New Dark Energy-Force Solves The Discrepancy Of The Proton-Radius.

Author: Dan Visser[a]

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Abstract.

It is well known among physicists that two different kinds of experiments give an anomaly in the proton-radius. The anomaly is: When a muon orbits the proton the proton-radius is 4% smaller than when an electron orbits the proton. This anomaly is a puzzle in standard physics. This puzzle is solved in a new cosmological theory with a new dark energy-force. This article describes the solution. The solution is put in perspective of new physics by a combination of quantum-gravity and sub-quantum dark matter-force in one formula, within the new cosmological theory, called the Double Torus Theory for the universe.

1. Introduction.

Over the past few years an unexplained discrepancy in atomic physics has been risen. Two different experimental methods for measuring the same thing, the proton radius, give incompatible results. The anomaly has risen by two type of experiments that have shown two different values for the proton's radius with a huge discrepancy. The radius of a proton was ever firmly detected on is 0.88 ± 0.01 femto-meters (abbreviated as fm, or 10^{-15} m) based on scattering-experiments or energy-levels in spectroscopy-experiments (both electron-based). However, muonic-hydrogen experiments show an average proton-radius that is 4 % smaller[1]. But a proton-size should be independent on how measurements are performed. The discrepancy could not be a fluke, because a sigma 7 covered these experiments. The anomaly of the proton-size is still not solved in standard physics[2], but further improvements brought it on 0.842 ± 0.001 fm. The latest result was due to experiments using muonic hydrogen, in which a negatively charged muon orbits the proton, instead of an atomic hydrogen where an electron orbits the proton. The muon is 200 times heavier than the electron, hence the muon orbits closer to the proton than the electron does, but that doesn't justify the proton-radius to be affected by a 4% smaller radius. This anomaly is solved according to a brand new cosmological theory.

The new theory is called the Double Torus Theory (DTT), which is a new framework solely developed by a non-institutional affiliated scientist Dan Visser, living in the town Almere in the Netherlands, who meanwhile is retired. In his related articles the development of his theory is described and posted in the vixra-archive[3]. In one of his latest papers he establishes an overwhelming amount of evidence that is available for the non-existence of the Big Bang[4]. Now the solution for the 4% too small proton-radius is added to his DDT article framework.

New formulations of quantum-gravity and sub-quantum dark matter-force united in one force are presented, which put physics in a new reality of a universe that is torus-shaped and dynamically performed by extra small time. The key-issue here was turning inside-out the Big Bang universe and add 2D time smaller than Planck-time (refined time) to the conformal time that limits the General Theory of Relativity (GRT) and Quantum-Theory (QT). The first results came from the author's thought-experiment by scaling-away (or scaling closer) two different sized black holes, simultaneously also melting them together[5]. The formula was analyzed by Christopher Forbes (PhD mathematics), who was also a FRAS-member, and put in perspective of a Double Torus shaped universe. Therein the loss of information is conserved and quantum-

dynamics are recalculated by 'refined time'. After a solely development of the Double Torus Theory by the author himself, the latest insights show that reality happens on the edge of a sub-quantum time-torus, which is independent on where one is aware of the universe. Such a sub-quantum time-torus rotates eternally, like all other sub-quantum time-tori in the 'system' do. The force that powers this rotating 'system' is a combined force of minimum quantum-gravity and sub-quantum dark matter force, which performs at the edge of any sub-quantum time-torus. The 'system' performs a dark flow at this level. Several former articles show evidence for such a universe.

Now the 40-th article of the DTT-framework presents a solution of the anomaly of the proton-radius, which can be explained by applying the DTT-formulations on a constituent quark-mass and the mass equivalent to the energy of stronger force . 'Constituent' here means: The equivalent energy of the strong-force makes up 99% and the equivalent energy of the current quark rest-mass makes up 1% of the total proton-mass. Thereby these energies are related to special-relativity[6,7].

1. Preface for the 4% smaller proton-radius by DTT-formulations.

The evidence starts with the topology of spin-dynamics of an electron (spintronics), by its characterization of placing the electron in two different places of space. Theoretically it is otherwise impossible to attach a spin to an electron, which is a point-particle with no dimensions. Such a topology led to topological insulators. In this way the electron performs 5D space dimensions. However, the DTT remarkably describes this 5D space dimensions by the new sub-quantum dark matter-force. Simultaneously (and additionally) 2D time smaller than the Planck-time is attached to this topology. So, what I did then, is: I applied the electron spin-topology also to the proton (see fig.1).

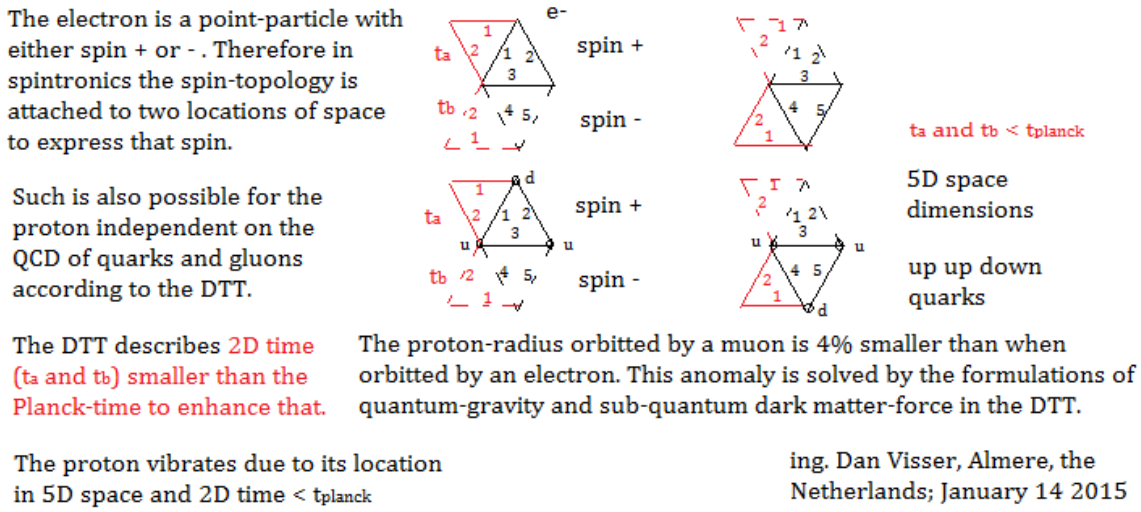

Fig. 1: DTT-topology applied to the more dimensional perspective of the electron and proton.

In the above figure the basic quark-combination (u,u,d) is emphasized. This is the proton, positive charged. The d-quark changes its position in space when getting an opposite spin. This means the proton is observably vibrating.

Introduction to the solution of the anomaly of the proton-radius.

The basic issue for the solution is, that quantum-gravity is maintained by using Newton's formula for gravity, but wherein the radius (r) is replaced by a dimension D, such that r =D. Thereby the strong force (gluon interactions) contribute 99% for the proton-mass. The quark rest-mass contributes for 1%. This fact is put in point-masses for showing quantum-gravity dynamics independent on the strong force (gluons) and the quark dynamics (QCD), as follows:

$$O \bullet - - - r = D - - - \bullet qu\,, \tag{1}$$

where (O) is the point-mass equivalent to the concentrated energy of the strong force and (qu) is the point-mass equivalent to the concentrated energy of the quark rest-masses. The (r) is the distance between (O) and (qu), which is replace by an amount of dimensions (D) . A fact is, these concentrated point-masses are:

$$O = m_1 = \frac{99}{100} m_{proton} \text{ and } qu = m_2 = \frac{1}{100} m_{proton}\,, \tag{2}$$

where (qu) stands for quark and where the quantum-gravity is abbreviated as (q = quantum). Then the following equation for Newton quantum-gravity rules, according to the DTT:

$$qF_N{}^{G=1} = Gm_1m_2r^{-2} = Gm_1m_2D^{-2} \tag{3}$$

The Newton quantum-gravity has thus been made dependent on the amount of dimensions D, while D is still maintained proportional to r^{-2} of the Newton force. This is contrarily to common imaginations of making r of higher dimensions in the exponent. However, in the next chapter is shown how equations 3 is related to the dimensions of the sub-quantum dark matter force when quantum-gravity and sub-quantum dark matter force are equal at a minimum.

G = 1 here means: a minimum quantum-gravity due to the basic exercise of the DTT in turning the Big Bang Universe inside-out and adding 2D time smaller than Planck-time (refined time) to the conformal time that limits the General Theory of Relativity (GRT) and Quantum-Theory (QT). In this way a minimum acceleration performs for G=1 at the edge of a rotating sub-quantum-time-torus in the DTT. This is explained more in detail in the next chapter.

DTT formulations to the solution of the anomaly of the proton-radius.

In the DTT a combined Newton quantum-gravity and sub-quantum dark matter force is given here as a part of a more extended full perspective of these formulations in a former article[8]:

$$F_{de} = qF_N{}^{G=1}\left[m^2\right] \otimes \pm sqF_{dm}\left[\left(\frac{m^2}{s}\right)^3\right] \tag{4}$$

(originated from my basic new dark energy force-formula derived in my thought-experiment of April 10 2004 [5]).

F_{de} is a new dark energy force, which is not the cosmological constant. The $qF_N{}^{G=1}\left[m^2\right]$ is the Newton quantum-force. The $sqF_{dm}\left[\left(\frac{m^2}{s}\right)^3\right]$ is the force of a 'dark flow' in a 3D surface per 3D-time (of which 2D- time smaller than the Planck-time). In this exposure $qF_N{}^{G=1}\left[m^2\right] = sqF_{dm}\left[\left(\frac{m^2}{s}\right)^3\right]$ are equalized, because deeper than this minimum quantum-gravity-level $qF_N{}^{G=1}\left[m^2\right]$, the $sqF_{dm}\left[\left(\frac{m^2}{s}\right)^3\right]$ starts to rise and takes over as a 'dark flow' in that 3D surface. This set of formulations comprehends $k_{de} = \frac{c^5 L^2{}_{pl}}{2G}\left[\left(ms^{-2}\right)^2\right]$, as a mutual acceleration for both parts in the F_{de} equation (1). This exposes F_{de} as follows:

$F_{de} = m_{vm}\left(k_{de}\right)^{\frac{1}{2}}\left[m^2\right] \otimes \pm m^2{}_{dm}\left(k_{de}\right)^{\frac{1}{2}}\left[\left(\frac{m^2}{s}\right)^3\right]$, wherein m_{vm} is visible matter and $m^2{}_{dm}$ is dark matter. This can be detailed in:

$\pm m^2{}_{dm}\left(k_{de}\right)^{\frac{1}{2}}\left[\left(\frac{m^2}{s}\right)^3\right] = \pm m^2{}_{dm}\left(k_{de}\right)^{\frac{1}{2}}\left[m^2.m^2.\left(\pm\frac{m}{s}\right).\frac{m}{s^2}\right]$, whereof (5)

$\left[m^2.m^2.\left(\pm\frac{m}{s}\right)\right]$ is the 'spatial dark matter', which accelerates with $\left(k_{de}\right)^{\frac{1}{2}}\left[ms^{-2}\right]$. (6)

This causes a 'dark matter force', or the so called 'dark flow' in the 3D surface, which has a torus-geometry. In this set of equations is:

$\left(k_{de}\right)^{\frac{1}{2}} = \left(\frac{c^5 L^2{}_{pl}}{2G}\right)^{\frac{1}{2}}\left[ms^{-2}\right]$, whereof (7)

for a maximum G, thus for G=1, the Newton acceleration $\left(k_{de}\right)^{\frac{1}{2}}$ is a minimum acceleration. As mentioned before, this is due to turning the Big Bang Universe inside-out and adding 2D time smaller than Planck-time (refined time) to the conformal time that limits the General Theory of Relativity (GRT) and Quantum-Theory (QT). In this way the minimum acceleration performs for G=1 at the edge of a rotating sub-quantum-time-torus in the DTT.

This means: Back to equation (3) it will give the following relation:

$qF_N{}^{G=1} = m_2 g_{qu}$, (8)

Wherein g_{qu} is the acceleration that a quark feels in the 'hidden' quantum gravitational field within the QCD of quarks and strong force (gluons).

Remarkably this minimum acceleration theoretically follows basically from equation (7) for G=1:

$g_{qu} = (k_{de})^{\frac{1}{2}} = \frac{c^5 L^2_{pl}}{2G}\left[ms^{-2}\right] = 1.78x10^{-14}\left[ms^{-2}\right]$. Experimentally the smallest Newton acceleration is 5 x 10^{-14} ms^{-2}. A result that could be well due to the limits of the current measurement-technology.

Solution of the anomaly of the proton-radius.

In equation (6) the solution reveals itself by the dimension of the dark matter m^2_{dm} as:

$$\left[m^2.m^2.\left(\pm\frac{m}{s}\right)\right] = \left[\pm\frac{m^5}{s}\right]$$

The amount of space-dimensions for the dark matter mass is 5D.

When substituted this in equation (3) the following result reveals:

$$qF_N{}^{G=1} = Gm_1m_2r^{-2} = Gm_1m_2D^{-2}$$

$$qF_N{}^{G=1} = Gm_1m_2r^{-2} = Gm_1m_2 5^{-2}$$

Which means:

r^{-2} is proportional to a $\frac{1}{25} = \frac{1}{25}x100\% = 4\%$ smaller proton-radius.

What exactly happens?

Dark matter force is as well (+) as (–) according to equation (4). The dark matter force (+) is exchanged for the benefit of a heavier mass (because a muon is 200 time heavier than an electron). So, a stronger quantum-gravity will rule within the muon-hydrogen atom (H). However, the dark matter force simultaneously is extracted from its normal amount of dark matter in vacuum and that affects the proton too. The proton simultaneously feels less negative dark matter force. Less negative dark matter force will decreases the expansion of the proton-radius. This shortage of expanding contracts the proton-radius to a 4% smaller proton-radius than when an electron would have orbited the proton. This is the solution for the anomaly of the proton radius according to the DTT formulations.

Prediction.

However, an extended idea occurred to me.: A proton orbited by a negative tau (more heavier than the electron and muon), as far as this is possible to realize, will contract the proton-radius further.

In equation (6) is shown that 1D extra must be taken into account. From this follows the prediction that the proton radius will become smaller by:

$qF_N^{G=1} = Gm_1m_2r^{-2} = Gm_1m_2 6^{-2}$, which means:

r^{-2} will be proportional to a $\frac{1}{36} = \frac{1}{36} x100\% = 2,77\%$ smaller proton-radius.

References.

[a] Dan Visser, Almere, the Netherlands, is an independent cosmologist, who developed a new cosmological model, the Double Torus Theory, which describes the universe as a rotating time-torus universe by using additional time smaller than the Planck-time. This model replaces the idea that Big Bang would be the origin of the universe, but maintains the GRT and QT.

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