An outline of new Cosmology Model inspired by Cosmic Christology of the Johannine Prologue

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Abstract

This article discusses an outline of a new Cosmology model based on my interpretation of the Johannine Prologue. The objective of this article is to propose a new Cosmology model which is biblically sound and scientifically verifiable, inspired by Cosmic Christology of the Johannine Prologue. Because this is only an outline, it should be obvious that this is not a complete and working cosmology model. More research is needed to develop it further and also to test this idea. New experiments may be expected in the future to verify this proposal.

Introduction

Despite many efforts in the literature to discuss various cosmology models from biblical perspectives,[1] it is a common view held by many scholars that biblical view (Creation) and the scientific view (Big Bang) cannot be reconciled. Therefore most scholars simply reject biblical teaching as unscientific while most theologians simply ignore the Big Bang theories. Of course, there are also some variations of Creation hypothesis, such as the assertion that the Universe was created by God not in 6x24 hours, but in several thousand years. Another new theory is called as Intelligent Design, saying that the observed complicated structure both in microphysics (DNA, RNA etc) and macrophysics (galaxy, galaxy clusters, planets, stars) seems to point to a Supreme Creator. Therefore we need a new Cosmology model which is able to reconcile both the scientific finding and also the biblical teaching.

[1] See for instance: Willem B. Drees. *Beyond the Big Bang: Quantum Cosmologies and God.* La Salle, Illinois: Open Court Publ. Co., 1990

Question 1: Can we find a biblically sound model of Cosmology?

Traditionally the battle between theologians in one side and scientific world in another side seems to be almost irreconcilable. Even since the days of Galileo Galilei the dispute was quite harsh, with tendency of denying each other side.[2]

In modern days, the scientific finding of expanding galaxies by Edwin Hubble led to the Expanding Universe theory as suggested A. Friedman and G. Lemaitre. Lemaitre himself was a devoted Catholic priest, but he carefully distinguished between the point of beginning and the point of Creation. However, he seemed to assert that the Expanding Universe suggests a point of singularity or the beginning of time, which later it is called as the Big Bang.

In the context of scientific theories, we should admit that initially Big Bang Theory was made as a result of backward extrapolation of the Hubble law. The Hubble law itself only asserts that galaxies move away from each other. And if this law was extrapolated back to the origin of time, then we find that there should be a singularity which then was called as Big Bang.

However, the Big Bang or singularity itself is not free of criticism, both from steady state perspective and also from the rigorous theory of singularity itself. This directs us to a new question which will be discussed subsequently: Can the initial singularity be removed from cosmology models?

Provided the above question concerning initial singularity can be answered, then my answer to the first question is positive: yes, we can propose a new biblically sound Cosmology model with intention to reconcile biblical teaching with scientific findings.

Question 2: Can the initial singularity be removed from cosmology models?

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[2] George V. Coyne & Michael Heller. *A Comprehensible Universe*. New York: Springer-Verlag New York, 2008.

This question has been discussed in a report by Prof. Michael Heller, a cosmologist and theologian from Warsaw, Poland. In a paper for Templeton Prize, he discusses this problem: Cosmological Singularity and the Creation of the Universe.[3] He discusses among other things, how singularity is actually model dependent, and in different cosmology models the initial singularity can be removed. In other words, the notion of Big Bang is just a special case of the chosen space-time metric.

In this regards, I have brought this issue in a question at researchgate.net forum, and there are many comments from other scholars. To summarize their views, it seems that they agree with Prof. Heller that the initial singularity can be removed in different cosmology models. Some references in this context have been cited by contributors to that forum.[4]

A short summary of Dabrowski and Marosek[5] will be made here: Varying physical constant cosmologies were claimed to solve standard cosmological problems such as the horizon, the flatness and the Λ–problem. But one of the most intriguing problems in cosmology is the problem of singularities. In their paper, they suggest yet another possible application of theories suggesting varying physical constants: i.e. to solve singularity problem.[6]

In Belbruno's paper, it is shown that dynamical flow near the big bang singularity can be reduced to a central force field, when modeled by an anisotropic Friedman equation, under a number of assumptions. Then he applies the McGehee transformation to the central force field, yielding unique branch extensions of solutions through a=0.[7]

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[3] Michael Heller. Cosmological Singularity and the Creation of the Universe. http://www.templetonprize.org/pdfs/93-113.pdf

[4] Edward Belbruno. On the regularizability of the Big Bang Singularity (2012). arxiv.org/1205.1474v2.pdf

[5] Mariusz P. Dabrowski & Konrad Marosek. Regularizing cosmological singularities by varying physical constants (2012). arxiv.org/1207.4038v4.pdf

[6] Ibid.

[7] Edward Belbruno. On the regularizability of the Big Bang Singularity (2012). arxiv.org/1205.1474v2.pdf

If it is true that the initial singularity is model dependent, then it seems that the Big Bang can be removed too. In other words, there is a hope to describe the Universe as free from initial singularity.

Question 3: Can we model the Universe based on classical wave equation?

First, I shall recall a study conducted by some researchers from Observatoire de Paris – Meudon several years ago which suggests that vibration of early Universe can be used to determine the shape of the Universe. This study is led by Prof. J. Luminet.[8] What is interesting here is that they solved Helmholtz equation in spherical case to find out the vibration of early Universe. And we know that Helmholtz equation implies classical wave equation, therefore by deduction we can infer that it seems also possible to use Helmholtz equation to determine the vibration of early universe, and perhaps it can be related either to CMBR oscillation or Sakharov oscillation.[9] However, we should admit that oscillation of early universe has not received much attention so far, even though Sakharov (acoustic) oscillation is well known among cosmologists. Figure 1 below depicts CMB temperature anisotropies:

[8] URL: http://www.obspm.fr

[9] L.P. Grishchuk. Cosmological Sakharov oscillations and Quantum Mechanics of the early Universe (2011). arXiv: 1106.5205 [gr-qc]

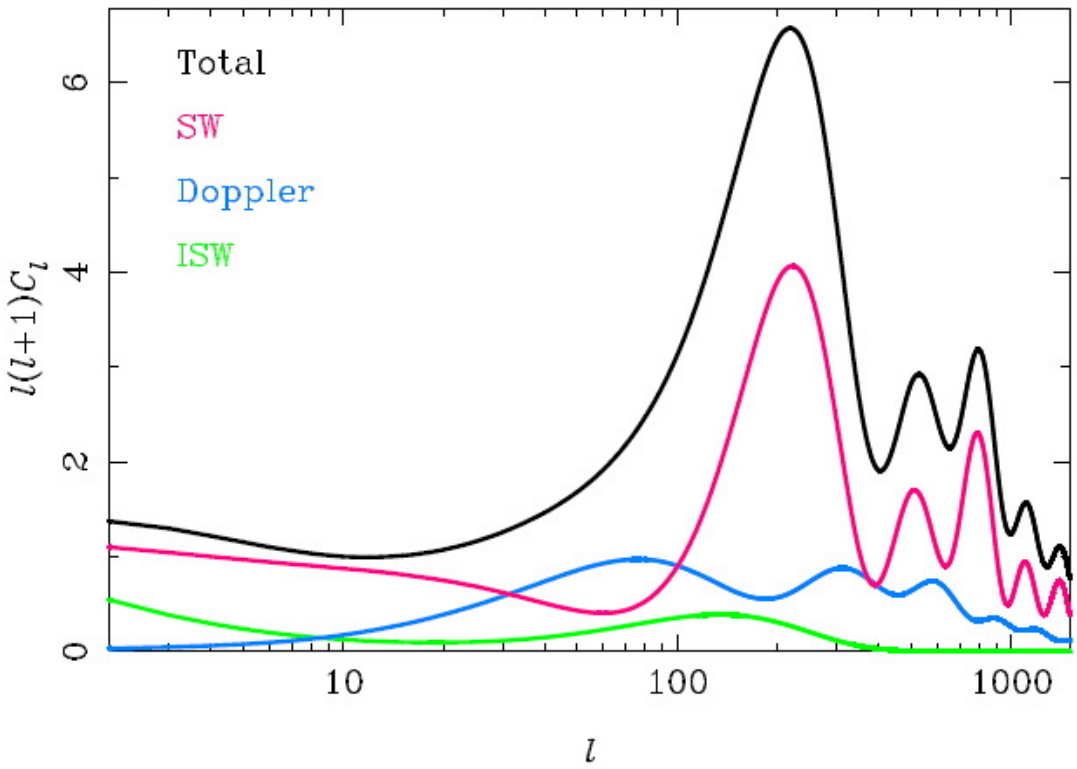

Figure 1. Various contributions to CMB temperature anisotropies [7, p.13].

Second, Hawking-Hartle wavefunction equation and Wheeler-DeWitt equation are two well-known equations for describing quantum scenario for the birth of the Universe (the quantum birth). These two equations are based on extrapolating wave mechanical arguments to the Universe scale, however both of them are lacking observability so far and they cannot explain any observation (data). Therefore it is fair enough to say that both equations are defective and useless equations for describing physical phenomena at large scales. Nonetheless, these equations indicate that it seems worth to study the wave nature of the Universe. Therefore, while we do not advocate the use of H-H or WDW equation, we still can use their approach to model the wave nature of the Universe.

Third, my own personal study since 2002 can be summarized as follows: For once in my life, I believed that Quantum Mechanics (QM) is the sought answer for almost all physics

problems, not only for atomic and particle world but also for astrophysics scale. For cosmologists, there is Wheeler-DeWitt equation which is borrowing quantum mechanical concept to study early period of the Universe. But everybody knows that WDW equation does not predict anything, so I tried to find another way.

Before I continue, firstly allow me to admit something: I should admit that I was very interested in quantum theory especially the wave mechanics since I read a book published by Santa Fe Institute/Addison-Wesley and edited by Wojciech H. Zurek with title: *Complexity, Entropy and the Physics of Information*.[10] I bought that book in 1996, and then studied it in my spare time. After that, I became interested in the wave mechanical model of solar system (planetary orbits) since I found a paper by Laurent Nottale from Paris. But I found that Nottale's Scale Relativity method is quite complicated, therefore I tried to derive his result in a simpler way (based on some quantum mechanics textbooks that I read at the time).

It took some years until I found time and energy to put my ideas in written form and then finally I can publish my first paper in Apeiron, January 2004.[11] In that paper, I discuss quantization of planetary orbits in solar system based on Bohr's quantization of angular momentum. I also predicted three planetoids beyond orbit of Pluto; and later on those 3 planetoids have been discovered subsequently by several astronomers including Dr. Michael Brown from Caltech I (around 2004-2005). After that, I published many more papers discussing various aspects of quantum/wave mechanics, but the basic view remains the same: that I was quite convinced that the quantum mechanics is a wonderful theory (like what many physicists used to think nowadays), although it is perhaps incomplete. In particular I was interested in the

[10] Zurek, Wojciech H. ed. *Complexity, Entropy and the Physics of Information*. Santa Fe Institute/Addison-Wesley Publ., 1990

[11] Christianto, V. A Cantorian Superfluid Vortex and the Quantization of Planetary Motion. *Apeiron* Vol. 11 No. 1, January 2004, URL: http://redshift.vif.com.

quantized vortices model of planetary orbits, because I found that quantized vortices correspond neatly to Bohr's quantization rule. Therefore, it would suggest that we can think that quantization in solar system is a result of quantized helium vortices.

But since 2009, I took a rather different view, which is to find possible connection between quantum mechanics and classical mechanics. That view was expressed in my 2009 paper together with Prof. Florentin Smarandache with title: *A derivation of Maxwell's equations in quaternion space.* In that paper we managed to derive a quaternionic form of Maxwell equations, based on Dirac-Gersten's decomposition method.[12] Since then, I sought further on how to connect classical mechanics and wave mechanics. But still, my basic view is that the wave mechanics eventually supersede classical mechanics. (During the period of 2005 until 2013, I have published no less than 9 books together with Florentin Smarandache and others.) For an introduction to the relationship between classical and quantum theory, see for instance Landsman.[13]

That view I hold until March 2014, when I found some papers written by Dr. George Shpenkov from googling. He explained among other things that there are some weaknesses of wave mechanics especially Schrödinger's equation. I sent him several emails and he emailed me back with some papers and books. After studying his papers and books, I decided that the classical wave equation can complement wave mechanics, and even they are compatible as indicated for instance by the exact correspondence between Poisson bracket and quantum commutator bracket.

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[12] Christianto, V., & Smarandache, F. A derivation of Maxwell's equations in quaternion space. *Progress in Physics, 2009*. URL: http://www.ptep-online.com

[13] Landsman, N.P. *Between classical and quantum* (2005). arXiv:quant-ph/0506082.

In short, I am now convinced that in certain cases like planetary orbits, periodic table of elements, and energy levels of hydrogen, the classical wave equation is proved to be equal or even far better than quantum model.

Now, I think it is the right time to study whether the classical wave equation can also be generalized to describe vibration and other properties of the Universe at large scale. I propose to use a new framework called "fractal vibrating string" in order to generalize the classical wave equation. As far as I know, such a fractal vibrating string concept has not been discussed elsewhere before to study astrophysics and cosmology phenomena.

The proposed solution: A Cosmology model inspired by the Johannine Prologue

As we know there are two main paradigms concerning the origin of the Universe: the first is Big-Bang Theory, and the other is Creation paradigm. But those two main paradigms each have their problems, for instance Big Bang Theory assumes that the first explosion was triggered by chance alone, therefore it says that everything emerged out of vacuum fluctuation caused by pure statistical chance. By doing so, its proponents want to avoid the role of the *Prime Cause* (God). Of course there are also other propositions such as the Steady State theory or Cyclical universe, but they do not form opinion of the majority of people in the world.[14]

On the other side, the Creation Theory says that the Universe was created by God in 6x24 hours according to Genesis chapter 1, although a variation of this theory says that it is possible that God created the Universe in longer period of thousands of years or even billions of years. But such a proposition seems to be not supported by Biblical texts.

[14] Andrew Zimmerman Jones & Daniel Robbins. *String Theory for Dummies*. Indianapolis, Indiana: Wiley Publishing Inc., 2010. P. 169.

To overcome the weaknesses of those main paradigms, I will outline here another choice, namely that the Universe was created by Logos (Christ in His pre-existence). This is in accordance with the Prolegomena of the Gospel of John, which says that the Logos was there in the beginning (John 1:1).[15]

This famous Prolegomena of the Gospel of John may be interpreted that everything comes from the Word of God, and since Word means Voice, and Voice means sound, and sound can be related to wave, vibration and frequency, then it seems quite straightforward to think that everything in this universe consists of vibration and frequency too. While the above analogy with the Gospel of John is suggested by this writer, such a view that everything is related to wave and frequency has been proposed by George Shpenkov.[16] He wrote as follows:

> "A new physics paradigm that we have accepted and follow in all our works is based on: (1) Dialectical philosophy and dialectical logic; (2) The postulate on the *wave nature* of all phenomena and objects in the Universe."[17]

This writer would like to propose an interpretation i.e. if Genesis 1:1-2 is interpreted according to John 1:1, then it seems we can arrive at a different picture of creation, that is the Universe was created by the Word of God (Greek: Logos, Aramaic: Memra) with the power of the Spirit of God.[18] And because the Logos is "word", then it could mean voice or sound, and if sound can be interpreted as wave and frequency, then it seems quite logical to think that everything in the Universe are formed of wave and frequency (vibration). Therefore it is important to work on classical wave equation (vibrating string) instead of Schrödinger equation

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[15] Victor Christianto. An Outline of Cosmology based on interpretation of The Johannine Prologue. *Bull. Soc. Math. Services and Standards*. Vol. 3 No. 3 (2014) URL: www.ijmsea.com

[16] George P. Shpenkov. *Dialectical View of the World: The Wave Model (Selected Lectures).* Volume I: Philosophical and Mathematical Background (2013). URL: http://shpenkov.janmax.com/Vol.1.Dialectics.pdf

[17] Ibid, p.7.

[18] Christianto, V. An Outline of Cosmology based on interpretation of The Johannine Prologue. *Bull. Soc. Math. Services and Standards*. Vol. 3 No. 3 (2014) URL: www.ijmsea.com

to model wave nature of atoms and molecules, partly because the *wave mechanics is unrealistic* model.[19]

A theory which supports this hypothesis is George Shpenkov's interpretation on the classical wave equation, which leads to the following conjectures: a. *shell-nodal* model of atoms and molecules; b. a periodic table of elements which is close to periodic table of Mendeleyev. And this writer proposed a further step, i.e. to extend further the classical wave equation to become *fractal vibrating string*, as mentioned briefly in a recent paper.[20]

Philosophically speaking, the fractal vibrating string has similarities with string theory, because both of them are based on the same hypothesis that particles come out of frequency and vibration, although they also have major difference that is string theorists must work with 26 dimensions: "… the universe has a total of 26 dimensions in string theory, as opposed to the four dimensions it possesses under Einstein's special and general relativity theories".[21] Another major difference is that so far string theory has no single prediction which can be compared with observation or experiment, while the proposed fractal vibrating string model is closer to our everyday's experience.

Therefore, my vision can be summarized as follows: My vision is to extend Dr. George Shpenkov's method (he uses the classical wave equation) to become fractal vibrating string. I hypothesize that many phenomena from microscale up to macroscale can be described using *fractal vibrating string*. And it should be noted here that the proposed fractal vibrating string here is different from fractal string theory of Dr. Michel Lapidus, and it is also different from the

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[19] Christianto, V. A review on Schrödinger equation & classical wave equation. *Prespacetime Journal* Vol.5 No. 5, May 2014. URL: http://www.prespacetime.com or http://www.vixra.org/author/Victor_Christianto

[20] Christianto, V. An Outline of Cosmology based on interpretation of The Johannine Prologue. *Bull. Soc. Math. Services and Standards*. Vol. 3 No. 3 (2014) URL: www.ijmsea.com

[21] Jones, Andrew Zimmerman & Daniel Robbins. *String Theory for Dummies*. Indianapolis, Indiana: Wiley Publishing Inc., 2010. P. 169.

"standard" string theory (although philosophically speaking, they may have some similarities). One of the basic differences is that in string theory, one should work with 26 dimensions, which is not necessary for studying fractal vibrating string.

To the best of our knowledge, such a proposal that the Universe was created by the Word of God (or Logos in Greek) is not in conflict with a recent review on the Johannine cosmology:

"The Word is the creator of all things; the apriority; the source of sources; the origin of origins. The creation of the world is itself revelatory; the creation itself bears the stamp of the Word (1.3)."[22]

And it is also consistent with Holman Christian Standard Bible's translation of Revelation 3:14 : "The Amen, the faithful, true Witness, the Originator of God's creation…"[23]

But unfortunately there are only a few studies in such a Johannine cosmology in the existing body of literature, and even more fewer is mathematical model based on such a Johannine cosmology. Therefore my proposal may be considered as one early attempt to develop such a mathematical model based on interpretation of Johannine Prolegomena. By doing so, I wish to contribute in better dialogue between theology and scientific world.

Future works

For the time being, there are some remaining works to be done:

a. To find exact solution of Helmholtz equation in spherical case and then compare it with observed data of Early Universe's oscillation.
b. To explain CMBR/WMAP spectrum and anisotropy

[22] Klink III, Edward W. "Light of the World: Cosmology and the Johannine Literature," Chapter 5 in Jonathan T. Pennington & Sean M. McDonough (eds.) *Cosmology and the New Testament Theology*. London: T&T Clark, 2008. p. 74-89

[23] Holman Christian Standard Bible, Free edition obtained at OliveTree BibleStudy App.

c. To explain redshift data

d. To explain the origin of clustering formation of galaxies

e. Etc.

Implications of the proposed research

Implications of the proposed research include:

a. It is possible to reconcile scientific findings with biblical teaching in the context of cosmology modeling.

b. It is possible to explain CMBR spectrum from the viewpoint of classical wave equation.

c. It is possible to construct a fractal vibrating string model to study both many large scale as well as micro scale phenomena.

d. Potential implication is to apply unified wave field model governing electromagnetic and gravitational phenomena.[24]

In short, if the proposed research is approved, then it can open a plethora of new approaches to study cosmology in a whole new perspective.

Concluding remarks

I have outlined here a new choice for cosmology model, namely that the Universe was created by Logos (Christ in His pre-existence). This is in accordance with the Prolegomena of the Gospel of John, which says that the Logos was there in the beginning (John 1:1).

[24] Christianto, V. A derivation of GravitoElectroMagnetic (GEM) Proca-type equations in Fractional Space. *Prespacetime Journal* Vol. 5 No. 5 May 2014, www.prespacetime.com or http://www.vixra.org/author/Victor_Christianto

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If the proposed research is accepted, then it can open a plethora of new approaches to study cosmology in a whole new perspective.

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[11] Landsman, N.P. *Between classical and quantum* (2005). arXiv:quant-ph/0506082.

[12] George P. Shpenkov. *Dialectical View of the World: The Wave Model (Selected Lectures).* Volume I: Philosophical and Mathematical Background (2013). URL: http://shpenkov.janmax.com/Vol.1.Dialectics.pdf

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[17] Klink III, Edward W. "Light of the World: Cosmology and the Johannine Literature," Chapter 5 in Jonathan T. Pennington & Sean M. McDonough (eds.) *Cosmology and the New Testament Theology*. London: T&T Clark, 2008. p. 74-89

[18] Holman Christian Standard Bible, Free edition obtained at OliveTree BibleStudy App.

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