{x}$ with m elements from $\bar{x}$, m<n, which is formed according to the form (1.1),

that is, the structure SDS $\begin{matrix} Subject\ of\ Q \\ \tilde{y} \\ action\ Q \\ \tilde{x} \end{matrix}$ contains only m elements, or in forms (1.1.1) - (1.1.5) [15], summarizing it. Fuzzy fcapacities in themselves of the third type can be formed for any other structure, not necessarily SDS, only by necessarily reducing the number of elements in the structure, in particular, using form (1.2) [15]. Structures more complex than fSD_8f can be introduced. For example, through a form (1.3), where A is fuzzy compressed (fuzzy fits) in C in the fuzzy compression fuzzy structure B in C (i.e., in the fuzzy structure SDS $\begin{matrix} Subject\ of\ Q \\ \tilde{y} \\ action\ Q \\ \tilde{x} \end{matrix}$); or through the forms (1.3.1) - (1.4) [15] and corresponding generalizations of (1.4) on (1.3.1) - (1.3.4) [15], etc. (1.3.1) - (1.3.4) [15] schematically interpret the fuzzy formation of fuzzy capacity in itself through a pseudo 3-connected form with a 2-connected form. The ideology of SDS and fSD_8f can be used for programming.

Remark D.2.5. Fuzzy self, in particular, according to a fuzzy form-fuzzy analogue of the form of type (1.1): (2.1*) [15].

Here are some of the fuzzy SDS -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 SDS $\begin{matrix} Subject\ of\ Q \\ \tilde{p} \\ action\ Q \\ \tilde{x} \end{matrix}$.
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 SDS $\begin{matrix} Subject\ of\ R \\ \tilde{B} \\ action\ R \\ \tilde{Q} \end{matrix}$, where $\tilde{Q}$ can be anything.
3. Similarly for fuzzy loop operators and others.

fSD_8f– fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding fsdprt-program operators in form (1.1) [15] for more complex operators in forms (1.1.1) - (1.4), (2.1*) [15] and analogs of forms (1.1.1) - (1.4) by type (2.1*) [15].

For example, SDS $\begin{matrix} Subject\ of\ Q\{R,S\} \\ S \\ action\ Q\{R,S\} \\ R \end{matrix}$ is the fuzzy self-type SDS-structure with measure of fuzziness μ of the second type if $Q\{R,S\}$ is a fsdprogram capable of fuzzy generating R with measure of fuzziness μ from S.

The example of self-fsdprogram of the first type is

SDS $\begin{matrix} Subject\ of\ R \\ \{ \text{fDprt} \begin{matrix} \tilde{p} \\ Q \\ \{\tilde{x}\} \end{matrix},\ \text{fDprt} \begin{matrix} \tilde{B} \\ R \\ \tilde{Q} \end{matrix},\ \text{fDprt} \begin{matrix} Q \\ Q \\ Q \end{matrix} \} \\ action\ R \\ w \end{matrix}$

The example of fsdprogram for SDmnsd- fuzzy analogue of SmnSt [1 - 3]:

SDS $\begin{matrix} Subject\ of\ Q \\ \tilde{p} \\ action\ Q \\ \tilde{x} \end{matrix}$ - fuzzy $action\ Q$ of $\tilde{p}$ to $\tilde{x}$.

SDS $\begin{matrix} Subject\ of\ P \\ tw \\ action\ P \\ g \end{matrix}$, where P - fuzzy assigning target weight tw to fuzzy g with measure of fuzziness μ.

SDS $\begin{matrix} Subject\ of\ S \\ \{q\}w \\ action\ S \\ \text{SDmnsd}\ activation \end{matrix}$, where S - SDmnsd $activation$ for fuzzy $\{q\}w$ with measure of fuzziness μ.

SDS -coding.

SDS -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, SDS $\begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ B \end{matrix}$, where Q - SDS -coding.

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

SDelf-coding.

SDelf-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, SDS $\begin{matrix} Subject\ of\ Q \\ A \\ action\ Q \\ A \end{matrix}$.

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 SDS-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 SDS-Networks and series-parallel. Codes from a conventional type computer system will be used via SDS-connectors in SDS-coding.

for example: SDS $\begin{matrix} Subject\ of\ := \\ \{\text{UHF AC}\} \\ := \\ activation \end{matrix}$. UHF AC field activation is used.

Dynamic SDS and $SD_8(t)f$ programming.

The ideology of dynamic SDS and $SD_8(t)f$ can be used for programming:

1. Simultaneous fuzzy $action\ \overline{Q(t)}$ of the expressions $\overline{p(t)}$=(p₁(t)|$\mu_{\overline{p(t)}}$(p₁(t)), p₂(t)|$\mu_{\overline{p(t)}}$(p₂(t)), ..., pₙ(t)|$\mu_{\overline{p(t)}}$(pₙ(t)) to the variables $\overline{x(t)}$=(x₁(t)|$\mu_{\overline{x(t)}}$(x₁(t)), x₂(t)|$\mu_{\bar{x}(t)}$(x₂(t)), ..., xₙ(t)|$\mu_{\overline{x(t)}}$(xₙ(t))). This is implemented via

SDS $\begin{matrix} Subject\ of\ \overline{Q(t)} \\ \overline{p(t)} \\ action\ \overline{Q(t)} \\ \{\overline{x(t)}\} \end{matrix}$.

2. Simultaneous $\overline{R(t)}$ = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\overline{g(t)}$=(g₁(t)|$\mu_{\overline{g(t)}}$(g₁(t)), g₂(t)|$\mu_{\bar{g}(t)}$(g₂(t)), ..., gₙ(t)|$\mu_{\overline{g(t)}}$(gₙ(t))) for the fuzzy set of expressions $\overline{B(t)}$=(B₁(t)|$\mu_{\overline{B(t)}}$(B₁(t)), B₂(t)|$\mu_{\bar{B}(t)}$(B₂(t)), ..., Bₙ(t)|$\mu_{\overline{B(t)}}$(Bₙ(t))).

Implemented via SDS $\begin{matrix} Subject\ of\ \overline{R(t)} \\ \overline{B(t)} \\ action\ \overline{R(t)} \\ \overline{Q(t)} \end{matrix}$, where $\overline{Q(t)}$ can be anything.

3. Similarly for fuzzy loop operators and others.

$SD_8(t)f$ - fuzzy software operators will differ only just because aggregates $\overline{x(t)}, \overline{p(t)}, \overline{B(t)}, \overline{g(t)}$ will be formed from corresponding SDS -program operators in form (1.1) [15] for more complex operators in forms (1.1.1) - (1.4), (2.1*) [15] and analogs of forms (1.1.1) - (1.4) by type (2.1*) [15].

tSDS -program operators.

The ideology of tSDS and $SD_{16}f$ - fuzzy analogues of tS and t_{S_4f} from [14] can be used for programming. Here are some of the tSDS-program operators.

1. Simultaneous expelling fuzzy $action\ Q$ of the expressions $\tilde{p}$=(p₁|$\mu_{\tilde{p}}$(p₁), p₂|$\mu_{\tilde{p}}$(p₂), ..., pₙ|$\mu_{\tilde{p}}$(pₙ)) from the variables $\tilde{x}$=(x₁|$\mu_{\tilde{x}}$(x₁), x₂|$\mu_{\tilde{x}}$(x₂), ..., xₙ|$\mu_{\tilde{x}}$(xₙ)). This is implemented via $\begin{matrix} \tilde{x} \\ (action\ Q)^{-1} \\ \{\tilde{p}\} \\ Subject\ of\ Q \end{matrix}$ SDS.

2. Simultaneous expelling R = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=(g₁|$\mu_{\tilde{g}}$(g₁), g₂|$\mu_{\tilde{g}}$(g₂), ..., gₙ|$\mu_{\tilde{g}}$(gₙ)) for the fuzzy set of expressions $\tilde{B}$=(B₁|$\mu_{\tilde{B}}$(B₁), B₂|$\mu_{\tilde{B}}$(B₂), ..., Bₙ|$\mu_{\tilde{B}}$(Bₙ)). It's implemented through $\begin{matrix} \tilde{Q} \\ (action\ R)^{-1} \\ \tilde{B} \\ Subject\ of\ R \end{matrix}$ SDS, where $\tilde{Q}$ can be anything.

3. Similarly for loop operators and others.

$SD_{16}f$ – fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding tSDS-program operators in form (1.1) [15] for more complex operators in forms (1.1.1) - (1.4), (2.1*) [15] and analogs of forms (1.1.1) - (1.4) by type (2.1*) [15]. Consider hierarchical tSDS -program operator

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

Dynamic tSDS and $SD_{16}(t)f$ programming at time q.

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

1. The process of simultaneous expelling fuzzy $action\ Q(t)$ of the expressions $\overline{p(t)}$=(p₁(t)|$\mu_{\overline{p(t)}}$(p₁(t)), p₂(t)|$\mu_{\overline{p(t)}}$(p₂(t)), ..., pₙ(t)|$\mu_{\overline{p(t)}}$(pₙ(t))) from the variables $\overline{x(t)}$=(x₁(t)|$\mu_{\overline{x(t)}}$(x₁(t)), x₂(t)|$\mu_{\bar{x}(t)}$(x₂(t)), ..., xₙ(t)|$\mu_{\overline{x(t)}}$(xₙ(t))). This is implemented via

$\begin{matrix} \overline{x(t)} \\ (action\ Q(t))^{-1} \\ \overline{p(t)} \\ Subject\ of\ Q(t) \end{matrix}$ SDS(t).

2. The process of simultaneous expelling R(t) = fuzzy checking with fuzziness μ(t) by the fuzzy set of conditions $\overline{g(t)}$=(g₁(t)|$\mu_{\overline{g(t)}}$(g₁(t)), g₂(t)|$\mu_{\bar{g}(t)}$(g₂(t)), ..., gₙ(t)|$\mu_{\overline{g(t)}}$(gₙ(t))) for the fuzzy set of expressions $\overline{B(t)}$=(B₁(t)|$\mu_{\overline{B(t)}}$(B₁(t)), B₂(t)|$\mu_{\bar{B}(t)}$(B₂(t)), ..., Bₙ(t)|$\mu_{\overline{B(t)}}$(Bₙ(t))) is implemented through

$\begin{matrix} \overline{Q(t)} \\ (action\ R(t))^{-1} \\ \overline{B(t)} \\ Subject\ of\ R(t) \end{matrix}$ SDS(t), where $\overline{Q(t)}$ can be anything.

3. Similarly for loop operators and others.

$SD_{16}(t)f$ – fuzzy software operators will differ only just because aggregates $\overline{x(t)}, \overline{p(t)}, \overline{B(t)}, \overline{g(t)}$ will be formed from corresponding processes tSDS(t) for above mentioned programming operators through form (1.1) [15] for more complex operators in forms (1.1.1) - (1.4), (2.1*) [15] and analogs of forms (1.1.1) - (1.4) by type (2.1*) [15]. Consider hierarchical dynamic tSDS-program operator:

$(action\ Q(q))^{-1}\begin{matrix}B(q\\ \\A(q))\end{matrix}$ SDS(q) = $Subject\ of\ Q(t)$

$\left\{ fft(q)_{S_1 f(A(q)\cap B(q))} + \begin{matrix}\{\}\\ \mu\\ A(q)-A(q)\cap B(q)\\ (B(q)-A(q)\cap B(q))\end{matrix} \text{ffSprt}(q) \right\}$, where

action Q- contain.

fD[1]epr -program operators (form $(action\ Q)^{-1}\begin{matrix}B\\ \\D\end{matrix}$fD[1]prt $\begin{matrix}A\\ action\ Q\\ B\end{matrix}$ - fuzzy analogue of ${}_D^B S^1 t_B^A$ [10]).

For example, $R^{-1}\begin{matrix}\tilde{x}\\ \\ \{\tilde{p}\}\end{matrix}$fD[1]prt$\begin{matrix}\tilde{B}\\ R\\ \tilde{Q}\end{matrix}$, where simultaneous expelling fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=(g₁|μ$_{\tilde{g}}$(g₁), g₂|μ$_{\tilde{g}}$(g₂), ..., gₙ|μ$_{\tilde{g}}$(gₙ)) for the fuzzy set $\tilde{p}$=(p₁|μ$_{\tilde{p}}$(p₁), p₂|μ$_{\tilde{p}}$(p₂), ..., pₙ|μ$_{\tilde{p}}$(pₙ)) from the variables $\tilde{x}$=(x₁|μ$_{\tilde{x}}$(x₁), x₂|μ$_{\tilde{x}}$(x₂), ..., xₙ|μ$_{\tilde{x}}$(xₙ)) and simultaneous R = fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=(g₁|μ$_{\tilde{g}}$(g₁), g₂|μ$_{\tilde{g}}$(g₂), ..., gₙ|μ$_{\tilde{g}}$(gₙ)) for the fuzzy set of expressions $\tilde{B}$=(B₁|μ$_{\tilde{B}}$(B₁), B₂|μ$_{\tilde{B}}$(B₂), ..., Bₙ|μ$_{\tilde{B}}$(Bₙ)), $\tilde{Q}$ can be anything.

The examples:

$(action\ Q)^{-1}\begin{matrix}A\\ \\A\end{matrix}$fD[1]prt$\begin{matrix}A\\ action\ Q\\ A\end{matrix}$ can be interpreted as $\begin{pmatrix}s^1elf\\ os^1elf\end{pmatrix}$-fdprogram operator. $(action\ Q)^{-1}\begin{matrix}A\\ \\A\end{matrix}$fD[1]prt$\begin{matrix}A\\ action\ Q\\ A\end{matrix}$ sample $\begin{pmatrix}s^1elf\\ os^1elf\end{pmatrix}$-fdprogram structure example.

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

fDeprt₁- program operators (form $(action\ Q)^{-1}\begin{matrix}C\\ \\D\end{matrix}$fD₁prt$\begin{matrix}A\\ action\ Q\\ B\end{matrix}$ - fuzzy analogue of ${}_D^C S_1 t_B^A$ [13], [9]).

$(action\ Q)^{-1}\begin{matrix}A\\ \\A\end{matrix}$fD₁prt$\begin{matrix}A\\ action\ Q\\ A\end{matrix}$ - sample $\begin{pmatrix}d_1self\\ d_1oself\end{pmatrix}$-fdprogram structure example.

Applications to Physics

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) [19]) the elements of space-time, objects. 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 = v²/R. There is there "clotting" the element of space - a direct line to circle. For example, in the case R →0, v²=d*R we get one of the options of self-energy. The operators $(action\ Q)^{-1}\begin{matrix}C\\ \\D\\ Subject\ of\ Q\end{matrix}$ SDS $\begin{matrix}Subject\ of\ Q\\ A\\ action\ Q\\ B\end{matrix}$ 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. Moreover self(A) ||| self(B) = (A|||A)|||(B|||B) = A|||B.

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 D.2.6. 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 D.2.7. In strings theory, to more correctly accept self -action as a string (in private., self-containment), which generates this self - object - an elementary particle.

Remark D.2.8. 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 [15], [18] in order to obtain the necessary pseudo-living energy from this self-energy, do this.

Remark D.2.9. 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 D.2.10. 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

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Declarations

Availability of data and material

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Appendix

Entire neural network as instantaneous simultaneous SDS-RAM in SDS-elements and fself- elements.$fself^{fself^{\cdots^{fself}}}$, ff1 ↓ I $\uparrow_{-1}^{1}$ $ff_2^{\text{ff1}\downarrow \text{I}\uparrow_{-1}^{1} ff_2^{\cdots^{\text{ff1}\downarrow \text{I}\uparrow_{-1}^{1} ff_2}}}$, $fsin\infty^{fsin\infty^{\cdots^{fsin\infty}}}$.When activated in a neural network, the entire neural network becomes a working memory. Use of fself-energy as fuzzy activation or from outside.