Entanglement related to cosmology-TTM.

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Abstract.

This paper postulates a theoretical structure within entangled photons. The postulate is introduced within the framework of the cosmological Twin-Tori Model (TTM). Related papers are to be found in viXra[1,2,3,4,5,6]. After generally derived equations and interpretations, a mass (m_t) per 2π is calculated on ≈ 2.6 x 10^{-34} [(J.s) m^2 / s]. Such a tiny spinning-forward surface per second (torus geometry) has an energy much smaller than the Planck-energy in Joule, suggesting a subdivision of 10^{43} surfaces below the Planckscale: If one photon changes spin, the entangled photon could follow by means of the spinning-forward tiny surface-structure within the torus geometry (per 2π), being an information-flux for entanglement in general below the Planckscale.

1. Introduction.

The Twin-Tori cosmological Model (TTM), a new cosmological model, published in the viXra [1,2,3,4,5,6], is an intertwined double torus universe of dark energy and dark matter, producing a "+" and "-" dark energy force. My great acklnowledgement goes to Christopher Forbes (phD Math and Physics) for formulating this Model (with his colleaque), based on my "dark energy force formula" and "time-torus". More publications of his higher mathematics will follow soon.

However, I continue to explore the TTM myself. One such an exploration, brought-up here, might be interpreted as very strange. So, I decided to publish this under my own name and personal responsibility, mentioning Christopher Forbes as co-author for his currently excellent work on the Twin-Tori Model.

This paper considers my postulate of a "new movement", called: "inter dimensional time-translator (idtt)". This "idtt" operates in addition independent of the lightspeed through a "new information-flux" between spin-entangled photons. This "idtt" is a kind of "window", which is excluded from the relativistic spacetime. However, it is no wormhole either.

In my opinion a "movement" in such a "window" is possible with "speed", which is not a velocity-like speed. So, it has nothing to do with the axions, ever suggested in the early 1960's, which suppose to be particles going faster than light in a relativistic spacetime.

The assumption of the afore mentioned "window", called "idtt", means that two entangled photons could have two identities, which is not in line with the connventional quantum physics, where two spin-entangled photons are not suppose to have two identities. In this paper I investigate if this convention can be broken, because the TTM is refering to a new cosmology.

Firstly I memorize the cosmological formulas of the previous articles, which describe a larger outer-torus, consisting of an amount of dark energy, Y, enclosing an inner-torus of dark matter. Somewhere in the inner torus of dark matter we are observing a big bang cosmology with about 4% visible matter.

However, in the TTM the Y is producing a dark energy force, F_{de} "+" and "-", which is a new phenomenon in terms of current understanding of dark energy, which is supposed to speed up the expansion of the big bang cosmology.

Instead (in the TTM) the F_{de} "+" is expanding the inner dark matter torus, which might be what we observe as big bang expansion. On the other hand, the F_{de} "-" could be considered as the contraction of the "inner dark matter torus" with "us as the observer" inside. However, we observe an accelerating expansion of spacetime according to the F_{de} "+", which triggered me to combine the amount of dark energy, Y, (from the TTM) with the energy-tensor from Einstein's field equations in a new equation.

However, the interpretation of such a combination demands an invariant energy tensor in order to maintain the proven Einstein field equations to be invariant in current big bang cosmology. A same principle should be apllied to quantumdynamics.

The investigation in this paper, however, might be understood as violating the quantum dynamics, however, it is not. It is an addition to quantum dynamics. It is a focus on a possible information-flux between entangled photons, which could be a "transport-tool" for "moving-information" within a "three dimensional time-window". This is in addition to the one time-arrow (entropy) of the big bang cosmology. It is justified to do so in my opinion, because the dark energy force in the double torus geometry implies such an existence of "three dimensional (extra) time".

Normally it would be not apropriate to investigate such in respect of the big bang cosmology with conventional quantuymphysics. However, in a

"higher order universe", such as the TTM is, this is not forbidden. So, I took the challenge to investigate this.

I described the dimensions of the amount of dark energy, Y, in SI-units. I showed how the amount of dark energy, Y, and the energy-tensor $T_{u,v}$ of Einsteins field equations, could be combined. Then I gave an analysis of the new equantion to enable my postulate to be analized for a "new movement", within a window of spin-entangled photons.

2. The amount of dark energy Y in dimensional perspective of SI-units.

The amount of dark energy in the TTM is formulated as Y (see references viXra[1,2] as follows:

$$Y = -\frac{1}{4}c^4\hbar^2 m^6 G[\frac{m^4}{s^4}(Js)^2 kg^6 \frac{m^3}{kgs^2}]$$

(1)

This equation can be re-written as:

$$Y = -\frac{1}{4}c^4\hbar^2 m^6 G[\frac{1}{G}N(Js)^2 kg^6 \frac{m^3}{kgs^2}]$$

(2)

$$Y = -\frac{1}{4}c^4\hbar^2 m^6[N(Js)^2 kg^6 \frac{1}{kg}\frac{1}{G}kg]$$

(3)

$$Y = -\frac{1}{4}c^4\hbar^2 m^6 G^{-1}[N(Js)^2 kg^6]$$

(4)

$$Y = -\frac{1}{4}c^4\hbar^2 m^6 G^{-1}[N\{(Js)kg^3\}^2]$$

(5)

The dimensions of Y in SI-units show a double intertwined torus, producing a force, which is the dark energy force[1,2].

3. The combination of the amount of dark energy Y and the Einstein energy-tensor.

In order to anchor the energy-tensor of Einstein's field equantions, Y has to be divided by c^4, which removes the $[G^{-1} N]$ from the afore expressed dimension of Y (equantion 5), while simultaneously $-8\pi G T_{u,v}$ must be substituted to get the expression as is formulated at the rightside of the equal-sign in Einstein's field equations. This exercise is expressed in equation (6) and (7). The sub-result is expressed in equation (8). The end-result is expressed in equantion (9) and (10).

$$\frac{Y}{c^4} = -\frac{1}{4}\hbar^2 m^6 [\{(Js)kg^3\}^2]$$
(6)

$$\frac{-8\pi G T_{u,v}}{c^4} = -\frac{1}{4}\hbar^2 m^6$$
(7)

$$-\frac{8\pi G T_{u,v}}{c^4} = -\left(\frac{1}{2}\hbar m^3\right)^2$$
(8)

$$-m^6 = -32\pi G \hbar^{-2} c^{-4} T_{u,v}$$
(9)

$$m^6 = 32\pi G \hbar^{-2} c^{-4} T_{u,v}$$
(10)

Now, it is the amount of dark energy, Y, in the double torus geometry of dark energy and dark matter, represented by m^6 in equation (10), which determines the curvature of spacetime. This means according to the equation (10) the energy-tensor has become part of a "three dimensional time" in the TTM. The connection is given by a factor.

Therefore I now identify this factor applied to the energy tensor, which represents the "three dimensional time" from the dark energy and is applied to the energy-tensor. The identification is called, the "idtt"-factor, as follows:

$$idtt = 32\pi G \hbar^{-2} c^{-4}$$
(11)

The "idtt"-factor is defined as an "inter dimensional time-translator" and not affective on the energy-content within the energy tensor matrix. It is affective on the "time-time character" of the energy tensor matrix. This means the "idtt"-factor affects the "time"-contribution of the "energy x time"≤¼ h/π. The "idtt" operates in a deeper level than the Plancktime. The identification of the "idtt-factor" and the "time-time character" of the energy tensor, according to equation (10), could be rewritten as follows:

$$m^6_{tt} = \left(\overset{idtt}{32\pi G \hbar^{-2} c^{-4}} \right) \otimes \left(t.t_{T_{u,v}} \right)$$

(12)

Meaning: Index tt in ($m^6_{tt)}$) means affective on the "time-time character" of $T_{u,v}$; idtt means "inter dimensional time translator"; $\otimes$ is an affection on the "time-time character" of the energy tensor.

Mass ($m^6_{tt)}$) is remains affective on the energy tensor matrix $T_{u,v}$ as long as $T_{u,v}$ has not reached its limit of maximum energy density and other limits of energy producing parameters.

So, the decrease of the exponent of ($m^6_{tt)}$) will lower the energy tensor $T_{u,v}$. I lower the exponent to a square ($m^2_{tt)}$) , because then a correlation to the Planck-mass is made. Equation (12) follows:

$$m^2_{tt} = \left(\overset{idtt}{32\pi G \hbar^{-2} c^{-4}} \right) \otimes \left(t.t_{\left(T_{u,v}\right)^{\frac{1}{3}}} \right)$$

(13)

Now I take one time-direction of energy tensor matrix $T_{u,v}$, because then a correlation to a "window of "time-movement" between two spin-coupled photons" could be made valid as explained in equation (11). This will give the following equation:

$$m^2_{t} = \left(\overset{idtt}{32\pi G \hbar^{-2} c^{-4}} \right) \otimes \left(t._{\left(T_{u,v}\right)^{\frac{1}{3}}} \right)$$

(14)

ERGO:

The "time-movements" in a window of two spin-entangled photons are not of

influence on the energy tensor for maximum energy tensor parameters. The "movement" I mean here, is an "inter dimensional time translator-movement (idtt)", which could be understood as a "translator" that operates as an information-flux" in the "window of two spin-coupled photons". Or in other words: The "time-movement" is a "translater-speed", which "zooms in" in the Plancktime. The "time-movements" subdivides the Plancktime in more "time-units":

$$m^2{}_t = \frac{\frac{t_{planck}}{idtt}}{\left(32\pi G\hbar^{-2}c^{-4}\right)} \otimes \left(t_{planck}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}\right)$$

(15)

The "time-connection" between Y and the energy-tensor $T_{u,v}$ is made valid now. What the dimension of this "time-unit" is, must follow from the next derivations.

Substituting the Plancktime:

$$m^2{}_t = \frac{\frac{\left(\frac{G\hbar}{c^5}\right)^{\frac{1}{2}}}{idtt}}{\left(32\pi G\hbar^{-2}c^{-4}\right)} \otimes \left(t_{planck}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}\right)$$

(16)

Entering the dimensions in SI-units in both parts left and right of the affection-sign $\otimes$ is giving the following equation:

$$m^2{}_t = \left(0.5\right)^5 G^{-0.5}c^{1.5}\hbar^{2.5}[kg^2\frac{m^8}{s^5}] \otimes \left(t_{planck}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}[s]\right) \quad \text{Per } \pi$$

(17).

This looks like mass (although in 13-dimensions) affective to the Planck-time.

$$m^2{}_t = \left(0.5\right)^5 G^{-0.5}c^{1.5}\hbar^{2.5} \otimes \left(t_{planck}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}\right)[kg^2\frac{m^8}{s^4}] \quad \text{Per } \pi$$

(18).

Now I re-write the dimension of equation (18) in SI-units:

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

$$[\left(kg\frac{m^2}{s}\right)^2 \left(\frac{1}{G}kgm\right)] = \frac{1}{G}[(Js)^2(kgm)]$$

<div align="right">Per π   (19)</div>

From this re-write follows:

$$m^2{}_t = (0.5)^5\, G^{-1.5}c^{1.5}\hbar^{2.5} \otimes \left(t_{\text{planck}}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}\right)[(Js)^2(kgm)]$$

<div align="right">Per π   (20)</div>

Then a small change is made to lower the exponent $(0.5)^{0.5}$ to get per 2π, and gives:

$$m^2{}_t = (0.5)^4\, G^{-1.5}c^{1.5}\hbar^{2.5} \otimes \left(t_{\text{planck}}{}_{\left(T_{u,v}\right)^{\frac{1}{3}}}\right)[(Js)^2(kgm)]$$

<div align="right">Per 2π   (21)</div>

Then the **value** of equation (21) will be:

$$m^2{}_t \approx 6.778\text{x}10^{-68}{}_{\left(t_{\text{planck}}{}_{T_{u,v}}\right)^{\frac{1}{3}}}[(Js)^2(kgm)]$$

<div align="right">Per 2π   (22)</div>

The mass-square is a spinning-mass in a torus-surface and excluded from the energy-tensor! (because of its limits)

According to the original dimensions in SI-units (equation 19), the mass-value is:

$$m_t \approx 2.6\text{x}10^{-34}{}_{\left(t_{\text{planck}}{}_{T_{u,v}}\right)^{\frac{1}{3}}}[kg\left(\frac{m^2}{s}\right)^2] = [kg\frac{m^2}{s}\frac{m^2}{s}] = [(J.s).\frac{m^2}{s}]$$

<div align="right">Per 2π   (23)</div>

Dimensionally in SI-units this is a spinning-forward surface in a torus geometry! So, this had to be the perception of the window for spin-entangled photons! It is a curved window: It is a torus-geometry!! Inside this torus a "movement" (not a velocity-like speed) takes place during entanglements. If this mass is compared with the Planck-energy in Joule, than an equation follows, with the ratio:

$$\frac{2.6 \times 10^{-34}[(J.s).\frac{m^2}{s}]}{2.1 \times 10^{-8} \times 9 \times 10^{16}[J]} = 0.137566 \times 10^{-42} \approx 10^{-43}[m^2]$$

(24)

This supposes 10^{43} surfaces subdividing the Planck-energy.

This brings me to my conclusion:

Conclusion.

I do realize that equation (22, 23,24) might be interpreted as super-phenomenologically strange !! However, after having generally derived equations and interpretations, a mass (m_t) per 2π is calculated on $\approx 2.6 \times 10^{-34}$ [(J.s) m^2 / s] (equation 23). Such a tiny spinning-forward surface per second (torus geometry) has an energy much smaller than the Planck-energy in Joule, suggesting a subdivision of 10^{43} surfaces below the Planck scale (equation 24). This subdivision of surfaces, within the tiny torus-geometry, could be understood as an information-flux for entangled photons: If one photon changes spin, the entangled photon could follow through the spinning-forward tiny surface-structures within the torus-geometry (per 2π).

This conclusion is visualized in my handwritten image, as follows:
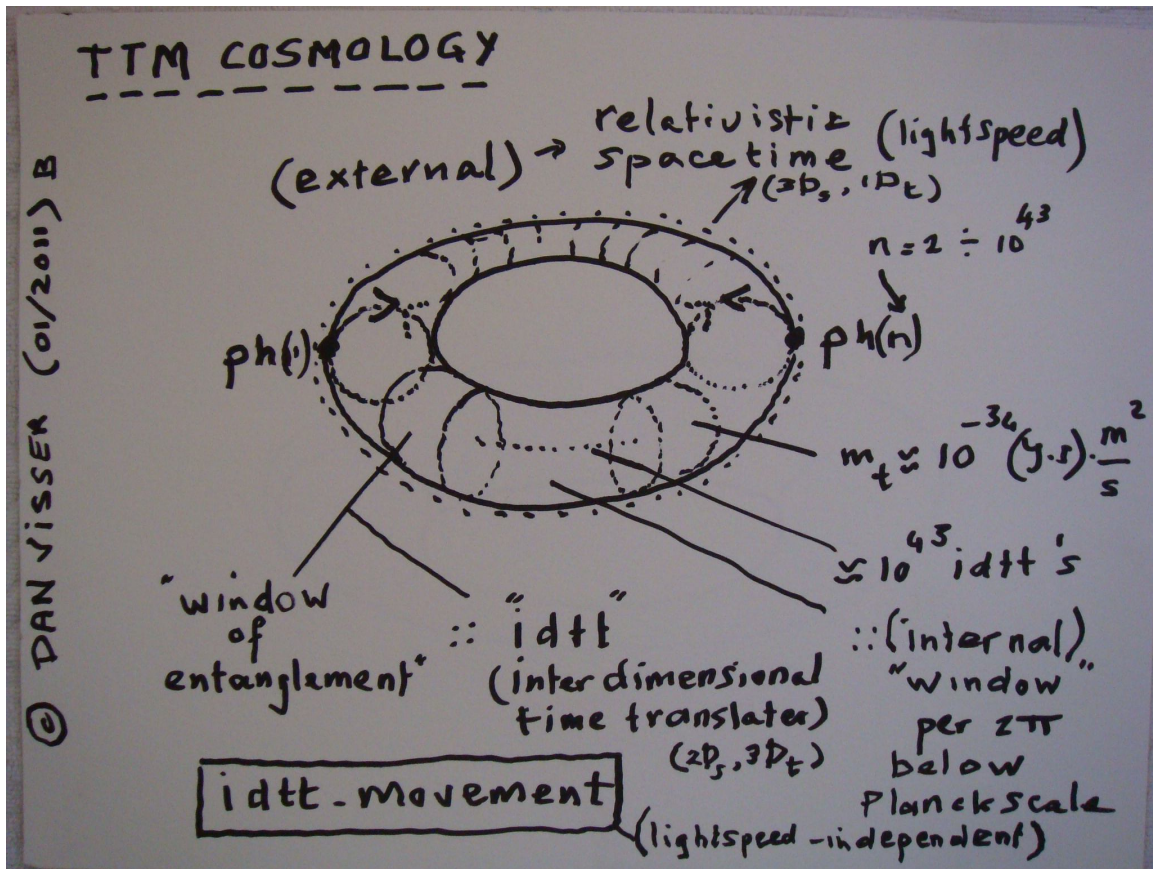
Image (conclusion).

Fig.1: Entanglement related to the cosmology-TTM. © Dan Visser, Almere, the Netherlands, January 2011.

Explanation fig 1: The relativistic spacetime is external to the torus-geometry. The torus-geometry and the relativistic spacetime are complemetarily. That is why you could say the relativistic spacetime is part of the torus-geometry. The torus-geometry is the "window of entaglement" beyond the limits of the relativistic spacetime. Inside this "window" the spinning-forward surfaces are located (idtt's: inter dimensional time translators) for n=1 to 10^{43}, below the Planck scale. The torus-geometry is scaled for 2π, which means it can be larger or smaller, even as large as the big bang cosmology, or, and, even as small as the Plancklength. So, a lot of entanglements are possible. It enables to experience a complete new perception of the universe, like entering a time-window of independent light speed with consciousness.

Ackknowledgement

References.

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