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 having derived equations and interpretations, a mass (m_t) per 2π [rad] is calculated on $\approx 2.6 \times 10^{-34}$ [(J.s) m^2 / s]. This is a tiny (sub-quantum) spin, which moves forward in a surface-stream of the torus geometry that connects the entangled photons. The equivalent relativistic energy of m_t has an energy much smaller than the equivalent energy of the Planck-mass (in Joule), which suggests a subdivision of approximately 0.73 $x10^{43}$ surfaces within (which means below) the Planck-scale. If a photon changes spin than the entangled photon could follow this change by means of that surface-structure within the torus geometry (per 2π [rad]), while being an sub-quantum information-flux for the establishment of the entanglement in general. This refines time in the TTM and relates it to time in Einstein's energy-tensor-equation.

1. Introduction.

The Twin-Tori cosmological Model (TTM), which is a new cosmological model, published in the viXra [1,2,3,4,5,6], and which is an intertwined double torus universe of dark energy and dark matter, produces a "+" and "-" dark energy force. My great acknowledgement goes to Christopher Forbes (phD Math and Physics) for formulating this Model (with his colleague), based on my "new dark energy force formula", which fits a "time-torus". More publications of Christopher's contribution should be focusing on his higher mathematics and is expected to 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 to be respectful to 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 to, and independent of the light-speed, as a “new information-flux“ between spin-entangled photons. This “idtt” is a kind of “window“, which is excluded from the relativistic space-time. However, it is no wormhole.

In my opinion the “movement” in such a “window” is a ‘time-translater’, which is not a velocity-like speed. The “idtt” means that two entangled photons have two identities, which is not in line with the conventional quantum physics, where two spin-entangled photons are not supposed to have two identities. They are not divided, but connected as one unit. In this paper I investigate if this convention within the framework of the TTM, which is referring to a new cosmology base on a universe as a Double Torus.

Firstly I memorize the cosmological formulas of the previous articles, which describe a larger outer-torus, consisting of an amount of dark energy, Y, which encloses an inner-torus of dark matter. Somewhere in the inner torus of dark matter we observe a big bang cosmology with approximately 4.45% 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 the F_{de} “-” is expanding the inner dark matter torus, which might be what we observe as bBig 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 space-time 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.

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 applied to quantum-dynamics.

The investigation in this paper might be understood as violating the quantum dynamics, however, that is not the case: It is an addition to quantum dynamics. It is a focus on a new 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) in the big bang cosmology. It is justified to do so in my opinion, because the new dark energy force in the Double Torus geometry implies such an existence of "three dimensional (extra) time".

Normally it would be not appropriate to investigate such a case in respect of the big bang cosmology with conventional quantum-physics. 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 equation to enable my postulate to be analyzed on the existence of a "new movement" within the entanglement for 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:

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

This equation can be re-written as:

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

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

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

$$Y = -\frac{1}{4} c^4 \hbar^2 m^6 G^{-1} [\mathrm{N} \quad \mathrm{Js} \ \mathrm{kg}^3 \ ^2] \tag{5}$$

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 equations, Y has to be divided by c^4, which removes the [G^{-1} N] from the afore expressed dimension of Y (equation 5), while simultaneously $-8\pi GT_{u,v}$ must be substituted to get the expression as is formulated at the right-side of the equalsign 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).

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

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

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

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

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

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 space-time. 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:

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

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 (E) x time (t)” $\geq$ ¼ h/π.
The “idtt” operates in a deeper level than the Planck-time. The identification of the “idtt-factor” and the “time-time character” of the energy tensor, according to equation (10), could be rewritten as follows:

$$m^{6}{}_{tt} = \left(32\pi G\hbar^{-2}c^{-4} \right)^{\text{idtt}} \otimes \; t.t_{T_{u,v}} \qquad (12)$$

The meaning is: Index tt in ($m^{6}{}_{tt)}$) means affective on the “time-time character“ of $T_{u,v}$; idtt means “inter dimensional time translator“; ⊗ 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:

$$m^{2}{}_{tt} = \left(32\pi G\hbar^{-2}c^{-4} \right)^{\text{idtt}} \otimes \left(t.t_{T_{u,v}}^{\frac{1}{3}} \right) \qquad (13)$$

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:

$$m^2{}_t = \left(32\pi G\hbar^{-2}c^{-4} \right) \otimes \left(t._{T_{u,v}{}^{\frac{1}{3}}} \right) \qquad (14)$$

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 Planck-time. The “time-movements” subdivides the Planck-time in more “time-units“:

$$m^2{}_t = \frac{t_{planck}}{\left(32\pi G\hbar^{-2}c^{-4} \right)^{idtt}} \otimes \left(t_{planck\,{}_{T_{u,v}{}^{\frac{1}{3}}}} \right) \qquad (15)$$

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 Planck-time:

$$m^2{}_t = \frac{\left(\frac{G\hbar}{c^5} \right)^{\frac{1}{2}}}{\left(32\pi G\hbar^{-2}c^{-4} \right)^{idtt}} \otimes \left(t_{planck\,{}_{T_{u,v}{}^{\frac{1}{3}}}} \right) \qquad (16)$$

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

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

(17)

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

(18).

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

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

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

(19)

From this follows:

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

Per π (20)

Then a small change is made to lower the exponent $(0.5)^{0.5}$, which means for the square mass $(0.5)^1$ to get the equation per 2π, so will follow:

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

Per 2π (21)

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

$$m^2_{\ t} \approx 6.778x10^{-68}\ {}^{t_{planck}}{}_{T_{u,v}}{}^{\frac{1}{3}}[\ Js^{\ 2}\ \ kgm\ ]$$

Per 2π

(22)

This mass (square) is excluded from the energy-tensor, because that has its limits to the Planck-time ! Here the $(t_{planck})^{1/3}$ is smaller than the Planck-time limit.

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

$$m_{\ t} \approx 2.6x10^{-34}\ {}^{t_{planck}}{}_{T_{u,v}}{}^{\frac{1}{3}}[kg\left(\frac{m^2}{s}\right)^2] = [kg\frac{m^2}{s}\frac{m^2}{s}] = [(J.s).\frac{m^2}{s}]$$

Per 2π (23)

Dimensionally this is a tiny (sub-quantum) spin, which moves forward in a surface-stream of the torus geometry that connects the entangled photons below the Planck-scale. So, this had to be the perception of the window for spin-entangled photons! It is a curved as a torus-geometry and entangles the photons !! Inside this torus has a "movement" (which is not a velocity-like speed) takes place during the entanglement, because: If the non-equivalent relativistic energy of m_t is compared with the equivalent relativistic energy of the Planck-mass (in Joule), than an equation follows, with the ratio:

$$\frac{2.6x10^{-34}[(J.s).\frac{m^2}{s}]}{2.1x10^{-8}\,x9x10^{16}[J]} = 0.137566x10^{-42} \approx 1{,}376x10^{-43}[m^2]$$

(24)

This suggests approximately 0.73 x 10^{43} inner time-surfaces that sub-divide the Planck-time.

This brings me to the following 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 x 10^{-34} [(J.s) m^2 / s] (equation 23). This is a tiny (sub-quantum) spin, which moves forward in a surface-stream of a torus geometry that connects two entangled photons. The equivalent relativistic energy of m_t has an energy much smaller than the equivalent relativistic energy of the Planck-mass (in Joule), which suggests a subdivision of approximately 0.73 x10^{43} surfaces within (which means below) the Planck-scale. This connects the photons by a new (sub-quantum) information-flux, being a finer structure, which exists of two extra time dimension smaller than the Planck-time. This conclusion is visualized in my handwritten image, as follows: **Image (conclusion).**

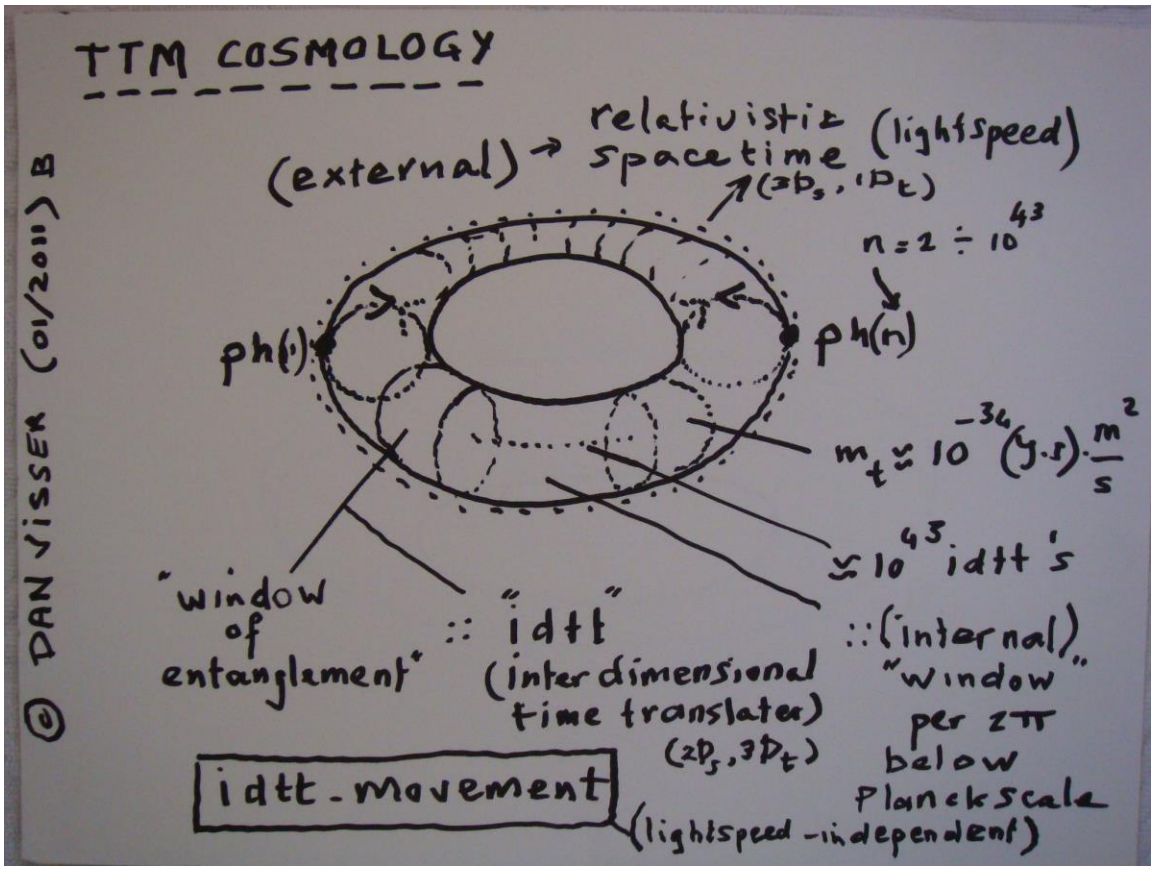

Fig.1: Entanglement related to the cosmology-TTM. © Dan Visser, Almere, the Netherlands, January 2011.

Explanation of fig 1: The relativistic space-time is external to the torus-geometry. The torus-geometry and the relativistic space-time are complementary. That is why you could say the relativistic space-time is part of the torus-geometry. The torus-geometry is the “window of entanglement” beyond the limits of the relativistic space-time. Inside this “window” the refined time-surfaces are located (idtt’s: inter dimensional time translators) as time smaller than the Planck-time. The torus-geometry is scaled for 2π [rad]. This enables to experience a complete new perception of the universe, like entering a time-window of independent light speed with consciousness.

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References.

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