5th-force is force-particle in deeper-vacuum and fits the universe RTHU postulate.

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Abstract.

This article refers to the 5th-force, which is fitting in a new model for the universe called: Rotating Torus Hologram Universe (RTHU). In this new cosmological model the lenghtscale, at which a dark boson (X17) is detected, is the 5th-force, and calculated from the perspective of how the dark matter boson affects negative-charged-quarks in the Helium-4 neutron. The lengthscale, at which X17 is detected, is theoretically calculated from formulas used in the RTHU at approximately $4,82 \times 10^{-17}$ meter. This relates to an Hungarian-experiment, wherein an accelerated Helium-4 atom decays in vacuum in e+ (positron) and e- (electron). Moreover, a corresponding dark energy is related to X17 and also calculated. The given exercises are based on my earlier postulated of 'duo-bits', which represent the dark matter force (X17), and emerges according tot he RTHU from below the non existing Planck-boundary. The RTHU in general generates materialized in-time-shifted holograms, which we experience as Big Bang universa. This is a new cosmological persepective mentioned earlier in other of my artcles.

Introduction.

In a new postulated Rotating Torus Hologram Universe (RTHU) an elementary dark matter force-particle ('duo-bit') is designed and pre-calculated, and posted, by the author in a series of articles in the vixra-archive. Institutional archives never react to endorse the author's new ideas about the origin, shape and dynamics of the universe[2]. The article-formulas are emerged from a thought-experiment[3] in 2004, and published in 2010, in order to prevent information-loss in black holes as wel ass in the classical Big Bang universe.

The earlier published RTHU framed-formulas do postulate a new dark energy (Y), which is variable, and urge to leave the Planck-boundary of the classical Big Bang-theory. My new postulate is applied to experiments of the Hungarian Academy of Sciences, Atomki, in Debrecen, Hungary, managed by the head division nuclear physics, Attila Krasznahorkay. In quite an other way the explanation of the existance of X17 (dark boson), marked as a 5th-force, is shown by me as rather realy possible [4,5,7].

The new dark energy (Y) is distributed as Double Torus geometry, one large dark energy-torus surrounding and intertwining a smaller elementary torus. This is expressed by four 'duo-bits', of which two 'duo-bits' enlighten two Planckmasses in vacuum. However, below the Planck-boundary the four 'duo-bits' dominate to exist.

The 'duo-bits' are the dark bosons, being 'dark matter force-particles', also experienced as X17 in the Hungarian 'dark boson' Experiments and others. Combining my RTHU framed-formulas and the Hungarian X17 result also a new perspective on a new origin, shape and dynamics of the universe is gathering proof.

Basic 'duo-bit' value.

Speaking of a torus, we deal with an interior-torus here, within a torus of new dark energy Y. The interior-torus may expand or contract. The interior-torus is the buildingstone for all small and large objects (particles, planets, stars and galaxies) leaving a torus-track behind, during the rotation of the RTHU. Thereby the RTHU is a maximum torus, emerging a materialized Big Bang universe by its rotation. This means the classical Big Bang universe is not fundamental. However it is an imprint of a hologram, which is experienced as real for decades, but that is a illusion. In this article here a basic 'duo-bit' is described as a publication[2] to emphasize more proof for statements made earlier in my posted articles[6], as follows:

$$m^2{}_{dm} = 4.6 \left[\frac{eV}{c^2} \right] . \frac{1}{100} \left[mm^2 \right]$$

$$m^2{}_{dm} = 0.046 \left[\frac{MeV}{c^2} m^2 \right] \qquad (1)$$

$$E_{m^2{}_{dm}} = 0.046 \left[MeV.m^2 \right]$$

Lateron in this article the basic energy value (equation 1) is used as an elementary value in order to calculate X17 from the different cosmological perspective of the RTHU. Firstly I start with some formulas related to the earlier series of articles[6]:

$$F^2{}_{de} - Y = 0$$

$$Y = F^2{}_{de}$$

$$Y = \left(F_N{}^{G=1} \right)^2 \otimes \left(F_{dm} \right)^2 \qquad (2)$$

$$Y = \left(k^{\frac{1}{2}}{}_{de} \right)^2 . \left(m_p \right)^2 \otimes \left(k^{\frac{1}{2}}{}_{de} \right)^2 . \left(m^2{}_{dm} \right)^2$$

Wherein $\left(m_p \right)^2 = \left(m^2{}_{dm} \right)^2$ is giving birth to a geometric-dimension of new dark energy (Y), which the elementary dark energy, as follows:

$$Y = \left(k^{\frac{1}{2}}{}_{de} \right)^4 \left[\frac{m^4}{s^8} \right] . \left(m^2{}_{dm} \right)^4 \left[\left(\frac{MeV}{c^2} m^2 \right)^4 \right] = \left(k^{\frac{1}{2}}{}_{de} \right)^4 \left[\frac{m^4}{s^8} \right] . \left(E_{m^2{}_{dm}} \right)^4 \left[\left(MeVm^2 \right)^4 \right]$$

$$Y = \left(k^{\frac{1}{2}}{}_{de} \right)^4 . \left(E_{m^2{}_{dm}} \right)^4 \left[\frac{m^4}{s^8} \left(MeVm^2 \right)^4 \right]$$

$$Y = \left(k^{\frac{1}{2}}{}_{de} \right)^4 . \left(E_{m^2{}_{dm}} \right)^4 \left[\left(MeV^2 m^2 \right)^2 \left(\frac{m^4}{s^4} \right)^2 \right] \qquad (3)$$

$$Y = \left(k^{\frac{1}{2}}{}_{de} \right)^4 . \left(E_{m^2{}_{dm}} \right)^4 \left[\left(MeV^2 m^2 \right)^2 N^2 \right]$$

This is a dark energy-torus filling the torus of dark matter-force, which may expand or contract by Newtonforce.

Conotations:

$F^2{}_{de}$ is the new dark energy force; Y is the new dark energy. Y is variable-vacuum below the Planck-border, but constant at the Planck-border and above); $k^{\frac{1}{2}}{}_{de} = 1.78x10^{-14}\left[\dfrac{m}{s^2}\right]$[6,8] is the interior torus-acceleration (the torus may expand or contract); $m^2{}_{dm}$ is the basic 'duo-bit', or so to say a basic 'dark matter force-particle' in the RTHU-model; m_p is the Planck-mass, which is enlighted by two out of four 'dark bosons'; $F_N{}^{G=1}$ is the baryonic gravity-force (visible gravity); F_{dm} is a dark matter force (dark gravity). See further fig. 1: The duo-bit in the process of vacuüm related tot the RTHU.
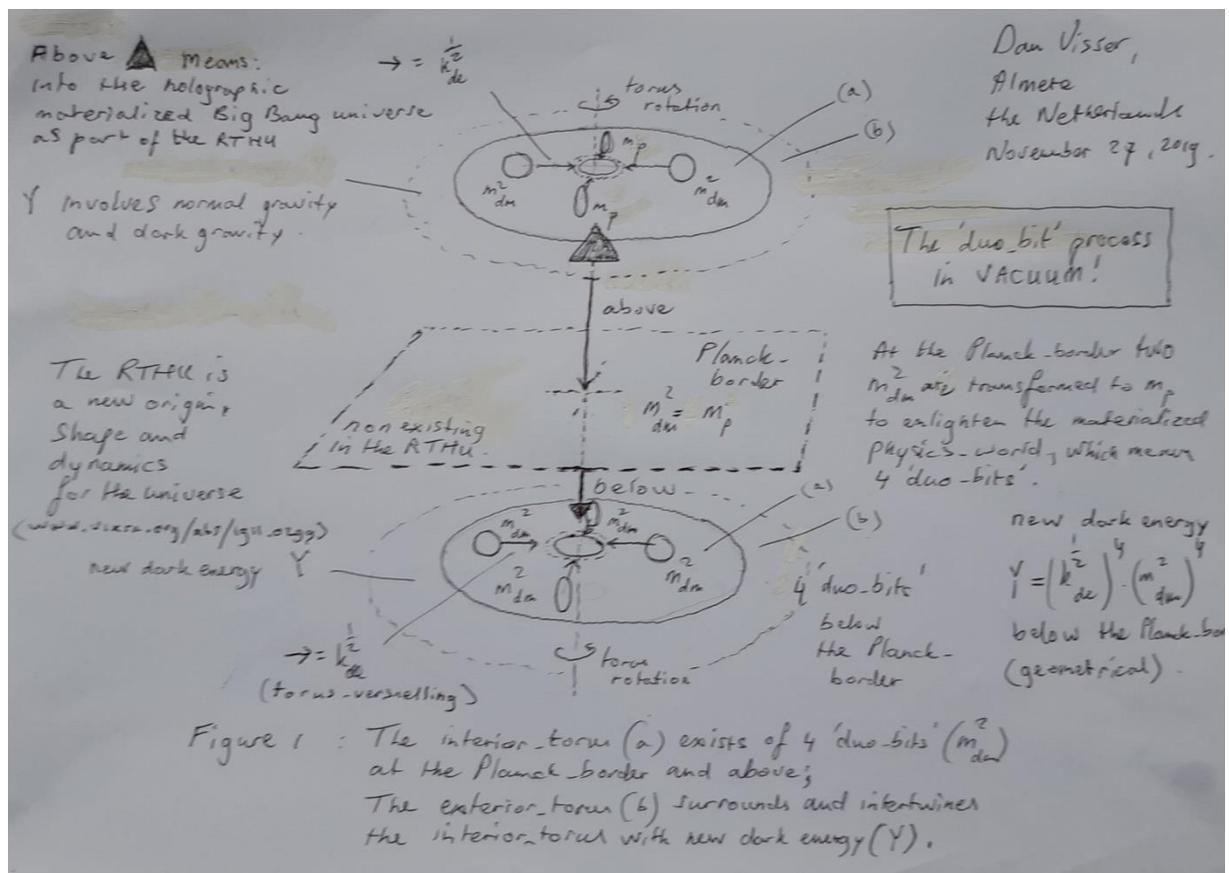

Fig. 1: 'Duo-bits' in the non-existing Planckboundary in the RTHU.

From equation (2) and (3) follows:

$$\left(m^2{}_{dm}\right)^4 = \dfrac{\left(F_N{}^{G=1}\right)^2 \otimes \left(F_{dm}\right)^2}{\left(k^{\frac{1}{2}}{}_{de}\right)^4} \tag{4}$$

Equation (4) represents a basic '4-duo-bit' for equation (5); it represents the elementary energy of the dark boson, shaped as an interior-torus, as follows:

$$\left(E_{m^2_{dm}}\right)^4 = \frac{\left(F_N^{G=1}\right)^2 \otimes \left(F_{dm}\right)^2}{\left(k^{\frac{1}{2}}_{de}\right)^4}$$

(5)

In order to get the relation with the 2 duo-bits as m^2_{dm} in fig. 1 the following exercise is performed:

$$\left\{\left(E_{m^2_{dm}}\right)^4\right\}^{\frac{1}{2}} = \left\{\frac{\left(F_N^{G=1}\right)^2 \otimes \left(F_{dm}\right)^2}{\left(k^{\frac{1}{2}}_{de}\right)^4}\right\}^{\frac{1}{2}}$$

(6)

However, at (and below) the Planck-boundary $F_N^{G=1} = 1\left[m^2\right]$, so follows: (7)

$$F_{dm} = \left(E_{m^2_{dm}}\right)^2 (k_{de}) \left[\frac{MeV^2 m^4\left[\left(\frac{m}{s^2}\right)^2\right]}{\left[m^2\right]}\right]$$

(8)

$$F_{dm} = \left(E_{m^2_{dm}}\right)^2 (k_{de}) \left[\left(MeV.m\right)^2\left(\frac{m}{s^2}\right)^2\right]$$

(9)

From equation (9) the scale at which the X17 (dark boson) occurs can be calculated, as well as the belonging scale of the dark matter particle-force, as follows:

$$n^2 F_{dm} = n^2 \left(E_{m^2_{dm}}\right)^2 (k_{de}) \left[\frac{1}{m^2}\left(MeV.m\right)^2\left(\frac{m}{s^2}\right)^2 = \left(MeV\right)^2\left(\frac{m}{s^2}\right)^2\right]$$

(10)

Wherein:

Reference: www.vixra.org/abs/1911.0299 for the dimension of n is [1/m²]

$$E_{m^2_{dm}} = 0.046\left[MeV.m^2\right]; \text{(see equation 1)}$$

$$k_{de} = \left(k^{\frac{1}{2}}_{de}\right)^2 = \left(1.78x10^{-14}\right)^2 = 3.1684x10^{-28}\left[\left(\frac{m}{s}\right)^2\right]; \text{(see connotation, equation 3).}$$

Scale-calculation dark boson:

The n, for which X17 exists at a certain scale, is as follows:

$$nE_{m^2_{dm}} k^{\frac{1}{2}}_{de} \cong 17 \left[MeV . \frac{m^2}{s^2} \right] \tag{11}$$

$$n \cong \frac{17 \left[MeV . \dfrac{m^2}{s^2} \right]}{0.046 \left[MeV.m^2 \right] x 1.78 x 10^{-14} \left[\dfrac{m}{s^2} \right]} \cong 207.621 x 10^{14} \left[\frac{1}{m} \right] \tag{12}$$

The n is scalair. It generates the SCALE - X 17, meaning at which X17 (the dark boson) occurs to exist, but also enables to detect the SCALE - X 17, at which the dark force is felt. The n increases the torus-acceleration and causes expansion of the the elementary-torus; Thereto it becomes a scalair factor to increase the Plancklength and determines the scale whereon the X17 (dark boson about 17 MeV) occurs, as follows:

$$n \left[\frac{1}{m} \right] . k^{\frac{1}{2}}_{de} \left[\frac{m}{s^2} \right] = nk^{\frac{1}{2}}_{de} \left[\frac{1}{s^2} \right] ; \text{ which is flat expansion of vacuum} \tag{13}$$

With equation (13) the SCALE factor of X 17 can be calculated, as follows:

The SCALE-factor is:

$$\propto_{X17} \cong nl_p \cong 207.621 x 10^{14} \left[\frac{1}{m} \right] x 1.616199 x 10^{-35} \left[m \right] \cong 0.335 x 10^{-18} \tag{14}$$

That leads to the enlargement of the Plancklength, as follows:

$$\frac{l_p}{\alpha_{X17}} = \frac{1.616199 x 10^{-35} \left[m \right]}{0.335 x 10^{-18}} = 4.82 x 10^{-17} \left[m \right] \tag{15}$$

This scale corresponds to the quark-scale in vacuum. However, It only affects the neutron quarks (+2/3, -1/3, -1/3 charge), because X17 is proto-phobic (it is afraid of proton-quarks, with +2/3, +2/3, -1/3 charge).

The reach of the the dark-force.

The approach from equation 12, 13, 14 and 15 can also be used for the calculation of the reach of the Dark orce (DF), which is a spatial expansion of vacuum, as follows:

$$n^2 \left[\frac{1}{m^2} \right] . \left(k^{\frac{1}{2}}_{de} \right)^2 \left[\frac{m^2}{s^4} \right] = n^2 k_{de} \left[\left(\frac{1}{s^2} \right)^2 \right] \tag{16}$$

The scale-factor for the DF-surface is:

$$\propto_{DF} \cong n^2 l^2{}_p \cong \left(207.621x10^{14}\right)^2 \left[\frac{1}{m^2}\right] x \left(1.616199x10^{-35}\right)^2 \left[m^2\right]$$

$$\propto_{DF} \cong 43106.479641x10^{28} \, x1.34936x10^{-70} \cong 58166.159368379x10^{-42} \tag{17}$$

$$\propto_{DF} \cong 0.058x10^{-36}$$

The radius of the DF-surface is:

$$\frac{l_p}{\propto_{DF}} \cong \frac{1.616199x10^{-35}\,[m]}{0.029x10^{-18}} \cong 4x10^{-16}\,[m] \tag{18}$$

This is a factor $\dfrac{4x10^{-16}}{4.82x10^{-17}} \cong 8.3$ more than the scale of occurrance of X17.

The dark boson and dark-force In further perspective of the RTHU.

The perspective is as follows: The moment Helium-4 decays in vacuum, negative charged quarks in the neutron of He4 are affected by the dark-boson $X17 = 17\,[MeV]$ at $4.82x10^{-17}\,[m]$. Simultanuously a belonging dark matter-force F_{dm} is delivered with a reach to $4x10^{-16}\,[m]$.

According to equation (10) the strength of the dark matter force is:

$$n^2 F_{dm} \cong n^2.\left(E_{m_{dm}}\right)^2 .k_{de} \cong 43106x0,002116x3.1684x10^{-28} \cong 0.289x10^{-25}\left[\left(MeV\right)^2\left(\frac{m}{s^2}\right)^2\right] \tag{19}$$

And according to equation (3) the expanding or contracting elementary dark enegy torus (Y) is:

$$Y = \left(k^{\frac{1}{2}}{}_{de}\right)^4 .\left(E_{m^2{}_{dm}}\right)^4 \left[\left(MeV^2 m^2\right)^2 N^2\right]$$

$$Y = \left(1.78x10^{-14}\right)^4 .\left(0.046\right)^4 \left[\left(MeV^2 m^2\right)^2 N^2\right]$$

$$Y \cong 45x10^{-62}\left[\left(MeV^2 m^2\right)^2 N^2\right]$$

Prediction.

Earlier, experiments with Berilium8 (a heavier isotope), were involved. Hence, a larger acceleration in vacuum would have been needed to detect the X17 dark boson (equations 13 and 15). This means up-coming experiments should use heavier atom-masses with a larger acceleration to release an X17 boson in order to get the subsequently decay of e+ and e-.

Further understanding.

In the practical setting of experiments vacuum is considered as constant, while the atoms (or isotopes) are accelerated in that "constant" vacuum. However, vacuum is variable in the RTHU and rotating below the Planck-boundary. According tot hat aspect vacuum must be cooled down below 2.7 degrees Kelvin to release the dark force.

Conclusions.

The exercises in this article prove the existence of a deeper rotating vacuum generating a dark boson to be enlighted for a materialized physicsworld, a world we use to call the classical Big Bang Universe. But it exactly means that the classical Big Bang is originally generated by a Rotating Torus Hologram Universe (RTHU), which is based on 'duo-bits' being 'dark matter force-particles'. Or also called dark-bosons. These resite below the Planck-boundary.

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