

No 3 things

Yuri Danoyan

Abstract

Assumptions of physics which need revision: 1) 4Dspacetime continuum. 2) Gravity as a fundamental force. 3) 3 fundamental dimensional constants (G, c, h). Alternatives have been proposed: 1. Splitting 3D discrete space from 1D continuous time. 2. Gravitation as an integral effect of the Universe. 3. Only Planck constant as a fundamental dimensional and as a consequence only the Planck mass unit have sense.

1. About space and time.

On my first essay <http://www.fqxi.org/community/forum/topic/946> I revealed a number, rather ratio of two numbers. It was ratio 3:1.

No one was collecting before so many different facts of ratio 3:1 at first sight have nothing in common. In binary system (3:1) 11:1. Only one symbol used for denotation bunch of evidences from Galactics to elementary particles. In the same row ratio 3Dspace:1D time.

I call this phenomenon a broken metasymmetry. Of course, the additive approach of (3+1) D Space-Time let resolved many problems of modern physics and was very fruitful. But recognition of splitting approach 3:1 will get additional knowledge of Laws of Nature." Surprisingly, the container(space-time), spin content(fermions-bosons), content (energy-matter) obey the same law 3:1.

Once (Fri 8/1/2008)) I asked by e-mail Dr. Stephen Weinberg:

"If space is discrete and time is continue, 4-dimensional space-time lost its sense or not?"

Answer was "Yes". I then started thinking about continuous time

It seems that continuous time eliminates the problem of the beginning of the Universe and appropriately incorporated in the theories of cyclic universes. For example Penrose modern version of Heraclitus . <http://accelconf.web.cern.ch/accelconf/e06/PAPERS/THESPA01.PDF>

Every Universe is the cause of the previous Universe and originated from remnants of Big Crunch. Time is the circle, rather like logarithmic spirale. We show later that cyclic model can resolve problems of binary relations with following summary.

Concept of Time little bit tricky and has two historical views: Parmenides(static) and Heraclitus(dynamics).

I will try to show concrete difference between the 2 approaches:

Suppose two options with the same content:

- a. The static book (whole story). Doesn't time exist
- b. The same audio-book in the present dynamical regime (CD, magnetic tape. etc) Time exist.
Book is Parmenides.
Audio-book is Heraclites.

At first sight two approaches, Parmenides(book) and Heraclites(audio-book) in a one picture seems as a crazy. As Niels Bohr said: "There are trivial truths and the great truths. The opposite of a trivial truth is plainly false. The opposite of a great truth is also true."

<http://www.brainyquote.com/quotes/quotes/n/nielsbohr129177.html>

The Complementarity is also applicable here as well.

Let's look at the dilemma Parmenides vs Heraclites on the other side, namely, deterministic and probabilistic approach. As analogy relativity vs quantum mechanics.

Here, the first relates to determinism, the second to the randomness and free will.

Advantage of Parmenides is knowledge of whole book.

Advantage of Heraclites is hearing of sounds of audio-book in concrete moment and free will and enjoy it.

Fair view Yakir Aharonov's, when he says, "...is somewhat Talmudic: everything you're going to do is already known to God, but you still have the choice."

<http://physicsworld.com/cws/article/news/2012/aug/03/can-the-future-affect-the-past>

Freeman Dyson writes that the Heisenberg-Bohr based "entanglement" of the wavefunctions stems from the dualistic interpretation which

"Says that the classical world is a world of facts while the quantum world is a world of probabilities.

Quantum mechanics predicts what is likely to happen while classical mechanics records what did happen.

This division of the world was invented by Niels Bohr, the great contemporary of Einstein who presided over the birth of quantum mechanics. Lawrence Bragg, another great contemporary, expressed Bohr's idea more simply: 'Everything in the future is a wave, everything in the past is a particle'. Freeman Dyson, *The Scientist as Rebel*, Random House Inc. 2008, 222

Return to the cyclic universe with continues time need to add. All is flow in one cycle, but all cycles repeat itch other, despite the imaginary violation of second law of thermodynamics. Only possible reconciliation between Parmenides and Heraclites is the Cyclic Universe

I would like reminding quote from P.A.M. Dirac:

"It seems very likely that sometime in the future there will be an improved quantum mechanics, which will include a return to the causation and which justify the view of Einstein. But such a return to the causality may be possible only at the cost of failure of some other fundamental ideas, which we now accept undoubtedly.

If we are going to restore causality, we shall have to pay for it and now we can only guess what idea must be sacrificed." P.A.M. Dirac. *Directions in Physics: lectures delivered during a visit to Australia and New Zealand August/September 1975*. Wiley, New York, 1978.p.88

Complementary concept of time can explain, why some time we must forget about time. To my opinion what supposed to be Dirac. Notion of "time" need to sacrifice sometime. Second sacrifice is the second law of thermodynamics. The second law of thermodynamics is a postulate, not be proved within the framework of thermodynamics. In this connection quote from Sir Arthur Eddington: "

"There is only one law of Nature—the second law of thermodynamics—which recognises a distinction between past and future more profound than the difference of plus and minus. It stands aloof from all the rest. ... It opens up a new province of knowledge, namely, the study of organisation; and it is in connection with organisation that a direction of time-flow and a distinction between doing and undoing appears for the first time". *The Nature of the Physical World* (1928, 2005), 67-68.

http://todayinsci.com/E/Eddington_Arthur/EddingtonArthur-Quotations.htm

Is The Universe perpetum mobile?

As far as I'm sure that time is a circle, I think on the basis of the principle of complementarity, that the Universe may have two descriptions as with dimensions and without dimensions. Example of dimensionless description can serve time as a circle. I suspect that the space obeys other abstract law to law tangent

periodical curve. No dimensions. Only angles. But angles can have discrete structure, see my article Phenomenon of 18 Degrees for Pseudoscalar Mesons . <http://vixra.org/abs/0907.0012>. The article proved of a certain quantized value the angle 18 degrees. The same angle revealed for charged non- stable leptons:

	Mass(Mev)	$\tan^{-1} m/Mp$
mu	105.65	$6.424 = (45-38.576)\text{deg} = (45-2 \times 19)\text{deg}$
tau	1777	$62.165 = (45+17.165)\text{deg} = (45+17)\text{deg}$

Using this pattern you can get the value of the Higgs boson recently open in angular measure by multiplying $18 \times 7 = 126$

Main cause of unsuccessful attempts to cross the general relativity with quantum mechanics hidden in duality notion of time, binary contradictory but complementary relations (determinism vs probability), (determinism vs causality), (determinism vs free will), (physical vs mental), (emergentism vs reductionism), (digital vs analog). That's why the concept of quantum gravity not created yet. This situation would be resolved to reconcile by complementary approach.

Other interesting conclusion concerning of cyclic universe. If all cycles repeat it's other. Does cyclic universe mean eternal return (Friedrich Nietzsche, recurrence theorem Poincaré)? Eternal return mean immortality. If Cyclic Universe can get scientific confirmation, it can help to reconciliation Science with Religion.

If Universe is cyclic, you are born with every cycle, every time and lives your period of life. Between cycles you exist as a Platonic idea, or as a soul, as a spirit.

Then in the some period of cycle you are born and existing as mind with body or body with mind together, then after your death you exist again as a soul.

Is the Time is a Circle?

2.

Gravitation and mass. In my essay <http://www.fqxi.org/community/forum/topic/946> I wrote: "3 of 4 fundamental interactions (strong, electromagnetic, weak) are relatively close by their values, but are greatly different from gravitational. Again the 3:1 Ratio." In the same essay, was shown the analogy between the geometry of 2D surfaces with positive and negative curvature, and the Fermi-Bose statistics. [Fermi-Riemann; Euclid; Bose-Lobachevski] as [0,1, Infinity]. It means 2D (+) for fermions +2D (-) for bosons, the total contribution of both leads to 0-curvature.

Once in "Concepts of Particle Physics, vol.1", I found notes concerning: "...that gravity is not associated with an independent quantized field, but is a collective effect due to already known to us Fermi and Bose fields." Kurt Gottfried and Victor Weisskopf "Concepts of Particle Physics vol.1", Oxford University Press, New York 1984, 212. I became interested in this idea and send e-mail 06.16.98 to Dr. Gottfried and asked him who are supporters this approach. He answered: "What we were alluding to at time was an idea of Sakharov which has, at least thus far, not born fruit."

Nevertheless, many years of interest to this idea still alive. See Matt Visser "Sakharov's induced gravity: a modern perspective" <http://arxiv.org/abs/gr-qc/0204062>

Sakharov idea close to Mach principle 1. Newton's gravitational constant G is a dynamical field. 2. If you take away all matter, there is no more space 3. The theory contains no absolute elements.

I am also supporter of opinion that gravity is not a fundamental force. It seems to me that Sakharov's view about gravitation as elasticity of space close to truth. Mach's idea also still alive. I written that gravity is not a fundamental force in article "What Wolfgang Pauli Did Mean?" <http://vixra.org/abs/0907.0022> . In

conclusion we give one more quote: "I like Bohr's division, because it allows the possibility that gravitons may not exist. If the scope of quantum theory is limited, gravity may legitimately be excluded from it" "I feel the same way about gravitons" Freeman Dyson, *The Scientist as Rebel* 2008 Random House Inc.222

3.

The term fundamental physical constant often has been used to refer to universal but dimensional physical constants such as the speed of light, Planck's constant h , or the gravitational constant G .

Dimensionless physical constant is a universal physical constant that is dimensionless – having no unit attached. The best known example is the fine structure constant α , with the approximate value $1/137.036$. The question whether the fundamental dimensionless constants depend on space and time is being extensively researched. Despite several claims, no confirmed variation of the constants has been detected. In "Dialogue on the number of fundamental constants" L. B. Okun, G. Veneziano and M. J. Duff, <http://arxiv.org/abs/physics/0110060>. concerning the number of fundamental dimensional constants. They advocated correspondingly 3, 2 and 0 fundamental constants. Why they not considering case, where only 1 constant Planck-Dirac's constant; $h/2\pi=1,054 \times 10^{-27} \text{ erg}\cdot\text{sec}$?

To my opinion it will be convincingly, because c doesn't contain mass dimension for triumvir(L,T,M) and G doesn't contain T for the same triumvir.

My be $h/2\pi$ only dimensional constant of Nature?

Some hint gives Planck mass $M_P=(hc/G)^{1/2}$. We simultaneously can decrease or increase c and G , but M_P remains unchanged. Different set of laws that operates in two dimensions (in the absence of gravity).

For example $M_P/M_e=1836$ is true dimensionless constant. I found that is

beautiful symmetric number because $1+8=3+6=9$, after convert to numerological addition.

In the binary code 1001 present nice mirror symmetry.

Now let's go to Planck unit.

$$\begin{aligned} \text{Length (L)} \quad l_P &= \sqrt{\frac{\hbar G}{c^3}} \quad 1.616 \, 199(97) \times 10^{-35} \text{ m} ; \quad \text{Mass (M)} \quad m_P = \sqrt{\frac{\hbar c}{G}} \quad 2.176 \, 51(13) \times 10^{-8} \text{ kg} ; \\ \text{Time (T)} \quad t_P &= \frac{l_P}{c} = \frac{\hbar}{m_P c^2} = \sqrt{\frac{\hbar G}{c^5}} \quad 5.391 \, 06(32) \times 10^{-44} \text{ sec} \end{aligned}$$

I am sure Planck mass (energy) eternal relevant.

I am not sure about Planck length and Planck time.

I will try why: I think if the c and G vary synchronously in time value Planck length and Planck time lost its sense.

In the Planck length G/c^3 no linear link. In the Planck time G/c^5 no linear link.

I think in the small distances possible there are world is 2-dimensional wrapping in the 3-dimensional world. Because in the 2d world haven't gravitation so that there is a constant G is not applicable and the Planck Planck length unit lost its sense, because included constant G .

The reason for the non-existence of black holes.

Pay attention to the Schwarzschild radius formula

where G and c are the square of the formula, or look at the formation of Planck units of length and time. What is the dependence of these supposedly terrible constants

Now imagine that they are not constant, but varies synchronously in time value, plus or minus 20

orders of magnitude.

Leaves only the Planck mass unit makes sense, and the rest is all bullshit and the problem of quantum gravity, pseudoproblem.

About Planck mass unit

My calculation:

proton(neutron) ; $M_{pr}=10^{-24}$ g ; $M_{pl}=10^{-5}$ g ratio1= $M_{pl}/M_{pr}=10^{20}$

$M_{pl}=10^{-5}$ g; $M_{star}=10^{35}$; ratio2= $M_{star}/M_{pl}=10^{40}$

Conclusion: ratio1=sqrt(ratio2)

Contribution of Proton in the curvature of 2D space(+) positive

Contribution of Photon the curvature of 2D space(-) negative.

Summary of The Universe in theoretical view

Fermions. 12(6 quarks+3 leptons+3 neutrino).Spin =1/2

Bosons. 4(1 gluons+3 vector(2W+1Z)+1photon).Spin=1

12/4=3:1

I wrote other article about enigmatic number 12 "Maximum Number 12 on the Spectrum of Mass of Elementary Particles" <http://vixra.org/abs/0907.0014>

From other side the Universe really has:

Fermions 3(proton, electron, neutrino),neutron non-stable .Boson 1 photon. See my essay

<http://www.fqxi.org/community/forum/topic/946>

Ratio 3:1;

Metasymmetry is broken

In the conclusion.

Freeman Dyson told about unsolved problems in physics:

"To my mind there are only two things that would really would be disastrous for the future of physics. One is if would solve all of the major unsolved problems. That would be indeed be a disaster, but I am not afraid of it happening in the foreseeable future.

The other disastrous thing would be if we become so pure and isolated from the practical problem of life that none of brightest and most dedicated students wants any longer to study physics" Freeman Dyson, *The Future of Physics Physics Today*, Sept. 1970, **23**, pp. 23-28.

I would really wish them who working in the field of fundamental physics problem would not remain unemployed.

Appendix 1 Cosmological picture of one cycle

Big Bang; Present; Big Crunch(CGS)

$c=10^{30}$; $c=10^{10}$; $c=10^{-10}$

$G=10^{12}$; $G=10^{-8}$; $G=10^{-28}$

$h=10^{-28}$; $h=10^{-28}$; $h=10^{-28}$

$\alpha =10^{-3}$; 1/ 137; 1

$e=0,1$; $e=e$; $e=12$

Confirmation of lower limit velocity of light

<http://arxiv.org/ftp/arxiv/papers/1209/1209.3765.pdf>

Appendix 2 Cosmological values of mass

$M_p = 10^{-25}$; 10^{-24} ; 10^{-23}

$M_e = 10^{-29}$; 10^{-28} ; 10^{-27}

$M_{pl} = 10^{-5}$; 10^{-5} ; 10^{-5}

Appendix 3

Age of the Universe $t=13,7$ billion years

The mass of the Universe is proportional to the square of the universe's age: $M \propto t^2$ (Dirac)

Age of the universe $12+1.72$ bln years.

Full cycle of the universe $12 \times 12 = 144$ bln years

M_{pr} in the end of cycle $\times 12$

M_{el} in the end of cycle $\times 12$

Rest of time 11×12

Number 11= number of dimensions of M-theory

Every 12 bln years is 1 dimension ,change of metrics

Appendix 4

As model of evolution the Universe can serve the evolution logarithmic spiral in polar coordinates from 0 to collapse and again to survive.

http://en.wikipedia.org/wiki/Logarithmic_spiral

Accelerating Yes.

Ratio 3:1; Energy:Matter;

I think generation #2, generation #3 are the effect of Influence from Future, just hints from the Future. Influence from the Future

<http://arxiv.org/abs/hep-ph/9607375>

Appendix 5 Solution of cosmological constant problem

Theory: Cosmological constant is 10^{94} g/sm^3

Practice: Cosmological constant is 10^{-28} g/sm^3

Planck constant $h=10^{-28} \text{ g x sm}^2/\text{sec}$ in 2D space embedding in 3D space

Only right value is experimental value.

Space foam(not space-time foam)is right solution.

$e^2/GMeMp=10^{40}$ if Mp, Me, e increased 12 time

$Gbb/Gbc=10^{12}/10^{-28}=10^{40}$

Finally I understand Dirac big number puzzle.

Play "the Universe" contain 2 acts

Act 1 Bosonisation (0-pi)

Inversion sign of curvature

From hyperbolic to elliptic

Act 2 Fermionisation (pi-2pi)

Note.In the 2D space Pauli's principle is not valid.There is no need introduce the concept of "color".

Does God play Dice?

Yes,but when He play, always falls the same 3:1

Why is Quantum Gravity so hard?

<http://blogs.scientificamerican.com/guest-blog/2011/07/14/why-is-quantum-gravity-so-hard-and-why-did-stalin-execute-the-man-who-pioneered-the-subject/>

" The reason is that, when it comes to gravity, mass is the gravitational analog of electric charge. You do not have freedom to choose mass and (gravitational) charge separately, as you do in electromagnetism."
(Gennady Gorelik blog)

Once again, why G and c not fundamental.

Because in the same space - time they vary synchronously, but in Planck units of length and Planck unit of time they have different dependencies, and therefore none of them are true.

Once again, why is not always suitable 4D space-time.

Because it does not solve the problem of beginning.

Once again, why gravity is not a fundamental interaction.

Because it is emergent and graviton does not exist.

To my opinion charge and mass two sides the same coin.

So the of Newton's law and Coulomb's law have the same form.

So c and G vary so synchronously in cosmological evolution time.

So ratio e/m constant for proton and electron

So quantum gravitation problem is pseudoproblem.