New Gravity-Physics and -Mathematics calculate Dark Matter-accelerations and prove a recalculated Double Torus Universe.

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Abstract

New gravity-physics and -mathematics produce calculations of dark matter-accelerations and prove we live in a Double Torus Universe, which recalculates Quantum Gravity in vacuum. The set of equations to do that, prove the (new) dark energy force formula in the Double Torus Hypothesis is correct. The formula has been developed step by step and described in my Vixra-papers. It is an alternative for still unknown dark energy used in Big Bang cosmology. It is a tool for the awareness that the universe is not a universe that started with a Big Bang. The universe is a Double Torus, which uses + and - dark matter force to change quantum-gravity. The formula shows clearly a new view on the universe to be necessary. This paper shows theoretical predictions through calculations that match the experimental values of dark matter-accelerations in galaxies, the Pioneer-satellites (1 and 2) and produces the lowest limit for Newton-gravitational force. This Newton limit-acceleration matches the laboratory-experiments and moreover sets the limit to a slightly theoretical lower limit-acceleration of 2.8659×10^{-14} [m/s^2]. There is no other theory that predicts this limit. The conditions of the formula show, that quantum-gravity is related to a dark matter force. Dark energy-time from below the Planck-time is applied to the dark matter.

Introduction.

DAN is the founder of an evidence-based alternative for the universe otherwise than the Big Bang, after he lost contact with (PhD) Christopher Forbes (UK) - also being a fellow-member of the Royal Astronomical Society. Both DAN and Christopher realized the universe could be theoretically based on a Double Torus, but at the time (2004-2009) they had no evidence for that. However, DAN worked further on his 'papers', after several attempts to connect with Christopher, and gathered more than one sort of evidence. Just creative analysis and the guts to assume different interpretations than conservative cosmologists currently have.

DAN lost most of his confidence in the arguments for a Big Bang, as also for M-String-theories - still predicting more Big Bangs -, or linear cyclic conformal cosmology – pointing to no need for cosmic inflation -, or cascading Big Bangs – repeatedly emerging from a black holes collisions, and even a Big Bounce - a prolongation from a former collapsed universe. These doubts now highlight the profile of the Double Torus hypothesis.

The Double Torus hypothesis is a dark matter-dark energy universe, but with a different dark energy: It uses dark energy-time smaller than the Planck-time. The view is: What we observe by light is powered by this (new) dark energy-time, which affects the quantum gravitational status, because the extra-time is applied on dark matter. Therefore the meaning of the gravitational Newton-constant

changes. In this paper this deeper insight is worked out in detail. An overview of all of DAN's 'papers' is available in the Vixra-archive[1].
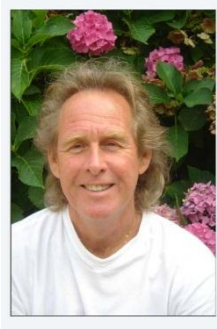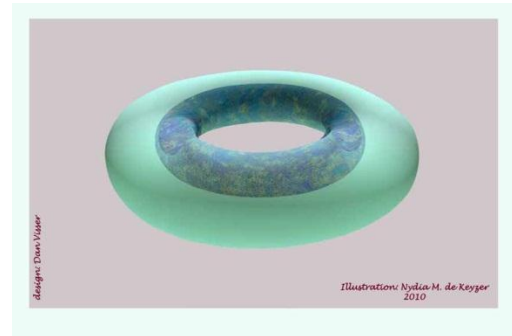

Fig. 1 Dan Visser (1947), photograph 2008.

Fig. 2 Double Torus hypothesis in 2009.

Figure 2: The dark energy-time torus encloses, and intertwines, a smaller dark matter torus. The spindle in this hypothesis is a (new) 'dark energy force formula', originally derived from DAN's thought-experiment[2]. It used 'non-relativistic scaling faster than light', which means 'scaling independent of the light speed'. Such a dynamic was supposed to be the source for recalculation of quantum-gravity. This could lead to re-visibility of, and re-existence in, reality. DAN's 'fantasy' took serious shape the more he analyzed this idea. One of the controversial findings (neutrinos faster than light, that violate Einstein's Relativity) is yet still theoretically to explain by the influence of a dark matter force on neutrinos, which can get an extra push from the dark matter's negative mass[3]. Since summer 2012 the faster-neutrino-case is closed by CERN, but DAN is convinced that will change in the near future, because the findings in this paper are an additional evidence for faster neutrinos than light. DAN also solved the discrepancy between vacuum-energy density, calculated by as well the quantum-gravity as the General Relativity. This discrepancy is eliminated in the Double Torus hypothesis. There is also the fine-structure-constant, which seems to be a dipole. The dipole points to a cyclic curved cylinder topology: This fits the Double Torus hypothesis. DAN's (new) dark energy force also shows the dimensions of a dark flow, and a fact is, that a dark flow is astronomically observed in the universe.

The dark energy force formula in the original setting of April 2004:

$$F_{de} = - k \cdot m^3 = - (c^5 O_e / 2G) \, m^3 \, [(kg.m)^3 N/s] \text{ , with } k = k_{de} \cdot (1/G), \text{ where } k_{de} = c^5 O_e / 2 \qquad (1)$$

Since the first paper in 2009 an additional "+"sign became part of the formula. The reason was DAN became involved in a co-operation with Christopher Forbes (UK, PhD-math and physics and Fellow of the Royal Astronomical Society). DAN's (new) 'dark energy force-formula' was picked-up from his website by Christopher Forbes. Christopher (and his colleague Keith Lees) send him a general mathematical equation for Dan's formula !! Then these results were published on September 1 2009 in a co-operative 'paper' in the Vixra-archive (the first paper). At that time it was named Twin-Tori Model . Then afterwards, DAN published his **'original'** 'dark energy force-formula' in retrospective in the Vixra-archive, because he already derived that in April 2004. Then many of DAN's 'papers' followed, after the contact with Christopher Forbes 'faded away' in 2011. Remarkably no other archive had been willing to accept DAN's formulas. Submission to other archives was only possible by

involving endorsers, but DAN didn't like that. Nor he was prepared to pay for publishing his papers. So DAN developed his formula on a solitary base, outside from the institutional walls. After that period he developed the starting framework according to his own view, while not being affiliated to any institution at all. Still DAN remembers the original plan was, that Christopher should developed a *Triple Torus Topology ('triple', because the mathematical boundaries had to determine the physical boundaries)*, named as the *Forbes-Visser Model (F-V model).* However, the lost-contact between DAN and Christopher remained.

The dark energy force formula became a formula with a "+"and "-" sign:

F_{de} = ± k. m^3 = ± (c^{5}O$_e$/2G) m^3 [(kg.m)^{3}N/s] , with k = k$_{de}$.(1/G), wherein k$_{de}$ = c^{5}O$_e$/2 (2)

And was supported by the general mathematical expression of Christopher Forbes :

$\int$ (α x^2+ β x+ γ) dx = k, k $\in$ ℝ, (3)

$\int$ (0) dx = k, k $\in$ ℝ (4)

$\Rightarrow$ $\int$ (α x^2+ β x+ γ) dx = $\int$ 0 dx (5)

$\Rightarrow$ α x^2+ β x+ γ = 0, (6)

For α =G, β =0, and γ =-1/4 c^4 $\hbar^2$ M^6 G follows **x=± 1/2 .c^5 m^3 G^{-1}(L$_{Planck}$)^2** (7)

The x is identical to DAN's physics-math-formula, wherein :O$_e$ = (L$_{Planck}$)^2 , as follows:

F_{de} = ± (c^{5}O$_e$/2G) m^3 [(kg.m)^{3}N/s] (8)

DAN already did know the dimensions, because of his thought-experiment from 2004 with as a result his original dark energy force formula**.** Then after further solitair research, DAN presented a new setting of his formula in January 2013.

The dark energy force formula in the setting of January 2013.

F_{de} = F^G $_N$. ±F$_{dm}$ [(m^8/s^3)], which is identical to F$_{de}$ = F^G $_N$ [m^2] . ±F$_{dm}$ [(m^2/s)^3], where k'$_{de}$ is a conventional acceleration in F^G $_N$ and ±F$_{dm}$. (9)

k'$_{de}$ = (k$_{de}$)$^{1/2}$ = (c^{5}O$_e$/2)$^{1/2}$ [m/s^2] (10)

The dark matter force is F$_{dm}$= ±m^2 $_{dm}$. (k'$_{de}$)$^{1/2}$ [(m^2/s)^3].

'F' stands for 'force', whereas the index 'N' means Newton and 'G' is the Newton gravity-constant; the index 'de' means 'dark energy', the index 'dm' means 'dark matter' and the expression between '[..]' stands for the 'dimensions' in 'meter and second'. The expression (m^3) is a combination of visible- and dark matter mass and originally split-up in one of DAN's former papers[2] .

The setting of January-2013 presents a more detailed layout with the transition of the gravity-constant G [N.(m^2 /kg^2)] into 1 [m^2] because of the separation of Newton-gravity-force and dark matter force. In the next chapter this is mathematically described.

The Newton quantum-gravity (quF^G $_N$) is given here with the dark matter force in vacuum. Fundamental is: A dependency on a larger and smaller time than t_{Planck}.

$F^{t>tpl}_{de}$ = (quF^G_N) [kg. m/s^2] . ($\pm$F$^{invac}_{dm}$) [(kgm)^3/s] => dimension $\pm$ F$^{t>tpl}_{de}$ in [(kgm)^3. N/s]   **(11)**

$F^{t<tpl}_{de}$ = (quF^G_N) [m^2] . ($\pm$F$^{invac}_{dm}$) [(m^2/s)^3] => dimension $\pm$ F$^{t<tpl}_{de}$ in [m^8/s^3]   **(12)**

Then this 'paper' came. It describes the deeper mathematical meaning of this dimensional transition.

The dark energy force formula in perspective of the general mathematical expression.

I go back to the general mathematical expression of Christopher Forbes :

$\int$ (α x^2+ β x+ γ) dx = k, k $\in \mathbb{R}$,

If $\int$ (0) dx = k, k $\in \mathbb{R}$ than $\Rightarrow$ $\int$ (α x^2+ β x+ γ) dx = $\int$ 0 dx

Then also $\Rightarrow$ α x^2+ β x+ γ = 0,

For α =G, β =0, and γ =-(1/4) .c^4 $\hbar^2$ M^6 G follows **x=$\pm$ (1/2) .c^5 m^3 G^{-1}(L$_{Planck}$)^2**

γ is the total dark energy and x is the dark energy force formula $\pm$ (c^{5}O$_e$/2G) m^3 [(kg.m)^{3}N/s].

G is the Newton-constant 6.6 x 10^{-11} [N (m^2/kg^2).

Firstly I re-derived the dimensions the dimensions of the dark energy (γ), which are:

$$\left[\left(\frac{m}{s} \right)^4 (Js)^2 kg^6 \frac{m^3}{kgs^2} \right] = \left[\frac{m^4}{s^4} J^2 s^2 kg^6 \frac{m^3}{kgs^2} \right] = \left[\frac{m^4}{s^4} J^2 kg^5 m^3 \right] = A$$

$$A = \left[kg^2 \frac{m^4}{s^4} J^2 kg^3 m^3 \right] = \left[\left(kg \frac{m^2}{s^2} \right)^2 J^2 (kgm)^3 \right] = \left[J^2 J^2 (kgm)^3 \right]$$

    (13)

I see two space energy [Joule squared], square (| _) to each other. This implies to describe a circular energy form like a torus, which encloses, and intertwines a co-describing 3D mass-surface. That will fully describe a Double Torus topology of energy and matter.

Further analysis of the Christopher Forbes-math-expression.

The point here is: β =0 demands the function ax^2+bx+c= 0 has two real roots. These roots are:

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-\beta \pm \sqrt{\beta^2 - 4\alpha\gamma}}{2\alpha}$$

    (14)

$$x_{1,2} = \frac{0 \pm \sqrt{0 - 4G\gamma}}{2G} = \pm\sqrt{\frac{-\gamma}{G}} = \pm\sqrt{\frac{-(-\frac{1}{4}\,c^4\hbar^2 M^6 G)}{G}} = \pm\sqrt{\frac{1}{4}\,c^4\hbar^2 M^6} = \pm\frac{1}{2}(\hbar M^3)c^2 \qquad (15)$$

These roots have a similarity with $\frac{1}{2}mv^2$, which is the average energy of visible moving Newtonian mass. However, now I found an average energy to be gravitational (+)and anti-gravitational (-), and moreover, an energy that is operating as an M^3 mass-globe(3D) in an energy-time Planck-surface in the dimension [Js]. This means activity of dark energy and dark matter is an actual case within the Planck-surface.

Look also at the discriminant $D = b^2 - 4ac = 0 - 4G\gamma = -4G\gamma$ \hfill (16)

For dark energy is negative $(\gamma < 0) \Rightarrow D = 4G\gamma > 0$, thus two roots. The two roots are not dependent on G, but only dependent on $(\hbar M^3)c^2$. \hfill (17)

So the α is allowed to change in the transition of the gravity-constant G [N.(m^2/kg^2)] into 1 [m^2], This can be described as follows:

$D = 4\alpha\gamma$, with $G \le \alpha \le 1$. From this follows:

For $(\alpha = G) \rightarrow D = 4G\gamma$ \hfill (18)

For $(\alpha = 1) \rightarrow D = 4\gamma$ \hfill (19)

The physical meaning is, that if a gravitational field has a gravitational constant G and thus is observable in principle, the visible world must also be related to a dark matter force that has dimensions in [(kgm)^3/s]. In that situation we observe dark matter as a static *dark* 3D-surface in space-time. The only domain we are aware of is: Where time is larger than the Planck-time. The formula for dark energy force then is as follows:

F$^{t>tpl}_{de}$ = (quF^G_N) [kg. m/s^2] . (±F$^{invac}_{dm}$) [(kgm)^3/s] => dimension ± F$^{t>tpl}_{de}$ in [(kgm)^3. N/s] \hfill **(20)**

A significant detail in that circumstances is: Dark energy produces 4 times the 'G'!! (look at the discriminant). This is what the Einstein-cross represents in conventional space-time theories. It is possible to observe four images of an object that lies behind a strong gravitational field caused by stars, galaxies or clusters of galaxies.

But if G=1, the dark energy remains to have a 4 times larger dark energy than is related to 1 [Joule] per 1 [m^2]. Its operating domain is deep in vacuum, based on time smaller than the Planck-time. Then the formula for dark energy force becomes:

F$^{t<tpl}_{de}$ = (quF^G_N) [m^2] . (±F$^{invac}_{dm}$) [(m^2/s)^3] => dimension ± F$^{t<tpl}_{de}$ in [m^8/s^3] \hfill **(21)**

A more significant detail now is: We observe dark matter as a 3D-*dark* matter flow, because the dimension are now in [(m^2/s)^3]. Here we are: A fact is, that a 'dark flow' is really observed by astronomers. So, this is concrete proof for the existence of a Double Torus universe, because it follows ts formulas.

Extension.

Now I add an extension. But first I refer to the last part of derivations in paper [4]:

$$F_{de} = \left\{ \left(F^G{}_N \right) \left[m^2 \right] \right\} \otimes \left\{ \left(\pm F_{dm} \right) \right\} \left[\left(\frac{m^2}{s} \right)^3 \right]$$

(22)

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

(23)

Where, for $(\kappa = 1)$ in $\left\langle \left(k_{de} \right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2\kappa} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] \right\rangle \Rightarrow \left(k_{de} \right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right]$

(24)

That changes equation (23) in:

$$F_{dm} = \pm m^2{}_{dm} \left[m^2 m^2 \frac{m}{s} \right] \cdot \left(\frac{c^5 O_e}{2} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] = \pm m^2{}_{dm} \left(\frac{c^5 O_e}{2} \right)^{\frac{1}{2}} \left[\left(\frac{m^2}{s} \right)^3 \right]$$

(25)

, which points to a **dark flow.**

Now the extension:

Gravity F_Z , for $G \leq (\alpha = \kappa) \leq 1$, is part of the following equation:

$$F^G{}_N [N] < F_Z < quF^G{}_N \left[m^2 \right] \otimes \pm F_{dm} \left[\left(\frac{m^2}{s} \right)^3 \right]$$

(26)

This leads to more insight in the smallest acceleration and more.

The smallest acceleration.

Some calculations are made to prove the acceleration in the dark energy force formula matches laboratory-experiments and astronomical observations[5,6]:

For $(\alpha = \kappa = G)$ follows:

for $\left\langle \left(k_{de} \right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2\kappa} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right] \right\rangle \Rightarrow \left(k_{de} \right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2G} \right)^{\frac{1}{2}} \left[\frac{m}{s^2} \right]$ = **0.3527 x 10** [-10] **[m/s²].**

(27)

This is close to the observed dark matter-acceleration in galaxies is 1 x 10 [-10] [m/s²] (see reference 5 and 6).

The observed value is 1/3 smaller than the theoretical calculated value. This is due to the lack of sufficient sensitive instruments for measuring dark matter in galaxies.

The same is at hand for the calculation of the acceleration of the Pioneer-satellites 1 and 2, which are also assumed to decelerate by dark matter. The experimental value is determined at 9×10^{-10} [m/s^2] (see also reference 5 and 6). This determined value is about 20 times smaller than the theoretical value. This is due to the much more smaller scale of dark matter influence within the planetary-system; for galaxies there is much more dark matter present seen from a larger distance. This leads to a more accurate acceleration-value of dark matter in galaxies.

In the other case, where , $(\alpha = \kappa = 1)$ follows:

For
$$\left\langle \left(k_{de}\right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2\kappa}\right)^{\frac{1}{2}} \left[\frac{m}{s^2}\right] \right\rangle \Rightarrow \left(k_{de}\right)^{\frac{1}{2}} = \left(\frac{c^5 O_e}{2}\right)^{\frac{1}{2}} \left[\frac{m}{s^2}\right]$$
= **2.8659 x 10^{-14} [m/s^2]**.   (28)

This is the smallest limit-acceleration produced by dark matter. It is roughly 2 times smaller than the experimental laboratory-results of 5×10^{-14} [m/s^2] (see also reference 5 and 6).

The theoretically calculated value is the real breakdown of Newton-gravity, where dark matter takes over. It is the point where dark matter force (in vacuum) generates quantum-gravity.

In both calculations c = 3×10^{-8} [m/s^2], O$_e$= $(2.6 \times 10^{-35})^2$ [m^2], G = 6.6×10^{-11} [N.(m^2/kg^2)]

The conclusion is: The dark energy force formula is correct. It is in accordance with astronomical observations and earth-laboratory-experiments. For me it is clear we do not live in a Big Bang-started universe, but we live in a Double Torus Universe that recalculates quantum-gravity to produce visibility of matter, and vice-versa. With a 'new theory on gravity and dark matter' I have been able to calculate theoretically and independently the small accelerations in spacetime for dark matter. This opens a new perspective on cosmology.

Deeper understanding of the accelerations, related to dark matter densities.

The larger the scale dark matter density is observed, the more accurate quantum-gravity is determined. In reverse it means, that more closer vacuum seems to be more empty. Following that thought, it means that seemingly smaller dark matter density is observed at smaller scales. This makes it difficult to measure accurately the acceleration, caused by dark matter. Anyhow, a large dark matter density amplifies quantum-gravity. This suggests quantum-gravity is at a maximum in the observed cosmic microwave background-radiation (CMB). However, that is not the truth about the physical reality! It is due to a misleading observation Big Bang cosmology is giving us: If we would be able to travel back to the CMB, we would observe structures again, because the new reality is: The Double Torus universe that changes the quantum-gravity. It does this by dark energy-time (the time smaller than the Planck-time). This enables it to produce gravity (with G), and hence visible mass for only 4%. The whole dynamic fills the Double (circular cyclic) Torus Universe.

As a consequence, really larger dark matter densities fastens small particles (like neutrinos) to a larger speed than light-speed. That is why I'm convinced the case of faster-than light-neutrinos of

2011-2012 will be needed to re-open. I already described that in a paper in addition to calculations that predict the 60 nanoseconds faster neutrinos, when dark matter particles are in the neighborhood : Then neutrinos then are be able to violate General Relativity. So, what happened in CERN was: They discovered dark matter, but dismissed the crux behind their experiments, because of a lack of new theory. So, real larger dark matter densities amplify- quantum gravity and hence enables neutrinos to escape from gravity.

The dynamic in the Double Torus corresponds to more quantum-gravity by $-F_{dm}$. On the contrary less quantum-gravity corresponds to $+F_{dm}$. The $-F_{dm}$ narrows the dark energy-time torus to enclose the dark matter torus more intensively: Thus more calculation of dark matter, hence more quantum-gravity. The $+F_{dm}$ widens the dark energy-time torus, so less dark matter is calculated, and hence less quantum gravity is produced. Another way to see this, is: With the $-F_{dm}$ the dark matter torus seemingly widens, which enables the dark energy-time smaller than the Planck-time to be applied more to the dark matter torus, producing more gravity-dynamic, thus more quantum-gravity. In opposite the $+F_{dm}$, seemingly narrows the dark matter torus, so less quantum-gravity is the result. And seen from the perspective of the dark energy force $F_{de} = \pm F_N . F_{dm}$, the "+" amplifies the quantum-gravity of F_N and the "−" weakens the quantum-gravity of F_N. That is the recalculation-process I spoke of in many of my former papers. I will close this paper by saying: "Those who deny the universe-calculations in a Double Torus Universe are religious Big Bang believers who are to lose their science."

References.

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