

## 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** =  $4.42 \times 10^{-15}$ . An important constant, giving the ratio between the volume of nucleonic-bound gravitational energy and its free volume in physical space that it needs:  $4.r_{pp}/r_e$  (page 103) and  $r_n.r_p/h.c^2$  (page c).
- The **threshold-value of 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  $\approx 10^{83} \text{ ec's}$ , 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  $10^3 \text{ Spp-layers}$**  ( 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  $\phi = 0^{\circ} \rightarrow 360^{\circ}$  (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 equal amount is ejected into the inner space to keep the ec inflated by repelling reactions with *Spp's*.

- The **diameter 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:  $f_{pp} \approx 3.38 \times 10^{-12} \text{ N}$  (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. 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 energy**:  
 $m_e \cdot c^2 = 8.0847 \times 10^{-14} \text{ J}$  ( $\approx 0.5 \text{ MeV}$ ) and a frequency of:  
 $\nu_m = 5.876 \times 10^{21} \text{ s}^{-1}$  (neutrino's, page 33)
- The equatorial  $ec$ -spin amounts to:  $V_r = 1.1744 \times 10^{-7} \text{ m.s}^{-1}$  (p. 74), with an angular velocity of (see Chapter 11):  
 $\tilde{\omega}_{cr} = N_{cr} \times 2c \times r_e / r_{pp} = V_r \times 360^0 \times (7.4 / 7.38)^2 / (2\pi \cdot r_e) = 1.01 \times 10^{12} \text{ [degr./s]}$
- **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):

$$\mathbf{G} = (\pi \cdot h_r \cdot N_g \cdot r_e^2 \cdot V_p) / [8 \cdot m_n \cdot m_p \cdot \{(2/\pi)^4 \cdot (V_p/c)^2 + 1\}^{1/2}] = \mathbf{6.672 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}.$$

- 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):

$$\mathbf{G} = 2 \cdot r_e \cdot C_c \times 0.0478 = \mathbf{6.67 \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}}, \text{ in which } 0.0478 \text{ means } 4.78\% \text{ annihilated energons per ec; } C_c = 1.042 \times 10^8 \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-1}.$$

- **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 ( $1.81095 \times 10^{-26} \text{ s}$ ),  
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).