

Time and Continuum: Zenon Manifold

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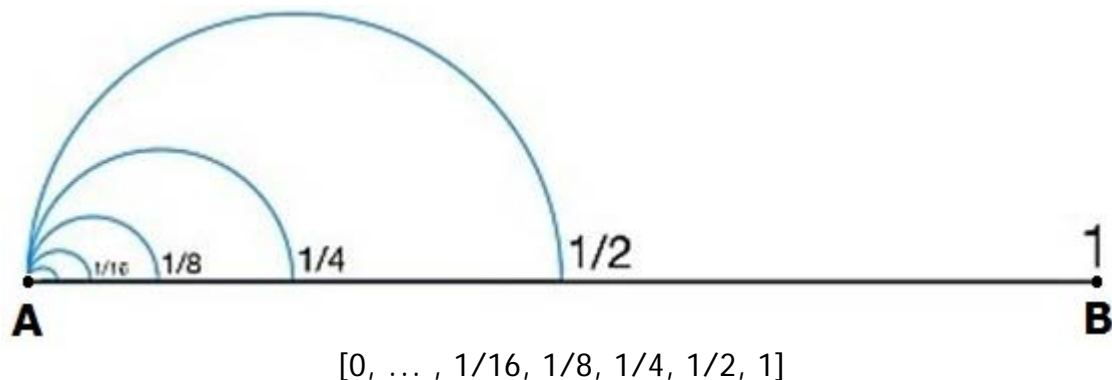
Abstract

Ensuing from first principles, I suggest pre-geometric theory of spacetime [1], in which the apex of **light cone** 'here and now' is not modeled with dimensionless point [2], but with non-trivial mathematical object along *null intervals*, endowed with brand new structure, topology and dynamics (contrary to Robert Geroch [3]), and defined on so-called Zenon manifold [4].

The full manuscript is available upon request.

According to **David Hilbert**, an old French mathematician claimed that, if you suggest a new mathematical theory, it could not be considered complete until you have made it so clear that you can explain it to the first man whom you meet on the street. Let me try.

As told by **Aristotle** (*Physics* VI:9, 239b10), **Zeno of Elea** (490-430 BC) has formulated the famous **dichotomy paradox**: That which is in locomotion must arrive at the half-way stage before it arrives at the goal. In the drawing below, if we imagine **B** going back to **A**, then **B** will stop *only* at the ultimate limit $B \equiv A$, which denotes one single dimensionless point [2], and locomotion will be impossible. See Thompson's lamp paradox and FI, pp. 15-16 in [1].



The only possible solution to the paradox above is to endow *every* point in $[AB]$ with structure, topology and dynamics from the Heraclitean *flow of events* (p. 11 in [1]): replace $B \equiv A$ with the elementary step of time \underline{AB} depicted with Fig. 2c at p. 14 in [4]. The speculations about spacetime continuum [5] and causality [3] are unacceptable, and I suggest a *perfect* continuum of spacetime points as 4D events called 'atoms of geometry' (Fig. 3 at p. 7 and p. 12 in [4]) defined on a brand new **pre-geometric manifold**, dubbed **Zenon manifold**. In one sentence, I introduce Heraclitean time (p. 11 in [1]) "inside" the geometric points \underline{AB} (read above) to solve the problem of **continuum** [5]: all points from the number line (p. 39 in [1]) *follow* the Heraclitean time (Fig. 2c at p. 14 in [4]) without any gaps whatsoever, not even by Gedankenexperiment. Now let's delve into details [8].

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References and Notes

1. D. Chakalov, *Platonic Theory of Spacetime*. 10 February 2019, 46 pp., at [this http URL](#).
2. C. Stover and E. Weisstein. "Point." From MathWorld — A Wolfram Web Resource. <http://mathworld.wolfram.com/Point.html>
3. Robert Geroch, *General Relativity from A to B*, University of Chicago Press, 1978, p. 21. Robert Geroch and Gary Horowitz, *Global Structure of Spacetimes* (1979) at [this http URL](#).
4. D. Chakalov, *Spacetime Engineering*. 2 April 2019, 16 pp., at [this http URL](#).
5. John Baez, Struggles with the Continuum, [arXiv:1609.01421v3](#), 2 January 2018, p. 2. Ioannis Raptis, [arXiv:gr-qc/0110064v1](#), 15 October 2001; Sec. 2, (a)-(f) pathologies of the classical spacetime manifold.
6. D. Chakalov, *The Physics of Life*. 20 January 2019, 14 pp., at [this http URL](#).
7. D. Chakalov, *Hyperimaginary Numbers*. 7 February 2018, 26 pp., at [this http URL](#).
8. Notice that the back bone of Zenon manifold — the noumenal 'monad without windows' (read (iii) at p. 6 in [6]) — is not explicitly present in the drawing [above](#). It is a brand new notion of 'zero' which, just like the "big bang", does *not* belong to the physical (or rather *physicalized*) spacetime (p. 3 in [1]). We may think of it (not "Him") as 'Platonic Universe as ONE' and suggest physical theology (pp. 29-30 in [1]) and spacetime engineering (pp. 1-3 and p. 13 in [4]; pp. 8-10 in [6]), and also correct many errors in present-day [point-set topology](#), [set theory](#), and [number theory](#). The current mathematical presentation of the Continuum [5] is 'not even wrong': recall Zeno's dichotomy paradox [above](#) and read [Erwin Schrödinger](#) from 1935 (p. 2 in [6]) and [Werner Heisenberg](#) from 1958. The *intact* quantum world is **perfect** continuum, interpreted as Platonic *Res potentia* (dubbed [John](#)). It is still the first off mystery in Quantum Mechanics, known since 1911, thanks to [Charles Wilson](#).

The Continuum is about Time: the elementary step of Heraclitean time [AB](#) 'here and now' (read [above](#)) is just the *interface* between irreversible past and Platonic potential future (Fig. 3 at p. 7 and Fig. 2c at p. 14 in [4]). Think of [AB](#) as the ancient [Ouroboros](#) with two *dual* states (p. 3 in [Penrose-Norris Diagram](#)), or the god [Janus](#) looking simultaneously at the past and in the future. We need new [Mathematics](#), not some "primordial standard clock" ([Xingang Chen](#)). For if some "oscillating" physical stuff behaves like "primordial clock" of the [scale factor](#), it must be defined by another physical phenomenon, *ad infinitum*: [Turtles all the way down](#). Which is why we need the Aristotelian [Unmoved Mover](#) endowed with **self-action**: *Der Geist bewegt die Materie* (Virgil, *The Aeneid*, VI, 727). Needless to say, the *physicalized* explications or "[jackets](#)" from the universal **self-action** cannot be traced to any physical "[turtle](#)" *whatsoever*, and many (otherwise [smart](#)) people decided to call them "dark" (p. 14 in [4]). But again, the **self-acting John** is Platonic reality "before" light, like [Macavity](#). It has exactly *zero* chance to exist as physical reality (p. 17 in [1]).

As of today, nobody is interested. I keep exploring my "carrot" (p. 1 in [4]), it works like a charm, better than a Swiss watch — read the 'yellow button' story at p. 15 in [7]. [Again](#), the full manuscript, entitled *Zenon Manifold*, is available upon request ([Matthew 7:6](#)).

16 April 2019

Last update: Easter 2019, 21:00 GMT

Addendum

The two-page manuscript above was submitted to arXiv.org on [24 Apr 2019 09:46:09 EST](#). One day later, on 25 April 2019, arXiv Moderation wrote: "Our moderators have determined that your submission is not of plausible interest for arXiv. As a result, we have removed your submission."

Let me show just one example of Platonic theory of spacetime, which, according to arXiv Moderation, "is not of plausible interest for arXiv." Recall the Catch 22 paradox from Escher's drawing hands at p. 3 in [4] and the crux of "GW astronomy", pp. 15-16 [therein](#). Here's my conclusion (p. 12 [therein](#)):

But there is no *direct* coupling of matter and geometry. Instead, matter is "coupled" to its *atemporal* (p. 3) Platonic state called *Res potentia* ([John](#)). The latter is being localized in the physical world (local mode of spacetime) as 'geometry', [once-at-a-time](#). Thus, matter is acting *on itself* via its Platonic state ([John](#)) in the global mode of spacetime, thanks to which matter becomes *gravitalized* (Sic!) and acquires inertia due to the feedback (p. 11) from the entire Universe as ONE. In the same way the [human brain](#) is acting *on itself*. Only matter interacts with matter. Neither geometry (p. 4) nor parapsychological "ghosts" can.

There is no *direct* coupling of matter and geometry. As I explained previously (p. 3 in [6]),

... the left-hand side contains an entirely different, neither quantum nor classical, animal. Many people consider "intuitively clear" to interpret this brand new object as 'pure geometry' (at the limit $B \equiv A$, read [above](#) - D.C.), like the grin of the Cheshire cat without the cat (p. 15), but here's the catch: "There is no spring or sink *everywhere* (emphasis mine - D.C.) in spacetime for matter (particles' plus electromagnetic field's) energy-momentum" ([Zhaoyan Wu](#)), which could be reserved exclusively for gravity, so that gravity could employ such "spring or sink" to interact with matter and fields, say, with a plastic bottle (p. 21) or with "a bead on a stick" ([Richard Feynman](#)). We face the same puzzle in the physics of the [human brain](#): if the mind were able to interact with brain's tissue, then the mind will be a bona fide physical field. But how could geometric things interact with matter?

Read the first excerpt [above](#). Again, geometric things do not *directly* interact with matter. They just can't. Matter is *always* localized in the irreversible past (Fig. 3 at p. 7 in [4]), whereas the gravitational energy is inherently *non-localizable* ([MTW p. 467](#)) and atemporal Platonic *Res potentia* ([John](#)) placed in the *potential* future, "just in the middle between possibility and reality" (Werner Heisenberg, p. 2 in [6]). According to GR textbooks, geometry acts on matter, telling it how to *move* ([MTW p. 5](#)), and hence the *gravitalized* matter becomes **self-acting**. Why? Because we cannot see 'the grin of the Cheshire cat without the cat'. We can see only one of Escher's drawing hands (p. 3 and p. 10 in [4]), placed in the right-hand side of Einstein's field equations, and it *cannot* obey the law of energy conservation ([Hermann Bondi](#)). If it could, gravity will become physical field. Thus, we need brand new notion of Time (read [above](#)) to unify GR and QM ([Charles Wilson](#)).

But this brand new approach to quantum gravity "is not of plausible interest for arXiv", said arXiv talebans.

So be it ([Matthew 7:6](#)).

Regarding quantum gravity and cosmology [8], look at the so-called evolution equation (Sec. 3 in [CEN.pdf](#)): at every consecutive instant AB 'here and now' (read [above](#)), the total energy of the *physicalized* universe is being nullified — [once-at-a-time](#). The equation is still in symbolic form, pending the precise formulation of hyperimaginary numbers ($|w|^2 = 0$):

$$|w|^2 = |m|^2 + |m_i|^2$$

I also suggested spacetime engineering (pp. 1-3 and p. 13 in [4]; pp. 8-10 in [6]), with emphasis on particular type of natural healing known as [Reiki](#). It is made of two Japanese words — Rei which means 'Higher Power' and Ki which denotes 'life force energy' (see 'Platonic Universe as ONE' [8] and pp. 11-12 in [6]). [Reiki energy](#) is not based on belief, faith, or suggestion. It cannot be guided by the practitioner, because it has its own innate wisdom to guide itself by its own [self-action](#) (read [above](#)): recall the Law of Reversed Effort (p. 9 and p. 38 in [1]). Everyone can master Reiki by learning (p. 43 [therein](#)), much like learning to juggle three balls in the air (p. 9 in [6]). All you need is [one click away](#).

Happy Easter!

D. Chakalov
Easter 2019, 15:15 GMT



Questions and Answers

Q1. What do you mean by 'Platonic Universe as ONE' [8]?

A1: Firstly, the entire Universe as ONE is not comprehensible with our cognition, because it is not relational — it includes, by definition, *absolutely* everything. The two drawings below are misleading, as they show some background dark area "outside" the universe, with respect to which we can *think* of '[the boundary of the universe](#)'. Secondly, the entire Universe as ONE is *atemporal* Platonic object, which acts as ultimate *cutoff* on the *physicalized* 4D universe (email from 3 August 2018 at p. 26 in [1]). It (not "He") is *atemporal* Platonic object (dubbed "trunk" on p. 11 in [6]), like the state of Platonic photon "during" its flight, "after" it is emitted but "before" it is absorbed. In photon's reference frame, it does *not* age nor move at all, being at null interval ([Kevin Brown](#)).

Ditto to the Platonic Universe as ONE shown with [red](#) vertical line in Fig. 2c at p. 14 in [4].

This **red** vertical line is the *atemporal radius* of the inflating balloon in Fig. 4 at p. 6 in [1]; read also p. 32 [therein](#). It shows the *atemporal* “location” of the **matrix** (pp. 8-10 in [6]). Let me elaborate with the drawings below.



The dark “pizza” above shows the idea of ‘[expanding universe](#)’ as 2D surface of the [inflating balloon](#) (the drawing at right), after [Arthur Eddington](#). You cannot see here the **nullified atemporal radius** of the inflating balloon nor its omnipresent **center** at the Beginning ([John 1:1](#)): the ultimate limit $B=A$ shown at p. 1 [above](#).

The two drawings above are misleading, because they “show” the entire physicalized 4D universe *en bloc*, “outside of time and outside of space” ([Stéphane Durand](#), 2:15-2:23). We stay always *inside* 4D spacetime, along the horizontal line of instantaneous state of the *moving slit* below (1+1-D spacetime), from Stéphane Durand (source at [this http URL](#)).



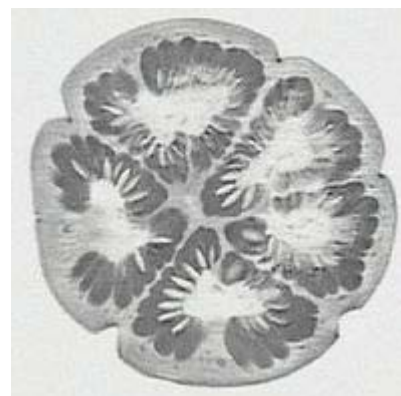
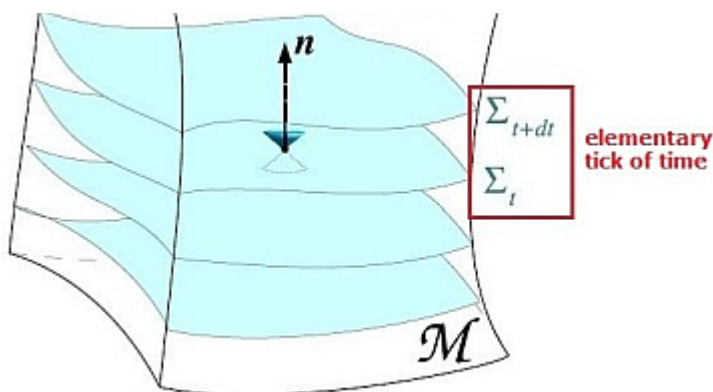
The horizontal line (left) of instantaneous state of the *moving slit* is 1+1-D spacetime from which we produce 3+1-D (local mode of) spacetime with *squared* ([Wikipedia](#)) local time. The 3D slit itself is moving **up↑** following the global Heraclitean time (read [above](#)), shown with **red** vertical line in Fig. 2c at p. 14 in [4] and marked with **AB** [above](#). The global motion of 3D slit **up↑** is *precisely* (Sic!) nullified — once-at-a-time, as recorded with your clock. This is the reason why we have a *perfect* 4D spacetime continuum (dubbed ‘local mode of spacetime’), as explained also at p. 31 (conversation with Stavros) in [1]; see also [Macavity](#).

Thus, the fundamental time asymmetry from the 3D slit **up↑** [above](#) is *precisely* nullified in the *physicalized* 4D local mode of spacetime — we end up with two symmetric “future pointing” and “past pointing” vectors ([Piotr Chrusciel](#)), and “there is no dynamics within space-time itself: [nothing ever moves therein](#); nothing happens; nothing changes.” (Robert Geroch in [3]). If this were true, you shouldn’t be reading these lines, in the first place.

NB: To understand the 3D slit [above](#), imagine taking snapshots from a dark room with camera equipped with flash, and then *assembling* the snapshots to see the illuminated room as 3+1-D movie reel (local mode of spacetime). There is no physical space nor time **between** the snapshots, and you will see a *perfect* spacetime continuum **rendered** by the

“speed” of light – the global Heraclitean time of the 3D slit **up↑ above** is “orthogonal” to the entire *physicalized* 4D movie reel (local mode of spacetime), as it follows the **nullified atemporal radius** of the **inflating balloon**, from its **center B≡A** at the Beginning (John 1:1).

In **numerical relativity**, on the other hand, people interpret the sliding 3D slit **up↑ above** as the physical time read with a clock, by taking the stand of some unphysical meta observer “outside of time and outside of space” (Stéphane Durand). Such “splitting” of spacetime is **not even wrong** – the resulting picture of ‘space + time’ resembles the consecutive slices of a pumpkin, along the time of your wristwatch; click the animated (.gif) image below.

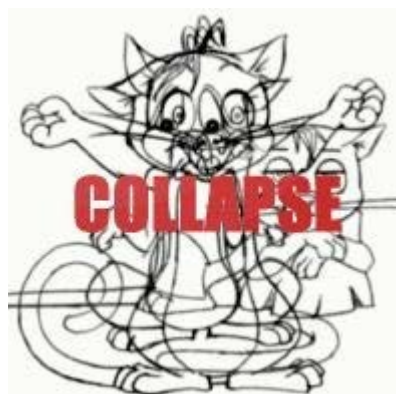


It is a grave error to present the cosmological time of the 3D slit **up↑** (read **above**) with the time read with your clock. Read Slide 12 in [Quantum Spacetime](#).

Q2: Are you suggesting Universal Mind, by quoting Vigril ‘*Der Geist bewegt die Materie*’ (the Mind moves the matter)?

A2: No, I don’t. Read about the doctrine of *trialism* at pp. 11-12 in [6] and pp. 29-30 in [1], and the excerpt [above](#). Notice the “location” of *atemporal* Platonic **matrix** at p. 5 [above](#). It is **self-acting** Platonic matrix (p. 3 [above](#)), neither mental (*Res cogitans*) nor physical (*Res extensa*) stuff. Read p. 9 in [6] and check out Slides 9 and 10 in [Quantum Spacetime](#). To see a demonstration of the evolution equation (p. 4 [above](#)), watch closely Wong Yi Feng at [this http URL](#). It’s not “magic”. Any sufficiently advanced technology is indistinguishable from magic (Arthur C. Clarke).

Please don’t hesitate to submit your questions. If you wish to start from Mathematics, read p. 1 [above](#) and pp. 6-7 in [4]. If you decide to start from QM, read Erwin Schrödinger from 1935 at p. 2 in [6]. The *intact* Platonic quantum state (dubbed **John**) cannot have definite values, neither before nor after we measure it – quantum “superposition” of macroscopic classical states (see the cat states below) is an **oxymoron** (p. 14 in [6]).



There is no “collapse” in the quantum world (*ibid.*, p. 3). If you nevertheless prefer to follow the current QM textbooks, try to produce some “quantum time operator” from the trajectory of a single quantum particle, as demonstrated by Charles Wilson in 1911. Check out also Slides 6, 7, 8, 9, and 10 in [Quantum Spacetime](#), to fully understand the *atemporal* Platonic **matrix** (pp. 8-10 in [6]).

If you prefer to start from GR, don't forget the *bundle* of inertia & gravitational rotation: read p. 13 in [6] and p. 46 in [1]. By comparison, we know from QM that electrons do not revolve about the nucleus, like a pea travelling in a circle, and the same tallies to the “classically not describable two-valuedness” known as quantum spin (Wolfgang Pauli). In current GR textbooks, the *torsion* is eliminated *by hand* from the outset, and nobody knows how spacetime geometry could possibly “move” matter (MTW p. 5) to produce continuous macroscopic gravitational rotation. Also, nobody has tried to explain how the gravitational “field” was created, so that mass “there” — *the whole universe* — could determine inertia “here” (John Wheeler). The solution is *very simple* and *counterintuitive*: read p. 3 [above](#).

Finally, let me quote from the abstract of my first paper ‘How to Bind Mind to Matter?’ from January 1990 (source at [this http URL](#)): “the description of the bond “between” mind and matter and the description of the topology of spacetime are, in essence, one and the same problem.” It took over twenty-three years to solve this immensely difficult problem, by suggesting a new theory of quantum gravity on [20 October 2013](#): read p. 3 [above](#). Little did I know back in January 1990 that we need brand new mathematics and quantum gravity (read p. 4 [above](#)) to understand the physics of Life (p. 9 in [6]). To quote Erwin Schrödinger from [18 November 1950](#) (*ibid.*, p. 2), every *physical* fact “definitely either *is* or is *not*”, whereas the *atemporal* Platonic quantum-gravitational *Res potentia* ‘neither *is* nor is *not*’. It is a different kind of reality (dubbed *John*), “just in the middle between possibility and reality” (Werner Heisenberg): read p. 2 [above](#).

As an illustration of *atemporal* Platonic *Res potentia*, recall John Wheeler's game of [Twenty Questions](#) (pp. 60-61 in [gravity.pdf](#)):

There had been a plot not to agree on an object to be guessed, but that each person, when asked, must give a truthful answer concerning some real object that was in his mind, and which was consistent with all the answers that had gone before. With only one question left, John Wheeler guessed: “Is it a cloud?”
The answer was “Yes!”

The final answer ‘cloud’ was correlated with all previous answers, but it could not be physicalized from/by the Platonic idea of ‘cloud *per se*’ until the final question. But if you say ‘cloud’, you will not “collapse” the Platonic idea of ‘cloud *per se*’, which keeps its invariant *meaning*: try the experiment with your brain at p. 2 in [7]. Now just replace ‘meaning’ with *atemporal* Platonic **matrix** and read Slides 9 and 10 in [Quantum Spacetime](#), and p. 13 in [4]. Every *physicalized* ‘jacket’ occupies one single “point” in the *number line*. All you need is [one click away](#).

As to the physicalized, *cloud-like* manifestation of gravity as inertia-and-gravitational rotation (read [above](#) and p. 35 in [1]), the *Bondi news*, which determines the energy flux of [gravitational radiation](#), cannot produce [holomovement](#) in the cosmos — read p. 3 [above](#). You need the ultimate *cutoff* on the physical universe (Q1 at p. 4 [above](#)) to define the [positivity mass conjecture](#) — you cannot “install” GW mirrors at [null-and-spacelike infinity](#).

To sum up, I offer three proposals (P) relevant to Mathematics and mathematical physics:

P1. New [pre-geometric manifold](#), called Zenon manifold (p. 1 [above](#)), in which all geometric points are emergent *physicalized* points ('jackets' or 'clouds'), whereas their common Platonic source [does not belong](#) [8] to its set of emergent *physicalized* geometric points. I also suggest corrections (explained in the [full paper](#)) to [point-set topology](#), [set theory](#), and [number theory](#), and new numbers called hyperimaginary numbers ($|\mathbf{w}|^2 = 0$).

P2. Every geometric point has internal structure "along" the three types of *null intervals* ($c^2t^2 = r^2$, see [Wikipedia](#)), such that these dynamic points *follow* the global Heraclitean time without any gaps whatsoever (p. 1 [above](#)), thanks to which we end up with *perfect 4D* spacetime continuum (local mode of spacetime) made by 'jackets' or 'clouds' (p. 7 [above](#)).

P3. The global and non-relational Heraclitean time, depicted with the motion of 3D slit [up↑](#) (p. 5 [above](#)), is unobservable due to the "speed" of light: p. 31 in [1] and [Macavity](#). For if it were *physically* observable, we will face 'turtles all the way down' (p. 2 [above](#)).

Corollaries (C):

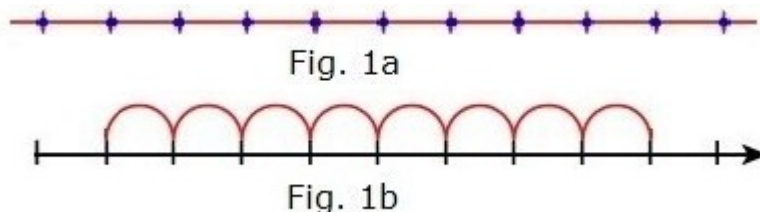
C1. The so-called Russell's paradox, revealed in 1899 by [Ernst Zermelo](#), is not applicable to Zenon manifold – the unphysical Platonic world (p. 11 in [1]), which can organize any [uncountable set](#) of elements "into a whole" (*Zusammenfassung zu einem Ganzen*, [Georg Cantor](#)), [does not belong](#) to any element of its own set. The unphysical Platonic world (read [8]) is the UNSpeakable (p. 2 in [7]) manifestation of 'absolute zero' (not 'zero of something', p. 30 in [1]), known as 'the monad without windows' (Leibniz).

C2. Atemporal Platonic Universe as ONE (p. 4 [above](#)) and Platonic reality endowed with [self-action](#) (p. 3 [above](#)), presented with so-called global mode of spacetime spanned "along" null intervals [1]: spacetime engineering [4]. The *atemporal* Platonic world ([John](#)) is the common source of (i) its *physicalizable* eigenstates (e.g., 'cloud', p. 7 [above](#)) and in the case of gravity (ii) its *physicalizable* (*non-tensorial*) and *gravitalized* energy, momentum, and angular momentum (p. 7 [above](#)). Tensors are applicable only to a *physical* fact that "definitely either *is* or is *not*" ([Erwin Schrödinger](#)): no tensors in quantum gravity. For if geometry were *physical* fact, it could instruct matter/energy "[how to move](#)" only by some *physical* 'total field' (*Gesamtfeld*, Albert Einstein at p. 12 in [4]), which simply does not exist. There is no *direct* coupling of geometry to electromagnetic field in the first place, as we know after the unsuccessful efforts by [Gunnar Nordström](#) in 1914: p. 3 [above](#).

C3. To those who are only curious about how the Platonic [matrix](#) works (p. 7 [above](#)): recall the probability for [emergence of life](#). As [Fred Hoyle](#) remarked (p. 9 in [6]), the random emergence of even the simplest cell matches the likelihood that "a tornado sweeping through a junk-yard might assemble a [Boeing 747](#) from the materials therein." Or recall the collision deep below the surface of the Atlantic Ocean of two nuclear submarines in February 2009 (p. 18 in [7]) – the chance of such correlation is perhaps much higher than the chance of successful correlation of your 100 billion neurons and 100+ trillion synapses right above your neck (ensuing from your [prenatal brain](#)), so that you can read these lines. This is the Platonic [matrix](#) in action. The list goes on and on.

To demonstrate the Platonic [matrix](#), read the 'dark room' analogy at p. 5 [above](#) and recall how you create light in a dark room with a light bulb, which emits photons with rate, say, 1.8×10^{20} photons per second (Slide 9 in [Quantum Spacetime](#)), depicted with blue dots in Fig. 1a below. All photons (blue dots) are *identical* 'jackets' or 'clouds' (p. 7 [above](#)) cast by the Platonic [matrix](#) of 'photon *per se*', depicted in Fig. 1b [below](#).

Notice that EM radiation in Fig. 1a employs *background* spacetime continuum, thanks to which we can estimate the *rate* of app. 1.8×10^{20} photons per second, whereas the 'dark room' (p. 5 [above](#)) is the Platonic **matrix** depicted in Fig. 1b below. The latter is *precisely* nullified ($|w|^2 = 0$) in the *physicalized* 4D (local mode of) spacetime (p. 31 in [1]) shown in Fig. 1a: read P1 [above](#).



The first off challenge to canonical quantum gravity and [the problem of time](#) is to suggest some "quantized" spacetime which, unlike EM radiation on *background* spacetime at Fig. 1a, does not have *any* background whatsoever. The problem resembles painting a picture without any canvas (p. 17 in [1]). The "canvas" might be 'something else' (C.J. Isham and J. Butterfield) that could only be hidden **between** the "quanta" of gravitational "field". Thus, Fig. 1a [above](#) would have to contain 'something else' that does not belong to it:

[---one photon---]**between**[---one photon---]**between**[---one photon---

Complex problems have simple, easy-to-understand [wrong answers](#).

But how to describe some entity (P1), which must not exist as physical reality (p. 5)? We have similar situation in QFT, as the question of how [virtual particles](#) exist "before" they show up and "after" they go back to the [quantum vacuum](#) is quietly swept under the carpet, despite the fact that its precursor is known since 1935, thanks to Erwin Schrödinger (p. 2 in [6]). The only possible solution, in my opinion, is to employ the Platonic **matrix**: read p. 3 [above](#). As Bernhard Riemann stated in [June 1854](#), "Either the reality which underlies space must form a discrete manifoldness, or we must seek the ground of its metric relations outside it, in binding forces which act upon it." Just replace 'outside it' with the Platonic **matrix**. What happens locally, in the infinitesimal neighborhood of every geometric point, depends on [the entire Universe as ONE](#), and *vice versa* (C2 [above](#)).

If you disagree, check out the alternative approach with "[gravitons](#)" suggested by [Nobel Laureate](#) Kip Thorne, and try his experiment aimed at creating "gravitons" at p. 16 in [4]. Read also p. 25 (last) in [viXra:1712.0017vA](#). Sad but true.

Again, anything you were unable to understand will be entirely my fault. Should you have questions, please don't hesitate to contact me by [email](#).

But if you are [not interested](#) in the origin of Time and Continuum, as demonstrated with Zeno's paradox of motion (p. 1 [above](#)) — no problem ([Matthew 7:6](#)). Have a beer instead. As Max Planck pointed out in [1936](#):

An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: it rarely happens that Saul becomes Paul. What does happen is that its opponents gradually die out and that the growing generation is familiarized with the idea from the beginning: another instance of the fact that the future lies with youth.

In RS spacetime, [gravity & rotation](#) (p. 46 in [1]) is determined by the spacetime **matrix** that creates the *entire* spacetime ([Slide 12](#)), only applied *locally* (Sic!): shrink the RS metric to produce so-called “[cold dark matter](#)” or inflate the RS metric to produce “[dark energy](#)” – always in **dynamic** ‘tug of war’ equilibrium. See the [Dipole Repeller](#) ([Vimeo](#)).

Now look at Fig. 9 in *Spacetime Physics*, by E.F. Taylor and J.A. Wheeler (source [here](#)).

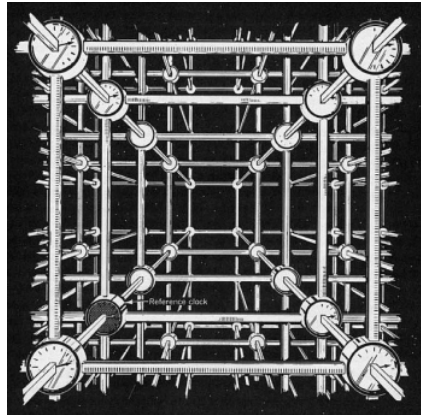


Fig. 9. Latticework of meter sticks and clocks.

The authors Edwin F. Taylor and John Archibald Wheeler explicitly acknowledged their metaphysical assumption that “*every clock in the latticework, whatever its construction, has been calibrated* (emphasis mine - D.C.) in meters of light-travel time” (source [here](#)).

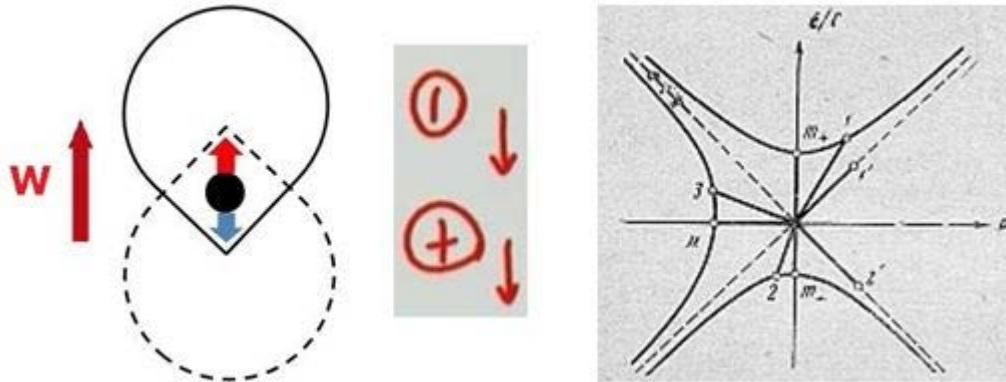
This ‘calibration’ is the crux of RS spacetime. It is a global *atemporal* phenomenon, which is being *exactly* nullified in the physicalized 4D (local mode of) spacetime, once at a time (Fig. 1a at [p. 9](#)). If you look along the *vertical* motion of the 3D slit [up↑](#) at [p. 5](#), you will see different [photoshop-like](#) 4D layers, as both time *and* space are *already* being changed, “before” light (conversation with Stavros, p. 31 in [1]). Thus, we cannot see the global motion of 3D slit [up↑](#) ([p. 5](#)) viz. the omnipresent [luminiferous aether](#) (called [Macavity](#)), as confirmed by the [Michelson-Morley experiment](#). We cannot “turn around” and look straight at the *atemporal* Platonic reality, in Plato’s parlance, nor detect “online” the Heraclitean *flow* of events (p. 11 in [1]) – it only makes the *physicalized* “shadows” **self-acting** ([p. 3](#)).

As an example, look at Fig. 1a at [p. 9](#) and the mechanism of creating light in [Slide 9](#) in [Quantum Spacetime](#), discussed previously at [p. 8](#). The precise ‘calibration’ of creating app. 1.8×10^{20} *identical* photons *per second* is not a *bona fide* physical process, resembling, for example, flushing a toilet. In the latter case you can place all events on a timeline: before you flushed the toilet, the water was present in toilet’s reservoir, waiting patiently to be released down the pipe, with particular acceleration and gradually gaining speed at which it does its final job, then it takes some time to refill the reservoir with fresh water, etc.

Our case of creating *physicalized* photons is totally different – water is made of [bradyons](#) possessing real (not [imaginary](#)) non-zero rest mass, whereas [photons](#) are entirely different animals, as they do not exist as *physical* stuff ‘out there’, *before* they were created, and they do not “[accelerate](#)” either. In this sense, photons remotely resemble so-called [virtual particles](#) ([p. 9](#)). But where are they “located”? See Fig. 1b [above](#) and the equation at [p. 4](#).

Yes, we have *calibration* of the entire latticework “in meters of light-travel time” ([Fig. 9](#)), and the scale-dependent ‘meters of light-travel time’ produce relative Large and Small: read [p. 10 above](#). It’s all relative, as uncle Albert used to say.

Regarding the applications of RS spacetime, read the interpretation of the “expansion” of space at pp. 4-5 in [4] and the last paragraph at p. 5 [therein](#), about spacetime engineering. The crux of the issue is the universal **self-action** (see below) and the equation at [p. 4](#).



Read [p. 3 above](#) and the references at [p. 3](#) in [1].
Besser eine Laus im Kraut als gar kein Fleisch?

Regarding the hypothetical Higgs field ([Ian Low](#)), which supposedly permeates the entire spacetime ([Ivo van Vulpen](#)) like some “invisible hobgoblins” ([Lawrence Krauss](#)), we are invited to believe that “fields that had no rest mass to begin with start to behave as though they were massive” ([Viktor Toth](#)). For example, the Higgs field imparted mass to the **intrinsically massless** W and Z bosons, thereby ‘slowing them down’ ([David J. Miller](#)).

Briefly, it is impossible to “recover” gravity by embedding such ‘retarded light’ hypothesis in the **Standard Model**: read about the so-called “**gravitons**” at [p. 9](#). I believe the approach outlined at [p. 3](#) and [p. 4](#) offers **the only possible** path to **quantum gravity** and **cosmology**, and **the only possible** explanation of the “dark” manifestations of gravity: read [p. 2](#).

However, it is still unclear to the author of these lines what could be the mechanism of **universal** “repulsion” producing the mass-energy of particles (forget about the **Higgs field**), and how this mechanism could create unlimited **self-acceleration** depicted in the second drawing [above](#). If [Baron Münchhausen](#) used spacetime engineering ([p. 9](#) in [4]), perhaps he could fly **effortlessly** in the air (NASA called it ‘**propellantless propulsion**’), along with his brave horse. To quote Robert Powell and Alejandro Rojas from the Scientific Coalition for UAP Studies (source [here](#)):

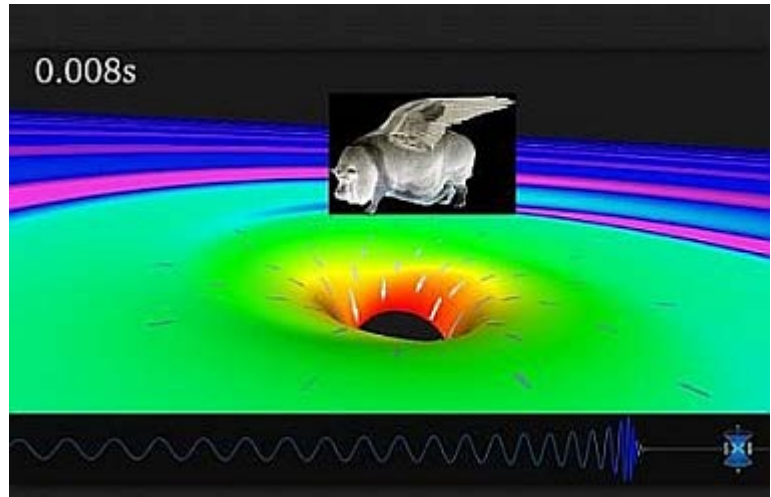
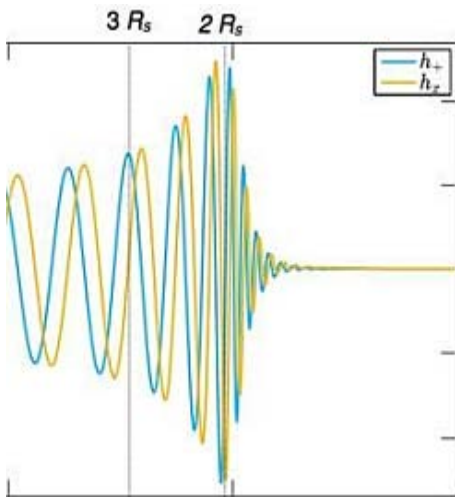
Calculated AAV [anomalous aerial vehicle] accelerations ranged from 40 g-forces to hundreds of g-forces and estimated power based on a weight of one ton ranged from one to nine gigawatts. None of the navy witnesses reported having ever previously seen military or civilian vehicles with these maneuvering abilities. Manned aircraft such as the F-22 and F-35 are limited to nine g-forces and the F-35 has maintained structural integrity up to 13.5 g-forces. Our results suggest that given the available information the AAVs capabilities are beyond any known technology.

True, we still do not have scalable applications of spacetime engineering, perhaps because we still do not understand **Time and Continuum**. More from Max Planck at [p. 9 above](#).

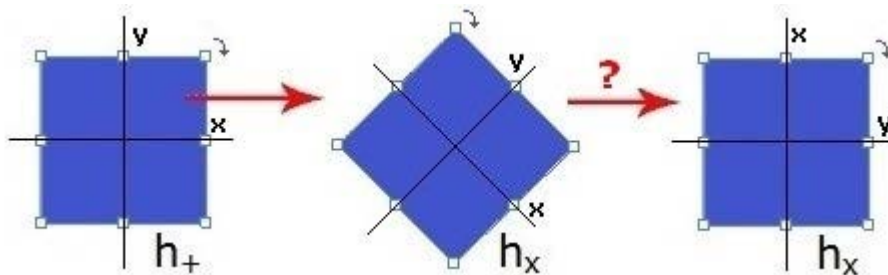
D. Chakalov
 May 28, 2019
 Last update: June 9, 2019, 11:00 GMT

The Persistent Mystery of Gravitational Radiation

The so-called [GW150914](#) is **FRAUD**: read p. 17 and p. 25 in [viXra:1712.0017vA](#). In February 2016, over 1500 “experts” in General Relativity (GR) declared *four* outstanding discoveries: (i) “gravitons” (Q2 in [gw_miracles.pdf](#)) with mass app. $m_g \leq 7.7 \times 10^{-23} \text{ eV}/c^2$, (ii) “vacuum” spacetime in which the **stress-energy tensor is zero** ($T^{ab} = 0$), (iii) binary **black holes**, and (iv) gravitational “waves” (p. 15 in [gwa_rip.pdf](#)). According to **Kip Thorne**, GW150914 were “by far the most powerful explosion humans have ever detected except for the big bang”, only it went off **completely** silent. Why? Because “a *vacuum* BBH merger does not produce any EM or particle emission whatsoever” (p. 9 in [arXiv:1602.08492v4](#)). It just can’t.



Recall that in present-day GR “it would be hopeless to look for exact solutions for the gravitational waves emitted by realistic astrophysical sources” ([Michele Maggiore](#)). Thus, the first drawing above is “derived” by pure imagination and wishful thinking. It’s **FRAUD** (p. 25 in [viXra:1712.0017vA](#)). Read also *Gravitational Wave Miracles?* ([gw_miracles.pdf](#)).



Q1: What phenomenon could possibly produce an exact 45° angle between h_+ and h_x and keep it **exactly** fixed **within** the “superposition” of these oscillating metric fields, in such way that the latter will *never* conflate and intermingle? What could sustain the *phases*?

Q2: How could these “gravitons” be arranged in **vacuum spacetime** to keep the 45° angle between h_+ & h_x ? For if the angle reaches 90° , the net effect from h_+ & h_x will be zero.

Forget it. The motto of **Kip Thorne et al.** is ‘**fake it** until you make it’. **BIG mistake.** Bernard Schutz explained the insoluble problems of gravitational radiation 17 years ago, on 2 August 2002 ([Schutz.pdf](#)). In the first place, there is no physical *structure* in **vacuum spacetime** to produce any “angle”, similar to, e.g., the H-O-H angle in **water molecule**.

The only available theory of [gravitational radiation](#), suggested by Hermann Bondi in 1961 (Josh Goldberg, private communication) and published in 1962 (Hermann Bondi *et al.*, [Paper VII](#)), cannot explain the fact that we observe only *one* type of mass. It is impossible in principle to define the *non-linear* transport of energy – both emission (loss) and absorption (gain) – with the *linearized* approximation of GR ([Jose Pereira](#)), adopted also in [Bondi's hypothesis](#). The latter uses *linear* perturbations of the Minkowski metric and [wrongly](#) suggests energy conservation in “[isolated system](#)” at [null infinity](#), just as Penrose did – [wrongly](#) – next year, in [January 1963](#). Here's the core problem in present-day GR.

Picture gravity as the *shape* of a mountain. The mountain is dead fixed and its shape does not “move” anywhere, just as the effects predicted by the Special and General Relativity, which are used to correct the GPS Navigation System (pp. 20-22 in [1]), are fixed on the “mountain”. Bondi's [news field](#) produces *changes* of the [stress-energy-momentum](#) of the mountain due to gravitational radiation, which instruct the physical mountain how to *move* ([MTW p. 5](#)), and the *gravitalized* mountain becomes **self-acting** (p. 3) viz. “dark” (p. 2).

Why? Because the detector of Bondi's *news field* can interact with only one of Escher's ‘drawing hands’ (p. 3 in [4]), placed in the *right-hand* side of [Einstein's filed equations](#): the “mountain” as *Res extensa*, subjected to perpetual energy **non-conservation** (p. 3).

**Geometry as
potential
reality or
*Res potentia***



**Matter as
physical
reality or
*Res extensa***

Read p. 3 in [4].

There is no background ‘[aether](#)’ in GR (p. 9) to *time* the non-linear interactions of the two ‘drawing hands’ above, to determine which goes first, the mountain's *shape* (*Res potentia* in the **potential** future) or the physical mountain (*Res extensa* in the **irreversible past**).

Thus, the genuine detector of gravitational radiation must *simultaneously* ‘feel’ both the Platonic state of the mountain, placed in the **potential** future, and the physicalizable, [cloud-like](#) mountain placed in the **irreversible past**. This is the crux of my proposal for *atom of geometry* possessing its own structure, dynamics, and topology (p. 17 in [1]). It replaces the false “one single” dimensionless geometric point $B \equiv A$ (p. 1), used also in current math textbooks to “define” closed and open intervals ([Wolfram](#)) and “derive” the murky idea of ‘[limit](#)’. See also the metric paradox at p. 3 in [1] and read again p. 3 [above](#).

To sum up, here are the two major ideas: (i) the **continuum** of spacetime (p. 2) is modeled with the *atemporal* axis **W** (p. 12) moving **up** (p. 5), which is *precisely nullified* in the *squared* ([Wikipedia](#)) and *physicalized* 4D spacetime orthogonal to **W**, and (ii) the *activity* (**C3**) of the cosmological time *arrow* (p. 6) is powered by the **self-acting Unmoved Mover**.

Regarding the “vertical” motion of the 3D slit **up** at p. 5: the entire *physicalized* world is being **re-created** and **re-rendered** by the “speed” of light (p. 11), at every *consecutive* 4D instant ‘here and now’, like **re-created** Phoenix Universe, with total energy being *always* “conserved”, that is, **nullified** (p. 4), once-at-a-time **AB** (p. 1), as read with your clock.

People still interpret mountain’s *shape* (**geometry**) as *physical* reality and try to present it with tensor in the *left-hand* side of **Einstein’s field equations**, which is why this inherently *non-localizable* ‘drawing hand’ (p. 3 in [4]) **must** be **nullified** at every spacetime point (MTW p. 467), yet it remains “spread over” finite spacetime regions, as **non-local gravity**. Ditto to the quantum Platonic state, dubbed **John** [8]: it **must** be **nullified** at spacetime points as well, by wave function “**collapse**”, leaving only its **non-local entangled** “jackets”.

Back to **gravitational radiation**: I have been arguing, ever since 16 December 2015 (p. 14 in [scam.pdf](#)), that its detector must be endowed with **self-action** (p. 3 and p. 12) resembling the **human brain**. Mind you, the gravitational “**waves**” may look **weird**: watch Wong Yi Feng at the link at p. 6. All *three* types of mass (equation at p. 4 and drawings [here](#)) have to be included in the theory of gravitational radiation in order to understand gravity (p. 7) and its “dark energy” and “dark matter” (p. 2) in **dynamic** ‘**tug of war**’ equilibrium (p. 11). As a spin-off, we might avoid the deadly **climate catastrophe**: “At this rate, it’s going to take nearly 400 years to transform the energy system” (James Temple, p. 5 in [6]).

Finally, may I add a historical remark. Forty-seven years ago, in June 1972, after studying physics for little over five months (I started in January 1972 at age 19), I suddenly got the feeling that I’ve finally understood the so-called **fictitious force** in GR. It was a *beautiful* feeling, which lasted until the end of 1973, and of course never came back. But in June 1972, I was very happy that I can “understand” GR, and decided to ask a friend of mine (he was teaching theoretical physics at the University of Sofia) for help: could it be that gravity acts as “mediator” of the human mind on its brain? After all, gravity is not a physical field, so what if the brain is influenced by the *metric field* in GR, producing the neural correlates of mind and consciousness? The idea was seriously stupid, of course, yet many years later I found an unexpected similarity between the *physicalized*, **cloud-like** manifestations of gravity and the “action” of the mind on its brain: read p. 3 above. Namely, the mind does not act **directly** on its brain, just as gravity mediated by ‘geometry’ does not act **directly** on its physical source placed in the *right-hand* side of **Einstein’s field equations** — see the drawing above. Due to the “speed” of light, we can observe only *physical* stuff in its past light cone, and can only infer that both the human brain and the *gravitalized* matter have become **self-acting** (p. 3), being influenced by some “dark” stuff (p. 2). Simple, isn’t it?

People “intuitively” disagree, yet decide to keep silent and ignore my theory, ever since January 1990 (p. 7). But suppose that the *atemporal* Platonic reality (see above) did not exist. Then, in the case of the human brain, you’re left with Marxist-Leninist philosophy, according to which ‘the brain is the hardware and the mind is its software’, and you have to locate some *humongous* super-computer in the human brain, producing “1,000 trillion calculations per second” (source [here](#); read also [HBP.pdf](#)). In the case of GR, you have to discover some (infinitely large?) “field” offering **stress-energy-momentum** *exclusively* to gravity (Einstein called it ‘total field’, p. 12 in [4]), which is impossible, as we know after **Gunnar Nordström** in 1914 (C2 at p. 8). What do you do, then? You decide to *confine* the influence of gravity (MTW p. 5) **only** to ‘bare spacetime’, that is, to “vacuum” spacetime with **stress-energy tensor zero** ($T^{ab} = 0$), as **Kip Thorne** and his collaborators did (read (ii) at p. 13), so that the “mountain” is *dead frozen* (p. 14), and you can happily use the **linearized approximation of GR** viz. *linear* perturbations of Minkowski metric in which “the gravitational field remains a **powerless shadow**” (Hermann Weyl, p. 9 in [gwa_rip.pdf](#)).

Don't ever say that you knew nothing about it ([p. 9](#)).

D. Chakalov

June 4, 2019

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