

12. Some data, obtained from the energon-hypothesis.

- The average **energon-content** of space amounts to $C_{pp} = 2.73 \times 10^{81} \text{ pp's.m}^{-3}$ (page 103). The sources of energons are the **elementary charges (ec's)**.
- **Space-factor** = 4.42×10^{-15} . An important constant, giving the ratio between the volume of free *pp*'s and the volume of space that they need: $4.r_{pp}/r_e$ (page 103). See also page 143: $q_c/t_r = UPR / 4.42 \times 10^{-15} \text{ kg.m}^2.s^{-3}$.
- The **average value of *pp*(mass)-density in space** is equal to the **ec-density**: $D_{ec} = 7.2376 \times 10^{20} \text{ kg.m}^{-3}$ (page 103).
- The **ec-content of the universe** may be put on $\sim 10^{83}$ **ec's**, forming more or less complex material structures (page 102).
- **Neutrons exist of 1862 ec's** (931 electrons and 931 positrons) with an **average relative velocity**: $V_N = 0.7413 \times c$ (chapter 5). Radius $r_n = 5.1184 \times 10^{-16} \text{ m}$ (p.59).
- **Protons exist of 1859 ec's** (929 electrons and 930 positrons) with an **average relative velocity**: $V_P = 0.7399 \times c$ (chapter 5). Radius $r_p = 5.1430 \times 10^{-16} \text{ m}$ (p.62).
- The **ec's exist of a thin hollow sphere of source-energons**:
The surfaces contain:
 $N_{es} = 3.3 \times 10^{30} \text{ Spp's}$ (page 101).
The **thickness of the total ec-mantle may be put on 1366 Spp-layers** (chapter 11).
- The **ec-radius** amounts to: $r_e = 6.6979 \times 10^{-18} \text{ m}$ (page 59). It is **pulsating** conform $r_e^{\pm} = r_e .(1 + 0.03158.\sin \phi)$, with frequency $\nu_e = 7.94 \times 10^{24} \text{ s}^{-1}$ and a **variation of charge** $e^{\pm} = e .(1 + 0.063.\sin \phi)$, if $\phi = 0^0 \rightarrow 360^0$ (page 85).
- In the **absolute unit of time**, $t_o = r_{pp} / c = 2,468 \times 10^{-41} \text{ s}$ (page 105) an ec reproduces $N_{cr} = 1.86 \times 10^{-12}$ -th part of its *Spp*'s, emitted as *pp*'s into the outside space (page 101 and 114). An amount of N_{es} is ejected into the inner space to keep the ec inflated at the ec-density D_{ec} by repelling reactions with *Spp*'s (page 130).

- The **radius of a pp** amounts to $r_{pp} = 7.4 \times 10^{-33} \text{ m}$ (page 100).
- The **emission of pp 's** happens with a spread of velocities between $0.5 - 1.5 \times c$ with respect of the ec -mantle. The pp 's rotate around the direction of emission left- or righthanded, depending on the kind of charge (see pages 3, 158 and § 9.9).
- The **reaction of Spp 's** with incoming foreign pp 's is the reverse of emission: the meeting velocity must be $0.5 - 1.5 \times c$ with respect of the ec -mantle. Shifts into excessive velocities cause **effects of relativity** (pages 18-24). The reaction is **repelling between absolute oppositely rotating pp 's and Spp 's**, both with velocity c into the direction of a point of action, and is **attracting with absolute equally rotating (S) pp 's**.
- The **force-exertion of a pp on an ec** measures: $f_{pp} \approx \pm 3.38 \times 10^{-12} \text{ N}$ (page 101).
- The **exchange of forces between ec 's** happens normally by pp 's of all velocities, emitted over a **period of pp -convergence**: $\Delta_t = A \cdot \sqrt{2} / c$, causing a **magnetic force** at relative velocities (page 34). The **electrical centres** are closer to the partners than the centres of mass: $e_{ex} = 0.1406 \times r_e$, (§ 3.5.3).
- The so-called annihilation between electron and positron means in reality a jump into a stationary orbit around each other at a distance of $r_m = 5.4097 \times 10^{-15} \text{ m}$ and a relative transversal velocity of $V_m = 0.6662 \times c$ with the **emission of two photons**:

$$m_e \cdot c^2 = 8.1872 \times 10^{-14} \text{ J} (\approx 0.511 \text{ MeV}),$$
and a rotation-frequency of:

$$\nu_m = 5.876 \times 10^{21} \text{ s}^{-1}$$
 (neutrino's, pages 33-34)
- The equatorial ec -spin amounts to: $V_r = 1.1744 \times 10^{-7} \text{ m} \cdot \text{s}^{-1}$ (p. 74), with an angular velocity of (see Chapter 11):

$$\tilde{\omega}_{cr} = N_{cr} \times 2c \times r_e / r_{pp} = V_r \times 360^0 \times (7.4 / 7.38)^2 / (2\pi \cdot r_e) = 1.01 \times 10^{12} [\text{degr.}/\text{s}]$$
- **Light-velocity for EM -quanta**. The emission of signals happens by a differing ec -system that has an internal communication **with the velocity of light** (chapter 10). The reception of signals can only take place if the signals arrive with light-velocity, allowing an internal communication of the receptor with that velocity. That must cause a difference in arriving-time of a signal for two differently moving observers within a synchronous system: $D_t = (D_v \pm v_q) \cdot L / c^2 \text{ s}$, (pages 127-128).

- **The force of gravitation** is caused by a difference of motion and conjunction between opposite ec's in dense plasma's, which leaves an effective difference of spin-movement of both charges in nucleons (Chapter 6).

The constant of gravitation G seems to be of fundamental importance for the material structures of the universe and can be found therefore by several calculations on those structures.

a. First calculation (Chapter 6):

$$\mathbf{G} = (0,17727 \times h_r \times \pi / 2 \times N_g \times r_e^2 \times c) / (m_n \times m_p) = \mathbf{6.673 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}.$$

b. Second calculation (Chapter 6):

$$\mathbf{G} = w \cdot q_G \cdot N_{EG}^2 = \mathbf{6.672 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}.$$

c. Third calculation (Chapter 13, page 151):

$$\mathbf{G} = (c^3 / h) \times (2 \cdot r_{pp}')^2 \times \{(e_{ex} / r_e)\}^6 = \mathbf{6.670 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}.$$

stipulating the importance of e_{ex} in the 3-dimensional movement of ec's in nucleons.

d. Fourth calculation (Chapter 13, page 155):

$$\mathbf{G} = (\pi^3 \cdot C_c \cdot c) / (4 \cdot m_e \cdot N_{RU}) = \mathbf{6.673 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}.$$

e. Fifth calculation (Chapter 13, page 165):

$$\mathbf{G} = 2 \cdot r_e \cdot C_c \times 0.0478 = \mathbf{6.672 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}, \text{ in which } 0.0478 \text{ means } 4.78\% \text{ annihilated energons per ec; } C_c = 1.042 \times 10^8 \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-1}.$$

- **Planck's Constant** can be found, starting from the extremely low value of the angular momentum of one pp ($M_{pp} = 1.5418 \times 10^{-85} \text{ kg} \cdot \text{m}^2 \cdot \text{s}^{-1}$) as an addition per second:

$$\mathbf{h \cdot s^{-1} = M_{pp} \times N_{es} \times N_{cr} \times t_0^{-1} \times e_{ex} \times \rho \times (1 - \alpha') / (p \times r_H) = \mathbf{6.6266 \times 10^{-34} \text{ kg} \cdot \text{m}^2 \cdot \text{s}^{-2}},}$$

which stipulates the importance of e_{ex} for the exchange of energy.

(see § 9.9 and pages 148/150)

- **Frequency of pp -collisions** : $\mathbf{v_{coll}/N_{es} = 3.6381 \times 10^{56}}$ per s, per ec-volume (N_{es}),
or $\mathbf{v_{coll}/ec \approx 2.0}$ per pp , per mean ec-traversing period (1.81095×10^{-26} s),
or $\mathbf{v_{coll}/t_0 \approx 4.42 \times 10^{-15}}$ per pp per t_0 , thus equal to the **space-factor**, (Ch. 11).
- **Cosmological Constant** : volume occupied by pp 's, created by an ec per second:
 $\mathbf{C_c = 9.49 \times 10^{-23} \text{ m}^3 \cdot \text{ec}^{-1} \cdot \text{s}^{-1}}$, or $\mathbf{1.042 \times 10^8 \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-1}}$ (§ 9.8.6).
- **Universal Power Ratio** : $\{(q_G / t_r) \cdot \{r_n \cdot r_p / (h \cdot c^2)\}\} = 4.5249 \times 10^{-20} \times 4.4202 \times 10^{-15}$
 $= \mathbf{2.000 \times 10^{-34}}$ (Page 143).