# Double torus cosmology reveals cosmic backround to measure dark energy.

Authors: Dan Visser, (Chris Forbes).

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**Abstract.**

Particularly this paper announces dark energy could be measured as a cosmic backround (CMB)-frame related to a specific quantumstate of dark energy and dark matter conform a double torus cosmology (TTM[1,2,3,4,5,6,7]). In addition this paper also refers to a planned dark energy interferometer-project expected to be operational in 2014[8]. Both aspects can be combined in order to get a better expectation and interpretation of the detection of dark energy. This paper shows dark energy to interact differently than in the planned experiments of the dark energy interferometer-project. That is the motive to publish this paper. Benchmark is dark energy and dark matter are not considered in a big bang cosmology, but in a double torus universe of one torus of dark energy, which encloses and intertwines a second torus of dark matter (TTM-cosmology). In derivations is shown that dark energy will affect falling (super positioned) Cesium atoms in the dark energy interferometer-project unexpectedly: 1. It will touch the super-positioned atoms twice! ; the cause will be the torus-geometry of the TTM-derived CMB-frame. 2. The 'Twice-touching' will vary subsequently; the cause will be a dependency on 'expansion or contraction' of the CMB-torus geometry through dynamics that are caused by the "+" and "-" strength of the dark energy force in the TTM and which is produced by the dark energy torus. This has motivated me to calculate a specific value for TTM-dark energy on about $4 \times 10^{-114}$ [X.s] in $6.4 \times 10^{-48}$ [$m^2$] as a new sort of spin-quantumstate [X.s], which drives the expansion of big bang cosmology analogue to how elementary spin is a 'generator for rotation' in conventional quantumphysics. Probably this paper might be of interest to the dark energy interferometer-project at least.

## Introduction.

In earlier viXra-papers[1,2,3,4,5,6,7] theoretical investigations revealed a cosmology based on a double torus of dark energy and dark matter (TTM cosmology). Within this framework big bang cosmology is supposed to be part of the TTM cosmology. The implication is the universe is much larger than the big bang predicts, and not with different areas of dark energy as sometimes is suggested by well known physicists.

The theoretical investigations of the TTM cosmology are continuously going forward. Head-author, and responsible for this paper, is Dan Visser (ingE and independent cosmologist, from Almere, the Netherlands). His collaborating friend Christopher Forbes (PhD Math and physics, UK) is mentioned as co-author, because of his more than important contribution to the TTM-model. We are both independent scientists not affiliated to an institute. At the moment Chris Forbes focusses on the publication of higher mathematics of the TTM cosmology, which will be released as soon as possible.

Meanwhile I present, in rather simply formulations, a derivation that shows the CMB can be derived from TTM cosmology. This is the motive for publishing the results, related to the planned experiments for measuring dark energy in the lab, announced to be operational in 2014[8].

In general, however, conventional cosmology is hooked on big bang cosmology. It still depends on a lot of budget-responsibility for doing experiments to prove predictions from theories that are designed within the framework of big bang cosmology. Even the afore planned lab-experiment to measure dark energy, through falling-superpositioned-Cesium-atoms in a 1.5 meter vacuum-chamber, and which is planned to be built as a duplicated interferometer to exclude gravitational influence, is considered within the framework of big bang cosmology. Therefore I find it important to show that dark energy could be put in perspective of TTM cosmology during these planned experiments.

Comments on the dark energy interferometer-project suggest doubts whether dark energy might be measureable[9]. I do not agree with that. I show a math-physics-equation that dark energy had to be detectable and how dark energy unexpectedly will effect the experiments differently than the project-team expects. Firstly I explain how TTM cosmology considers dark energy. Secondly my derivations are given. Thirdly analysis and conclusion accomplish the paper for an abstract that might interesting to the dark energy interferometer-project at least. The Planck-satelite-data about the finer CMB-radiation also might be related to what is published in this paper.

At last I want to express my critics to science-magazines, which inform the public from papers out of the institutional archives only. The time is there now to use also the viXra-archive to the public and institutions.

**TTM dark energy.**

Dark energy in the TTM is a dark energy torus enclosing and intertwining a dark matter torus. This dark energy torus comprehends an amount of dark energy, which produces a dark energy force. This force could have a “+“ or “-“ strenght. That “+“ is a new aspect of dark energy compared to conventional big bang cosmology. Big bang cosmology doesn’t assume such “+“ force. In the “+“ mode it enlarges the dark matter torus. This enables us the suggestion of an expanding relativistic spacetime within big bang cosmology. The “-“ mode compactifies the dark matter torus, and that is important for the quantumscale at which dark matter and dark energy are supposed to be measured.

In July 31 2010 I already questioned myself how? I took the quotient of the amount of dark energy (Y) and the dark energy force ($F_{de}$), as described in the TTM, and formulated a new math-physics-equation. To my astonishment this equation revealed CMB-frames (per 2π).

The nicest thing was, a specific CMB-frame was depending on how much mass was substituted in the equation, but I put it away untill I read the paper about the up-coming plans to measure dark energy in the dark energy interferometer-project.

Then I questioned myself again: What is the difference between how the dark energy interferometer-project assumes dark energy and I assume dark energy in the TTM? The difference in my opinion is: Dark energy is affecting dark matter by changing the density of dark matter particles by the “+“ and “-“mode of the TTM-dark energy. This property is due to a three dimensional time below the conventional quantum-physics.

On the other hand the dark energy-interferometer-project considers dark energy as a kind of equivalent dark matter, just like $E=mc^2$ is considered as exchanging pulling matter and gravitational energy. This is why the dark matter interferometer-projectteam supposes dark energy to affect matter in a gravitational way by planning a duplo-interferometer. However, dark energy is also assumed as a non-newtonian force. Well, this is not what dark energy is in the TTM cosmology. Besides one dimensional time effect is also taken for granted by the dark energy interferometer-project, I think such a view on dark energy is typically a view hooked on big bang cosmology.

Therefore I decided to fix my point of view in this delicate puzzle of dark energy. My point of view might become important when the lab-experiments will run-out data in 2014.

**Derivation of a CMB-frame in the TTM.**

In the next formulations the quotient of amount of dark energy(Y) and the dark energy force($F_{de}$) is derived:

$$\left(\frac{Y}{F_{de}}\right)^{TTM} = -1/4c^2\hbar^2 m^6 G^{-1}.\pm 2Gc^{-5}O_e^{\ -1}m^{-3} \tag{1}$$

$$\left(\frac{Y}{F_{de}}\right)^{TTM} = \pm\frac{1}{2c}\frac{\hbar^2}{O_e}m^3\left[\left(\frac{kg}{m}\right)^3(Js)^2 s\right] \tag{2}$$

$$\left(\frac{Y}{F_{de}}\right)^{TTM}_{per(2\pi)^2} = \pm\frac{h^2}{2cO_e}m^3\left[\left(\frac{kg}{m}\right)^3(Js)^2 s\right] \tag{3}$$

$$\left(\frac{Y}{F_{de}}\right)^{TTM}_{per(2\pi)^2} = \pm\frac{m^3}{2cO_e}h^2[X.s] \tag{4}$$

Analysis equation (4):

The dimension of equation (4) seems to be a ‘higher order spin’ [X.s], with [X = $(kg/m)^3$ .$(Js)^2$]. A spin is usually a quantumstate in conventional quantumphysics. This spin quantum state [X.s] seems to comprehend an intrinsic-quantum state of conventional quantumphysics. The dimension [$(kg/m)^3$] is the massdensity at the surface of a 3D-sphere, while the dimension [$(J.s)^2$] is also the squared-value of the elementary spin (h) at the surface of a 3D-sphere.

So, [X.s] will generate an elementary massdensity-variation at the surface of a torus (fig.1). The elementary massdensity-variations do occur in big bang cosmology. There it is called CMB-radiation. We observe CMB-radiation stretched to microwaves after the expansion of the universe based on big bang cosmology. Now equation (4) presents CMB-radiation as a double torus geometry.

Therefore [X.s] is a new sort of spin-quantumstate in TTM cosmology, which drives the expansion of big bang cosmology, just like the spin quantumstate in conventional quantumphysics in modern terms is described as the ‘generator of rotations‘ (fig 1). In TTM cosmology it is the ‘generator of expansion or contraction of dark matter through dark energy‘.

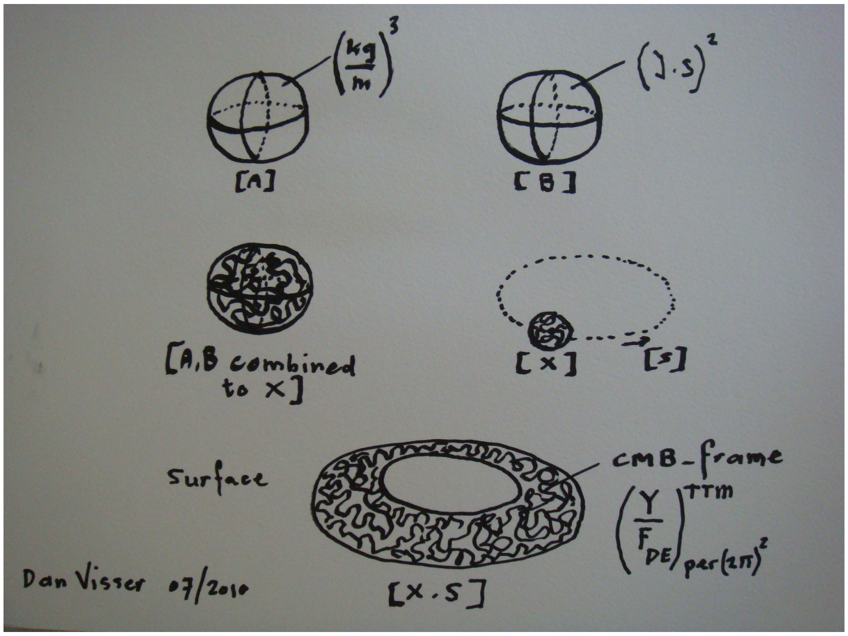

Fig 1: CMB-frame in the TMM cosmology.

I give attention to following analysis:

Equation (4) also comprehends a mass-parameter ($m^3$). This means $Y/F_{de}$ per $(2\pi)^2$ is the representation of a *specific CMB-frame* depending on which mass-value is substituted in equation (4). Through this mathematical property a big bang based cosmology is no longer garanteed. This paper introduces the expire-date of big bang cosmology, starting today, for them who understand the implications given in this paper. A simply calculation will show how a specific dark energy-value relates to a specific dark matter mass-value by substituting a specific value in ($m^3$). The dark matter energy-density, earlier calculated by me in a paper[6], shows dark energy is not the same as dark matter.

In the paper referred to, the dark matter energy-density value was calculated on 1 TeV in $6.4 \times 10^{-48}$ [$m^2$], which is equivalent to 1.782 661 731(70) x $10^{-36}$ [kg] in a same surface of $6.4 \times 10^{-48}$ [$m^2$].

Substitution of this value in equation (4) leads to the calculation of dark energy:

$$\left(\frac{Y}{F_{de}}\right)^{TTM}_{per(2\pi)^2} \sim \pm\frac{\left(1.78x10^{-36}\right)^3}{2x3x10^8x2.6x10^{-70}}\left(6.6x10^{-34}\right)^2\left[X.s\right] \tag{5}$$

$$\left(\frac{Y}{F_{de}}\right)^{TTM}_{per(2\pi)^2} \sim \pm 15.8x10^{-114}\left[X.s\right] \tag{6}$$

1. Based on the calculation (6) extra attention has to be given to a practical effect: The specific dark energy-CMB-frame $Y/F_{de}$ per $(2\pi)^2$ has a three dimensional torus-geometry, which means the surface of 6.4 x $10^{-48}$ [$m^2$] is not flat, but has thickness. Ergo, the calculated dark energy is distributed on the CMB-torus surface. If such a CMB-torus touches a falling (super positioned) Cesium atom in the dark energy experiment-project, a part of this CMB-torus surface might touch the Cesium atoms. It is as if only a 3D-sphere (with a 4 times larger surface) touches the Cesium atom with a ¼ of its energy.

**The calculated dark energy thus will be *4 times smaller than in calculation (6): ≈ 4 x $10^{-114}$ [X.s] in 6.4 x $10^{-48}$ [$m^2$].*** *(7)*

2. A CMB-torus geometry, touching Cesium atoms, imply a 3D-sphere of point 1 to be touching the Cesium atoms subsequently twice !

3. The "+" and "-" mode in the calculation (6) means 'expansion or contraction' of the torus-geometry, and thus will affect the measurements too. It does respectively decrease and increase the subsequence of point 2.

**Conclusion.**

This paper refers to the dark energy interferometer-project expected to be operational in 2014[8].

The results in this paper show dark energy could be measured, but differently than the interferometer-project expects.

Dark energy and dark matter are not assumed in big bang cosmology, but in TTM cosmology. The implication is dark energy will touch falling (super positioned) Cesium atoms twice (in a subsequence), because dark energy has a CMB-torus geometry. This subsequence can also vary, depending on the ‘expansion or contraction’ of the dark energy-CMB-torus geometry, which is caused by the “+” and “-” strength of the dark energy force described in the TTM cosmology.

The expected dark energy will have a value of $\approx 4 \times 10^{-114}$ [X.s] in $6.4 \times 10^{-48}$ [$m^2$] according to TTM cosmology.

**References.**


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