5th force-particle in vacuum fits in new universe RTHU postulate.

Author: Ing. Dan C.M. Visser[1]

Date: November 27 2019

Abstract.

This article refers to a 5th-force that fits a new model for the universe: Rotating Torus Hologram Universe, abbreviated as RTHU. Thereto the scale is calculated whereon negative charged quarks in the neutron of Helium4 are affected by a dark-boson X17 being the 5th-force-particle on a scale of approximately $0{,}3x10^{-18}$ meter, at the moment of He4 decay in vacuum. Simultanuously the belonging dark-force is felt at a scale of approximately 0,7 millimeter in vacuum. This follows from formules used to describe the RTHU model. However, significantly the value of the dark force also appears to be equivalent to its very small dark energy of approximately 10^{-88} $Joule^2$. The exercises given in this article postulate a duo-bit process from below the Planckborder to be the origin of X17, dark matter-force and dark energy according to the RTHU model. That model generates a materialized holographic Big Bang universe.

Introduction.

In a new postulated Rotating Torus Hologram Universe (RTHU) an elementary dark matter force-particle ('duo-bit') is designed, pre-calculated and posted by the author in a series of articles in the vixra-archive. Regular institutional archives do not 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 and the classical Big Bang universe.

These RTHU framed-formulas do postulate a new dark energy (Y), which is variable, and urge to leave the Planck-border in the classical Big Bang-theory. This 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 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, ajacent, above and below the Planck-border, which is a non-existing domain in the RTHU. This is expressed by four 'duo-bits' (modus 1), of which two 'duo-bits' enlighten two Planckmasses in vacuum. However, below the 'non existing' Planck-border four 'duo-bits' continue to exist (modus 2).

The 'duo-bits' are the dark bosons, named (in the RTHU) as 'dark matter force-particles', which are called X17 in the Hungarian 'dark boson' Experiment. 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 the case.

Basic 'duo-bit' value.

Speaking of a torus, we here deal with an interior-torus within a torus of new dark energy Y, while 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 the RTHU-rotation. This means the classical Big Bang universe is not fundamental, however it is an imprint as a hologram, which is experienced as real. Thereto a basic 'duo-bit' is described in a pre-publication[2], as a result of a serie of many other earlier posted articles[6] as follows:

$$m^2{}_{dm} = 4.6\left[\frac{eV}{c^2}\right].\frac{1}{100}\left[mm^2\right]$$
$$m^2{}_{dm} = 0.046\left[\frac{MeV}{c^2}m^2\right] \qquad (1)$$
$$E_{m^2{}_{dm}} = 0.046\left[MeV.m^2\right]$$

Later this basic energy value (1) is used as an elementary value in order to calculate X17 from a different cosmological perspective. 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 $\left(m_p\right)^2 = \left(m^2{}_{dm}\right)^2$ in the RTHU, giving birth to a geometric-dimension of new dark energy (Y), as follows:

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

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); $k^{\frac{1}{2}}{}_{de} = 1.78x10^{-14}\left[\frac{m}{s^2}\right]$ [6,8] is the interior torus-acceleration (the torus may expand or contract); m_{dm} is the 'duo-bit' ('dark boson'), named 'dark matter force-particle' in the RTHU; 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 (the visible one); F_{dm} is a dark matter force (dark gravity). See further fig. 1: The Duo-bit process in vacuüm related tot he RTHU.

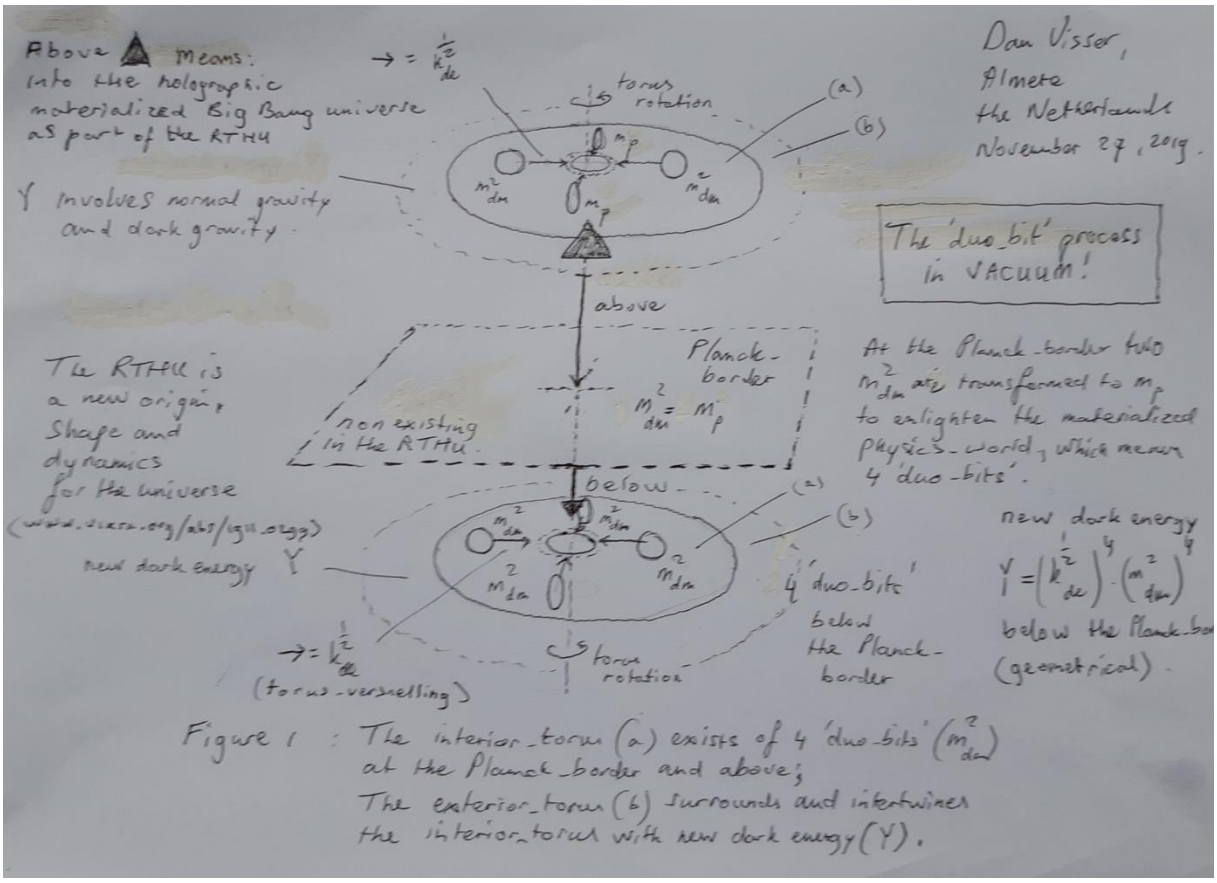

Fig. 1: Duo-bit process in vacuüm related to the RTHU.

From equation (2) and (3) follows:

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

Equation (4) represents a basic '4-duo-bit equation (5)' (related to fig. 1) which represents an elementary energy of the dark boson, shaped like an interior-torus, as follows:

$$\left(E_{m^2{}_{dm}}\right)^4 = \frac{\left(F_N{}^{G=1}\right)^2 \otimes \left(F_{dm}\right)^2}{\left(k^{\frac{1}{2}}{}_{de}\right)^4} \tag{5}$$

In order to get the relation with the (real) 2 duo-bit (only $m^2{}_{dm}$ in fig. 1) the following exercise is performed:

$$\left\{\left(E_{m^2{}_{dm}}\right)^4\right\}^{\frac{1}{2}} = \left\{\frac{\left(F_N{}^{G=1}\right)^2 \otimes \left(F_{dm}\right)^2}{\left(k^{\frac{1}{2}}{}_{de}\right)^4}\right\}^{\frac{1}{2}} \quad (6)$$

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

$$F_{dm} = \left(E_{m^2{}_{dm}}\right)^2 \left(k_{de}\right)\left[\frac{MeV^2 m^4 \left[\left(\frac{m}{s^2}\right)^2\right]}{\left[m^2\right]}\right] \quad (8)$$

$$F_{dm} = \left(E_{m^2{}_{dm}}\right)^2 \left(k_{de}\right)\left[\left(MeV.m\right)^2 \left(\frac{m}{s^2}\right)^2\right] \quad (9)$$

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

$$n^2 F_{dm} = n^2 \left(E_{m^2{}_{dm}}\right)^2 \left(k_{de}\right)\left[\left(MeV.m\right)^2 \left(\frac{m}{s^2}\right)^2\right] \quad (10)$$

Wherein:

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

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

Scale-calculation dark boson:

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

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

$$n \cong \frac{17\left[MeV.\frac{m^2}{s^2}\right]}{0.046\left[MeV.m^2\right] x 1.78x10^{-14}\left[\frac{m}{s^2}\right]} \cong 207.621x10^{14}\left[\frac{1}{m}\right] \quad (12)$$

The n is scalair. It generates the SCALE - X 17, meaning at which X17 (the dark boson) occurs to exist, but also enable to detect the SCALE DF-X 17 at which the dark force DF 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 17 MeV) occurs, as follows:

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

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

The SCALE is:

$$\propto_{X17}\cong nl_p\cong 207.621x10^{14}\,xl_p\cong 207.621x10^{14}\,x1.616199x10^{-35}\left[m\right]\cong 0.335x10^{-18}\left[m\right].$$ (14)

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).

Scale-calculation dark-force.

The approach from equation 12, 13 and 14 can also be used for the calculation of the dark force (DF) at the SCALE DF - X 17, as follows:

$$n^2\left[\frac{1}{m^2}\right].\left(k^{\frac{1}{2}}{}_{de}\right)^2\left[\frac{m^2}{s^4}\right]=n^2k_{de}\left[\left(\frac{1}{s^2}\right)^2\right]$$; see equation 10 (15)

With this the SCALE - DF of the Dark Force F_{dm} can be calculated, as follows:

The scale is: $\propto_{DF}\cong n^2l_p\cong\left(207.621x10^{14}\right)^2\,xl_p\cong 0.7x10^{-3}\left[m\right]\cong 0.7\left[mm\right]$ in vacuum. (16)

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

The perspective is as follows: The moment Helium4 decays in vacuum, negative charged quarks in the neutron of He4 are affected by the dark-boson $X17=17\left[MeV\right]$ on scale $\propto_{\sim X17}=0.3x10^{-18}\left[m\right]$ in vacuum. Simultanuously a belonging dark-force F_{dm} is delivered at scale $\propto_{DF}\cong 0.7\left[mm\right]$ in vacuum.

Moreover, significantly the value of the dark force is equivalent to dark energy (see the indication equation 13)!, but it follows directly from the next formula and calculation:

$$F^X{}_{DM}\cong n^2F_{dm}\cong 43106x0,002116x3.1684x10^{-28}\cong 289x10^{-28}\left[\left(MeV.m\right)^2\left(\frac{m}{s^2}\right)^2\right]$$ (17)

$$E_{F^X{}_{DM}}=F^X{}_{DM}\cong 918x10^{-88}\left[J^2\right]$$ (18)

Prediction.

Earlier experiments with Berilium8 means a heavier isotope was involved than with the Helium4. Hence, a larger acceleration in vacuum will be needed to detect the X17 dark boson (see equations 13 and 15). This means that coming experiments with heavier atom-masses need a larger accelerations to set free the X17 boson and the subsequently decay in e+ and e-.

Understanding.

In the practical setting of the experiments vacuum is experienced as constant, while the atoms (or isotopes) are accelerated in "constant" vacuum. In this article the aspects of the experiments are put in a frame of rotating vacuum at a deeper level.

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 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', also to call dark-bosons, all from below the Planck-border, which pragmatically (and thus factly) is a non-existing domain. (15)

References.

[1] Dan Visser, Almere, the Netherlands; email:dan.visser@planet.nl; phone: +31365499701, independent cosmologist and art-painter

[2] www.vixra.org/abs/1911.0299; New origin, Shape and Dynamics for the Universe; author: Dan Visser

[3] www.vixra.org/abs/1010.0013 Thought-Experiment Provides a Formula for (New) Dark Energy Force (Version-3); author: Dan Visser

[4] arxiv.org/abs/1910.10459v1 A.J. Krasznahorkay, et al. New evidence supporting the existence of the hypothetic X17 particle arXiv:1910.10459v1 [nucl-ex]:

[5] DOI: 10.1103/PhysRevLett.117.071803 Jonathan L. Feng et al. Protophobic Fifth-Force Interpretation of the Observed Anomaly in Be8 Nuclear Transitions, *Physical Review Letters* (2016).

[6] www.vixra.org/author/dan_visser

[7] DOI: 10.1103/PhysRevLett.120.231802 D. Banerjee et al. Search for a Hypothetical 16.7 MeV Gauge Boson and Dark Photons in the NA64 Experiment at CERN, *Physical Review Letters* (2018).

[8]www.vixra.org/abs/1711.0435; The Crumble of the Quantum-unit for Vacuum in the Double Torus Theory for a New Model of the Universe; Author: Dan Visser