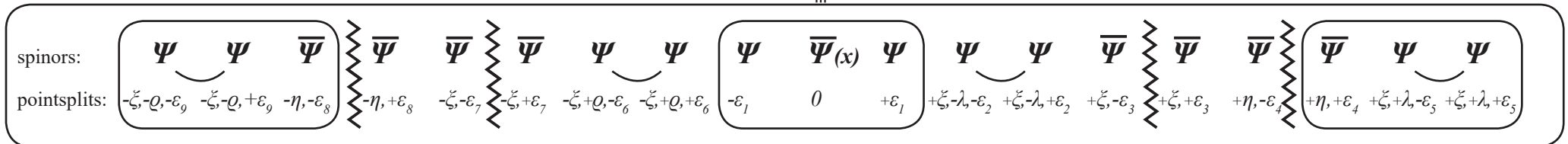# Norbert Winter

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**

$$\left[D^{(13)}_{\sigma_{13}} \Psi(x) \right]_{\xi\cup} \equiv \Psi^{(19)}_{\xi\cup}(x,\sigma_{13}) \equiv \Psi^{(19)}_{\xi\cup}(x) \equiv \Psi\text{-}19$$

spinors:	Ψ	Ψ	$\overline{\Psi}$	$\overline{\Psi}$	$\overline{\Psi}$	$\overline{\Psi}$	Ψ	Ψ	Ψ	$\overline{\Psi}_{(x)}$	Ψ	Ψ	Ψ	$\overline{\Psi}$	$\overline{\Psi}$	$\overline{\Psi}$	$\overline{\Psi}$	Ψ	Ψ
pointsplits:	$-\xi,-\varrho,-\varepsilon_9$	$-\xi,-\varrho,+\varepsilon_9$	$-\eta,-\varepsilon_8$	$-\eta,+\varepsilon_8$	$-\xi,-\varepsilon_7$	$-\xi,+\varepsilon_7$	$-\xi,+\varrho,-\varepsilon_6$	$-\xi,+\varrho,+\varepsilon_6$	$-\varepsilon_1$	0	$+\varepsilon_1$	$+\xi,-\lambda,-\varepsilon_2$	$+\xi,-\lambda,+\varepsilon_2$	$+\xi,-\varepsilon_3$	$+\xi,+\varepsilon_3$	$+\eta,-\varepsilon_4$	$+\eta,+\varepsilon_4$	$+\xi,+\lambda,-\varepsilon_5$	$+\xi,+\lambda,+\varepsilon_5$

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 $_5G$) 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 = $\left(p^+, e^-, v \; ; St, \; \gamma, Z, G \right) \equiv$ 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"

Preface:

After publication of the paper

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

$\equiv$ 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.

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**:

> **UC-1** (02/16/2018)
> **UC-2** (02/16/2018)
> **UC-3** (02/16/2018)
> **UC-4** (02/16/2018)
> **UC-5** (02/16/2018)

Following UC-1, we continue with the paper UC-2:

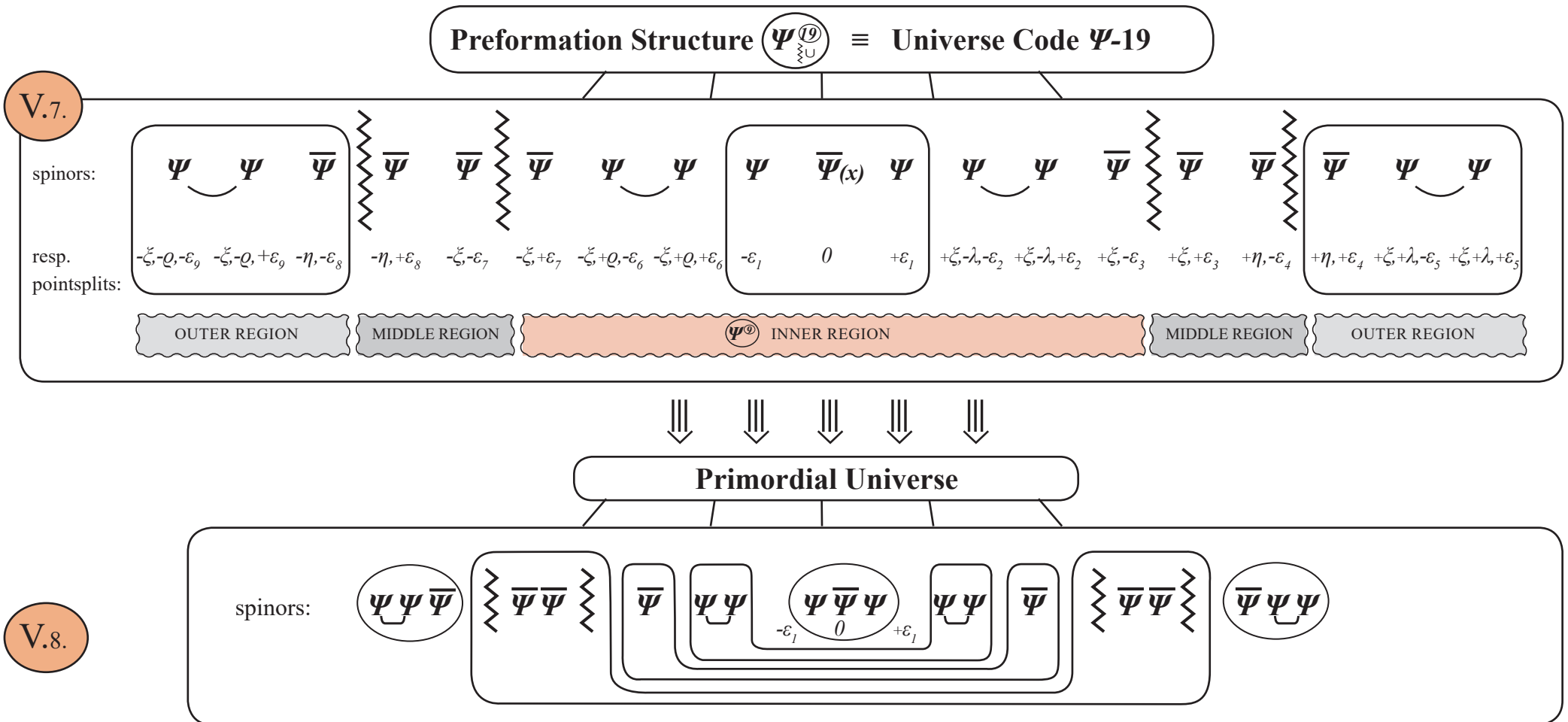The present work „**UC-2**" refers to the work UC-AOS.
Therefore, the numerical references used in the following text refer to the numerical representation of the paper UC-AOS.

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.

Initial situation:

In UC-1 it has been shown:

- how the Universe Code $\boldsymbol{\Psi}$-19 emerges from the fundamental dynamic I.1., I.2., I.3.
- how $\boldsymbol{\Psi}$-19 is structured and
- why the first ever manifestation of reality (primordial universe before the Big Bang) is structurally defined by $\boldsymbol{\Psi}$-19

Preformation Structure $\left(\boldsymbol{\Psi}_{\gtrless U}^{⑲}\right)$ ≡ Universe Code $\boldsymbol{\Psi}$-19

V.7.

spinors:

$\Psi \quad \Psi \quad \overline{\Psi} \quad \gtrless \overline{\Psi} \quad \overline{\Psi} \gtrless \overline{\Psi} \quad \Psi \quad \Psi \quad \Psi \quad \overline{\Psi}_{(x)} \quad \Psi \quad \Psi \quad \Psi \quad \overline{\Psi} \gtrless \overline{\Psi} \quad \overline{\Psi} \gtrless \overline{\Psi} \quad \Psi \quad \Psi$

resp. pointsplits:

$-\xi,-\varrho,-\varepsilon_9 \quad -\xi,-\varrho,+\varepsilon_9 \quad -\eta,-\varepsilon_8 \quad -\eta,+\varepsilon_8 \quad -\xi,-\varepsilon_7 \quad -\xi,+\varepsilon_7 \quad -\xi,+\varrho,-\varepsilon_6 \quad -\xi,+\varrho,+\varepsilon_6 \quad -\varepsilon_1 \quad 0 \quad +\varepsilon_1 \quad +\xi,-\lambda,-\varepsilon_2 \quad +\xi,-\lambda,+\varepsilon_2 \quad +\xi,-\varepsilon_3 \quad +\xi,+\varepsilon_3 \quad +\eta,-\varepsilon_4 \quad +\eta,+\varepsilon_4 \quad +\xi,+\lambda,-\varepsilon_5 \quad +\xi,+\lambda,+\varepsilon_5$

OUTER REGION | MIDDLE REGION | $\Psi^{⑲}$ INNER REGION | MIDDLE REGION | OUTER REGION

Primordial Universe

V.8.

spinors:

$\Psi\Psi\overline{\Psi} \quad \gtrless \overline{\Psi}\,\overline{\Psi} \gtrless \quad \overline{\Psi} \quad \Psi\Psi \quad \Psi\overline{\Psi}\Psi \quad \Psi\Psi \quad \overline{\Psi} \quad \gtrless \overline{\Psi}\,\overline{\Psi} \gtrless \quad \overline{\Psi}\Psi\Psi$

$-\varepsilon_1 \quad 0 \quad +\varepsilon_1$

6

Based on this, the present paper UC-2 shows how the primordial universe preceding the Big Bang has emerged along with all its matter and force manifestations and why it inevitably led to the Big Bang within all the events of the universe:

The Primordial Universe develops according to the construction process (III.1.) to (III.4.), from the inside outwards around the central origin of interactio(x), via the formation of the dynamically generated point split (σ_{13}) (see (III.4.)), i.e. in the point split-separated neighbourhood (x, σ_{13}) of the preformation structure $\left(\Psi_{\xi\cup}^{(19)}(x, \sigma_{13})\right)$, namely:

(V.9.)
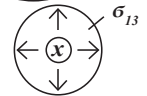
> Initiated by the construction process, which unfolds from the inside outwards, the point split distribution during the first creation process of the Universe is arranged maximally inwards, i.e. concentrated on the inner region $(\Psi^{(9)})$ in (V.1.), (V.2.) as much as possible.
> Thus: The middle region ($\equiv G$) is only acted upon by point splits that exist outside of core region $(\Psi^{(9)})$ in (V.2.). Similarly, the outer region is only acted upon by point splits that exist outside of the middle region.
> Whenever a point split σ^v, $v= 1, ..., 13$, is used to form a formation entity in (V.8.) by participating in the construction of the inner structure (the point split density) of this formation entity, it then becomes unavailable for the construction of other formation entities.
> This means: In the creation process and the formation of the Primordial Universe, there is the following point split process sequence:
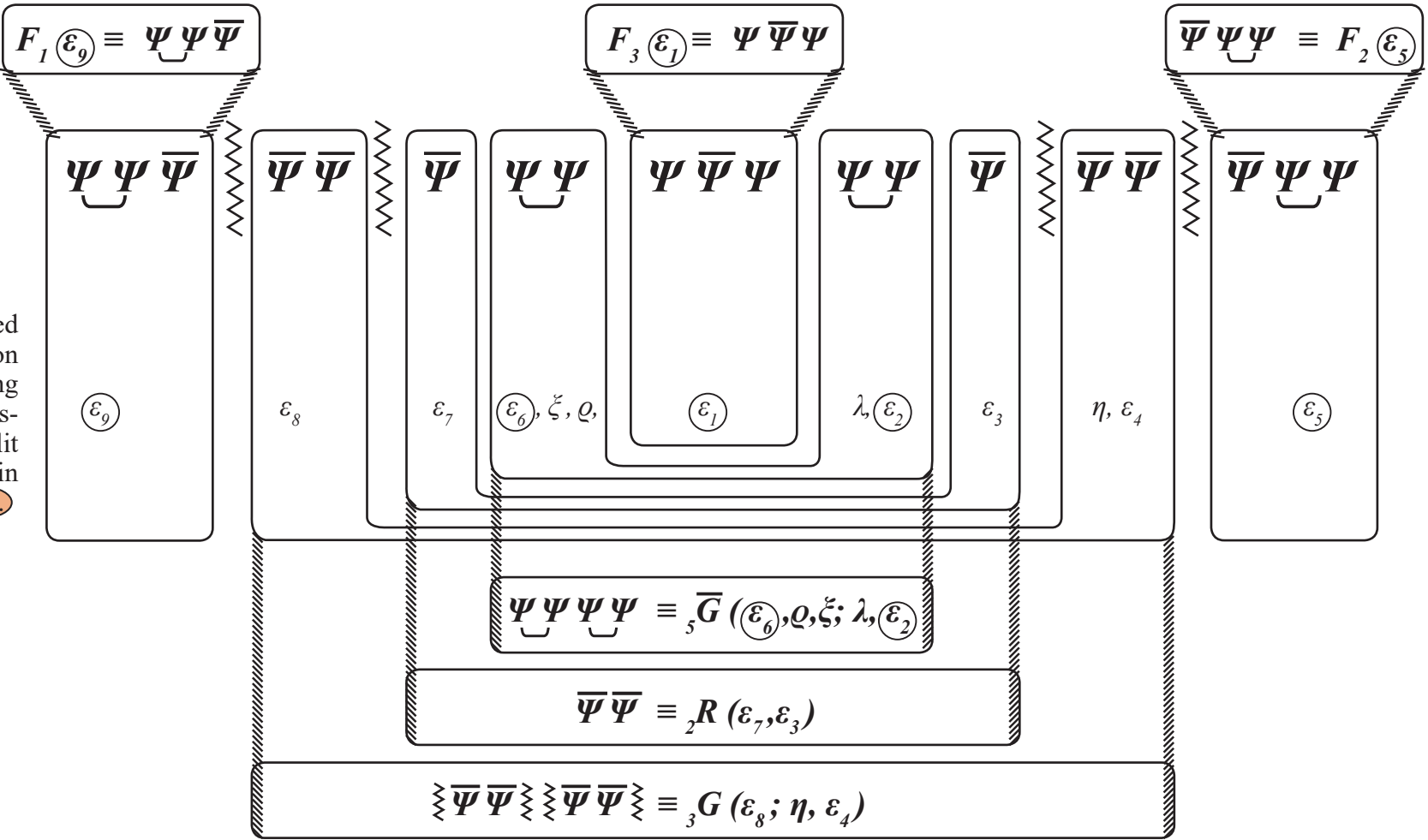>
> > Maximization of the point split distribution, as much as possible, towards the inner region $(\Psi^{(9)})$ in (V.7.). Thus, the formation entities of the Primordial Universe (V.8.) have the point split distributions:

With

$$
\begin{array}{ll}
F_1, F_2 & \equiv \text{ structurally determined by the preformation structure } \boxed{V.7.} \\
F_3 & \equiv \text{ structurally determined by the minimality principle } \boxed{I.2.1.} \\
{}_5\overline{G} & \equiv \text{ structurally determined by the identity principle } \boxed{I.5.} \\
{}_3G & \equiv \text{ structurally determined by the identity principle } \boxed{I.5.} \\
{}_2R & \equiv \text{ structurally determined by what remains}
\end{array}
$$

the formation entities of the first ever formation, or in other words the individual fermion and boson entities of the Primordial Universe, are as follows, assuming an inwards-maximized point split distribution, thus determining the structure of the Primordial Universe, before the Big Bang, 13.8 billion years ago:

$\boxed{V.11.}$

Fermions:	$F_1(\varepsilon_9); F_2(\varepsilon_5); F_3(\varepsilon_1)$	$\equiv$ **all**	$\boxed{\text{1-point split}}$ **object**
Bosons:	${}_5\overline{G}\,(\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)$	$\equiv$	$\boxed{\text{5-point split}}$ **object**
	${}_2R\,(\varepsilon_7, \varepsilon_3)$	$\equiv$	$\boxed{\text{2-point split}}$ **object**
	${}_3G\,(\varepsilon_8; \eta, \varepsilon_4)$	$\equiv$	$\boxed{\text{3-point split}}$ **object**

,

where the symbols of the bosons $\overline{G}, R, G$ are chosen to reflect their most fundamental properties $\boxed{V.5.}$:

$$
\begin{array}{llll}
\overline{G} \equiv & \Psi\ \Psi\ \Psi\ \Psi & \equiv \text{ repulsive} & \equiv \text{ „anti-gravitation“} \\
R \equiv & \overline{\Psi}\ \overline{\Psi} & \equiv \text{ repulsive} & \equiv \text{ „repulsion“} \\
G \equiv & \overline{\Psi}\ \overline{\Psi}\ \overline{\Psi}\ \overline{\Psi} & \equiv \text{ attractive} & \equiv \text{ „gravitation“,}
\end{array}
$$

with reference to our current concept of "gravitation".

The creation of mass and charge from the dynamically generated point split densities of each formation entity. Mass and charge as dynamically formed physical system quantities:

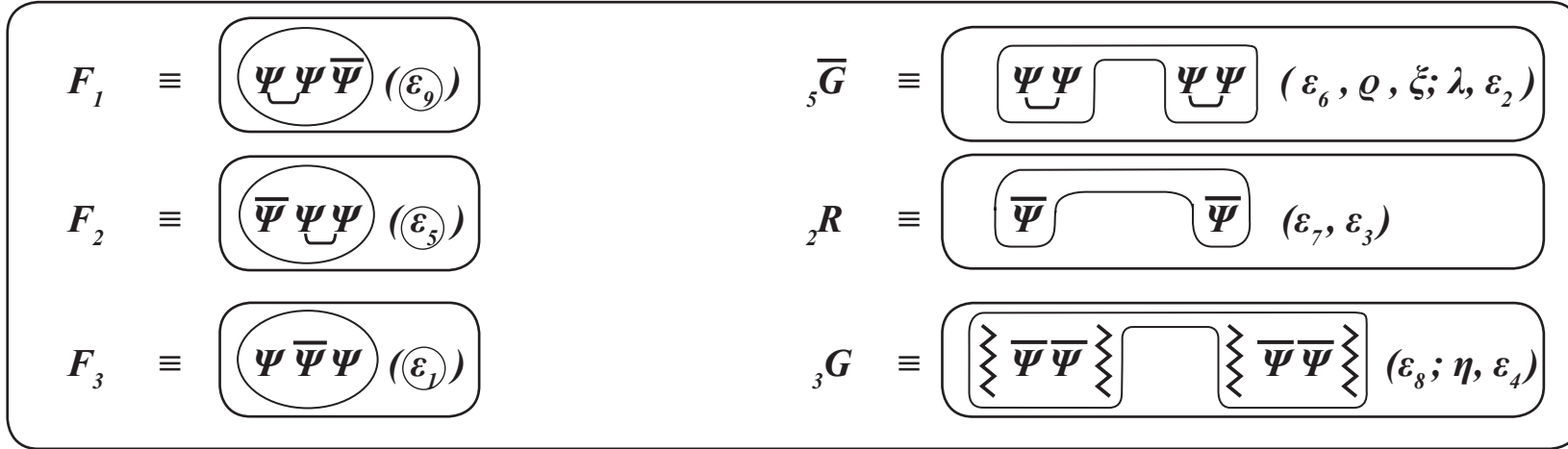massless ≡ point split density 0 or 1; mass ≠ 0 ≡ point split density 2 or more; charge ≠ 0 ≡ point split density 3 or more

In order to determine the physical properties of the first ever manifestation of reality thus formed ≡ Primordial Universe, we shall examine the point split densities of the formation entities that specifically formed within the Primordial Universe: F_1, F_2, F_3 ; $\overline{G}$, R, G (see V.11.) in order to characterize their physical effects:
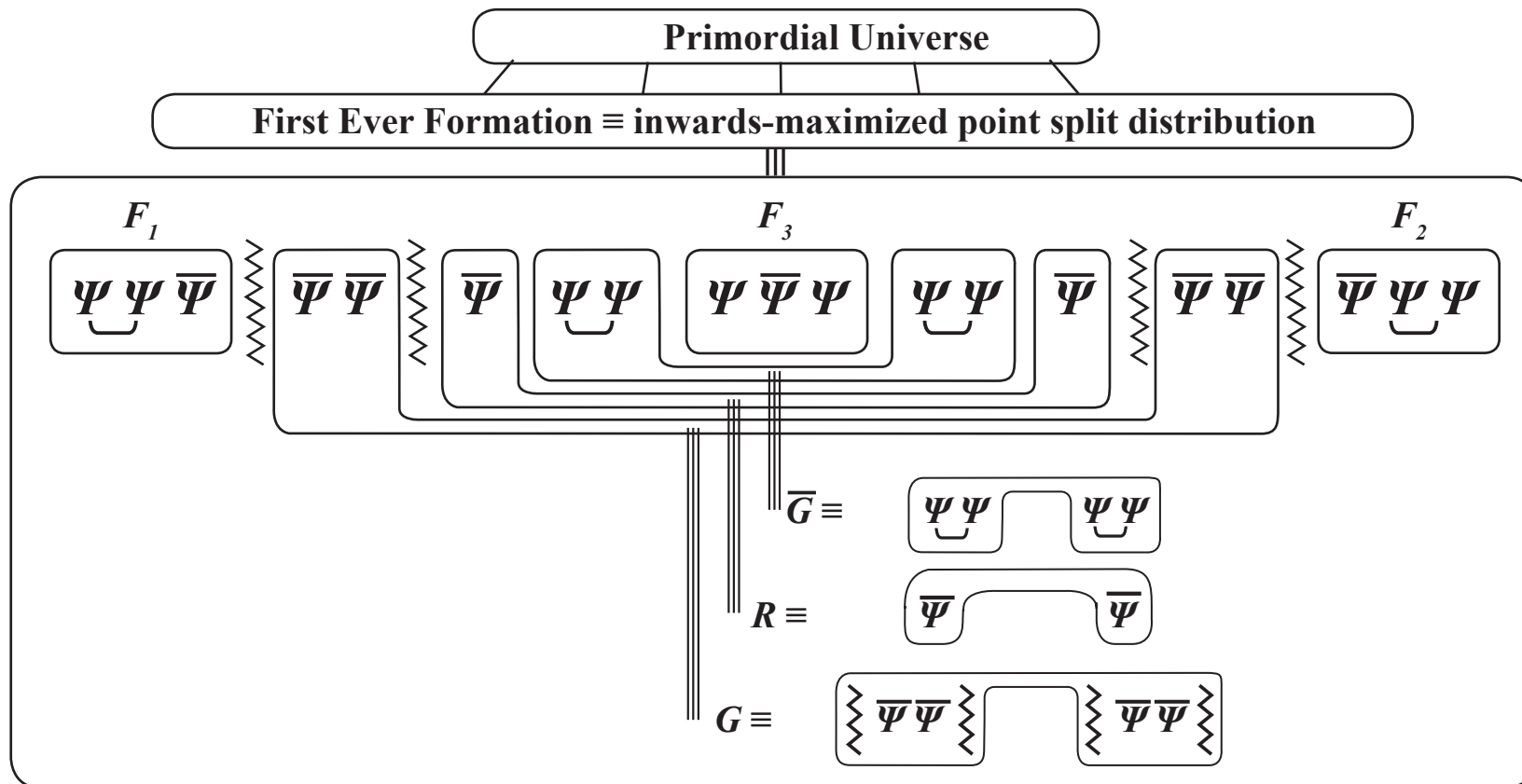
We shall therefore investigate the inner structure of the each of the formation components F_1, F_2, F_3 ; $_5\overline{G}$, $_2R$, $_3G$ of the Primordial Universe:

$$F_1 \equiv \left(\Psi\,\Psi\,\overline{\Psi} \right) (\varepsilon_9)$$

$$F_2 \equiv \left(\overline{\Psi}\,\Psi\,\Psi \right) (\varepsilon_5)$$

$$F_3 \equiv \left(\Psi\,\overline{\Psi}\,\Psi \right) (\varepsilon_1)$$

$$_5\overline{G} \equiv \left[\Psi\,\Psi \quad \Psi\,\Psi \right] (\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)$$

$$_2R \equiv \left[\overline{\Psi} \quad \overline{\Psi} \right] (\varepsilon_7, \varepsilon_3)$$

$$_3G \equiv \left[\overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi} \right] (\varepsilon_8; \eta, \varepsilon_4)$$

VI.2.

where the circle notation (ε_ν), $\nu = 1, 2, 5, 6, 9$ indicates that both the $(+\varepsilon_\nu\text{-split})$ and the corresponding $(-\varepsilon_\nu\text{-split})$ are consumed by particle formation within a given physical formation entity $(F_1, F_2, F_3 ; \overline{G})$

Thus: The following (inner structure elements) form within the formation components $(F_1, F_2, F_3 ; {}_5\overline{G}, {}_2R, {}_3G)$:

● The (inner point split collision density) ≡
   The inner collision density produced by the inner point split densities of each inner basis spinor.

● The (inner point split coherence structure) ≡
   The inner-structural spinor coherence of the inner basis spinors with respect to each other.

This raises the question of the physical meaning of each (inner spinor coherence density) and each (inner point split collision density) (see VI.3.6.).

In this chapter (Chapter VI.), we shall first examine the point split densities in full generality rather than restricting ourselves to the special case of the Primordial Universe, so that our conclusions are valid for all subsequent events of the Universe, in every phase of the Universe:

Before analysing the formation of each particle, we shall investigate the structural properties of the point split densities at the local point x ($x \pm \sigma$, $\sigma \to 0$):

VI.3.

point split densities:

VI.3.1.

- **0 or 1-split particles ≡ <u>massless particles</u> :**

  0 or 1 split do not influence the structure of space-time during particle formation – as can immediately be seen:

  1 split

  Hence: Spinor sets of $\Psi^{(n)}$ with 1 split can reach the local point x unimpeded as $\sigma \to 0$ (i.e. during the particle formation process):

  Hence: Particles with split densities of 0 or 1 splits are massless and therefore also chargeless, since they do not influence the structure of space-time.

- **2-split particles** ≡ <u>**particles with mass $\neq 0$**</u> :

2 splits influence the structure of space-time during particle formation:

$$\sigma_1 \qquad\qquad \sigma_2 \qquad\qquad \text{with} \qquad \sigma_1 \to 0 \ \text{ and } \ \sigma_2 \to 0$$

x

Since σ_1 and σ_2 are independent, the 2-split spinor sets interacting within the structure of space-time "collide" with each other (see above) in the neighbourhood of the local point x as $\sigma_1 \to 0$ bzw. $\sigma_2 \to 0$, leading to point curvature around x, and consequently to ≡ creation of mass :
A split density of 2 independent splits creates bending near the local point :

Mass is defined as point curvature, and hence spinor interactions resulting in at least 2 splits create mass by means of the associated curvature of space-time.

Hence: Particles with split density ≥ 2 have mass $\neq 0$

- **3-split particles ≡ <u>formation of charge</u> :**

3 splits influence the structure of space-time

Thus: The presence of 3 independent splits causes the local point x not only to develop curvature, but also to be compressed, and this compression causes the mass created by 2 splits to become denser.

This point compression creates charge, specifically

... $\Psi\overline{\Psi}$ -sequence   ≡   positive charge   (≡ standardized definition of $\oplus$-charge)
... $\overline{\Psi}\Psi$ -sequence   ≡   negative charge   (≡ standardized definition of $\ominus$-charge)

The fact that charge is formed by 3 splits automatically explains why every charged particle has mass, which already formed from the first 2 splits.

VI.3.3.

VI._{3.4.}

- **4-split particles ≡ <u>charge and mass</u>** :

With 4 splits , the 3-split state (charge) is covered with an additional layer of mass as a result of the more complex 4-split density.

Thus: 4-split particles have higher mass than the corresponding 3-split particles.
This explains why the mass of the proton (4-split particle) is greater than
the mass of the electron (3-split particle) .

VI._{3.5.}

- **5-split particles ≡ <u>charge and mass</u>** :

Particles that ultimately contain more than 4 point splits and which are inner-structurally composed of ≤ 3 basis spinors are ꜰʀᴀɢɪʟᴇ due to their high split density,
i.e. they cannot exist as "stable" elementary particles .

The 4-basis-spinor, 5-point-split particle $_5\overline{G}$ ≡ $\Psi\Psi$ $\Psi\Psi$ $(\varepsilon_6), \varrho, \xi; \lambda, (\varepsilon_2))$ see V.10. ,

i.e. the first particle ever created in the Primordial Universe, from within which the construction of the Universe began, is analysed in Chapter VIII. in full detail together with all of its consequences.

Inner spinor coherence density and inner point split collision density

The stronger the split density collisions between the inner basis spinors of an elementary particle, the greater the mass of that elementary particle.

The intensity of the split density collisions between the inner basis spinors depends on 2 other criteria:

① The inner basis spinor number of the elementary particle ,
i.e. how many basis spinors compose that elementary particle,
i.e. whether there it has 2 or 3 or 4 basis spinors, and thus whether the collision of split densities is distributed over 2 or 3 or 4 basis components of the elementary particle.
Thus: If more basis components (basis spinors) are available, the collision space is larger, and so the point split collision density is smaller, i.e. the mass of the elementary particle is smaller.

② The inner coherence of the elementary particle ,
i.e. the inner-structural composition of the elementary particle,
i.e. whether there are inner-structural binding elements „∪" or separation element „⧘"
within the inner structure of the elementary particle:
„∪"-binding elements increase the inner coherence and therefore increase the mass.
„⧘"-separation elements decrease the inner coherence and therefore decrease the mass.

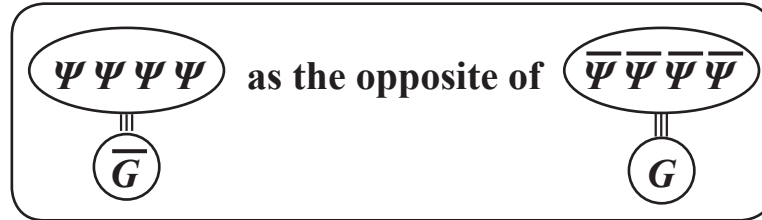**This determines the composition of each individual elementary particle :**

VI.3.6.

And one final fundamental remark:

VI._{4.}

By ⬤V.**10.** , ⬤V.**11.**, the Primordial Universe has (two and only two)(≥ 3)-split particles, namely:

$$\left(\,_5\overline{G}\,\right) \equiv \boxed{\Psi\,\Psi \quad \Psi\,\Psi} \equiv \text{5-split object} \quad \text{and} \quad \left(\,_3G\,\right) \equiv \boxed{\overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi}} \equiv \text{3-split object}$$

with opposite spinor configurations: $\boxed{\Psi\,\Psi\,\Psi\,\Psi \overset{}{\underset{\overline{G}}{}} \text{ as the opposite of } \overline{\Psi}\,\overline{\Psi}\,\overline{\Psi}\,\overline{\Psi} \overset{}{\underset{G}{}}}$.

Thus, the charge $\overline{q}_0$ of the (5-split particle $\equiv\,_5\overline{G}$) is the opposite of the charge q_0 of the (3-split particle $\equiv\,_3G$), so that the charge of the total system ($\overline{q}_0 + q_0 = 0$), i.e.: $\overline{q}_0 = -q_0$, (which in this case is the Primordial Universe) is neutral, as must necessarily be the case.

VI._{5.}

Hence: In the Primordial Universe, there only existed one elementary charge $|\,q_0\,|$, which takes 2 opposite values, which we may refer to as the gravitational elementary charge, and which takes the value $\overline{q}_0$ for the force boson $_5\overline{G}$ and q_0 for the force boson $_3G$, which, after the Big Bang, due to the particle formation point split stabilization process (see ⬤XI.26.6. $\Rrightarrow$ ⬤XI.26.7.), reforms as $\overline{q}_0$ and q_0 in the appropriately renormalized Dark Matter particles $_4\overline{G}$ and $_4G$.

This $\boxed{\text{elementary gravitational charge } q_0}$ is therefore the $\boxed{\text{primordial elementary charge}}$ that formed in the Primordial Universe, before the Big Bang, i.e. the charge that forms in particles with a $\boxed{\geq 3\text{-split structure}}$, due to the $\boxed{\text{point split penetration process}}$ presented in **VI.3.3.**

This means:

VI.6.

For the elementary gravitational charge, by **VI.4.** :

$$\boxed{\overline{q}_0 + q_0 = 0}$$

but this also means that:

$$\boxed{\overline{q}_0 \text{ and } q_0 \text{ have the same charge magnitude } |q_0|}\,,$$

which again in turn implies that:
Since the only elementary particles that exist in the elementary particle set **V.10.** of the Primordial Universe are ${}_5\overline{G}$ and ${}_3G$, and no other charge formations exist:

$$\boxed{\underline{\text{The elementary gravitational charge } |q_0| \text{ is quantized.}}}$$

This quantized magnitude $|q_0|$ implies that the elementary particle set **V.10.** of the Primordial Universe is neutral.

This is a separate concept from the elementary charge of Normal Matter $p^{\oplus}$ and $e^{\ominus}$, which only forms after the Big Bang, during the creation of Normal Matter (see Chapters **IX.** , **X.** , **XI.** and in particular **XI.23.**) as "electric charge" when the corresponding electromagnetic interaction forms together with its force boson γ.

The primordial universe as the first-existing formation of the universe, its structure of forces and particles and its inherent coding of the Big Bang by the massive (short-ranged) repulsive anti-gravitational force boson $\overline{G}$.

The following 6 individual formation components of the Primordial Universe form according to (V.10.) and (VI.2.) from the preformation structure (V.1.) – which was system-intrinsically constructed as described in (I.) → (V.):

(VII.1.)

The 3 most elementary fermions:

by VI.3.1.
↓

$F_1\,(\varepsilon_9)$ ≡ $(\Psi\,\Psi\,\overline{\Psi})\,(\varepsilon_9)$ ≡ (1-split) object ≡ **massless** ≡ **named:** (neutrino$_1$) ≡ (v_1)

$F_2\,(\varepsilon_5)$ ≡ $(\overline{\Psi}\,\Psi\,\Psi)\,(\varepsilon_5)$ ≡ (1-split) object ≡ **massless** ≡ **named:** (neutrino$_2$) ≡ (v_2)

$F_3\,(\varepsilon_1)$ ≡ $(\Psi\,\overline{\Psi}\,\Psi)\,(\varepsilon_1)$ ≡ (1-split) object ≡ **massless** ≡ **named:** (neutrino$_3$) ≡ (v_3)

The 3 most elementary bosons:

by V.6., VI.3.
↓

$_5\overline{G}\,(\varepsilon_6,\,\varrho\,,\,\xi;\,\lambda,\,\varepsilon_2)$ ≡ $\Psi\,\Psi \quad \Psi\,\Psi\,(\varepsilon_6,\,\varrho\,,\,\xi;\,\lambda,\,\varepsilon_2)$ ≡ (5-split) object ≡ **massive, strongly repulsive**
≡ **named:** (anti-gravitational force)

$_2R\,(\varepsilon_7,\,\varepsilon_3)$ ≡ $\overline{\Psi} \quad \overline{\Psi}\,(\varepsilon_7,\,\varepsilon_3)$ ≡ (2-split) object ≡ **massive, repulsive**
≡ **named:** (repulsion force)

$_3G\,(\varepsilon_8;\,\eta,\,\varepsilon_4)$ ≡ $\overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi}\,(\varepsilon_8;\,\eta,\,\varepsilon_4)$ ≡ (3-split) object ≡ **massive, weakly attractive**
≡ **named:** (gravitational force), not yet the
long-range (1-split) gravitational force G_1

Thus, the properties of the force action of each of the most elementary bosons $\overline{G}, R, G$ are already predetermined by the most (**fundamental structuring act** (**I.8.**), (**IV.5.**), (**V.6.**)) that precedes everything else, i.e. pre-established in the structure of all subsequent events, see in particular Chapters (**IV.**), (**V.**).

This means that:

The Primordial Universe formation ((**V.3.**), (**V.4.**), (**V.6.**), (**V.7.**), (**V.8.**), (**V.10.**)) is the first ever formation and therefore, by the minimality principle (**I.0.3.**), , the simplest possible formation that can be constructed from the preformation structure (**V.1.**). Physically, this follows from the fact that the spinors $\overline{\Psi}, \Psi$ – because of the dynamic (**I.1.**), (**I.2.**), (**I.3.**) – are all 4-component spinors (see (**I.2.2.**)), and must manifest this (4-componentness) physically – subject to the minimality principle (**I.0.**) – by forming

$$\boxed{\Psi\ \Psi\ \Psi\ \Psi} \quad \text{and} \quad \boxed{\overline{\Psi}\ \overline{\Psi}\ \overline{\Psi}\ \overline{\Psi}}\text{-formations in accordance with}(\text{V.4.})$$

concretely manifesting the 4-componentness of $\overline{\Psi}$ and Ψ predetermined by (**I.1.**), (**I.2.**), (**I.3.**) in reality.

Thus, (the preformation structure **V.1.**) necessarily and unequivocally develops into the following formations by means of the (first creation act):

$$\overline{G} \quad \equiv \quad \boxed{\Psi\,\Psi \quad\frown\quad \Psi\,\Psi} \qquad \text{as a manifestation of the 4-componentness of } \Psi \text{ in reality}$$

$$R \quad \equiv \quad \boxed{\overline{\Psi} \quad\frown\quad \overline{\Psi}} \qquad \text{(by } \textbf{V.8.}\text{)structural residual configuration in the } \gtrless\Psi^{⑨}\gtrless\text{-region}$$

$$G \quad \equiv \quad \boxed{\gtrless\overline{\Psi}\,\overline{\Psi}\gtrless \,\big|\, \gtrless\overline{\Psi}\,\overline{\Psi}\gtrless} \qquad \text{as a manifestation of the 4-componentness of } \overline{\Psi} \text{ in reality}$$

VII.2.

as the (first individual formation), i.e. (individual components, of the Primordial Universe).
Due to their (inner spinor structure) and the associated modes of action predetermined by the most fundamental structuring act – as described in **V.6.** – the force actions of the bosons $\overline{G}, R, G$ have the following properties (see **V.11.**):

$$\overline{G} \quad \equiv \quad \boxed{\Psi\,\Psi \quad\frown\quad \Psi\,\Psi} \qquad \equiv \text{(repulsive)} \quad \equiv \quad \text{named: } \textbf{anti-gravitational force}$$

$$R \quad \equiv \quad \boxed{\overline{\Psi} \quad\frown\quad \overline{\Psi}} \qquad \equiv \text{(repulsive)} \quad \equiv \quad \text{named: } \textbf{repulsive force}$$

$$G \quad \equiv \quad \boxed{\gtrless\overline{\Psi}\,\overline{\Psi}\gtrless \,\big|\, \gtrless\overline{\Psi}\,\overline{\Psi}\gtrless} \qquad \equiv \text{(attractive)} \quad \equiv \quad \text{named: } \textbf{gravitational force}$$

Thus: The Primordial Universe before the Big Bang consisted of

3 fermions $\equiv$ (**3 massless neutrinos with different inner structures**) **:**

$$v_1 \equiv F_1 \equiv \left(\boxed{\Psi\,\Psi\,\overline{\Psi}}\right)(\varepsilon_9) \qquad v_2 \equiv F_2 \equiv \left(\boxed{\overline{\Psi}\,\Psi\,\Psi}\right)(\varepsilon_5) \qquad v_3 \equiv F_3 \equiv \left(\boxed{\Psi\,\overline{\Psi}\,\Psi}\right)(\varepsilon_1)$$

and:

3 bosons $\equiv$ (**3-force mix**) **:**

$_5\overline{G}$	$\equiv$	most extremely strong, repulsive, absolutely dominant force
$_2R$	$\equiv$	normally strong, repulsive force
$_3G$	$\equiv$	most extremely weak, attractive force

VII.3.

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

$$_5\overline{G} \equiv \boxed{\Psi\,\Psi \quad \Psi\,\Psi} \;(\varepsilon_6\,,\varrho\,,\xi;\lambda,\varepsilon_2) \equiv (\text{repulsive}) \equiv \left(\overline{\overline{m}}\right),\;\overline{q}_0;$$

$\overline{q}_0$ because of the $\Psi\Psi\Psi\Psi$-configuration, $\overline{\overline{m}}$ means extremely high mass (see VI.4.), i.e. most extremely short range $\sim\!10^{-18}$ cm
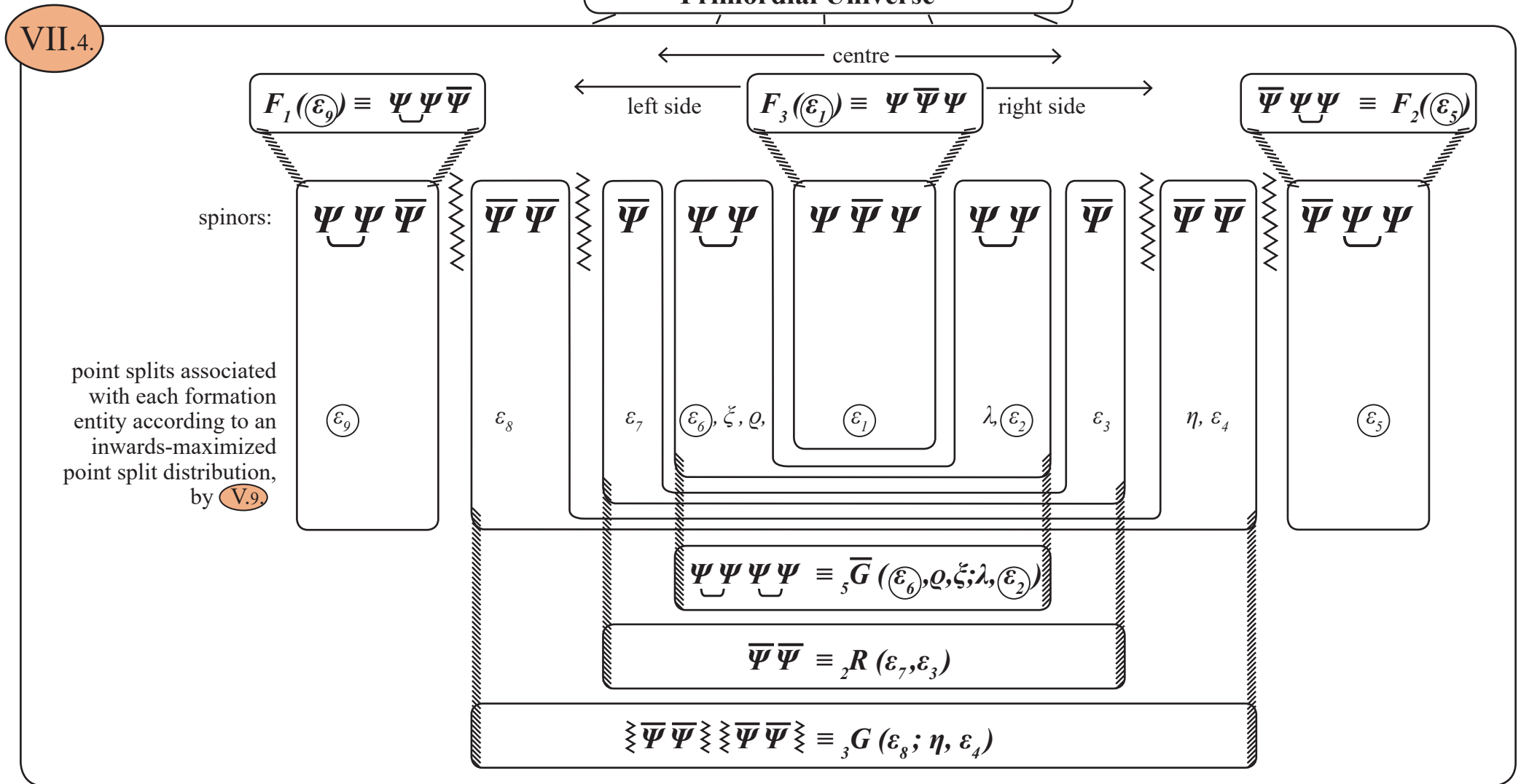
$$_2R \equiv \boxed{\overline{\Psi} \quad \overline{\Psi}} \;(\varepsilon_7,\varepsilon_3) \equiv (\text{repulsive}) \equiv (m)\,;$$

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

$$_3G \equiv \boxed{\overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi}} \;(\varepsilon_8;\eta,\varepsilon_4) \equiv (\text{attractive}) \equiv (\overline{m}),\;q_0;$$

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

This implies the following particle and force structure in the Primordial Universe (see V.10.)

Primordial Universe

VII.4.

centre

left side $\quad F_3\,(\varepsilon_1) \equiv \Psi\,\overline{\Psi}\,\Psi \quad$ right side

$F_1\,(\varepsilon_9) \equiv \Psi\,\Psi\,\overline{\Psi}$

$\overline{\Psi}\,\Psi\,\Psi \equiv F_2\,(\varepsilon_5)$

spinors: $\quad \Psi\,\Psi\,\overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi} \quad \Psi\,\Psi \quad \Psi\,\overline{\Psi}\,\Psi \quad \Psi\,\Psi \quad \overline{\Psi} \quad \overline{\Psi}\,\overline{\Psi} \quad \overline{\Psi}\,\Psi\,\Psi$

point splits associated with each formation entity according to an inwards-maximized point split distribution, by V.9.

$\varepsilon_9 \qquad \varepsilon_8 \qquad \varepsilon_7 \quad \varepsilon_6,\,\xi,\,\varrho, \qquad \varepsilon_1 \qquad \lambda,\,\varepsilon_2 \qquad \varepsilon_3 \qquad \eta,\,\varepsilon_4 \qquad \varepsilon_5$

$$\Psi\,\Psi\,\Psi\,\Psi \equiv {}_5\overline{G}\,(\varepsilon_6,\varrho,\xi;\lambda,\varepsilon_2)$$

$$\overline{\Psi}\,\overline{\Psi} \equiv {}_2R\,(\varepsilon_7,\varepsilon_3)$$

$$\{\overline{\Psi}\,\overline{\Psi}\}\{\overline{\Psi}\,\overline{\Psi}\} \equiv {}_3G\,(\varepsilon_8;\,\eta,\,\varepsilon_4)$$

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

The physical properties of each individual formation (VII.3.) 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.

VII.5.

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.:

$\Psi \ \Psi \ \Psi \ \Psi$ ≡ repulsive   ; $\Psi \ \Psi$ ≡ attractive
$\overline{\Psi} \ \overline{\Psi} \ \overline{\Psi} \ \overline{\Psi}$ ≡ attractive   ; $\overline{\Psi} \ \overline{\Psi}$ ≡ repulsive

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

$_5\overline{G} \equiv$ $\boxed{\Psi\Psi \quad \Psi\Psi}$ $(\varepsilon_6, \varrho, \xi; \lambda, \varepsilon_2)$ $\equiv$ (5-split) object

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

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

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

VII.6.

⇓
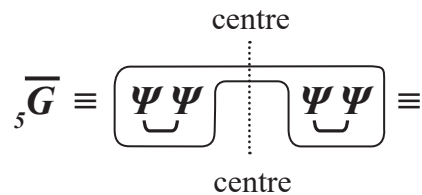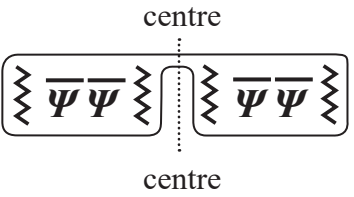
centre

$_5\overline{G} \equiv$ $\boxed{\Psi\Psi \quad \Psi\Psi}$ $\equiv$ acting from the centre outwards, most extremely strong, extremely massive and therefore extremely short-range repulsion force (separation force), named (anti-gravitational force)

centre

$_2R \equiv$ $\boxed{\overline{\Psi} \,\,\,\,\,\, \overline{\Psi}} \,\, (\varepsilon_7, \varepsilon_3)$ $\equiv$ (2-split) object

$\equiv$ by **VI.3.2.** **massive (i.e. short-range)**

$\equiv$ by **V.6.** . **repulsive, due to the** $\overline{\overline{\Psi}\,\overline{\Psi}}$**-structure**

$\equiv$ **due to the indirect inner-structural spinor coherence, a slightly weakened, normal force magnitude, named** (**repulsion force**)

$_3G \equiv$ $\boxed{\overline{\Psi}\,\overline{\Psi} \,\,\,\, \overline{\Psi}\,\overline{\Psi}} \,\, (\varepsilon_8; \eta, \varepsilon_4)$ $\equiv$ (3-split) object

$\equiv$ by **VI.3.3.** **massive (i.e. short-range), with charge** (q)

$\equiv$ by **V.6.** **an attractive (binding) force as a** $\overline{\overline{\Psi}\,\overline{\Psi}\,\overline{\Psi}\,\overline{\Psi}}$**-configuration)**

$\equiv$ **due to the** (**quadrauple separation structure** „⟩⟩⟩⟩"**), most extremely weak inner-structural spinor coherence and therefore most extremely weak force magnitude**

$\Downarrow$

centre

$_3G \equiv \overline{\Psi}\,\overline{\Psi} \,\, \overline{\Psi}\,\overline{\Psi} \equiv$ **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_1 **as will form later, after the Big Bang.**

centre

27

VII.7.

Furthermore: Due to the (double structure binding element „∪∪") , he coherence of the basis spinors of the anti-gravitational force $_5\overline{G} \equiv$ | $\Psi \Psi$ $\Psi \Psi$ | is many, many times ($\gg 10^{40}$) stronger than the gravitational force $_3G$, which, due to its structure with (quadruple separation elements „⧚⧚⧚") 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 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: ($_5\overline{G} \ggg\ggg......> \, _3G$).

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 $_3G=$ ($\overline{\Psi}\,\overline{\Psi}\,\overline{\Psi}\,\overline{\Psi}$) . 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 $\overline{G}$: ($\overline{G}$ = anti-gravitational force).

Thus: The Primordial Universe existed more than 13.8 billion years ago. It 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:**
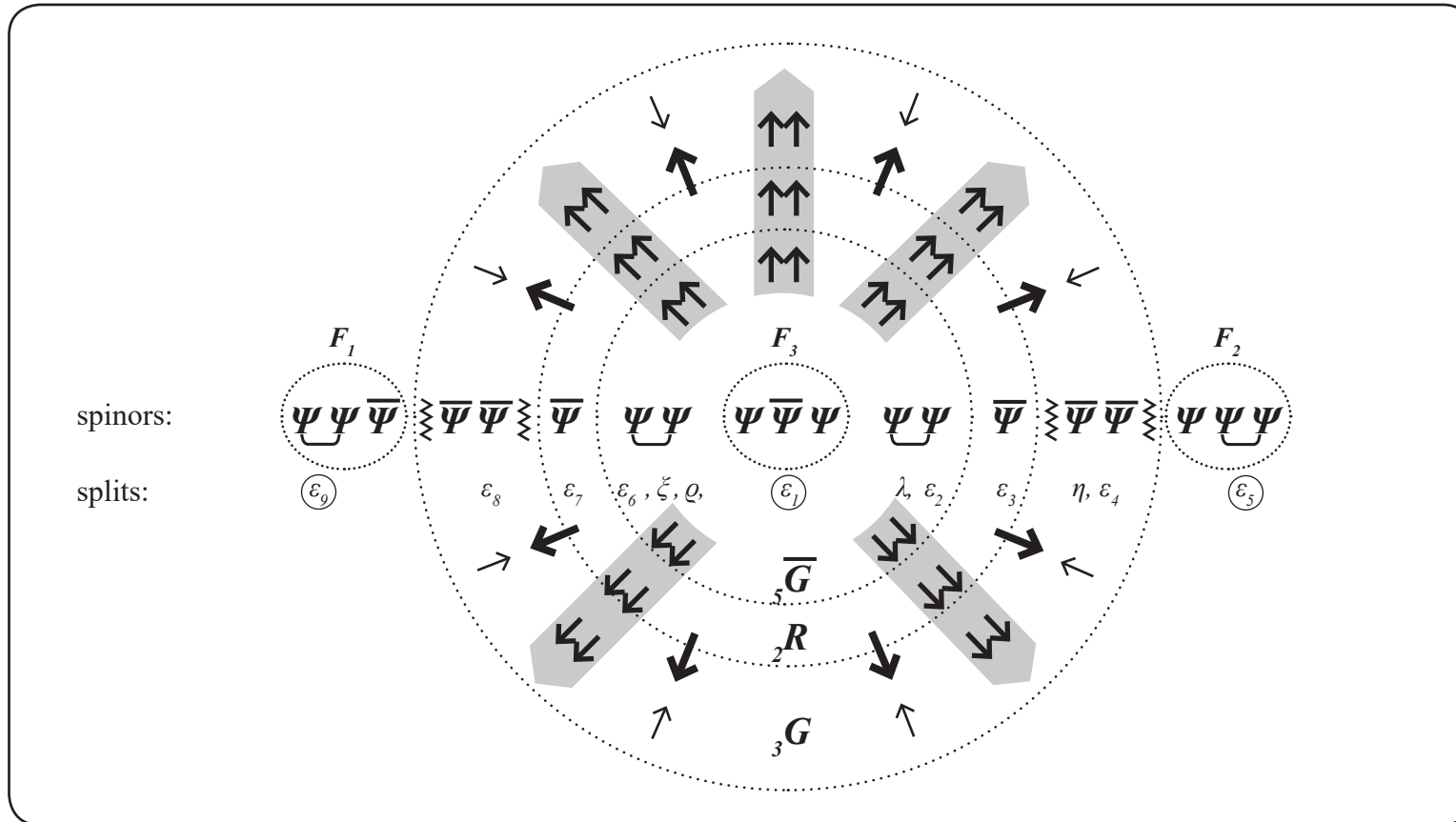
with $_5\overline{G}$ $\equiv$ repulsive $\equiv$ (immensely strong), most highly massive (short-range)

$\quad$ $_2R$ $\equiv$ repulsive $\equiv$ (normally strong), massive (short-range)

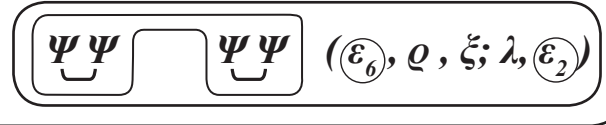$\quad$ $_3G$ $\equiv$ attractive $\equiv$ (immensely weak), massive (short-range)

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 $\quad _5\overline{G} \equiv$ $\boxed{\Psi\,\Psi \qquad \Psi\,\Psi}\ (\varepsilon_6),\ \varrho\ ,\ \xi;\ \lambda, (\varepsilon_2))$

This force $_5\overline{G}$ will be studied in detail in UC-3 to understand how and why the Big Bang happened.