

Norbert Winter

UC-6

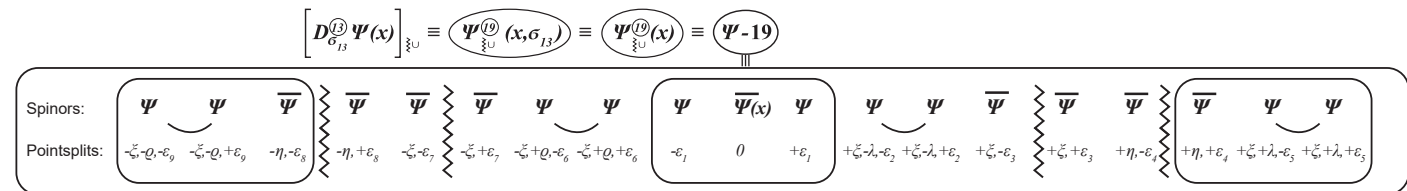
The complete list of all elementary particles of the entire Universe

(including their respective inner particle structure and their respective physical properties)

and the complete process chain and causal structure in the creation and evolution of the Universe from its beginning to today

- Before the Big Bang: Primordial Universe
- The Big Bang: All fine and global composition structures
- After the Big Bang: Dark Matter, Normal Matter/Antimatter, Dark Energy with the coupled construction of 4-dimensional space-time

generated from the Universe Code Ψ -19

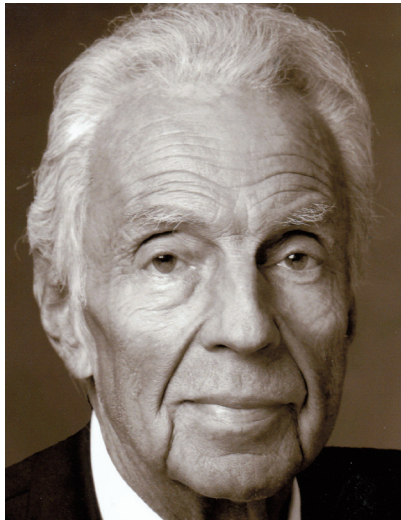


which in turn is derived from the basic dynamics I.1., I.2., I.3. $\equiv$ as an inner-structural creation and order system of the Universe (see UC-6; B, KP-1)

$$\begin{aligned} D \Psi(x) &= \Psi(x-\sigma_1) \overline{\Psi}(x) \Psi(x+\sigma_1); \sigma_1 \rightarrow 0 \\ D \overline{\Psi}(x) &= \overline{\Psi}(x-\sigma_2) \Psi(x) \overline{\Psi}(x+\sigma_2); \sigma_2 \rightarrow 0 \end{aligned}$$

$x \equiv \bullet$ interaction point, $D = \frac{d}{dx}$, $dx \equiv \sigma$ pointsplit

with repulsion $\equiv \begin{array}{c} \leftarrow -\sigma \\ \bullet \\ +\sigma \rightarrow \end{array}$
attraction $\equiv \begin{array}{c} \rightarrow -\sigma \\ \bullet \\ +\sigma \leftarrow \end{array}$



Norbert Winter

- Norbert Winter, born 1942, raised in Göttingen
- Studied Physics at the Universities of Heidelberg and Munich
- Doctorate in Physics with a thesis on elementary particle theory, supervisor H.P. Dürr
- Employed at the Max-Planck Institute for Physics in Munich, student of Werner Heisenberg
- 1974-2006, change of career into the insurance industry, including 25 years as board member or chairman of various insurance companies
- Despite this professional activities constant engagement with questions of logic and physics and constant contact with high-energy physicists
- From 2006, intensive engagement with questions of logic and physics
- From 2008, concrete and targeted development of the following works:

14/04/2011: "The Construction of Matter" (ADM)

06/03/2012: "Matter, Logic, and Existence" (MLE)

19/04/2013: "The Highly Massive Scalar Boson" (HSB)

26/05/2014: "The Law of Greatest Simplicity" (GDE)

22/05/2015: "The Unified Construction Process of the Universe from Smallest to Largest" (EAU, Kap. I-X.)

17/12/2015: "The Act of Creation of the Universe" (UEA)

04/08/2016: "The Development Process of the Universe from the Big Bang until Today" (UEP)

17/03/2017: "The 6 Key Processes in the Creation and Development of the Universe" (KPU)

17/03/2017: "The Universe Code Ψ -19" (UC)

17/03/2017: "The Universe Code Ψ -19, the unified composition and order system of the Universe" (UC-AOS)

16/02/2018: "Guide to the source and generating code of the Universe" (WW-UEC)

16/02/2018: "The Universe Code Ψ -19, the creation system of the entire process of the universe" (UC-G)

16/02/2018: "UC-1 – The creation of the Universe Code Ψ -19"

16/02/2018: "UC-2 – The Universe Code Ψ -19,

- The creation system of the first ever manifestation of the universe before the big bang ($\equiv$ primordial universe)
- The creation system of mass and charge"

16/02/2018: "UC-3 – The Universe Code Ψ -19,

- the creation system of the big bang (rupture of ${}_3G$) in the primordial universe
- The restructuring of the elementary particle set that has passed through the Big Bang
 - the formation of the normal matter elementary particle set = $(p^+, e^-, \nu; St, \gamma, Z, G) \equiv$ h-atom given suitable energy boundary conditions"

16/02/2018: "UC-4 – The Universe Code Ψ -19,

- the creation system:
- of the Big Bang Reproduction Cascade including absolutely all fine and global composition structures of the Earliest Universe directly after the Big Bang ($\frac{2}{3}$ Dark Matter / $\frac{1}{3}$ Normal Matter)
 - of the elementary particles of Dark Matter and Normal Matter including their inner-structural particle composition and their physical properties"

16/02/2018: "UC-5 – The Universe Code Ψ -19,

- the creation system of dark energy with the coupled construction of 4-dimensional space-time"

06/09/2018: „UC-6 – The Complete List of All Elementary Particles of the Entire Universe and the Complete Process Chain and Causal Structure in the Creation and Evolution of the Universe from Its Beginning to Today“

Preface:

After publication of the paper

**The universe code Ψ -19,
the unified composition and order system of the universe**

≡ UC-AOS (abbr.)

I have received numerous letters with the question:

1. of whether it would be possible - due to the abundance of the overall material and the breadth of the topic of the paper UC-AOS (Chapter I. - XIV., 356 pages) - to recommend a guide with the help of which one can find a clear path through the overall text of the paper
2. what, according to my opinion and with respect to the present overall situation of elementary particle physics and space physics, are the most important topics on either field
3. Some letters contained the question of whether it would be possible to represent the overall universe process as developed in UC-AOS in full details, in a closed, neatly arranged form on approx. 30-50 pages.
4. In other letters, the request was made to split the comprehensive paper UC-AOS into its 5-6 core topics, whereas each of these 5-6 core topics should be 30-50 pages in length, thus easily readable and preferably deal with a topic that is currently being discussed.
5. In addition, I have received a large number of requests in which it was suggested to summarize the content of UC-AOS, which represents the overall aspect of the Universe, in a separate paper.

The goal is:

- to fully grasp and present the complete process chain and causal structure of the Universe in a closed form, from its beginning to today, regardless of the complex nature of UC-AOS
- as well as presenting the complete list of all elementary particles existing and ever existing in the entire Universe (including their respective physical properties):
 - before the Big Bang, these are the elementary particles of the Primordial Universe
 - after the Big Bang, these are:
 - Dark Matter elementary particles,
 - Normal Matter / Antimatter elementary particles
 - Dark Energy elementary particles with coupled 4-dimensional space-time elementary units (space-time quantum)
- to display the range of properties of the Universe's overall process chain and its detailed fundamental structures
- In other words: to see the Universe in its entirety from its beginning to today in a closed form „at a glance“.

The questions 1. and 2. have been answered in the paper:

Guide to the source and generating code of the Universe at small scale (elementary particles) and at large scale (global structures of the Universe) (2/16/2018).

The third question has been dealt with within the paper:

The universe code Ψ -19, the generation system of the complete universe process (2/16/2018).

Question 4 is dealt with within the following 5 papers

UC-1 → UC-5 (16/02/2018)

Question 5 is dealt within this paper UC-6:

**The complete list of all elementary particles of the entire Universe
The complete process chain and causal structure in the creation and evolution of the Universe
from its beginning to today (06/09/2018)**

Following UC-1, UC-2, UC-3, UC-4 and UC-5, we continue with the paper UC-6:

The present work „UC-6“ refers to the work UC-AOS.

Therefore, the numerical references used in the following text refer to the numerical representation of the paper UC-AOS.

Thus, the reader can directly navigate to the text within the entire paper UC-AOS and retrieve the required information from the relevant text passages, in case further information on a certain subject is needed.

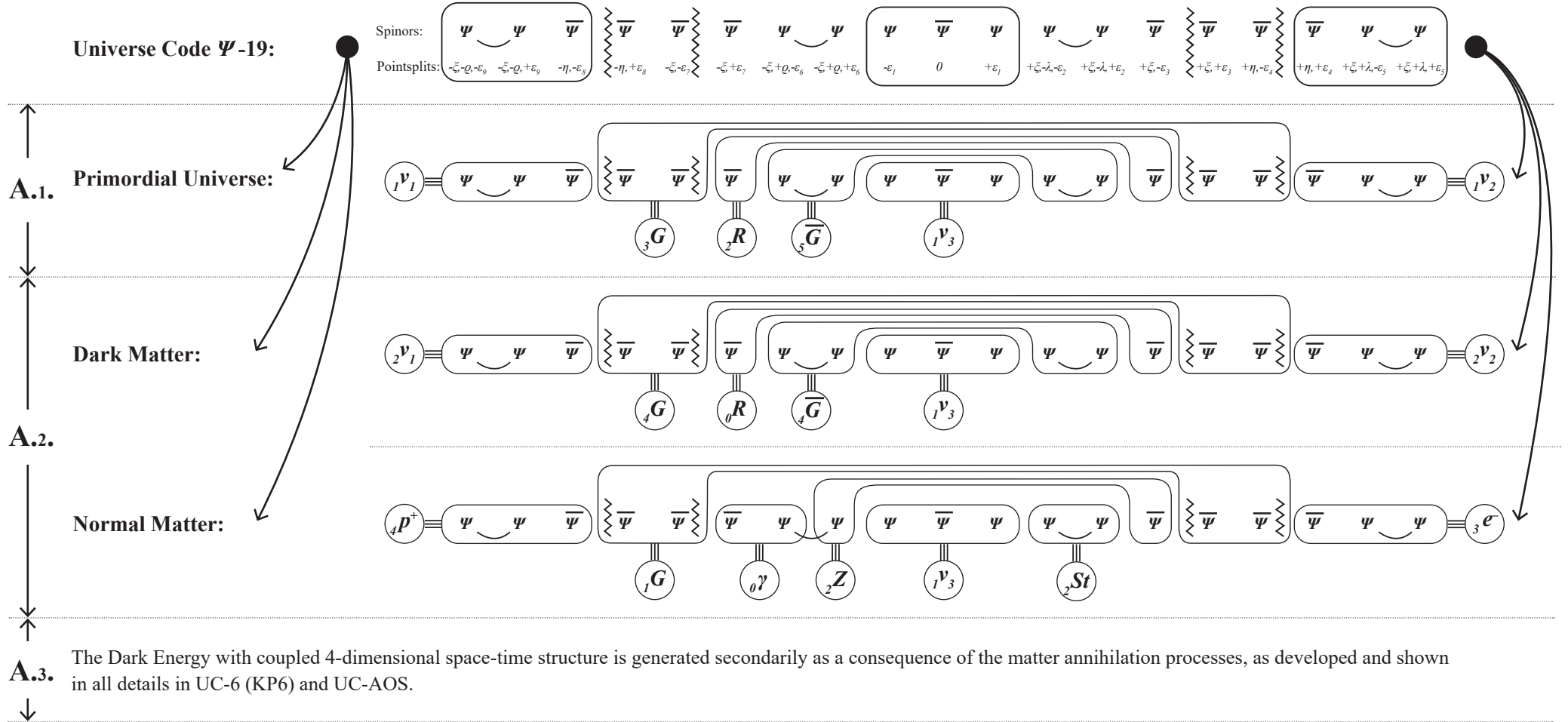
A. The complete list of all existing and ever existing elementary particles in the entire Universe:

- A.0. Structure Overview of Elementary Particle Generation from the Universe Codee Ψ -19**
- A.1. Before the Big Bang**
- A.2. Directly after the Big Bang**
- A.3. Today**

In UC-AOS, the complete derivation of all existing and ever existing elementary particles of the Universe from one and the same Universe Code Ψ -19 (V.7.) has been developed and presented. The inner structure of each elementary particle is generated by the specific formation processes that inevitably follow the Universe Code, as shown in detail in UC-AOS for each elementary particle.

An overview of this can be found in the following structure overview of elementary particle generation:

Please refer to the complete list of elementary particles for the respective point-split structure of the individual elementary particles. The lower left index number of each individual elementary particle symbol indicates the number of point-splits involved.



From the elementary particle generation process, it follows that an elementary particle is not generated singularly, but always an entire elementary particle set of the respective matter type is generated as a coherent, interacting overall system:

Primordial Universe: ${}_1\nu_1, {}_1\nu_2, {}_1\nu_3; {}_5\bar{G}, {}_2R, {}_3G$ || Dark Matter: ${}_2\nu_1, {}_2\nu_2, {}_2\nu_3; {}_4\bar{G}, {}_0R, {}_4G$ || Normal Matter: ${}_4p^+, {}_3e, {}_1\nu_3; {}_2St, {}_0\gamma, {}_2Z, {}_1G$,

whereby the conservation law of elementary particle generation always applies: For each elementary particle set, the total number of point-splits is 13, as required by the dynamic construction process I.12., III.4.1..

The Primordial Universe: The following 6 individual formation components of the Primordial Universe form according to **V.3.-V.6.**, **V.8.**, **V.10.** and **VI.2.** from the preformation structure **V.7.** – which was system-intrinsically constructed as described in **I.** → **V.**:

The 3 most elementary fermions:

$$\begin{aligned}
 F_1 (\varepsilon_9) &\equiv \boxed{\Psi \Psi \bar{\Psi}} (\varepsilon_9) \equiv \text{1-split object} \stackrel{\text{by VI.3.1.}}{\equiv} \text{massless} \equiv \text{named: } \boxed{\text{neutrino}_1} \equiv \nu_1 \\
 F_2 (\varepsilon_5) &\equiv \boxed{\bar{\Psi} \Psi \Psi} (\varepsilon_5) \equiv \text{1-split object} \equiv \text{massless} \equiv \text{named: } \boxed{\text{neutrino}_2} \equiv \nu_2 \\
 F_3 (\varepsilon_1) &\equiv \boxed{\Psi \bar{\Psi} \Psi} (\varepsilon_1) \equiv \text{1-split object} \equiv \text{massless} \equiv \text{named: } \boxed{\text{neutrino}_3} \equiv \nu_3
 \end{aligned}$$

The 3 most elementary bosons:

$$\begin{aligned}
 {}_5\bar{G} (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2) &\equiv \boxed{\Psi \Psi \quad \Psi \Psi} (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2) \stackrel{\text{by V.6., VI.3.}}{\equiv} \text{5-split object} \equiv \text{extreme massive, strongly repulsive} \\
 &\equiv \text{named: } \boxed{\text{anti-gravitational force}} \\
 {}_2R (\varepsilon_7, \varepsilon_3) &\equiv \boxed{\bar{\Psi} \quad \bar{\Psi}} (\varepsilon_7, \varepsilon_3) \equiv \text{2-split object} \equiv \text{massive, repulsive} \\
 &\equiv \text{named: } \boxed{\text{repulsion force}} \\
 {}_3G (\varepsilon_8; \eta, \varepsilon_4) &\equiv \boxed{\begin{array}{c} \text{---} \bar{\Psi} \bar{\Psi} \text{---} \\ \text{---} \bar{\Psi} \bar{\Psi} \text{---} \end{array}} (\varepsilon_8; \eta, \varepsilon_4) \equiv \text{3-split object} \equiv \text{massive, weakly attractive} \\
 &\equiv \text{named: } \boxed{\text{gravitational force}}, \text{ not yet the} \\
 &\quad \text{long-range } \boxed{\text{1-split}} \text{ gravitational force } G_1
 \end{aligned}$$

VII.1.

Thus: The Primordial Universe before the Big Bang consisted of

3 fermions $\equiv$ 3 massless neutrinos with different structures :

$$\nu_1 \equiv F_1 \equiv \underbrace{\Psi \Psi \bar{\Psi}}_{(\varepsilon_9)} \quad \nu_2 \equiv F_2 \equiv \underbrace{\bar{\Psi} \Psi \Psi}_{(\varepsilon_5)} \quad \nu_3 \equiv F_3 \equiv \underbrace{\Psi \bar{\Psi} \Psi}_{(\varepsilon_1)}$$

and:

3 bosons $\equiv$ 3-force mix :

$$\begin{aligned} {}_5\bar{G} &\equiv \text{most extremely strong, repulsive, absolutely dominant force} \\ {}_2R &\equiv \text{normally strong, repulsive force} \\ {}_3G &\equiv \text{most extremely weak, attractive force} \end{aligned}$$

where, by V.6., VI.3.2., VI.3.3., VI.3.4., VI.4.

$${}_5\bar{G} \equiv \underbrace{\underbrace{\Psi \Psi}_{(\varepsilon_6)} \underbrace{\Psi \Psi}_{(\varepsilon_2)}}_{(\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)} \equiv \text{repulsive} \equiv \underbrace{\bar{m}}_{\bar{q}_0}, \bar{q}_0;$$

$\bar{q}_0$ = anti-gravitational elementary charge, because of the $\Psi\Psi\Psi\Psi$ -configuration, $\bar{m}$ means extremely high mass (see VI.4.), i.e. most extremely short range $\sim 10^{-18}$ cm

$${}_2R \equiv \underbrace{\underbrace{\bar{\Psi} \bar{\Psi}}_{(\varepsilon_7)} \underbrace{\bar{\Psi} \bar{\Psi}}_{(\varepsilon_3)}}_{(\varepsilon_7, \varepsilon_3)} \equiv \text{repulsive} \equiv \underbrace{m}_m;$$

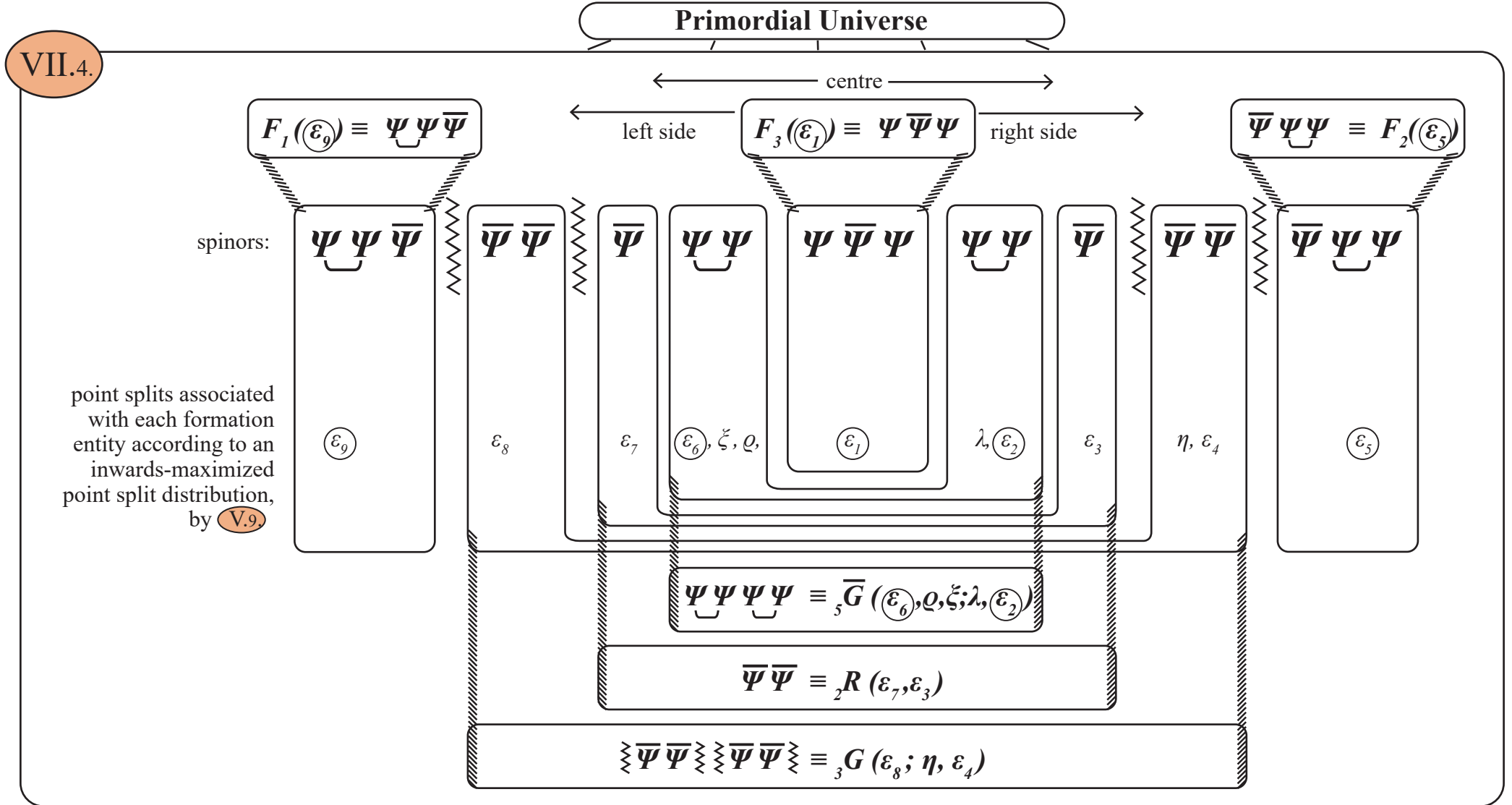
massive, range $\sim 10^{-14}$ cm

$${}_3G \equiv \underbrace{\underbrace{\underbrace{\bar{\Psi} \bar{\Psi}}_{(\varepsilon_8)} \underbrace{\bar{\Psi} \bar{\Psi}}_{(\varepsilon_4)}}_{(\varepsilon_8; \eta, \varepsilon_4)}}_{(\varepsilon_8; \eta, \varepsilon_4)} \equiv \text{attractive} \equiv \underbrace{\bar{m}}_{q_0}, q_0;$$

q_0 = gravitational elementary charge, because of the $\bar{\Psi}\bar{\Psi}\bar{\Psi}\bar{\Psi}$ -configuration, with $\bar{q} + q = 0$, $\bar{m}$ means extremely high mass, i.e. range $\sim 10^{-14}$ cm

VII.3.

In other words, the particle and force structure of the Primordial Universe (see **V.10.**) is as follows:



Thus: The Primordial Universe is (was) **absolutely centred**, **point-split-wise centred**, and **shapewise centred**.

VII.3 oder VII.4???
in UC-AOS anders als in UC-6

The physical properties of each individual formation (**VII.3.**) $\equiv$ Elementary Particles of the Primordial Universe are determined by the inner structure of each (individual formation entity).

This inner structure is determined by (3 factors) :

1st factor: (inner split density collision structure),
specifically the split density collision structure of the inner basis spinors
that form each individual formation entity.

2nd factor: (inner coherence structure), specifically the inner-structural spinor
configuration of the basis spinors in the composition of the (individual formation entity) .

3rd factor: The force structure properties (see **V.6.**) pre-established by the most
fundamental structuring act (**IV.5.**), i.e.:

$\psi \psi \psi \psi$	$\equiv$ repulsive	;	$\psi \psi$	$\equiv$ attractive
$\bar{\psi} \bar{\psi} \bar{\psi} \bar{\psi}$	$\equiv$ attractive	;	$\bar{\psi} \bar{\psi}$	$\equiv$ repulsive

VII.5.

Thus, the following statements hold for the individual forces ${}_5\overline{G}$, ${}_2R$, ${}_3G$ of the Primordial Universe (before the Big Bang):

VII.6.

${}_5\overline{G} \equiv$

$\left(\begin{array}{c} \Psi\Psi \\ \text{---} \end{array} \begin{array}{c} \Psi\Psi \\ \text{---} \end{array} \right) (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2) \equiv \text{5-split object}$

$\equiv$ by VI.3.5. most extremely massive, i.e. most extremely short-range ($\sim 10^{-18}$ cm),
charged with anti-gravitational force $\overline{q}_0$

$\equiv$ by V.6. a repulsive force, as a $(\Psi\Psi\Psi\Psi)$ -configuration

$\equiv$ due to the (double binding element „UU“) most extremely high inner-structural
spinor coherence and therefore most extremely high force magnitude by VII.5.

$\equiv$ „Unstable“ due to the 5-split density $\Rightarrow {}_5\overline{G}$ -rupture process (see KP3)



${}_5\overline{G} \equiv$ $\begin{array}{c} \text{centre} \\ \vdots \\ \left(\begin{array}{c} \Psi\Psi \\ \text{---} \end{array} \begin{array}{c} \Psi\Psi \\ \text{---} \end{array} \right) \\ \vdots \\ \text{centre} \end{array} \equiv$

acting from the centre outwards, most extremely strong, extremely
massive and therefore extremely short-range repulsion force
(separation force), named (anti-gravitational force)

VII.6.

$$\begin{aligned}
 {}_2R &\equiv \left(\overline{\Psi} \text{---} \overline{\Psi} \right) (\varepsilon_7, \varepsilon_3) \equiv \text{2-split object} \\
 &\equiv \text{by VI.3.2. massive (i.e. short-range)} \\
 &\equiv \text{by V.6. . repulsive, due to the } \overline{\Psi}\overline{\Psi} \text{-structure} \\
 &\equiv \text{due to the indirect inner-structural spinor coherence, a slightly weakened, normal force} \\
 &\quad \text{magnitude, named repulsion force}
 \end{aligned}$$

$$\begin{aligned}
 {}_3G &\equiv \left(\begin{array}{c} \overline{\Psi}\overline{\Psi} \\ \overline{\Psi}\overline{\Psi} \end{array} \right) (\varepsilon_8; \eta, \varepsilon_4) \equiv \text{3-split object} \\
 &\equiv \text{by VI.3.3. massive (i.e. short-range), with charge } q \\
 &\quad \text{charged with gravitational force } q_0, \text{ with } q_0 + \overline{q}_0 = 0 \\
 &\equiv \text{by V.6. an attractive (binding) force as a } \overline{\Psi}\overline{\Psi}\overline{\Psi}\overline{\Psi} \text{-configuration)} \\
 &\equiv \text{due to the quadrauple separation structure „}\overline{\Psi}\overline{\Psi}\overline{\Psi}\overline{\Psi}\text{“, most extremely weak} \\
 &\quad \text{inner-structural spinor coherence and therefore most extremely weak force magnitude}
 \end{aligned}$$



$${}_3G \equiv \left(\begin{array}{c} \overline{\Psi}\overline{\Psi} \\ \overline{\Psi}\overline{\Psi} \end{array} \right) \equiv \begin{array}{c} \text{centre} \\ \vdots \\ \overline{\Psi}\overline{\Psi} \\ \vdots \\ \overline{\Psi}\overline{\Psi} \\ \vdots \\ \text{centre} \end{array}$$

acting towards the centre inwards, most extremely weak, massive, and therefore short-range attraction force (binding force), named gravitational force, but not yet the long-range 1-split gravitational force G_I as will form later, after the Big Bang.

VII.7.

Furthermore: Due to the **double structure binding element „ $\cup\cup$ “**, the coherence of the basis spinors of the anti-gravitational force ${}_5\overline{G} \equiv \boxed{\Psi\Psi} \boxed{\Psi\Psi}$ is many, many times ($\gg 10^{40}$) stronger than the gravitational force ${}_3G$, which, due to its structure with **quadruple separation elements „ $\approx\approx\approx\approx$ “** has most extremely weak coherence between its inner basis spinors. Due to this **immense difference** between the inner basis spinor coherence of each force, the force magnitude of ${}_5\overline{G}$ is immensely higher than the force magnitude of ${}_3G$.

VII.8.

It follows that: The Primordial Universe first created more than 13.8 billion years ago consisted of:

3 structurally different types of neutrino types of neutrino $F_1, F_2, F_3 \equiv 3$ fermions

3 massive and therefore short-range ($< 10^{-14}$ cm) force bosons

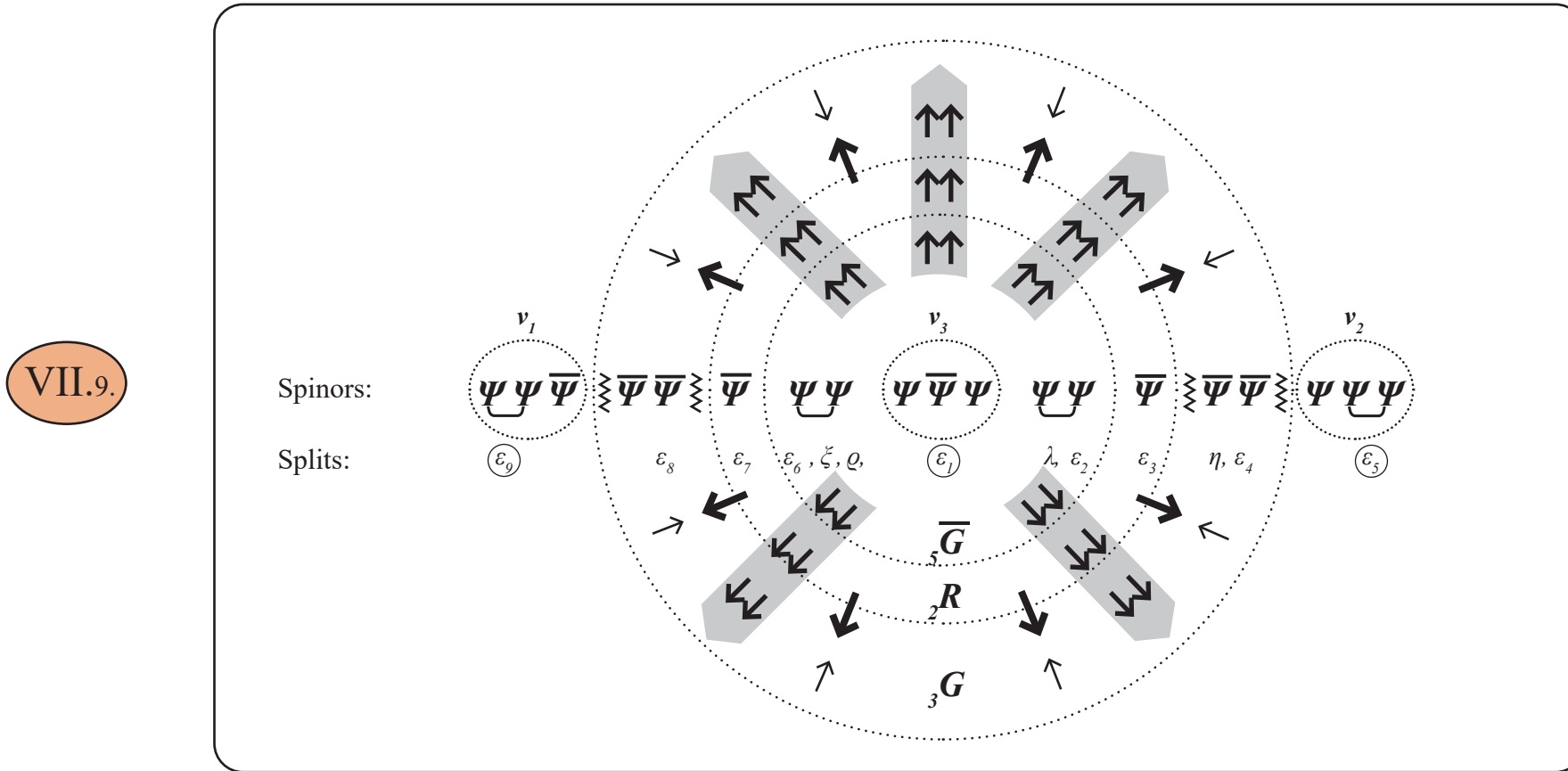
${}_5\overline{G}$ (10^{-18} cm), ${}_2R$ (10^{-14} cm), ${}_3G$ (10^{-14} cm), which together sum to give a most extremely repulsive total force, since the force structure and magnitudes satisfy: **$({}_5\overline{G} \gg \gg \gg \gg \gg \dots \gg {}_3G)$** .

Thus: The absolutely dominant force in the Primordial Universe is the force ${}_5\overline{G}$, which is a repulsive force named the **anti-gravitational force**, since its inner structure is the opposite of the force ${}_3G = \boxed{\overline{\Psi}\overline{\Psi}\overline{\Psi}\overline{\Psi}}$. This latter force still exists as a force structure in the Universe today, now (after the Big Bang **IX.2.**) in the form of a **1-split** formation and hence a long-range force. It is known as **gravitation**, namely ${}_1G$. This explains the choice of name for $\overline{G}$: **$\overline{G} = \text{anti-gravitational force}$** .

That is, the Primordial Universe consisted of a single (1) elementary particle set with the following 6 individual Primordial Universe elementary particles (3 fermions ν_1, ν_2, ν_3 ; 3 bosons ${}_5\overline{G}, {}_2R, {}_3G$):

Primordial Universe							
			Inner-Structural Particle Composition	by V.,VI.	Mass/Charge	Force Structure	Range
FERMIONEN	neutrino ₁	(ν_1)	$\equiv \boxed{\Psi \Psi \overline{\Psi}} (\varepsilon_0)$	$\equiv$ 1-split fermion	$\Rightarrow$	massless	
	neutrino ₂	(ν_2)	$\equiv \boxed{\overline{\Psi} \Psi \Psi} (\varepsilon_1)$	$\equiv$ 1-split fermion	$\Rightarrow$	massless	
	neutrino ₃	(ν_3)	$\equiv \boxed{\Psi \overline{\Psi} \Psi} (\varepsilon_2)$	$\equiv$ 1-split fermion	$\Rightarrow$	massless	
BOSONEN	anti-gravitational boson	$({}_5\overline{G})$	$\equiv \boxed{\Psi \Psi} \boxed{\overline{\Psi} \overline{\Psi}} (\varepsilon_0, \varrho, \zeta, \lambda, \varepsilon_2)$	$\equiv$ 5-split boson	$\Rightarrow$	extremely high mass, charged with anti-gravitational elementary charge $\overline{q}_0$ unstable due to the high 5-split density	most extremely strongly repulsive 10^{-18} cm
	repulsive boson	$({}_2R)$	$\equiv \boxed{\overline{\Psi}} \boxed{\overline{\Psi}} (0)$	$\equiv$ 2-split boson	$\Rightarrow$	massive	repulsive 10^{-14} cm
	gravitational boson	$({}_3G)$	$\equiv \boxed{\overline{\Psi} \overline{\Psi}} \boxed{\Psi \Psi} (\varepsilon_3, \eta, \varepsilon_4)$	$\equiv$ 3-split boson	$\Rightarrow$	massive, charged with gravitational charge q_0 with $(\overline{q}_0 + q_0) = 0$	most extremely weakly attractive 10^{-14} cm

Thus: The Primordial Universe existed more than 13.8 billion years ago. It consisted of a single Primordial Universe elementary particle set with the 6 individual Primordial Universe elementary particles $\nu_1, \nu_2, \nu_3; {}_5\overline{G}, {}_2R, {}_3G$). The Primordial Universe was most extremely small ($\equiv$ range of a massive force is $\leq 10^{-14}$ cm, and by VII.6. all 3 forces ${}_5\overline{G}, {}_2R, {}_3G$ of the Primordial Universe were massive and therefore short-range, namely $\leq 10^{-14}$ cm). The Primordial Universe therefore had the following structure and shape:



mit ${}_5\overline{G} \equiv$ repulsive $\equiv$ immensely strong, most highly massive (short-range) $\equiv$ $(\Psi\Psi\overline{\Psi}\overline{\Psi}\Psi\Psi) (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)$

${}_2R \equiv$ repulsive $\equiv$ normally strong, massive (short-range) $\equiv$ $(\overline{\Psi}\overline{\Psi}) (\varepsilon_7, \varepsilon_3)$

${}_3G \equiv$ attractive $\equiv$ immensely weak, massive (short-range) $\equiv$ $(\overline{\Psi}\overline{\Psi}\overline{\Psi}\overline{\Psi}) (\varepsilon_8; \eta, \varepsilon_4)$

The Primordial Universe, as the first ever manifestation of reality, was most extremely small, essentially a tiny point with mass, and was absolutely dominated by a most extremely massive and therefore most extremely short-range, most extremely repulsive force,

named:

anti-gravitational force

${}_5\overline{G} \equiv$

$$\left(\underbrace{\Psi \Psi} \quad \underbrace{\Psi \Psi} \quad (\varepsilon_6), \varrho, \xi; \lambda, \varepsilon_2 \right)$$

This force ${}_5\overline{G}$ will is studied in detail in Chapter **VIII. to understand how and why the Big Bang happened.**

The rupture of the Elementary-Boson ${}_5\overline{G}$ (see KP3) of the Primordial Universe sets the Big Bang production cascade **XI.23.** in motion with the two elementary sets **XI.22.** (see KP4) and, as a result, immediately after the end of the Big Bang, produces the following 2 components of matter of the Universe:

Dark Matter								
Component ① = 66.6 %	Inner-Structural Particle Composition			by V.,VI.	Mass/Charge	Force Structure	Range	Found?
neutrino ₁ $({}_2\nu_1)$	$\equiv$	$\boxed{\Psi\Psi\Psi}(\varepsilon_9, \varepsilon_8)$	$\equiv$ 2-split fermion	$\Rightarrow$	massive (mass $\neq 0$)			yes
neutrino ₂ $({}_2\nu_2)$	$\equiv$	$\boxed{\overline{\Psi}\Psi\Psi}(\varepsilon_4, \varepsilon_3)$	$\equiv$ 2-split fermion	$\Rightarrow$	massive (mass $\neq 0$)			yes
neutrino ₃ $({}_1\nu_3)$	$\equiv$	$\boxed{\Psi\Psi\Psi}(\varepsilon_1)$	$\equiv$ 1-split fermion	$\Rightarrow$	massless			yes
anti-gravitational boson $({}_4\overline{G})$	$\equiv$	$\boxed{\Psi\Psi}\boxed{}\boxed{\Psi\Psi}(\varepsilon_6, \varrho; \lambda, \varepsilon_2)$	$\equiv$ 4-split boson	$\Rightarrow$	extremely high mass, charged with anti-gravitational elementary charge $\overline{q}_\theta$	most extremely strongly repulsive	10^{-17} cm	not yet
repulsive boson $({}_0R_0)$	$\equiv$	$\boxed{\overline{\Psi}}\boxed{}\boxed{\overline{\Psi}}(0)$	$\equiv$ 0-split boson	$\Rightarrow$	massless	repulsive	long	not yet
gravitational boson $({}_4G)$	$\equiv$	$\boxed{\overline{\Psi}\Psi\overline{\Psi}}\boxed{\overline{\Psi}\Psi\overline{\Psi}}(\zeta, \varepsilon_7, \varepsilon_3, \eta)$	$\equiv$ 4-split boson	$\Rightarrow$	massive, charged with gravitational charge q_θ with $(\overline{q}_\theta + q_\theta) = 0$	most extremely weakly attractive	10^{-15} cm	not yet
as well as the end products created from the annihilation of $({}_4\overline{G}, {}_4G)$, including the split release products thus created, and the Dark Energy created from these and other annihilation processes with coupled 4-dimensional space-time structure								not yet

XI.36.

Normal Matter/Antimatter								
Component②≡ 33.3 %	Inner-Structural Particle Composition			by V.,VI.	Mass/Charge	Force Structure	Range	Found?
proton (antiproton*) $(p^+)(\overline{p}) \equiv$	$\boxed{\Psi\Psi\overline{\Psi}}_{(\varepsilon_9, \zeta, \varrho, \varepsilon_8)}$		$\equiv$ 4-split fermion	$\Rightarrow$	higher mass, charge $\oplus(\ominus)$			yes
electron (positron*) $(e^+)(\overline{e}) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}\Psi}_{(\varepsilon_4, \eta, \varepsilon_3)}$		$\equiv$ 3-split fermion	$\Rightarrow$	low mass, charge $\ominus(\oplus)$			yes
neutrino $(\nu) \equiv$	$\boxed{\Psi\overline{\Psi}\Psi}_{(\varepsilon_1)}$		$\equiv$ 1-split fermion	$\Rightarrow$	masless			yes
strong force $(St) \equiv$	$\boxed{\Psi\Psi}_{(\lambda, \varepsilon_2)}$		$\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	strongly attractive	10^{-13} cm	yes
energy-momentum $(E-I) \equiv$	$\boxed{\overline{\Psi}\Psi\overline{\Psi}\overline{\Psi}}_{(\varepsilon_6, \varepsilon_3)}$		$\equiv$ 2-split boson	$\Rightarrow$				yes
partial decomposition into $(\gamma)(Z) \overset{\text{III}}{\equiv}$	$\boxed{\overline{\Psi}\Psi}\boxed{\Psi\overline{\Psi}}_{(\varepsilon_6, \varepsilon_3)}$							yes
electromag. force $(\gamma) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}}_{(0 \text{ split})}$		$\equiv$ 0-split boson	$\Rightarrow$	massless	medium strong	long	yes
weak force $(Z) \equiv$	$\boxed{\Psi\overline{\Psi}}_{(\varepsilon_6, \varepsilon_3)}$		$\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	weak	10^{-15} cm	yes
gravitation $(G) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}}\boxed{\Psi\overline{\Psi}}_{(\varepsilon_7)}$		$\equiv$ 1-split boson	$\Rightarrow$	massless	most extremely weakly attractive	long	yes
as well as the annihilation end products ((e^+ , e^- , p^+ , p^-)), see XI.29.								yes

* For the detailed point split distributions of antimatter particles, see **XI.28.**

The composition of the Universe as of „Today“ is subject to the following 3-part breakdown:

Dark Matter								
Component ①= 66.6 %	Inner-Structural Particle Composition			by V.,VI.	Mass/Charge	Force Structure	Range	Found?
neutrino ₁ (ν ₁)	≡	ΨΨΨ (ε₉, ε₈)	≡ 2-split fermion	⇒	massive (mass ≠ 0)			yes
neutrino ₂ (ν ₂)	≡	ΨΨΨ (ε₄, ε₃)	≡ 2-split fermion	⇒	massive (mass ≠ 0)			yes
neutrino ₃ (ν ₃)	≡	ΨΨΨ (ε₁)	≡ 1-split fermion	⇒	massless			yes
anti-gravitational boson (Ḡ)	≡	ΨΨ ΨΨ (ε₆, ϱ ; λ, ε₂)	≡ 4-split boson	⇒	extremely high mass, charged with anti-gravitational elementary charge q̄ _θ	most extremely strongly repulsive	10 ⁻¹⁷ cm	not yet
repulsive boson (R _θ)	≡	Ψ Ψ (0)	≡ 0-split boson	⇒	massless	repulsive	long	not yet
gravitational boson (G)	≡	ΨΨΨ ΨΨΨ (ζ, ε₇, ε₃, η)	≡ 4-split boson	⇒	massive, charged with gravitational charge q _θ with (q̄ _θ + q _θ) = 0	most extremely weakly attractive	10 ⁻¹⁵ cm	not yet
as well as the end products created from the annihilation of (Ḡ, G), including the split release products thus created, and the Dark Energy created from these and other annihilation processes with coupled 4-dimensional space-time structure								not yet

Normal Matter/Antimatter								
Component ②≡ 33.3 %	Inner-Structural Particle Composition			by V.,VI.	Mass/Charge	Force Structure	Range	Found?
proton (antiproton*) $(p^+)(\overline{p}) \equiv$	$\boxed{\overline{\Psi}\Psi\overline{\Psi}}$ $(\varepsilon_9, \zeta, \varrho, \varepsilon_8)$	$\equiv$	4-split fermion	$\Rightarrow$	higher mass, charge $\oplus(\ominus)$			yes
electron (positron*) $(e^+)(e^-) \equiv$	$\boxed{\overline{\Psi}\Psi\Psi}$ $(\varepsilon_4, \eta, \varepsilon_3)$	$\equiv$	3-split fermion	$\Rightarrow$	low mass, charge $\ominus(\oplus)$			yes
neutrino $(\nu) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}\Psi}$ (ε_1)	$\equiv$	1-split fermion	$\Rightarrow$	masless			yes
strong force $(St) \equiv$	$\boxed{\overline{\Psi}\Psi}$ (λ, ε_2)	$\equiv$	2-split boson	$\Rightarrow$	massive, uncharged	strongly attractive	10 ⁻¹³ cm	yes
energy-momentum $(E-I) \equiv$	$\boxed{\overline{\Psi}\Psi}\boxed{\overline{\Psi}\Psi}$ $(\varepsilon_6, \varepsilon_3)$	$\equiv$	2-split boson	$\Rightarrow$				yes
partial decomposition into $(\gamma)(Z) \equiv$	$\boxed{\overline{\Psi}\Psi}\boxed{\overline{\Psi}\Psi}$ $(\varepsilon_6, \varepsilon_3)$							yes
electromag. force $(\gamma) \equiv$	$\boxed{\overline{\Psi}\Psi}$ (0 split)	$\equiv$	0-split boson	$\Rightarrow$	massless	medium strong	long	yes
weak force $(Z) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}}$ $(\varepsilon_6, \varepsilon_3)$	$\equiv$	2-split boson	$\Rightarrow$	massive, uncharged	weak	10 ⁻¹⁵ cm	yes
gravitation $(G) \equiv$	$\boxed{\overline{\Psi}\overline{\Psi}}\boxed{\overline{\Psi}\overline{\Psi}}$ (ε_7)	$\equiv$	1-split boson	$\Rightarrow$	massless	most extremely weakly attractive	long	yes
as well as the annihilation end products ((e ⁺ , e ⁻ , p ⁺ , p ⁻)), see XI.29.								yes

* For the detailed point split distributions of antimatter particles, see XI.28.

XII.42.

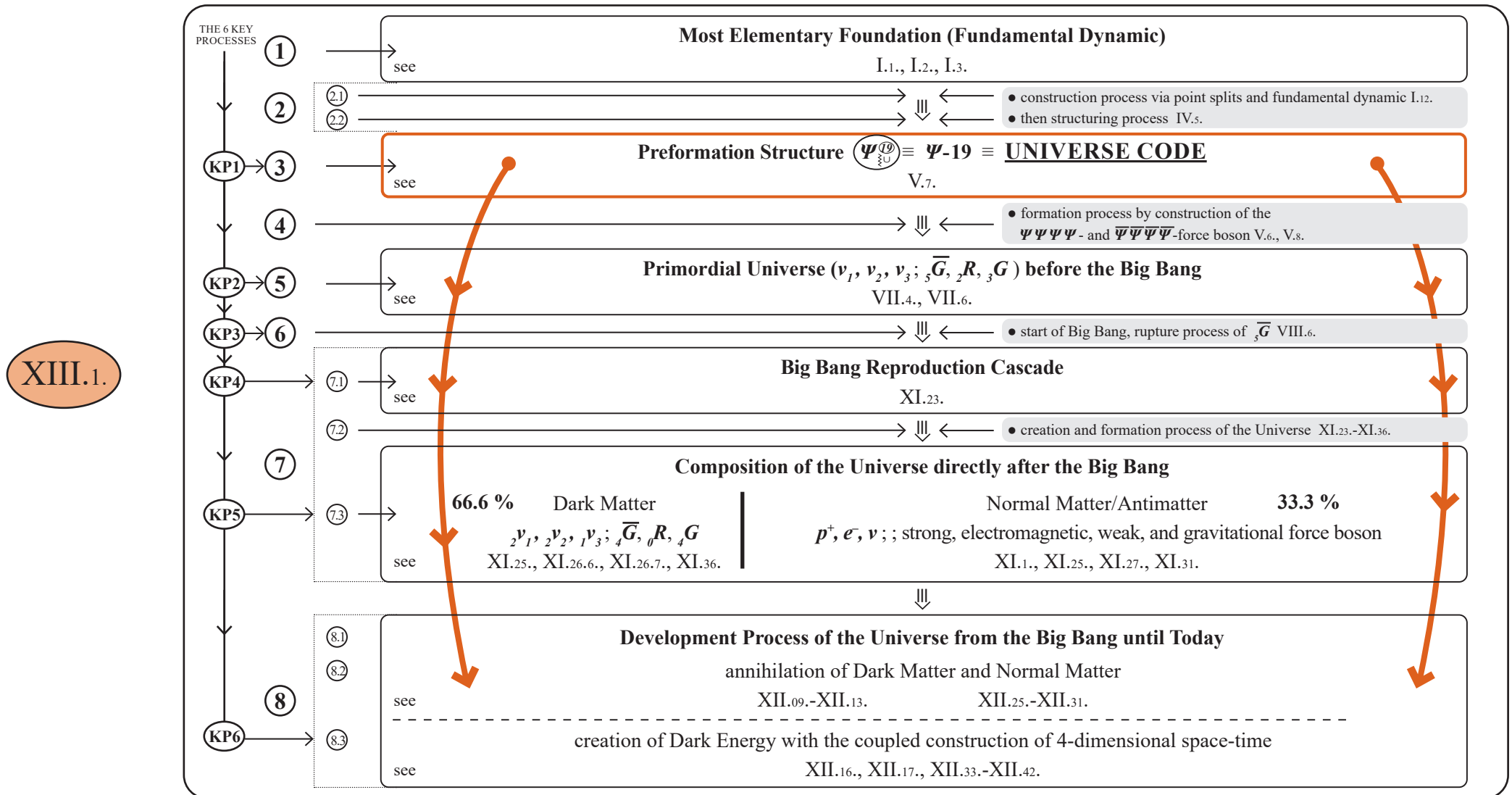
Dark Energy with the coupled construction of expanding 4-dimensional space-time (space-time-quantum)

Component③≡ 68.3 %	Inner-Structural Particle Composition		by V.,VI.	Mass/Charge	Force Structure	Range	Found?
of which 28.5 % proportion: Dark Energy Boson (E_1) ≡ created from the annihilation of a 28.5 % proportion of Normal Matter/Antimatter (see XII.17.)	$\overline{\Psi}\Psi \quad \underline{\Psi}\Psi (1-Split)$		≡ 1-split boson	⇒	massless, uncharged	expanding with the coupled construction of 4-dimensional space-time	long not yet
of which 39.8 % proportion: Dark Energy Boson (E_2) ≡ created from the annihilation of a 39.8 % proportion of Dark Matter (see XII.12.)	$\overline{\Psi}\Psi \quad \underline{\Psi}\Psi (1-Split)$		≡ 1-split boson	⇒	massless, uncharged	expanding with the coupled construction of 4-dimensional space-time	long not yet

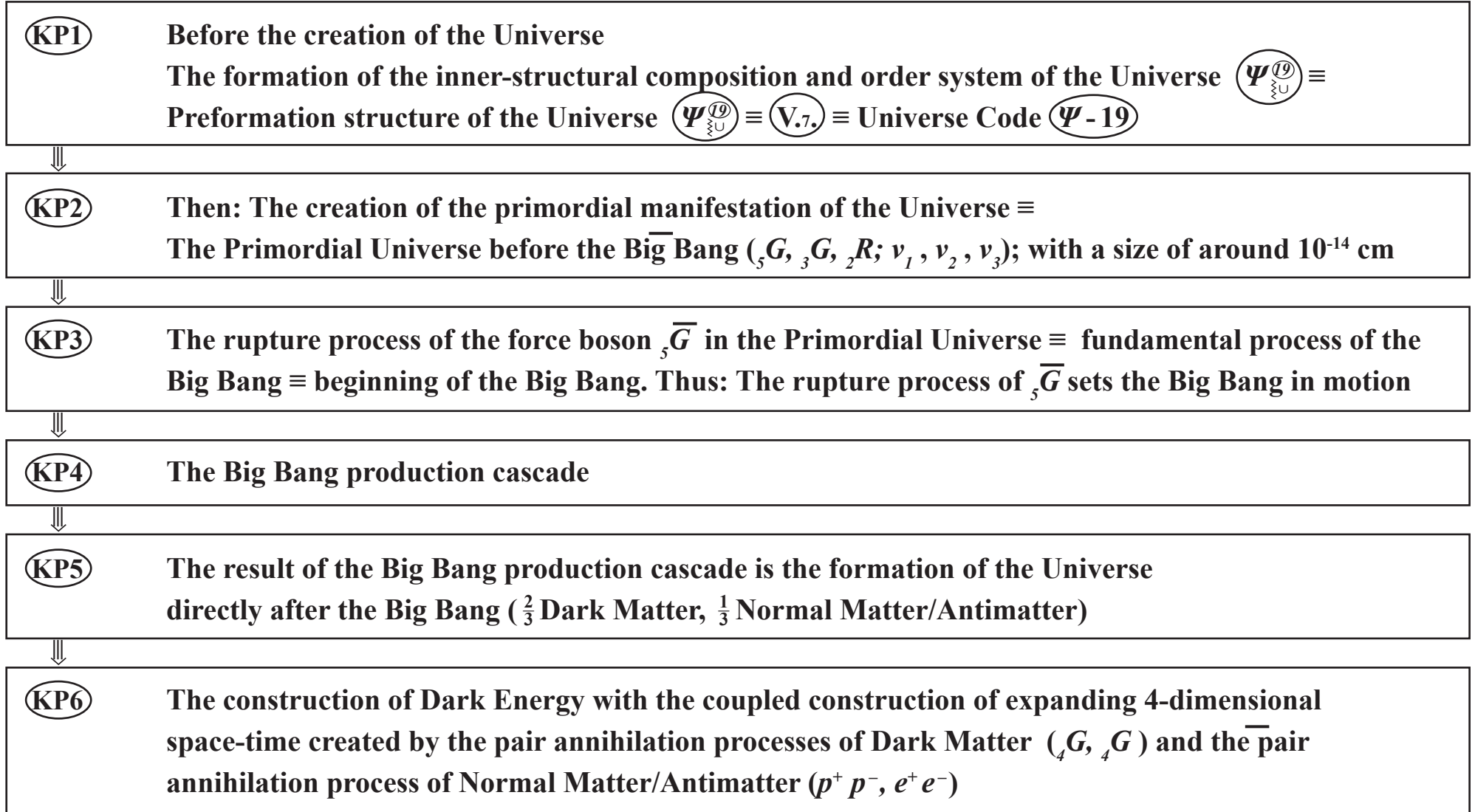
B. The complete process chain and causal structure in the creation and evolution of the Universe from its beginning to today:

- **Before the Big Bang**
- **The Big Bang process**
- **The development of the Universe after the Big Bang until today**

Chapters I.-XII. presents and explains the construction and development process of the Universe in terms of both its overall structure and the causal connections between its parts. During the construction and development process of the Universe, the following chain of global and individual processes unfolds:



XIV.1. The 6 core processes of the Universe $\textcircled{\text{KP1}} \rightarrow \textcircled{\text{KP6}}$ as described in **XIII.1.** are the following:



These 6 core processes $\textcircled{\text{KP1}} \rightarrow \textcircled{\text{KP6}}$ take place as follows (see in detail chapter XIV.):

(KP1) Before the creation of the Universe

The formation of the inner-structural composition and order system of the Universe $\Psi^{(19)}_{\text{U}}$ $\equiv$ preformation structure of the Universe $\Psi^{(19)}_{\text{U}}$
 $\equiv$ (V.7.) $\equiv$ Universe Code $\Psi - 19$

The Universe is thought to be around 13.8 billion years old. This raises the question: What was there before then, and how did the Universe begin to exist in the first place? What are the inner composition and order structures from which the Universe could have or must have been created, leading to what we know as reality?

Before the creation of the Universe, there must therefore have been some inner-structural composition and order process that develops into a Universe Code that governs all subsequent events in the Universe:

before the Big Bang – Big Bang – after the Big Bang until today, including all global and fine structures and all manifestations of matter and forces.

This construction process of the Universe Code $\equiv$ Universe Code $\Psi - 19$ $\equiv$ preformation structure $\Psi^{(19)}_{\text{U}}$ is namely:

The formation of the most elementary structure $\equiv$
 see I.1., I.2., I.3.

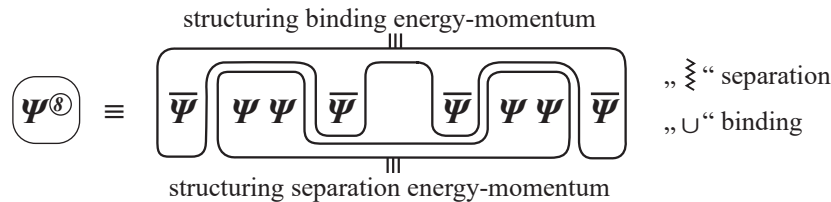
$$\begin{aligned} D \Psi(x) &= \Psi(x-\sigma_1) \bar{\Psi}(x) \Psi(x+\sigma_1); \sigma_1 \rightarrow 0 \\ D \bar{\Psi}(x) &= \bar{\Psi}(x-\sigma_2) \Psi(x) \bar{\Psi}(x+\sigma_2); \sigma_2 \rightarrow 0 \end{aligned}$$

with repulsion $\equiv \xleftarrow{-\sigma} \xrightarrow{+\sigma}$
 attraction $\equiv \rightarrow \bullet \leftarrow$

The formation of the construction process $\equiv$
 see I.12.

$$D_{\sigma_{5-13}}^{5-13} (D_{\sigma_{1-4}}^{1-4} \Psi(x)) \equiv \Psi^{(27)}(x, \sigma_{13})$$

The formation of the structuring process $\equiv$



see IV.5.

The formation of the preformation struture $\Psi^{(19)}$ by incorporating the structuring foundation $\Psi^{(8)}$ into $\Psi^{(27)}$.

$$\Psi^{(19)}_{\text{U}} \equiv \left(\Psi \Psi \bar{\Psi} \right) \approx \bar{\Psi} \bar{\Psi} \approx \bar{\Psi} \Psi \Psi \left(\Psi \bar{\Psi} \Psi \right) \Psi \Psi \bar{\Psi} \approx \bar{\Psi} \bar{\Psi} \approx \left(\bar{\Psi} \Psi \Psi \right)$$

see V.7.

I.12.

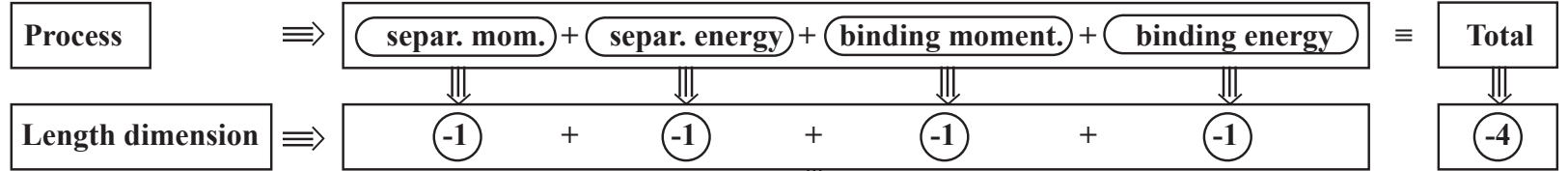


III.4.1.

$\Psi^{(27)}$

Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ	Ψ	$\overline{\Psi}$	Ψ	Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ	$\overline{\Psi}$	Ψ
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
$-\xi$	$-\overline{\xi}$	$-\overline{\xi}$	$-\overline{\xi}$	$-\eta$	$-\eta$	$-\eta$	$-\xi$	$-\xi$	$-\xi$	$-\overline{\xi}$	$-\overline{\xi}$	$-\overline{\xi}$	0	0	0	$+\xi$	$+\xi$	$+\xi$	$+\xi$	$+\xi$	$+\xi$	$+\eta$	$+\eta$	$+\eta$	$+\xi$	$+\xi$
$-\varepsilon_9$	0	$+\varepsilon_9$	$-\varepsilon_8$	0	$+\varepsilon_8$	$-\varepsilon_7$	0	$+\varepsilon_7$	$-\varepsilon_6$	0	$+\varepsilon_6$	$-\varepsilon_1$	0	$+\varepsilon_1$	$-\varepsilon_2$	0	$+\varepsilon_2$	$-\varepsilon_3$	0	$+\varepsilon_3$	$-\varepsilon_4$	0	$+\varepsilon_4$	$-\varepsilon_5$	0	$+\varepsilon_5$

Then the structuring and preformation process is following:

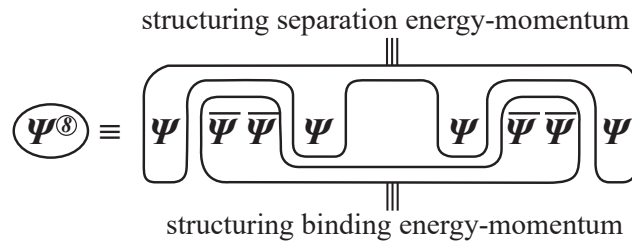


Thus: The overall structuring process requires a basis spinor set of length dimension (-4)

$\Rightarrow$ This means: The spinor raw material generated by **I.6.** must include the spinor subset of dimension (-4), required for structuring.

Since, by **I.3.**, the basis spinors Ψ and $\bar{\Psi}$ have dimension $-\frac{1}{2}$, $\dim \Psi = -\frac{1}{2}$, this must namely be a spinor subset $\Psi^{(8)}$ with $[\dim \Psi^{(8)}] = [\dim (-4)]$

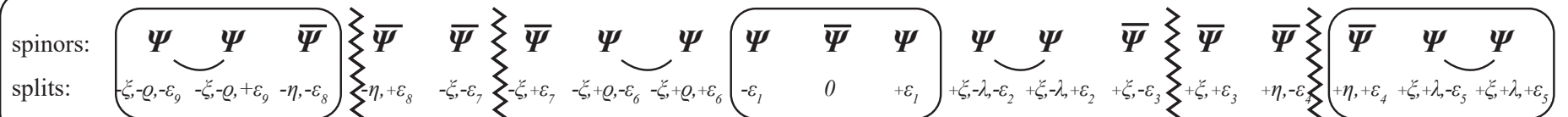
The structuring foundation is



with the structure elements

$\approx \equiv$ separ. and $\cup \equiv$ bind.

Incorporating the structure $\Psi^{(8)}$ into $\Psi^{(27)}$ gives the preformation structure $\Psi^{(19)}$:

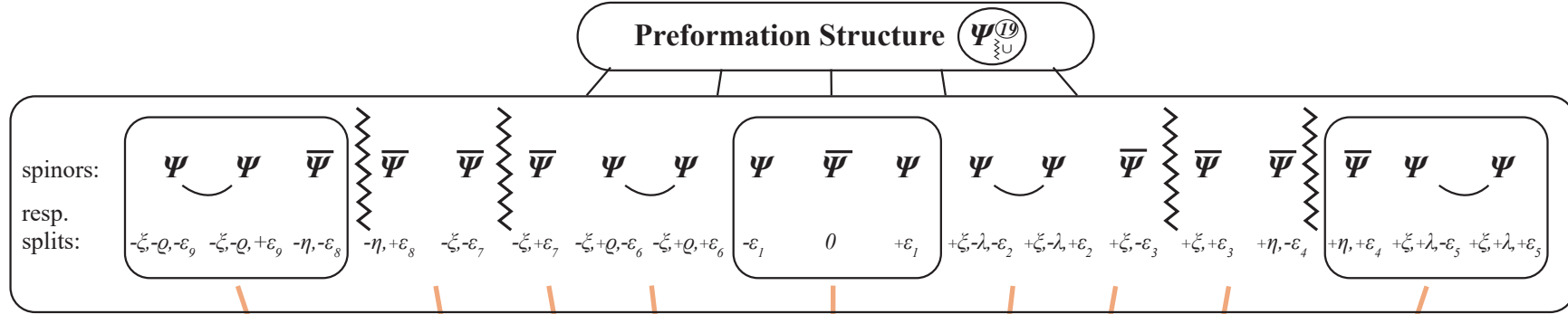


(KP2) The creation of the primordial manifestation of the Universe

≡ The Primordial Universe before the Big Bang (${}_5\overline{G}$, ${}_3R$, ${}_2G$; v_1 , v_2 , v_3) with a size of around 10^{-14} cm ≡ essentially a “bulky point”

From the

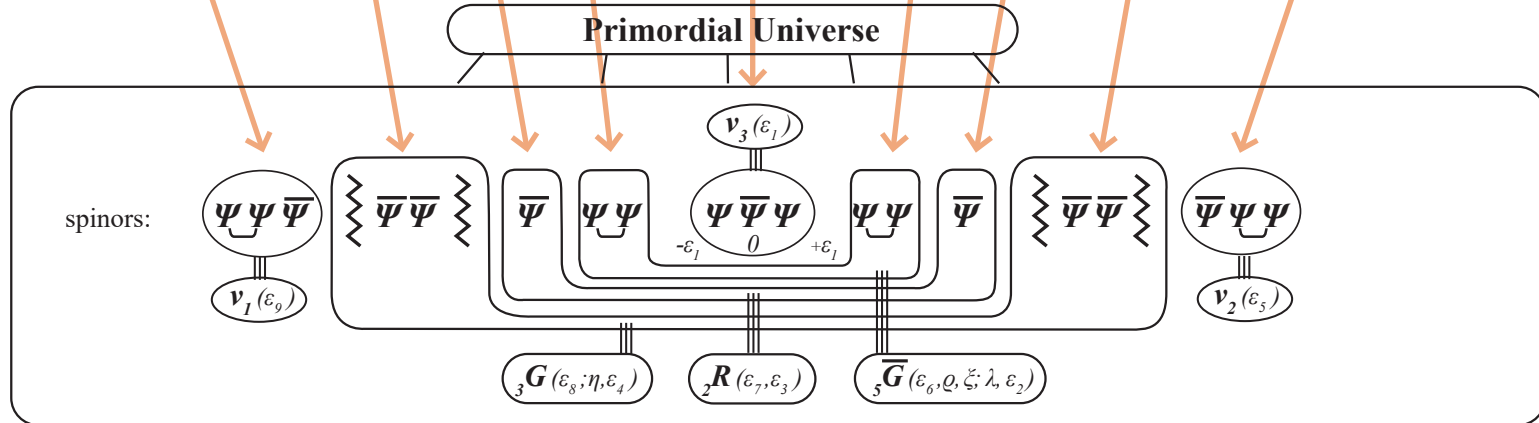
V.7.



that formed according to (KP1), another formation process is then initiated by the fact that Ψ , $\overline{\Psi}$ are both 4-component spinors, creating the $\Psi\Psi\Psi\Psi$ - and $\overline{\Psi}\overline{\Psi}\overline{\Psi}\overline{\Psi}$ -formation structures. The rest of the formation forms from the underlying preformation structure and the requirement that $\Psi_{\Sigma U}^{(19)}$ should have a global fermionic structure. This leads to the creation of the Primordial Universe with an inwards-maximized point split distribution:

V.8.

VII.4.



The left subscript of the bosons ${}_5\overline{G}$, ${}_2R$, ${}_3G$ indicates how many different point splits are in the inner-structural composition of the boson. For example: $({}_5\overline{G})$ means that $({}_5\overline{G})$ contains 5 different point splits.

Thus: The Primordial Universe before the Big Bang consisted of

3 fermions $\equiv$ 3 massless neutrinos with different structures :

$$\nu_1 \equiv F_1 \equiv \underbrace{\Psi \Psi \bar{\Psi}}_{(\varepsilon_9)} \quad \nu_2 \equiv F_2 \equiv \underbrace{\bar{\Psi} \Psi \Psi}_{(\varepsilon_5)} \quad \nu_3 \equiv F_3 \equiv \underbrace{\Psi \bar{\Psi} \Psi}_{(\varepsilon_1)}$$

and:

3 bosons $\equiv$ 3-force mix :

$$\begin{aligned} {}_5\bar{G} &\equiv \text{most extremely strong, repulsive, absolutely dominant force} \\ {}_2R &\equiv \text{normally strong, repulsive force} \\ {}_3G &\equiv \text{most extremely weak, attractive force} \end{aligned}$$

where, by (V.6.), (VI.3.2.), (VI.3.3.), (VI.3.4.), (VI.4.)

$${}_5\bar{G} \equiv \underbrace{\underbrace{\Psi \Psi} \quad \underbrace{\Psi \Psi}}_{(\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)} \equiv \text{repulsive} \equiv \bar{m}, \bar{q}_0;$$

$${}_2R \equiv \underbrace{\underbrace{\bar{\Psi}} \quad \underbrace{\bar{\Psi}}}_{(\varepsilon_7, \varepsilon_3)} \equiv \text{repulsive} \equiv m;$$

$${}_3G \equiv \underbrace{\underbrace{\bar{\Psi} \bar{\Psi}} \quad \underbrace{\bar{\Psi} \bar{\Psi}}}_{(\varepsilon_8; \eta, \varepsilon_4)} \equiv \text{attractive} \equiv \bar{m}, q_0;$$

$\bar{q}_0$ = anti-gravitational elementary charge, because of the $\Psi\Psi\Psi\Psi$ -configuration, $\bar{m}$ means extremely high mass (see VI.4.), i.e. most extremely short range $\sim 10^{-18}$ cm

massive, range $\sim 10^{-14}$ cm

q_0 = gravitational elementary charge, because of the $\bar{\Psi}\bar{\Psi}\bar{\Psi}\bar{\Psi}$ -configuration, with $\bar{q} + q = 0$, $\bar{m}$ means extremely high mass, i.e. range $\sim 10^{-14}$ cm

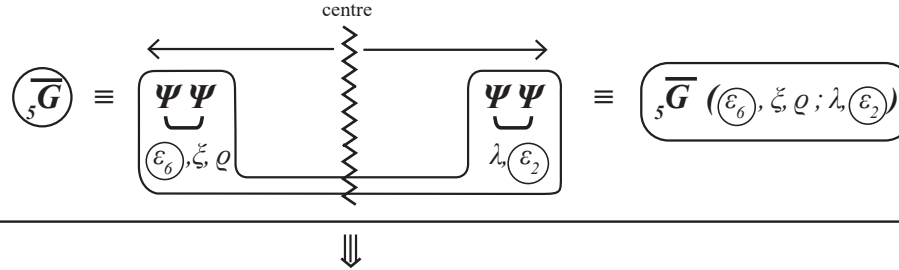
The Primordial Universe before the Big Bang was a „thick point“ with an extent of about 10^{-14} cm.

(KP3) The rupture process of the force boson ${}_5\overline{G}$ in the Primordial Universe

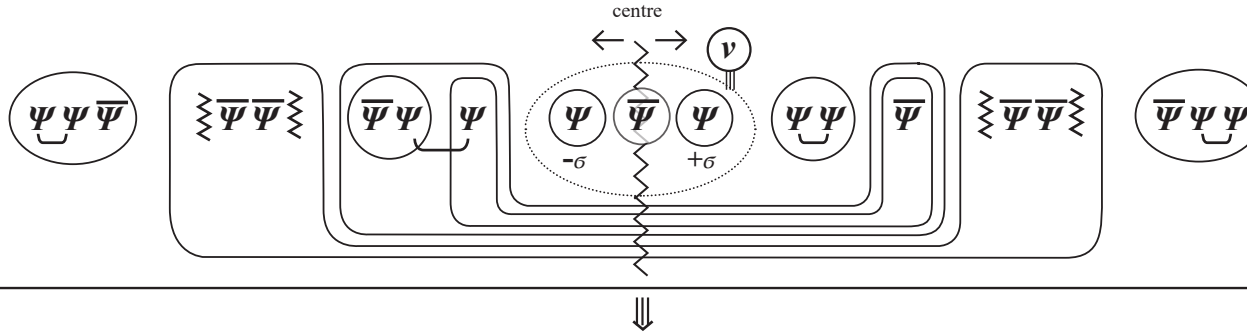
$\equiv$ fundamental process of the Big Bang $\equiv$ beginning of the Big Bang, i.e. the rupture process of ${}_5\overline{G}$ sets the Big Bang process in motion

The formation of the first ever force boson $({}_5\overline{G})$, i.e. the most extremely strong anti-gravitational force, the first ever force to emerge and exist, leads to the process that founds the Universe by means of the fundamental Big Bang process intrinsically associated with the $({}_5\overline{G})$ -boson

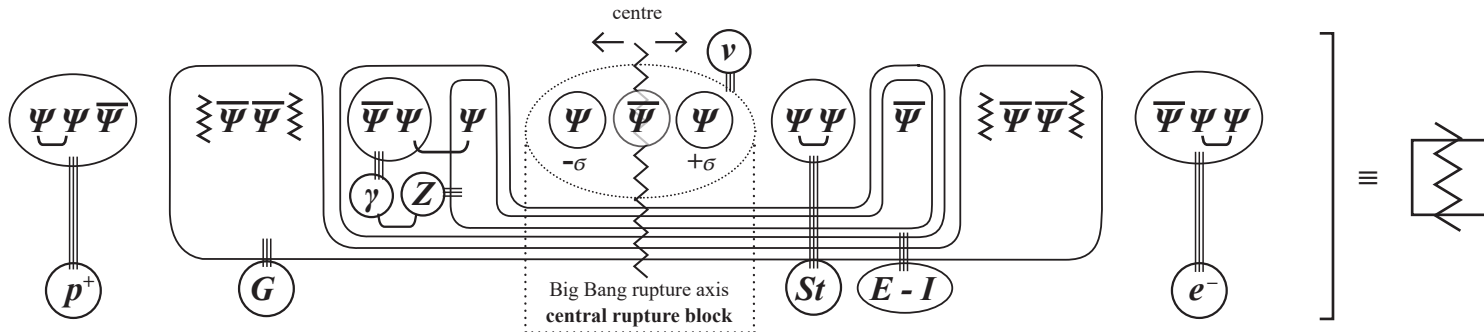
Rupture prozess of $({}_5\overline{G})$:



Thus: Within the whole of the Primordial Universe, this leads to a dissipation and reformation process with a point split distribution that is outwards-maximized because of the Big Bang rupture process:



As a consequence of the rupture of $({}_5\overline{G})$ (and therefore the beginning of the Big Bang), the post-Big Bang elementary set forms anew:



The elementary particle set created by the Big Bang ((IX.10.), (IX.11.)) forms as follows after the partial decomposition of $(E - I) \rightarrow (\gamma, Z)$ als

proton: (p^+) $\equiv$ $\left(\Psi \Psi \bar{\Psi} \quad (-\xi, -Q, -\varepsilon_8, (\pm \varepsilon_9)) \right) \equiv$ 3 basis spinor - 4-split object

electron: (e^-) $\equiv$ $\left(\bar{\Psi} \Psi \Psi \quad (+\eta, +\varepsilon_4, (\pm \varepsilon_5)) \right) \equiv$ 3 basis spinor - 3-split object

neutrino: (ν) $\equiv$ $\left(\Psi \bar{\Psi} \Psi \quad (\pm \varepsilon_1) \right) \equiv$ 3 basis spinor - 1-split object

strong interaction: (St) $\equiv$ $\left(\Psi \Psi \quad (-\lambda, (\pm \varepsilon_2)) \right) \equiv$ 2 basis spinor - 2-split object

electromagnetic-weak interaction: (γ, Z) $\equiv$ $\left(\bar{\Psi} \Psi \quad \left(\Psi \quad \bar{\Psi} \right) \quad (-\varepsilon_3, (\pm \varepsilon_6)) \right),$

where the components are connected together with „ $\cup$ “, but nonetheless exists separately as individual physical objects (see VII.23. to VII.33.)

(Z) $\equiv$ $\left(\Psi \dots \bar{\Psi} \quad (+\varepsilon_6, -\varepsilon_3) \right) \equiv$ 2 basis spinor - 2-split object

(γ) $\equiv$ $\left(\bar{\Psi} \Psi \quad (0) \right) \equiv$ 2 basis spinor - 0-split object

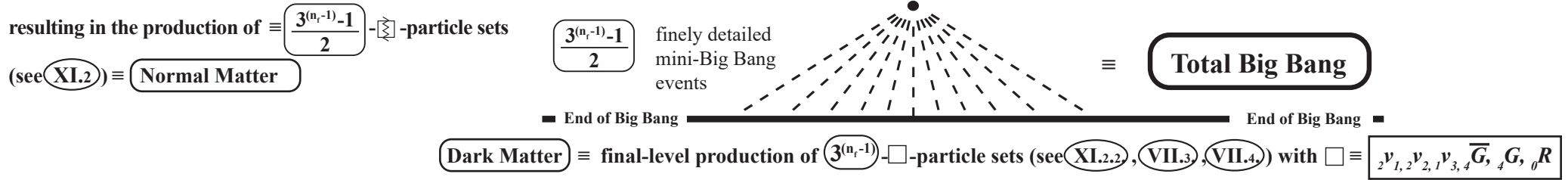
gravitonic interaction:: (G) $\equiv$ $\left(\begin{array}{c} \text{⌞} \end{array} \bar{\Psi} \bar{\Psi} \begin{array}{c} \text{⌞} \end{array} \begin{array}{c} \text{⌞} \end{array} \bar{\Psi} \bar{\Psi} \begin{array}{c} \text{⌞} \end{array} \quad (-\varepsilon_7) \right) \equiv$ 4 basis spinor - 1-split object

X.8.

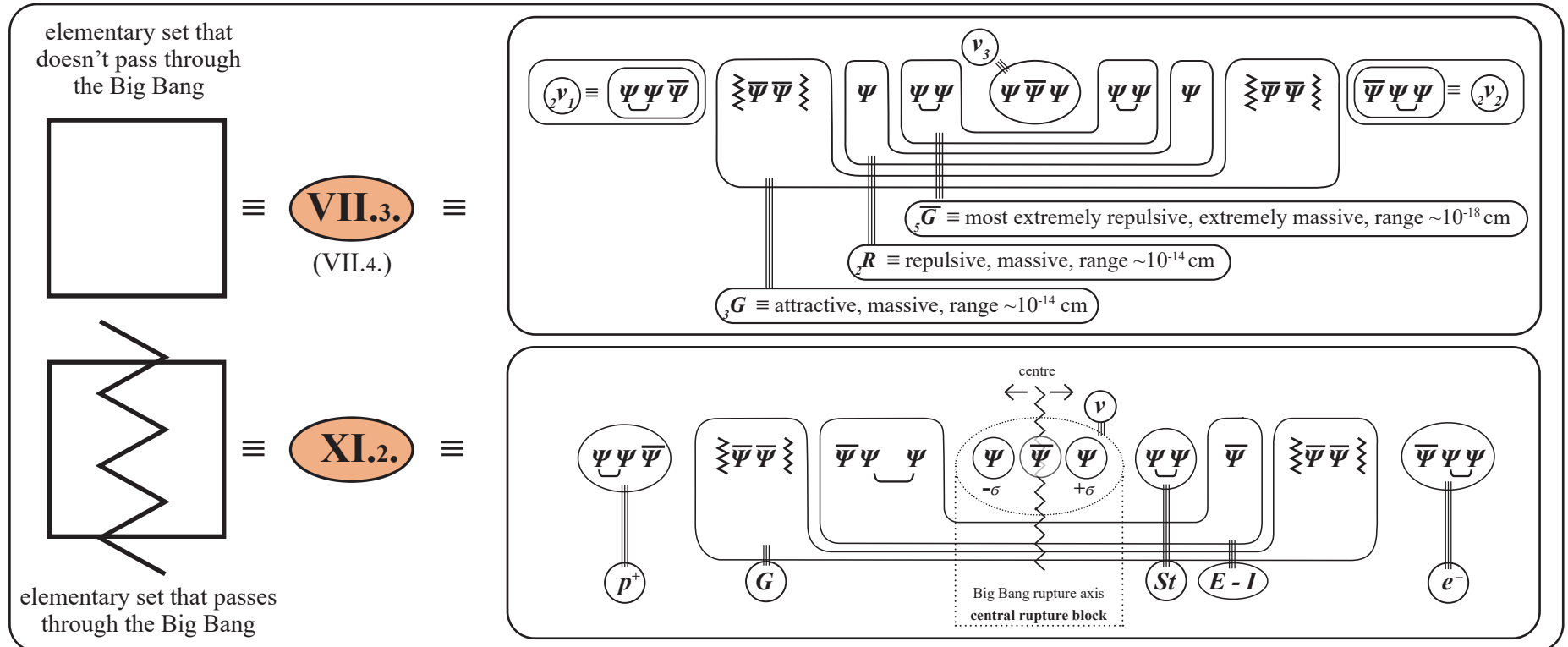
(KP3)

KP4 The Big Bang production cascade

This central Big Bang rupture axis leads to the Big-Bang-driven separation and therefore individualization of the 3 basis spinors in the central rupture region. As a result of this individualization, these 3 separated basis spinors then reform, each as the starting spinor of an independent dynamic construction process $\Psi_0 \rightarrow \Psi_0^{(19)}$, leading to the creation of 3 new construction systems, and thus to the creation of a 3-fold growth chain reaction (see (XI.20.), (XI.22.), (XI.23.)) :



To represent the structure of this chain reaction within the most colossal Big Bang production cascade more concisely, we introduce the following symbolic notation:



XI.23.

Big Bang Production Cascade

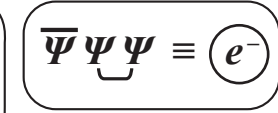
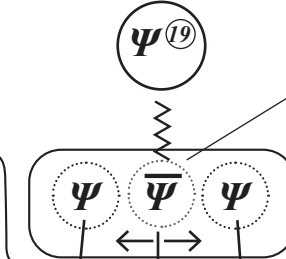
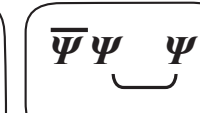
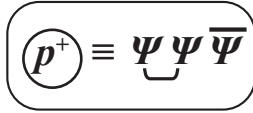
n-th production level, elementary sets produced: $s(n) \equiv 3^{n-1}$

number of elementary particle sets produced so far $\sum \equiv \frac{3^n - 1}{2}$

1st production level $\equiv n = 1$

$s(1) \equiv \textcircled{1}$ elementary particle set (ES) $\sum$

$\equiv \text{XI.2.}$



$\sum \equiv \frac{3^1 - 1}{2} \equiv 1$

2nd production level $\equiv n = 2$

$s(2) \equiv 3^{(2-1)} \equiv \textcircled{3}$ ES $\sum$



$\sum \equiv \frac{3^2 - 1}{2} \equiv 4$

3rd production level $\equiv n = 3$

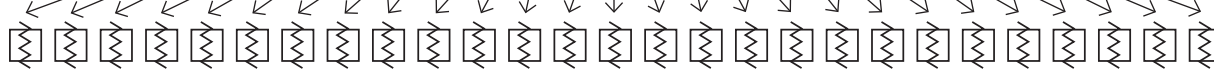
$s(3) \equiv 3^{(3-1)} \equiv \textcircled{9}$ ES $\sum$



$\sum \equiv \frac{3^3 - 1}{2} \equiv 13$

4th production level $\equiv n = 4$

$s(4) \equiv 3^{(4-1)} \equiv \textcircled{27}$ ES $\sum$



$\sum \equiv \frac{3^4 - 1}{2} \equiv 40$

$\vdots$

$(n_f - 1)$ -th production level $\equiv$ last-but-one production level $\equiv$ last iteration of the Big Bang, which produces ES $\sum$:

$s(n_f - 1) \equiv \textcircled{3^{(n_f - 2)}}$ ES $\sum$ and from which the last (final) production level n_f is created.

$\sum \equiv \frac{3^{(n_f - 1)} - 1}{2}$

----- END OF BIG BANG ----- END OF BIG BANG ----- END OF BIG BANG ----- END OF BIG BANG -----

$n_f \equiv$ final production level created from the $(n_f - 1)$ -th and last iteration of the Big Bang, then end of the Big Bang.

$s(n_f) \equiv \textcircled{3^{(n_f - 1)}}$ ES $\square \equiv$ production at the final level

XI.36. The Components ($\frac{2}{3}, \frac{1}{3}$) of the total Universe directly after the Big Bang, and the corresponding (6, 6) $\equiv$ 12 elementary particles

Dark Matter

Component ① $\equiv$ 66.6 %	Inner-Structural Particle Composition	by V., VI.	Mass/Charge	Force Structure	Range	Found?
neutrino ₁ (ν_1)	$\Psi\Psi\bar{\Psi} (\varepsilon_9, \varepsilon_8)$ $\equiv$ 2-split fermion	$\Rightarrow$	massive (mass $\neq 0$)			yes
neutrino ₂ (ν_2)	$\bar{\Psi}\Psi\Psi (\varepsilon_4, \varepsilon_5)$ $\equiv$ 2-split fermion	$\Rightarrow$	massive (mass $\neq 0$)			yes
neutrino ₃ (ν_3)	$\Psi\bar{\Psi}\Psi (\varepsilon_1)$ $\equiv$ 1-split fermion	$\Rightarrow$	massless			yes
anti-gravitational boson ($\bar{G}$)	$\Psi\Psi \quad \Psi\Psi (\varepsilon_6, \varrho; \lambda, \varepsilon_2)$ $\equiv$ 4-split boson	$\Rightarrow$	extremely high mass, charged with anti-gravitational elementary charge $\bar{q}_\theta$	most extremely strongly repulsive	10^{-17} cm	not yet
repulsive boson (R_θ)	$\bar{\Psi} \quad \bar{\Psi} (0)$ $\equiv$ 0-split boson	$\Rightarrow$	massless	repulsive	long	not yet
gravitational boson (G)	$\bar{\Psi}\bar{\Psi}\bar{\Psi} \quad \bar{\Psi}\bar{\Psi}\bar{\Psi} (\zeta, \varepsilon_7, \varepsilon_3, \eta)$ $\equiv$ 4-split boson	$\Rightarrow$	massive, charged with gravitational charge q_θ with $(\bar{q}_\theta + q_\theta) = 0$	most extremely weakly attractive	10^{-15} cm	not yet
as well as the end products created from the annihilation of ($G, \bar{G}$), including the split release products thus created, and the Dark Energy created from these and other annihilation processes with coupled 4-dimensional space-time structure						not yet

Normal Matter/Antimatter

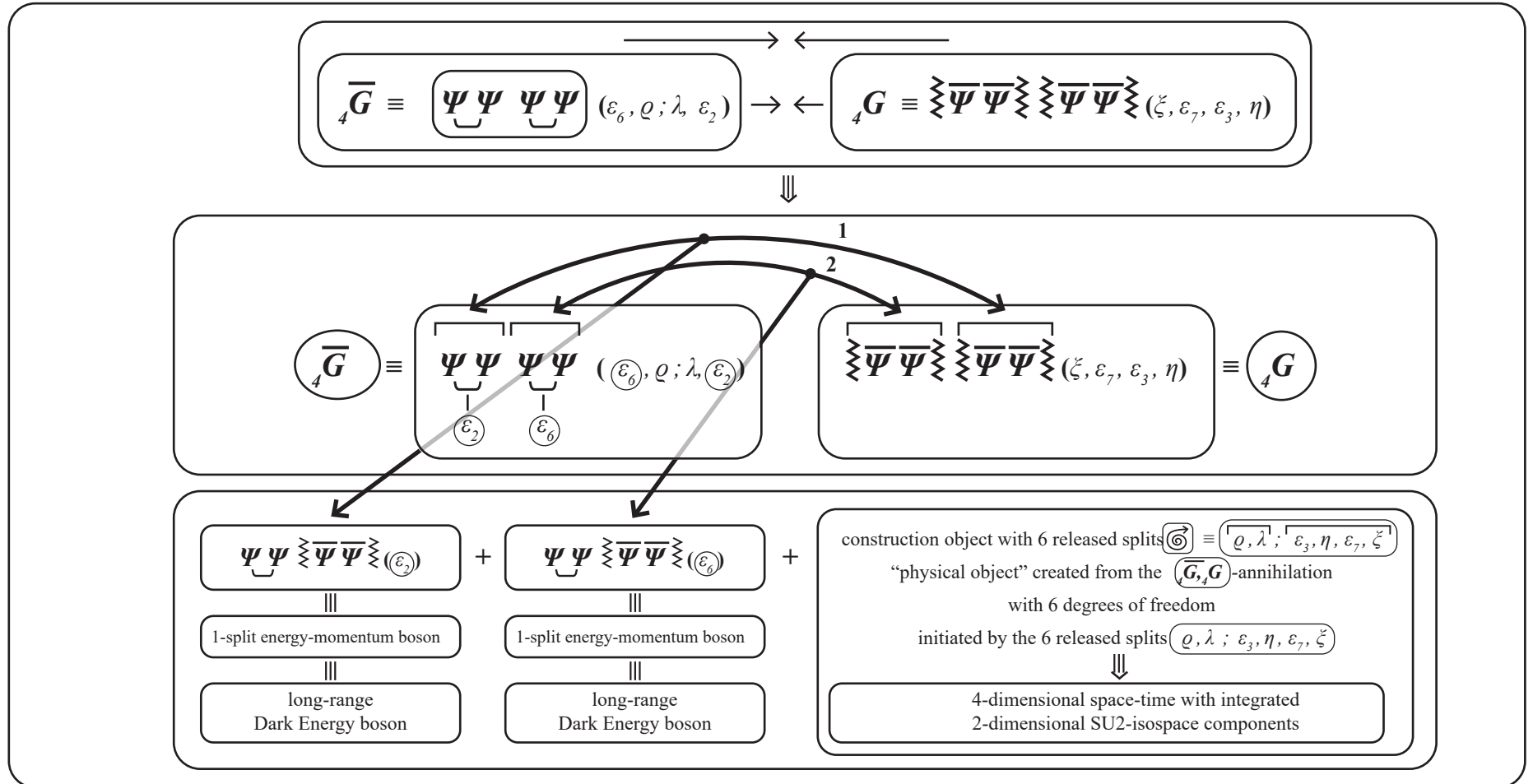
Component ② $\equiv$ 33.3 %	Inner-Structural Particle Composition	by V., VI.	Mass/Charge	Force Structure	Range	Found?
proton (antiproton*) ($p^+ (p^-)$)	$\Psi\Psi\bar{\Psi} (\varepsilon_9, \zeta, \varrho, \varepsilon_8)$ $\equiv$ 4-split fermion	$\Rightarrow$	higher mass, charge $\oplus (\ominus)$			yes
electron (positron*) ($e^+ (e^-)$)	$\bar{\Psi}\Psi\Psi (\varepsilon_4, \eta, \varepsilon_5)$ $\equiv$ 3-split fermion	$\Rightarrow$	low mass, charge $\ominus (\oplus)$			yes
neutrino (ν)	$\Psi\bar{\Psi}\Psi (\varepsilon_1)$ $\equiv$ 1-split fermion	$\Rightarrow$	masless			yes
strong force (St)	$\Psi\Psi (\lambda, \varepsilon_2)$ $\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	strongly attractive	10^{-13} cm	yes
energy-momentum ($E-I$)	$\bar{\Psi}\Psi\bar{\Psi}\bar{\Psi} (\varepsilon_6, \varepsilon_3)$ $\equiv$ 2-split boson	$\Rightarrow$				yes
partial decomposition into (γ, Z)	$\bar{\Psi}\Psi\bar{\Psi}\bar{\Psi} (\varepsilon_6, \varepsilon_3)$ $\Downarrow$					yes
electromag. force (γ)	$\bar{\Psi}\Psi (0 \text{ split})$ $\equiv$ 0-split boson	$\Rightarrow$	massless	medium strong	long	yes
weak force (Z)	$\Psi\bar{\Psi} (\varepsilon_6, \varepsilon_3)$ $\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	weak	10^{-15} cm	yes
gravitation (G)	$\bar{\Psi}\bar{\Psi}\bar{\Psi} \quad \bar{\Psi}\bar{\Psi}\bar{\Psi} (\varepsilon_7)$ $\equiv$ 1-split boson	$\Rightarrow$	massless	most extremely weakly attractive	long	yes
as well as the annihilation end products ((e^+, e^-, p^+, p^-)), see XI.29.						yes

* For the detailed point split distributions of antimatter particles, see XI.28.

(KP6) The construction of Dark Energy with the coupled construction of expanding 4-dimensional space-time,
 created by the pair annihilation processes of Dark Matter ($\bar{G}, G$)
 as well as the pair annihilation processes of Normal Matter/Antimatter ($p^+ p^-, e^+ e^-$)

Part 1:

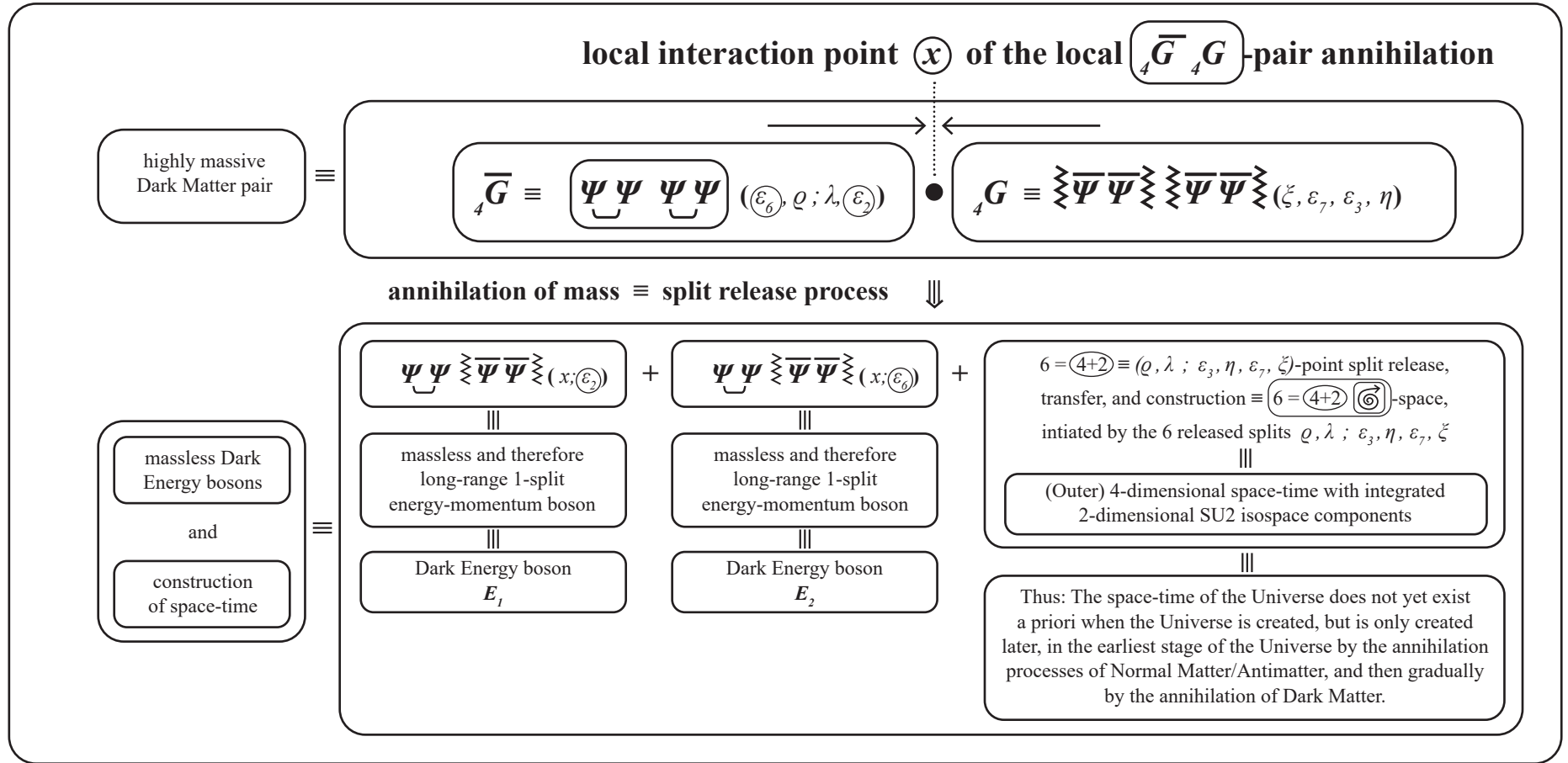
Annihilation of Dark Matter: The annihilation processes of Dark Matter and conversely the creation of Dark Energy with the coupled creation of expanding 4-dimensional space-time elementary strutures



(KP6)

XII.9.

Thus

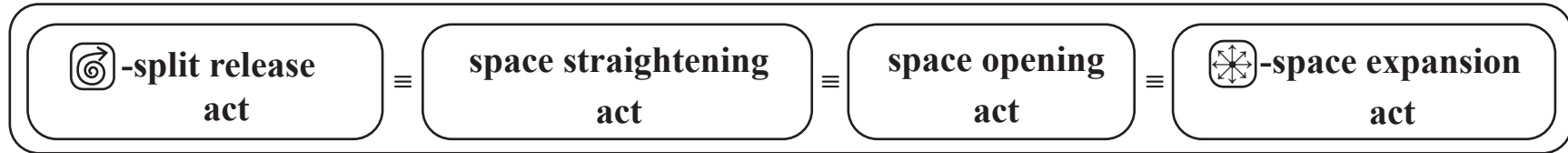


ⓀⓅ6

XII.12.

From XII.12., it follows that: The local interaction point $(x = \bullet)$ of the $(\bar{G}_4^+ G_4^-)$ -pair annihilation is “straightened out” by the expanding (4+2)-split release (⌚) – due to the annihilation of mass – or in other words “opened up”. Thus: Starting from the local interaction point $(x = \bullet)$, due to the (⌚) -split release from the annihilation processes XII.12., the following happens:

XII.13.



In VI.3.2., it was shown that point curvature is created by (split clustering processes with split densities (≥ 2)), and that this point curvature creates mass, and therefore the curvature of space is related to mass. If we symbolically write (split clustering $\equiv$ point curvature) as (⌚) , and the inverse act, namely (split release $\equiv$ point straightening), as (⌚) , then we see that:

XII.14.

- mass is generated at the mass point $\odot$ by (split densities (≥ 2)), i.e. (⌚) , and
- 4-dimensional space-time structure entities are created by (split releases (≥ 4)), i.e. (⌚) .

It follows that:

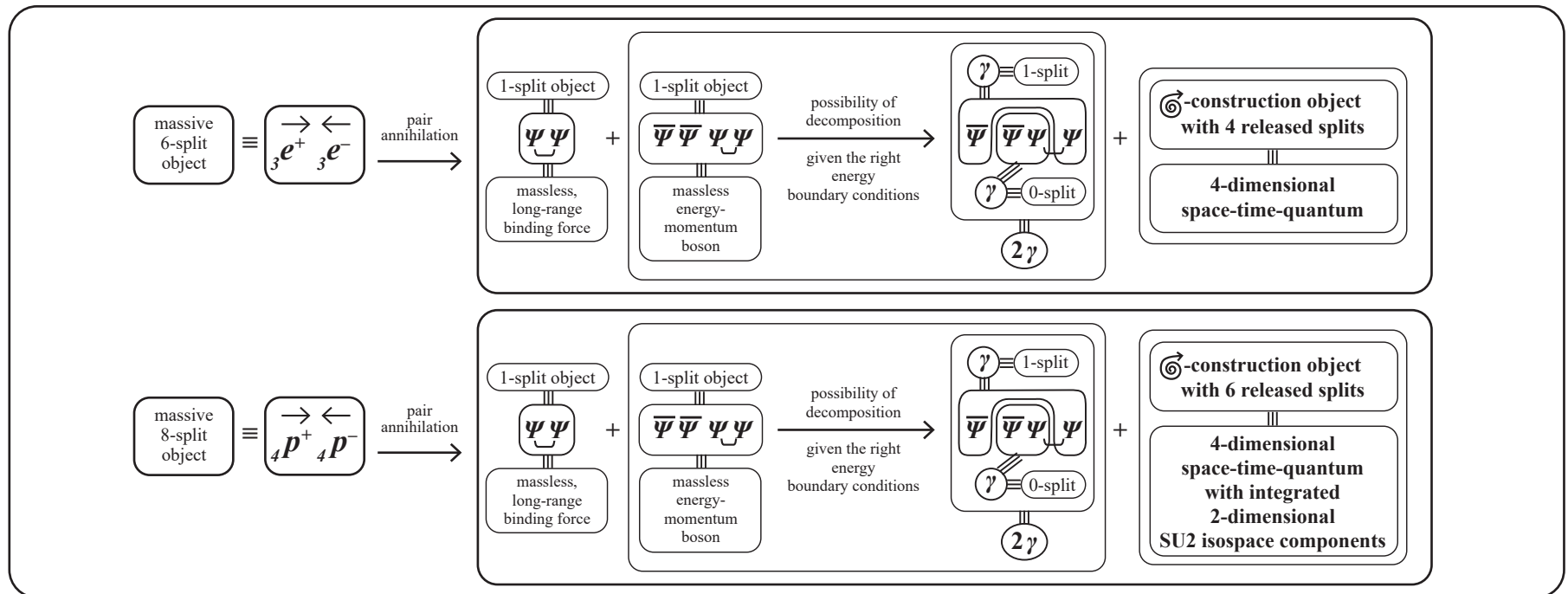
XII.15.

- space curvature $\equiv (\text{⌚}) \equiv \text{mass constr.} \equiv \text{clustering of space} \equiv \text{coupled with the construction of Normal Matter/Antimatter particles and Dark Matter particles}$
- space straightening $\equiv (\text{⌚}) \equiv \text{mass deconstr.} \equiv \text{constr. of expanding space} \equiv \text{coupled with the creation of massless Dark Energy bosons}$

Part 2:

The annihilation processes of Normal Matter/Antimatter and conversely the creation processes of energy-momentum bosons with the coupled creation of expanding 4-dimensional space-time elementary structure entities Annihilation of Normal Matter/Antimatter: Similar processes unfold within the Normal Matter/Antimatter segment.

By ⓀⓂ.28, more Normal Matter formed than Antimatter during the Big Bang. Since, at the time, the “freshly” formed Universe directly after the Big Bang, i.e. directly after the (Big Bang phase (see ⓀⓂ.23, $\equiv$ creation phase)), was a most extremely compact and most extremely massive “smallest possible structure” (some sources estimate that it was only ~ 10 cm in size), the Normal Matter/Antimatter pairs $(e^+ e^-)$ and $(p^+ p^-)$ were densely packed together, which necessarily led to the well-known pair annihilation processes ⓀⓂ.29.



The composition of the Universe as of „Today“ consists of the following 3-part breakdown (see **XII.42.**):

Dark Matter								
Component ①≡ 66.6 %	Inner-Structural Particle Composition		by V.,VI.	Mass/Charge	Force Structure	Range	Found?	
neutrino ₁ (ν ₁)	≡	ΨΨΨ (ε₉, ε₈)	≡ 2-split fermion	⇒	massive (mass ≠ 0)		yes	
neutrino ₂ (ν ₂)	≡	ΨΨΨ (ε₄, ε₃)	≡ 2-split fermion	⇒	massive (mass ≠ 0)		yes	
neutrino ₃ (ν ₃)	≡	ΨΨΨ (ε₁)	≡ 1-split fermion	⇒	massless		yes	
anti-gravitational boson (Ḡ)	≡	ΨΨ □ ΨΨ (ε₆, ρ; λ, ε₂)	≡ 4-split boson	⇒	extremely high mass, charged with anti-gravitational elementary charge q̄ _θ	most extremely strongly repulsive	10 ⁻¹⁷ cm	not yet
repulsive boson (R _θ)	≡	Ψ □ Ψ (0)	≡ 0-split boson	⇒	massless	repulsive	long	not yet
gravitational boson (G)	≡	Ψ̄ΨΨ̄ □ Ψ̄ΨΨ̄ (ζ, ε₇, ε₃, η)	≡ 4-split boson	⇒	massive, charged with gravitational charge q _θ with (q̄ _θ + q _θ)= 0	most extremely weakly attractive	10 ⁻¹⁵ cm	not yet
as well as the end products created from the annihilation of (Ḡ, G), including the split release products thus created, and the Dark Energy created from these and other annihilation processes with coupled 4-dimensional space-time structure								not yet

Normal Matter/Antimatter								
Component ②≡ 33.3 %	Inner-Structural Particle Composition			by V.,VI.	Mass/Charge	Force Structure	Range	Found?
proton (antiproton*) $(p^+)(\overline{p}) =$	$\boxed{\overline{\Psi}\Psi\overline{\Psi}}$ $(\varepsilon_9, \zeta, \varrho, \varepsilon_8)$	$\equiv$ 4-split fermion	$\Rightarrow$	higher mass, charge $\oplus(\ominus)$				yes
electron (positron*) $(e^+)(\overline{e}) =$	$\boxed{\overline{\Psi}\Psi\Psi}$ $(\varepsilon_4, \eta, \varepsilon_3)$	$\equiv$ 3-split fermion	$\Rightarrow$	low mass, charge $\ominus(\oplus)$				yes
neutrino $(\nu) =$	$\boxed{\Psi\overline{\Psi}\Psi}$ (ε_1)	$\equiv$ 1-split fermion	$\Rightarrow$	masless				yes
strong force $(St) =$	$\boxed{\Psi\Psi}$ (λ, ε_2)	$\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	strongly attractive	10^{-13} cm	yes	
energy-momentum $(E-I) =$	$\boxed{\overline{\Psi}\Psi\Psi\overline{\Psi}}$ $(\varepsilon_6, \varepsilon_3)$	$\equiv$ 2-split boson	$\Rightarrow$				yes	
partial decomposition into $(\gamma)(Z) \overset{III}{=}$	$\boxed{\overline{\Psi}\Psi}\boxed{\Psi\overline{\Psi}}$ $(\varepsilon_6, \varepsilon_3)$						yes	
electromag. force $(\gamma) =$	$\boxed{\overline{\Psi}\Psi}$ (0 split)	$\equiv$ 0-split boson	$\Rightarrow$	massless	medium strong	long	yes	
weak force $(Z) =$	$\boxed{\Psi\overline{\Psi}}$ $(\varepsilon_6, \varepsilon_3)$	$\equiv$ 2-split boson	$\Rightarrow$	massive, uncharged	weak	10^{-15} cm	yes	
gravitation $(G) =$	$\boxed{\overline{\Psi}\overline{\Psi}\overline{\Psi}}\boxed{\overline{\Psi}\overline{\Psi}\overline{\Psi}}$ (ε_7)	$\equiv$ 1-split boson	$\Rightarrow$	massless	most extremely weakly attractive	long	yes	
as well as the annihilation end products ((e^+ , e^- , p^+ , p^-)), see XI.29.								yes

Dark Energy with the coupled construction of expanding 4-dimensional space-time (space-time-quantum)							
Component③≡ 68.3 %	Inner-Structural Particle Composition		by V.,VI.	Mass/Charge	Force Structure	Range	Found?
of which 28.5 % proportion:							
Dark Energy Boson (E_1) created from the annihilation of a 28.5 % proportion of Matter/Antimatter (see XII.17.)	$\overline{\Psi}\overline{\Psi} \quad \underbrace{\Psi\Psi}_{(1-Split)}$	≡ 1-split boson	$\Rightarrow$	massless	expanding with the coupled construction of 4-dimensional space-time	long	not yet
of which 39.8 % proportion:							
Dark Energy Boson (E_2) created from the annihilation of a 39.8 % proportion of Matter/Antimatter (see XII.12.)	$\underbrace{\overline{\Psi}\overline{\Psi}}_{\overline{\Psi}\overline{\Psi}} \quad \underbrace{\Psi\Psi}_{(1-Split)}$	≡ 1-split boson	$\Rightarrow$	massless	expanding with the coupled construction of 4-dimensional space-time	long	not yet

Conclusion:

It is the goal of the present paper UC-6 to summarize the overall aspect of the Universe starting from the beginning to the present day and to present all actions of the Universe in a closed form „at a glance“.

In addition:

- **Firstly, in Part A of this paper UC-6, the complete list of all elementary particles existing and ever existing in the entire Universe (including their respective physical properties) is developed, analysed and presented in all details and in a closed form, as described in the extensive main paper UC-AOS.**
- **Secondly, in part B of this paper UC-6, the complete process chain and causal structure of the overall Universe is arranged separately and in a closed form, as developed and analysed in detail in the extensive main paper UC-AOS.**

With UC-6, the ambitious goal of conceiving the entire Universe, from its beginnings to the present day in all its fundamental structures, structural components, forces and dynamic systems of organization – both, at small scale and at large scale – has come closer.

And now to the final remark:

The declaration of completeness explicitly mentioned in the title of the present paper UC-6 is justified and based on the complete derivation of all elementary particles from the Universe Code Ψ -19 and on the causal chaining of the respective Universe processes

- before the Big Bang**
- the Big Bang**
- after the Big Bang until today.**

The title of the paper may sound provocative to some extent due to the claim of completeness. It is not meant to be provocative, but merely describes what has been derived from the Universe Code Ψ -19, as has been developed, presented and analysed in full detail in the paper UC-AOS. As a consequence, the Universe and everything existing in the Universe must derive from one and the same Universe Code.

Anything else would be surprising and ultimately not well-conceived.

With all these processes and causal relations, the physical Universe has its origin in the force boson ${}_5\overline{G}$, which has first emerged in the Primordial Universe before the Big Bang and whose inner particle structure and excessive point-split density (5 point splits) (see B, KP3) inherently contained the so called rupture process.

In other words:

Because of this instability (rupture process) of the elementary boson ${}_5\overline{G}$ of the Primordial Universe – and only due to this instability – the Big Bang process has taken place (see B, KP3 and KP4), followed by the episode right after the Big Bang, that is the construction of the Universe and the detailed Universe Formation ($\frac{2}{3}$ Dark Matter, $\frac{1}{3}$ Normal Matter / Antimatter), which, in the further course of the events, has led to all the other Universe development processes (see B, KP5 and KP6).

Conclusion:

If the force first ever existing boson ${}_5\overline{G}$ which had emerged in the Primordial Universe had not been unstable, the Primordial Universe would have remained a massive „thick point“ of about 10^{-14} cm, and nothing else would have happened. But ${}_5\overline{G} \equiv \boxed{\underbrace{\Psi\Psi} \quad \underbrace{\Psi\Psi}} (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon) \equiv \textcircled{5\text{-split}}$ boson was unstable due to the high point-split density of 5 point-splits.

Consequently, the Universe, as we know it, would not have arisen at all, and all that we know about the Universe would not have happened at all:

Thus, there would have been no Big Bang, no Dark Matter, no Normal Matter / Antimatter, no Dark Energy with coupled 4-dimensional space-time structure. But all that existed and exists.

That means: The reason of everything that ever existed and still exists in the Universe is that at the very beginning of the Primordial Universe – even before the Big Bang – the unstable elementary boson ${}_5\overline{G}$ of the Primordial Universe (force boson) had evolved, which in turn inevitably broke because of its inner particle structure (point-split density 5) (see B, KP3).

So, due to this single rupture process of this single force boson of the elementary particle set (6 particles: $\nu_1, \nu_2, \nu_3; {}_5\overline{G}, {}_2R, {}_3G$), of the Primordial Universe, see A.1., at the very beginning of the creation of the Universe, all other events of the Universe have found their historical beginning, followed by all the processes (Big Bang, Universe construction and development) described in the present paper UC-6 as well as in full detail in the main paper UC-AOS.

THE END