

Discussion needed about three (new) cosmological models based on mathematics and physics.

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Abstract.

Three new cosmological models are ‘circling’ the science-community: a ‘Bouncing Universe’, a ‘Conformal Cyclic Cosmology and a ‘Double Torus Cosmology’. All new ideas, commented anonymously and discussed institutionally. This paper wants more cosmologists and physicists to involve the discussion openly in the media, without walking save roads. The authors and readers are invited to involve this discussion. Which model is true and can the mathematics be matched?

Truth.

This paper has the intension to amplify the discussion of Conformal Cyclic Cosmology promoted by Sir Rodger Penrose (UK)^[1]. The argument is the introduction of a Double Torus Cosmology^[2,3,4,5,6,7,8,9,10].

The Conformal Cyclic Cosmology postulates that no inflation took place to start our big bang. Long before the big bang an earlier universe ended in an almost empty space, filled with some large colliding black holes and infinite energy, which was the start of our big bang.

The Double Torus Cosmology, however, suggests a dynamic process of dark matter and dark energy below the level of quantum mechanics, which also leads to a double torus geometry on the large scale universe. Such a universe exists of a dark energy torus enclosing a dark matter torus. The dark energy torus produces a ‘dark energy force’, which has two strengths, “+” for expansion and “-” for shrinking the dark matter torus. The ‘dark energy force’ also reveals a ‘triple time-arrow’, instead of ‘one time arrow’ causing entropy in the current big bang.

So, the discussion I suggest to start, will be represented by the following case: *“Does the ‘triple time arrow’ enable the laws of quantummechanics to connect with Conformal Cyclic Cosmology, at the moment one universe ends and a new one starts“.* Such a connection might even be supported by ‘graphene-investigation’, which revealed that space-structure might be segmented to enable point-particles (electrons) to change their spin-quantumstate by ‘hopping’ into an other space-segment^[11,12]. This sort of dynamics seems to be equivalent to the ‘Bouncing Universe’ of Dr. M Bojowald (DE), where a quantumspace is also ‘flipping’ insight-out with ‘time’ starting in the opposite direction^[13]. However, such is not the case in Conformal Cyclic Cosmology, where time goes forward all the time. In the Double Torus ‘time’ can be reversed, but not necessarily. If this is true, than which of the three cosmological models is most true?

Views.

My philosophical point of view and cognitivity urges me to be critical about the universe to have started with a big bang-inflation. There are logic-shortcomings, mainly determined by an 'non-stop inflation' in what ever state of physics is happening. My argument is: The conservative assumed property of dark energy might be completely wrong. This kind of dark energy generates 'negative pressure, which enables vacuum energy-density to be negative-energy, such that it acts like reversed-gravity and expands the universe. This has to be replaced by dark energy as described in the Double Torus Cosmology: "+" for expansion of the dark matter torus and "-" for 'shrinking' it.

A Conformal Cyclic Cosmology needs no inflation for flatness and homogeneities, because an earlier existing infinite large and empty universe will take care of that. However, such an 'infinite large and empty universe' suggests an open model, in which an observer will lose its identity, because in the end mass and time lose their meaning.

Although, a cyclic universe is a better alternative to repair big bang-inflation than any other alternative cosmological model, such as Stringtheory, and also better than modification of the existing inflationtheory, meanwhile extended research revealed 350 unequal and not equal distributed concentric circles' in the real cosmic background. These circles are of relative lower temperature than its surroundings. The circles 'have also 'dots' in the centre. The circles should be the result of colliding black holes before our big bang. Compared with computer-simulations of random generated cosmic background only a few circles occurred, according to an interview of R. Penrose on May 14 2011, in the Volkskrant, the Netherlands. This could really mean "we" observe events from before the big bang without inflation!

A Conformal Cyclic Cosmology is an extra ordinary new view of the universe, introduced by Sir Roger Penrose (UK) also in his book 'Cycles of Time' (2010) and earlier in his web-lecture (2005). On the other hand, Dr. Martin Bojowald (DE), introduced a 'Bouncing Universe, in his book "Zurück vor den Urknall- die ganze geschichte des universums" (2009). But whereas Penrose proclaims the big bang happens after the end of an earlier universe without inflation and no time-reverse, Dr. M. Bojowald envisions an 'insight-out turned universe', wherein time runs the opposite way. So, what is the truth?

Several anonymous comments in a physics-forum were applied to this paper. The comments stated that Penrose Conformal Cyclic Cosmology can end because eventually all matter falls into blackholes and blackholes evaporate into energy. So the universe ends up being nothing but energy at very high entropy. When there is no longer mass in the universe, time no longer applies. This is because there is only energy left and energy perceives infinite time as no time at all. So the end of universe is infinite in the future. So with only energy left, infinite time is reached. At that limit of infinity only energy and the gravitational waves are left by the blackholes; the waves would translate to density-variations in the next big bang. Such a limit of infinity mass can not approach, but energy can. The infinite limit of the end of time would translate to the beginning-limit of time, but "limit" means being a mathematical point at which you can approach, but may never reach.

So, how does this transition look exactly? "The decay of the last remaining particle into energy results in infinite entropy, which is synonymous with zero entropy, and which

might be a new ‘singularity’, that could be the explanation of the transition. Because since both space and time arise from the singularity, the event of the the decay of that last particle is the finite event that translates into the begining of time“ in a new big bang.

It is also ‘common sense’ in physics to refer to the ‘2nd-law of thermodynamics with entropy larger than zero. However, it depends on the picture an observer makes of the second law, which is expressed as ‘phase-space’ in cosmology. The trouble is: Such a ‘picture’ requires specifying an observer. Where is the observer in a cyclic universe? Whose map of ‘phase-space’ is being used? Or in other words: In whose eyes are some regions large and some small in the development of an increasinly expanding the universe?

Who defines what the macrostates are? Shouldn’t the 2nd-law not be better explained as: No one should *expect* to observe a decrease in entropy smaller than zero! So, if the universe collapses, and there is a ‘bounce’, and a ‘new phase’ expands, then where is the observer who sees a sudden decrease in entropy? Neither “Madam Before nor Madam After” can observe this“. The ‘phase-space-chart’ is just a visualization of the 2nd-law of thermodynamics. It is just showing that the universe goes from low entropy to high entropy and eventually end in thermal equilibrium. Is there a way to observe this transition from one state to the other in a lab?

Yes, in my point of view there is already evidence for that. In Dr. M. Bojowald’s ‘mirror-universe’ (with reversed time) a quantum universe restarts with a universe turning ‘insight-out’, without classical gravitational equations, and that should be measurable in quantum physics. Remarkable enough, it is measured in quantum physics, because graphene-investigation at CNSI ^[11,12] indirectly suggested that the electrons (which are point particles) can only change their spin-quantumstate in a deeper segmented space. So, this in fact confirms Bojowald’s theory: *time reverses by a transition to an other space segment!!* However, this does not dismiss Conformal Cyclic Cosmology from being true also. The only extension it needs, is: The Reversal of Time.

Are Penrose and Bojowald both right?

Matching Mathematics?

As the author of this paper, Dan Visser, (also author of a few ‘pre-publications’ on the subject ‘Double Torus’), I’m an independent cosmologist (Almere, the Netherlands). I developed a ‘dark energy force formula’ (April 4 2004). My ‘formula’ appeared to fit in a general equation (September 1 2009), derived by Christopher Forbes, mathematician and physicist, (UK) and published in the vixra-archive (see references). The general equation revealed a Double Torus of Dark energy and Dark matter^[2,3,4].

Although the implications are not quite clear yet, a ‘ ‘small mathematical beginning’ indicates why ‘visibility’ and ‘dark matter’ could be ruled by dark energy. Dark energy produces the dark energy force. The dynamic of the ‘dark energy force’ proposes a ‘triple time-arrow’ to recalculate existing quantum mechanics instead of ‘one time arrow’ due to entropy in the big bang.

Meanwhile Christopher Forbes has initiated new methods to write the higher mathematics of the Double Torus Cosmology. At undetermined moments we have contact by email. "In silence" the new higher mathematics is further developed by Christopher Forbes. He is the one, who discovered my ‘dark energy force formula’ on my website. My

website gives information and also shows a list of the weblinks to the 'vixra papers'. From this perspective I wonder, whether the mathematics of the three cosmological models could be matched?

Conclusion.

Three new cosmological models have been introduced. So, this is the reason I want amplify the discussion about these models: The cyclic character of universes might fit in the double torus, but the double torus is related to segmented space, having also a cyclic character by its closed curved tube (torus), while the bouncing universe has a character that seems to connect to segmented space. So the models must be related in some way. Therefore I want to know, which of these models is most true, and, or, could the mathematics be matched in some way? Response on this paper could be given to Dan Visser, Almere, the Netherlands (IngE, independent cosmologist and paintingartist). Email: dan.visser@planet.nl; his website is: www.darkfieldnavigator.com;

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