

# Brain-Controlled Cold Plasma

D. Chakalov  
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Regarding 'macroscopic effects', p. 31 in *Time and Continuum: Zenon Manifold* at <http://www.god-does-not-play-dice.net/zenon.pdf>

Let me begin with two excerpts from Wikipedia:

Quantum mechanics and classical physics  
[https://en.wikipedia.org/wiki/Quantum\\_mechanics#Quantum\\_mechanics\\_and\\_classical\\_physics](https://en.wikipedia.org/wiki/Quantum_mechanics#Quantum_mechanics_and_classical_physics)

Many macroscopic properties of a classical system are a direct consequence of the quantum behavior of its parts.

Macroscopic quantum phenomena  
[https://en.wikipedia.org/wiki/Macroscopic\\_quantum\\_phenomena](https://en.wikipedia.org/wiki/Macroscopic_quantum_phenomena)

Macroscopic quantum phenomena refer to processes showing quantum behavior at the macroscopic scale, rather than at the atomic scale where quantum effects are prevalent. The best-known examples of macroscopic quantum phenomena are superfluidity and superconductivity; other examples include the quantum Hall effect.

I suggest new macroscopic quantum phenomena: quantum fluids at room temperature, dubbed 'brain-controlled cold plasma' (BCCP)<sup>1</sup>. Namely, "macroscopic effects of so-called topological bridge (CQV) connecting the *potential* states of the human brain (p. 22) with the *potential* quantum-gravitational states (p. 29) of the physical system entangled with the brain": read p. 31 in *Time and Continuum: Zenon Manifold* at

<http://www.god-does-not-play-dice.net/zenon.pdf>

Let's dig deeper. To understand the measurement problem in QM, recall the so-called macro-objectification problem, from GianCarlo Ghirardi:  
<http://www.informationphilosopher.com/solutions/scientists/ghirardi/>

We have now reached the point where we can face the so-called problem of the macro-objectification of properties: how, when, and under what conditions do definite macroscopic properties emerge?

The measurement problem and macro-objectification problem are not solved: read Erwin Schrödinger from 1935 at p. 2 in *The Physics of Life* and, e.g., Maximilian Schlosshauer, [arXiv:quant-ph/0312059v4](https://arxiv.org/abs/quant-ph/0312059v4), 28 June 2005.

The main reason why the measurement and macro-objectification problems in QM are not solved is that the so-called quantum waves ([Wikipedia](https://en.wikipedia.org/wiki/Quantum_mechanics)), presenting the *potential* quantum states (read p. 31 [above](#)), possess *complex* (not real-valued) phase ([Chen Ning Yang](#)).

Think of four quantum dice, which you toss in the air, after which they drop on a table. All dice have to be correlated "in the air" ([atemporal Quantum Spacetime](#)) in such way that the

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<sup>1</sup> Download the latest version of this paper (BCCP.pdf) from [this http URL](#).

sum of their readings must be **already** (Sic!) confined in the interval [10, 20] at the instant they are fixed/dropped on the table. Due to the “speed” of light (read [below](#)), you can see the four dice *only* on the table, where they exist as *physical* ‘facts’. Suppose you observe four consecutive sets of readings, (3, 5, 1, 6), (6, 4, 3, 5), (5, 6, 2, 6), (1, 3, 5, 1), all of which are pre-correlated by the *atemporal* requirement [10, 20]. The trajectories of all dice are comprised *only* by their *physical* states ‘[on the table](#)’, which were pre-correlated ([Henry Stapp](#)), like the school of fish [below](#). They will be bootstrapped into holistic ‘school of dice’ and will display *wave-like* holomovement, without any *physical* source ([Erwin Schrödinger](#)) of such “quantum wave” endowed with *complex* (not real-valued) phase ([Chen Ning Yang](#)).

The same phenomenon works in your brain, while you’ve been reading these lines. If the [human brain](#) seems too complicated, think of a [centipede](#): how does it correlate its legs? With some [invisible “dark” computer](#), which [does not emit nor reflect light](#)? I can’t help but quote [Sir Arthur Eddington](#): “Something *unknown* is doing we don’t know what.”

I suggest that the *potential* quantum states (read p. 31 [above](#)) are *atemporal* Platonic reality ([Wheeler’s “cloud”](#), p. 7 in [zenon.pdf](#)), known as *Res potentia*. But what is ‘atemporal’?

Read the answer to the question at Quora ‘Does light only exist at the speed of light? Does light accelerate and decelerate?’ by Andrew Jonkers from 30 March 2018 at

<https://www.quora.com/Does-light-only-exist-at-the-speed-of-light-Does-light-accelerate-and-decelerate>

The whole concept of acceleration or deceleration has no meaning in this context. It started here, and ended there, with a certain probability. That is all you can say. Mathematically it is a plane wave traveling out spherically in three dimensions. Not really a satisfying answer. Let’s try something else.

It is not even as if the energy spreads out in all directions, and then chooses all at once to clump in one place as a single packet of energy. It is like a large number of zombie copies head out in all directions, each with the energy of a photon, and also in total number only with the energy of one photon! The moment one is observed, all the rest disappear. Mmmm that description is not much better.

However you describe it in English, it won’t quite make sense. But that is what Nature does! Perhaps a better explanation is (from Feynman), following emission, all the possible paths are explored, assigned a likelihood, and then the photon takes one. Feynman went a bit further and adds up all the paths it can’t take as well, just to show they happen to sum to zero probability.

The *atemporal* Platonic reality is residing “[between](#)” the emission and absorption of a photon, which is why I suggested an *extension* (Sic!) of the light cone: read NB at p. 16 in [zenon.pdf](#). This is my interpretation of the Feynman path ([Wikipedia](#)), by replacing all “[zombies](#)” with the Platonic quantum state (read [above](#)) of not-yet-observed or “intact” *atemporal* photon, called here ‘John’ ([Erwin\\_Easter.jpg](#)). See quantum tunneling at p. 4 in [Wendelstein\\_7-X.pdf](#).

Now, what will happen if we create a new collective *atemporal* quantum state “of the physical system entangled with the brain” (read [above](#))? All constituents of the *physical* system will exhibit *holomovement* ([Wikipedia](#)), like a correlated school of fish ([YouTube](#)) bootstrapped by their “cold plasma”. Hence the term brain-controlled cold plasma (BCCP).

Check out my proposal (8 August 2019) for producing electricity at p. 8 (last) in [Can We Replicate Stellar Nucleosynthesis?](#), and the suggestion by a prominent theoretical physicist.

You may ask, what is the origin of the energy? We only have to follow Mother Nature: *tweak* the cancellation mechanism producing an immensely small – but not zero – “positive energy density of about  $6 \times 10^{-10}$  joules per cubic meter” from the vacuum ([John Baez](#)), and we will unleash *unlimited* positive energy density, for example, to produce electricity (p. 8 [therein](#)). Recall that gamma-ray bursts (GRBs) can release “as much energy in a few seconds as the Sun will in its entire 10-billion-year lifetime” ([Wikipedia](#)).

But how to *tweak* this cancellation mechanism? With [BCCP](#) and the so-called ‘evolution equation’ at p. 4 in [zenon.pdf](#). Notice the re-interpretation of “negative mass” ([Wikipedia](#)) and “negative energy” ([Wikipedia](#)) at p. 23 in [zenon.pdf](#). We need Mathematics and quantum gravity, not some “[meditation](#)” or “ecstatic visions” à la St. Joseph of Cupertino ([Wikipedia](#)).

For the record: I suggested ‘*atemporal* quantum reality’ on 5 February 1987, ensuing from the interpretation of QM by [Henry Margenau](#) from 1954, the transactional interpretation (TIQM), and the first off mystery in QM, known since 1911, thanks to [Charles Wilson](#). Read about it at p. 4 in [Penrose-Norris Diagram](#). To understand the current situation, read p. 28 in [zenon.pdf](#).

Watch ‘Spacetime Engineering 101’ on 15.01.2020 at [this http URL](#). To obtain the password for the video (720p, MP4), please follow the instructions at pp. 2-3 in [Spacetime Engineering](#). For other inquiries, notice the excerpt from my website at [this http URL](#).

August 14, 2019

Last update: August 27, 2019, 14:25 GMT

## Post Scriptum

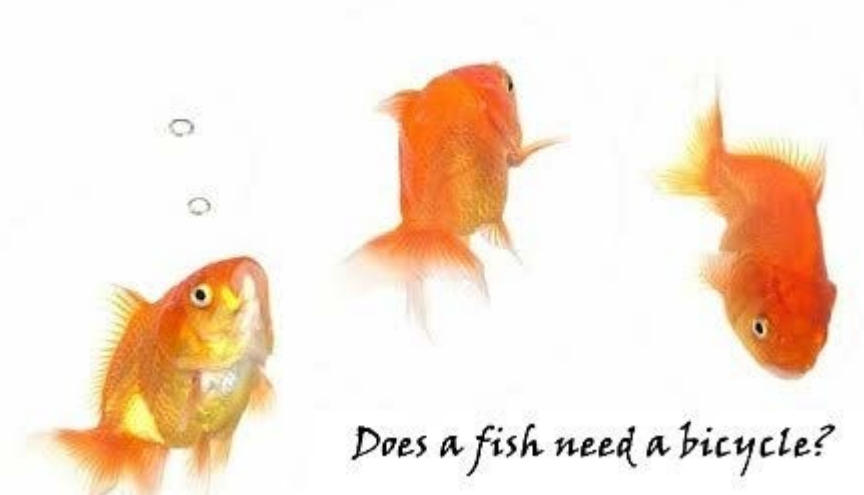
This is my photo from June 1994 (left), with my one-year old daughter. It was taken three months after I sent by snail mail my updated proposal for *atemporal* quantum reality from [February 1987](#) to many academic institutions, in March 1994. And this is how I look now.



Why is this important? Because now I can claim, with the benefit of the hindsight, that I could have offered my theory of spacetime and its testable predictions twenty years ago, by the end of 1999 at the latest, if only there was a trace of interest in quantum gravity and Mathematics by members of the theoretical physics community. In other words, I believe we could have *unlimited* ecologically clean energy by the end of 1999 (Sic!), instead of going to war on Iraq and killing 650,000 people, as estimated in the second *Lancet* survey from 11 October 2006 ([Wikipedia](#)). I can also claim, with the benefit of the hindsight, that we could have avoided the forthcoming climate catastrophe (p. 28 in [zenon.pdf](#)). Not to mention that I could have a normal family life, when my three kids were small and I was young and happy.

These statements of mine are, of course, *counterfactual*. Nobody knows what could have happened to me, if I had offered unlimited clean energy by the end of 1999. I could have been hit by a truck or killed with heart attack, whichever comes first. Anyway.

Now I am really old, and if people are still uninterested in my *proposal* – fine ([Matthew 7:6](#)). As I wrote on Easter 2019, “I keep exploring my “carrot” (p. 1 in [4]), it works like a charm, better than a Swiss watch” (p. 2 in [zenon.pdf](#)). I am only scratching the tip of the iceberg, very gently. Personally, I don’t need unlimited clean energy from *polarization of spacetime*. Don’t need quantum gravity and cosmology either. I’m fine.



D. Chakalov  
 August 19, 2019  
 Last update: August 22, 2019, 12:50 GMT

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Subject: The preferred basis problem  
 Date: Sat, 24 Aug 2019 16:48:20 +0100  
 Message-ID: <CAM7EkxkpuUC3qv9803ojZWMFVbg4Yu-fqe0w2EZEhOQZzMnBxA@mail.gmail.com>  
 From: Dimi Chakalov <dchakalov@gmail.com>  
 To: Max <schlossh@up.edu>  
 Cc: Karl <svozil@tuwien.ac.at>, helfera@missouri.edu,  
 andreas.doering@comlab.ox.ac.uk, erik@strangebeautiful.com,  
 gfrellis@gmail.com, hvanelst@karlshochschule.de, baez@math.ucr.edu,  
 norbert.straumann@gmail.com, vitasta9@gmail.com, seri@math.princeton.edu,  
 unruh@physics.ubc.ca, c.isham@imperial.ac.uk, ksavvidou@upatras.gr, anastop@upatras.gr,  
 giulini@itp.uni-hannover.de, teta@mat.uniroma1.it

Hi Max:

You mentioned the preferred basis problem in your arXiv:quant-ph/0312059v4, [http://www.god-does-not-play-dice.net/Max\\_title.jpg](http://www.god-does-not-play-dice.net/Max_title.jpg)

See the problem in KS Theorem at p. 18 in <http://www.god-does-not-play-dice.net/zenon.pdf>

Details in <http://www.god-does-not-play-dice.net/BCCP.pdf>

Should you decide to upgrade your arXiv:quant-ph/0312059v4 with KS Theorem, please drop me a line and I will elaborate: quantum “superposition” of classical states is an oxymoron. Erwin Schrödinger explained the issue in 1935,

[http://www.god-does-not-play-dice.net/Erwin\\_Easter.jpg](http://www.god-does-not-play-dice.net/Erwin_Easter.jpg)

Hope to hear from you. Karl Svozil, for example, knows my research since year 2000, after we met at his office in Vienna, yet he did not even mention the facts he learned from me in his 2018 book ‘[Physical \(A\)Causality](#)’.

All the best,

Dimi Chakalov  
[chakalov.net](http://chakalov.net)

## NOTE

The application of [KS Theorem](#) (p. 18 in [zenon.pdf](#)) to the preferred basis problem ([Max\\_title.jpg](#)) is the core of my proposal for *atemporal* quantum reality from 5 February 1987 (read [above](#)). Back in September 2002, I was kindly invited by Prof. [Chris Isham](#), Britain’s greatest quantum gravity expert ([Wikipedia](#)), to present my ideas at his *Tuesday Seminar* at Imperial College London, Room 503 Huxley. He knew my proposal for *atemporal* quantum reality very well, after we met in November 1998 and had numerous private discussions at his office. I wholeheartedly agreed, and suggested to schedule the seminar for *Wednesday*, 27 November 2002. Why? To see whether Prof. Chris Isham would instead suggest *Tuesday*, 26 November 2002, as his seminar was held only on *Tuesdays*. But he had no objections. However, my scheduled talk was still **not** listed at the webpage of the *Tuesday Seminar* by mid-October 2002. I got nervous and ask him by email whether his colleagues at the Physics Department are aware of the seminar, to which he responded that perhaps 3-4 people (Sic!) will attend, so we’ll have discussion at his office! That was totally unexpected, and I tried to explain to him the crucial importance of my proposal to quantum gravity. As Henry Margenau wrote in 1954 regarding the **latent** observables in QM (*Physics Today* 7(10), 6–13 (1954), [p. 10](#)): “I believe that they are “not always there”, that they take on *values* when an act of measurement, a perception, forces them out of indiscriminacy or latency.”

**Where** the latent observables could exist, during the “time” (if any) of still being “not always there”? Erwin Schrödinger explained the puzzle in 1935 ([Erwin\\_Easter.jpg](#)). Once we add to the puzzle from 1935 the [KS Theorem](#) (p. 18 in [zenon.pdf](#)) and the preferred basis problem ([Max\\_title.jpg](#) and Henry P. Stapp, [arXiv:quant-ph/0110148v2](#), Sec. 3), the need for *atemporal* quantum reality (read [above](#)) becomes *agonizingly* clear! We need new type of **spacetime** for quantum gravity, to accommodate the [atemporal quantum reality](#), and “Britain’s greatest quantum gravity expert” could certainly say something about it. But he fired back with the following (Wed, 23 Oct 2002 19:24:15 +0100):

“You do not know enough theoretical physics to help with any research in that area.”

Then I cancelled the so-called “seminar”. And now, 17 years later, it is far too late: read [above](#).

D. Chakalov  
August 26, 2019, 12:20 GMT

## APPENDIX I

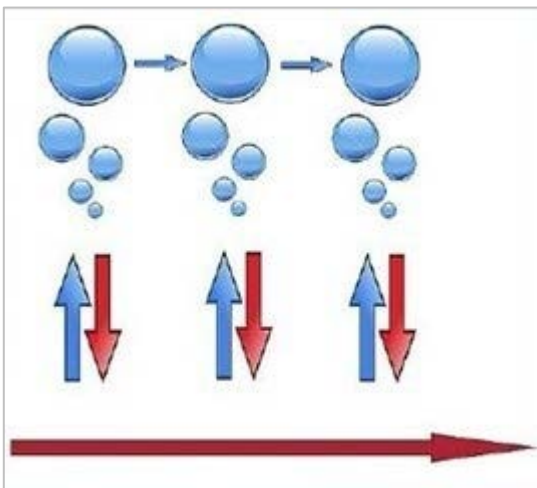
Read pp. 16-17 in [zenon.pdf](#). If the presentation seems complicated, try something very simple, such as the staggering error by Chris Isham (mentioned [above](#)) in his article, entitled 'Prima Facie Questions in Quantum Gravity', [gr-qc/9310031v1](#), 22 Oct 1993, p. 14: "The background Newtonian time (Sic! – D.C.) appears explicitly (Sic! – D.C.) in the time-dependent (Sic! – D.C.) Schrödinger equation." Do you smell rat?

Let me go back to my proposal for *atemporal* quantum reality from [5 February 1987](#), and quote Erwin Schrödinger, Die gegenwärtige Situation in der Quantenmechanik I-III, *Naturwissenschaften* 23, 1935, S. 807-812; 823-828; 844-849 (translated by [John D. Trimmer](#)):

### Sec. 8, Theory of Measurement

The rejection of realism has logical consequences. In general, a variable *has* no definite value before I measure it; then measuring it does *not* mean ascertaining the value that it *has*. But then what does it mean?

It means that we cannot observe *the* quantum state (dubbed 'John', see [Erwin Easter.jpg](#)), but only its *physicalizable* 4D "jackets". Recall [Charles Wilson](#) from 1911 (Slide 7 in [Quantum Spacetime](#)):



Can we explain the **red** and **blue** arrows in Wilson cloud chamber?

Can we explain *consecutive* energy-momentum exchanges between the quantum **particle & wave** and its **macroscopic** environment? Are quantum waves with **complex** phases (Chen N. Yang 1987) physical reality or *physicalizable* reality (Slide 15) "just in the middle between possibility and reality" (Heisenberg 1958)? What is the origin of **time** in Schrödinger equation? Can **clocks** read it?

**Yes** and **No**: The **matrix** (Chakalov 2016).

Another excerpt from [Erwin Schrödinger](#) (emphasis mine):

### Sec. 9, The Psi-function as Description of State

The rejection of realism also imposes obligations. (...) Therefore if a system changes, whether by itself or because of measurements, there must always be statements **missing** from the new function that were contained in the earlier one. In the catalog not just **new** entries, but also **deletions**, must be made.

Thus, the Psi-function as 'expectation-catalog' offers only **statements** about **propensities** for *physicalizable* 4D "jackets", and these **statements** are of course context-dependent ([Wikipedia](#)): we can both **add** and **delete** new "entries". And if we examine the [KS Theorem](#) (p. 18 in [zenon.pdf](#)) and the preferred basis problem ([Max\\_title.jpg](#) and Henry P. Stapp, [arXiv:quant-ph/0110148v2](#), Sec. 3), the need for *atemporal* quantum reality (read [above](#)) is indeed *agonizingly* clear. The quantum state ([John](#)) does not live on the light cone (p. 16 in [zenon.pdf](#)). It is **UN**colorizable (p. 18 in [zenon.pdf](#)) and cannot **in principle** be measured with its color-able, physicalizable 4D "jackets", although the latter can indeed be treated with "[probabilities](#)" ([Erwin Schrödinger](#)) that can nicely sum up to [unity](#). *Der Herrgott würfelt nicht!* ([Albert Einstein](#)). God casts the **matrix** (p. 7 in [zenon.pdf](#)), not the dice.

In 2006, FOXi awarded Chris Isham \$75,000 for his efforts dubbed "[topos quantum theory](#)", and in 2011 he received the [Dirac Medal](#) for "major contributions to the search for a consistent quantum theory of gravity and to the foundations of quantum mechanics." I only got his statement [above](#). [Maurice de Gosson](#) was a bit more specific: "Buzz off, idiot!" (p. 8 in [Wendelstein\\_7-X.pdf](#)).

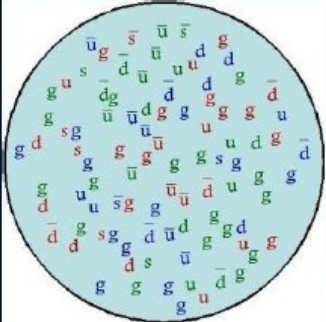
D. Chakalov

August 28, 2019, 11:30 GMT

## APPENDIX II

To understand the effect of Platonic **matrix** (p. 7 in [zenon.pdf](#)), recall the proton mass ([Wikipedia](#)): the combined mass of two up quarks and one down quark makes roughly 1% of proton's mass (Yi-bo Yang *et al.*, [arXiv:1808.08677v2 \[hep-lat\]](#)). See Slide 10 in [Quantum Spacetime](#) below.

### Atemporal Quantum Reality: Proton's Mass



How about spin-2  
Higgs-like boson  
at 14 TeV?

Only about **1%** of proton's mass can be traced to **quarks** (two up quarks and one down quark), whereas **99%** of its mass belongs to Quantum Chromodynamics (QCD) binding energy. Imagine zillions of quarks (u,d,s), antiquarks (u,d,s with a bar on top), and gluons (g) zipping around near the speed of light, banging into each other, and appearing and disappearing from QCD vacuum (Strassler 2010): they are able to assemble proton's **mass** of  $938 \text{ MeV}/c^2$  with error margin of just **one part in  $10^{45}$**  (Dolgov 2012), for at least  $10^{29}$  years.

What phenomenon could create  $10^{82}$  **identical** protons?

To understand the error margin of **one part to  $10^{45}$**  in assembling proton's mass, controlled and executed by proton's **matrix**, read [Alexander Dolgov](#): "The value of the vacuum energy of the quark and gluon condensates (36) is practically established by experiment. To adjust the total vacuum energy down to the observed magnitude,  $\sim 10^{-47} \text{ GeV}^4$ , there must exist another contribution to vacuum energy of the opposite sign (Sic! – D.C.) and equal to the QCD one with precision of one part to  $10^{45}$ . This new field cannot have any noticeable interactions with quarks and gluons, otherwise it would be observed in direct experiment, but still it must have very same vacuum energy. This is one of the greatest mysteries of Nature." ([arXiv:1206.3725v1 \[astro-ph.CO\]](#), p. 14.)

The "contribution to vacuum energy of the opposite sign" has completely different interpretation: read p. 3 [above](#). Nature can "adjust the total vacuum energy down to the observed magnitude", in such way that "the vacuum energy of the opposite sign" acts as a "new field" that "**cannot** have any noticeable interactions with quarks and gluons".

Why not? Because proton's **matrix** is *always nullified* ( $|\mathbf{w}|^2 = \mathbf{0}$ ): read again [Erwin Schrödinger](#). It only acts as proton's "memory": **if A**, then **B** (p. 25 in [zenon.pdf](#)). Hence Nature can assemble  $10^{82}$  *identical* protons, and keep doing it for at least  $10^{29}$  years. Forget about "[Higgs boson](#)". Simple, no?

Here is a broader explanation of the Platonic **matrix**. Consider a [set](#) of three apples on your table. They possess "full reality" ([Erwin Schrödinger](#)): we can attach to them 'probability for observation', and the sum of all probabilities will sum up to [unity](#). However, the Platonic **matrix** of the **set** of apples is not *physical* reality. It (not "He") is Platonic 'apple *per se*', which bootstraps the **set** of apples, yet the apple's **matrix** is *always nullified*, like  $\mathbf{3} + \mathbf{0} = \mathbf{3}$ . Namely, the apples do not interact with their Platonic **matrix**, but *only* with themselves, by their **self-action**. They will exhibit wave-like *holomovement* (see the four dice at pp. 1-2 [above](#)), which will in turn **increase** (p. 3) their binding energy ([Feynman loops](#)), but without new [Higgs-like](#) "apples" or "invisible hobgoblins" (p. 12 in [zenon.pdf](#)). By the same token, there is no *physical*, Higgs-like "gravitational pizza" (p. 26 in [zenon.pdf](#)). Matter and fields interact only **with themselves**, *via* their [atemporal Platonic states](#) and *by* their **self-action**, like the [human brain](#). No "ghosts", no "[Higgs field](#)", and no "[dark](#)" crap.

Now replace the two up quarks and one down quark with Platonic 'proton *per se*', so that all quarks make roughly 1% of proton's mass fixed by proton's **matrix**, with the precision of **one part to  $10^{45}$** .

D. Chakalov

August 28, 2019

Last update: September 18, 2019, 10:40 GMT

## APPENDIX III

My first email to CERN was sent on 18 April 2013, regarding the alleged "[god particle](#)". I only stressed, very politely indeed, that they do not have any theory to speculate about some "[Higgs boson](#)", and will have to start from the facts known since **1911**: read p. 6 [above](#) and the widely known, and still unsolved, puzzle about proton's mass at p. 7 [above](#). Since February 2017, my email address was banned by the talibans at CERN, due to some "[phishing attacks](#)". On 1 March 2017, I used another email address to send my objections. It was *not* bounced back. Read it below.

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Subject: CERN talibans: Get professional.

Date: Wed, 1 Mar 2017 18:18:41 +0100

Message-ID: <trinity-24847b9e-5482-433a-8a40-66ef9d341789-1488388721566@3capp-mailcom-lxa07>

From: quantum.gravity@mail.com

To: th-unit-secretariat@cern.ch, David Charlton <d.g.charlton@bham.ac.uk>, SERGIO.BERTOLUCCI@cern.ch, URS.WIEDEMANN@cern.ch, Fabiola Gianotti <Fabiola.Gianotti@cern.ch>, Ignatios Antoniadis <antoniadis@itp.unibe.ch>

"Overfunded research is like heroin: It makes one addicted, weakens the mind and furthers prostitution."

Johann Makowsky, The Jerusalem Post, 19 April 1985.

Shame on you, CERN talibans. You are wasting BILLIONS of euros, all taxpayers' money.

All you could do is to ban my gmail address due to some "phishing attacks", which I have never made.

Fact.

Check out the slides of my forthcoming talk in Geneva at

<https://www.youtube.com/watch?v=ac11wWHwXW0>

[http://www.god-does-not-play-dice.net/DC\\_Slide\\_1.pdf](http://www.god-does-not-play-dice.net/DC_Slide_1.pdf)

If you cannot find any "phishing attacks" in my slides, come to the conference in Geneva this June, <https://beyondspacetime.net/2017conference/>

I will teach you a lesson you will never forget.

Promise.

D. Chkalov

[chkalov.net](http://chkalov.net)

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I do not tolerate communist censorship (p. 4 in [Penrose-Norris Diagram](#), read p. 3 [above](#)) or taliban censorship. I am always ready to teach the CERN talibans a lesson they will never forget. **Promise.**

Notice my prediction about **spin-2** Higgs-like boson at p. 7 [above](#). Here I wish to remind CERN talibans that they cannot find the "[last turtle](#)" called "god particle": [Turtles all the way down](#).

To be specific, the so-called "Higgs mechanism" ([David J. Miller](#)) is the generic mechanism of unleashing the **precise** amount of *positive* energy density (p. 3) from the quantum vacuum, controlled and executed by proton's **matrix**: recall Alexander Dolgov [above](#). Now look at the "width of the Higgs boson" (CERN): "The Heisenberg Uncertainty Principle **implies** (Sic! – D.C.) that the energy, and thus the mass as well, of all unstable particles must have an uncertainty (*flexibility* – D.C.), which is inversely proportional to their lifetime. This uncertainty is quantified by the particle's "natural width", which characterises the **range** (Sic! – D.C.) of masses with which a particle is observed. (...) The Higgs boson signal, in red, appears over a **range** of values (Sic! – D.C.), which is dominated by the precision of the experimental measurement, and **not** the width of the Higgs boson." Once you enhance "the precision of the experimental measurement", you will discover a *family* of such bosons, including the one with **spin-2** dubbed **G** (Chao-Qiang Geng *et al.*, 9 Jan 2013, [arXiv: 1210.5103v2 \[hep-ph\]](http://arxiv.org/abs/1210.5103v2)). Of course, **G** has nothing to do with that crap called "[graviton](#)".

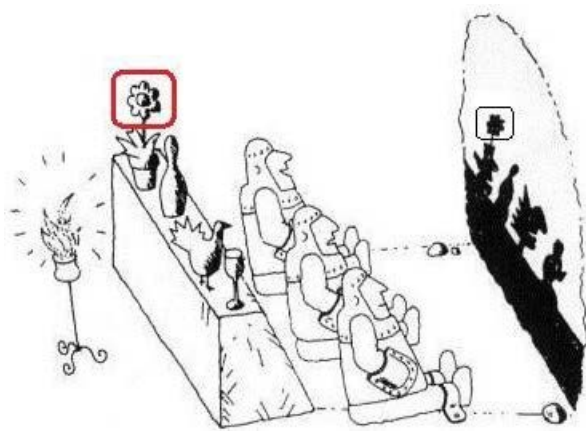


Needless to say, I will be more than happy to elaborate in details, starting from the Heisenberg “uncertainty” principle. If the error margin in assembling proton’s mass is **one part to  $10^{45}$** , what kind of “uncertainty” governs those quarks, antiquarks and gluons, “banging into each other, and appearing and disappearing from QCD vacuum” (p. 7 [above](#))? We need new [Quantum Spacetime!](#) Read Erwin Schrödinger at [p. 6](#) and [Peter Milonni](#). However, my gmail address is [banned by CERN](#).

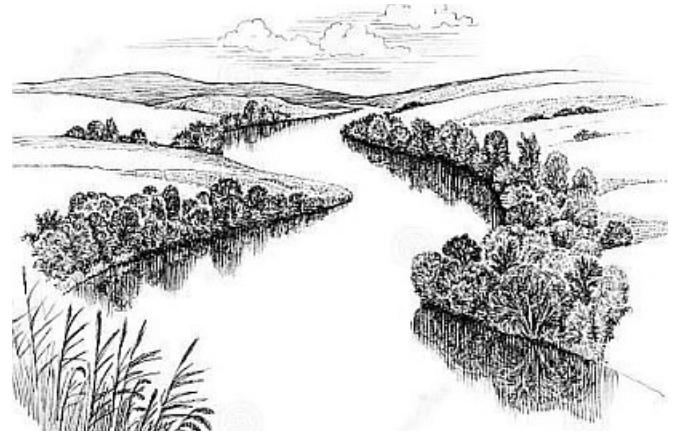
If your email address is *not* banned by CERN, please send the link to this paper to CERN and to all your colleagues: <http://www.god-does-not-play-dice.net/BCCP.pdf>

Here is [my prediction](#) from Thursday, January 9, 2003, 15:56:04 GMT: I bet \$100 that the [Higgs](#) will [not be discovered](#). Instead, the number of quarks will jump to 8 and more, in a [Fibonacci sequence](#).

To those interested in the global picture, read carefully all papers listed at the first paragraph of my website at [chakalov.net](#). I suggest a new *pregeometric* theory of spacetime, based on [first principles](#) from Plato and Heraclitus (see the drawings below, from p. 11 in [Platonic Theory of Spacetime](#)), and on Aristotle’s [Unmoved Mover](#) (‘that which moves without being moved’).



Thanks to the “speed” of light, we [cannot](#) turn around and look directly at the Platonic world.



Everything [changes](#) and nothing remains still — you cannot step twice into the same stream.

The Platonic world (*Res potentia*) and the fundamental *arrow* of 4D events (Heraclitus) cannot be *directly* observed due to the “speed” of light. They are *perfectly* hidden “inside” the geometric point, thanks to which we inhabit *perfect* 4D spacetime continuum. The geometric point — the quantum of spacetime called ‘atom of geometry’ — cannot be broken even with Gedankenexperiment: read p. 1, pp. 7-9 and pp. 16-17 in [zenon.pdf](#). For comparison, notice the inevitable gaps in the drawing below, like snapshots from a [movie reel](#). These gaps are *perfectly* sealed by [Time & Continuum](#).

[---one photon---][between](#)[---one photon---][between](#)[---one photon---

If the Platonic world (*Res potentia*) was exposed to light, the Aether could be [physically detected](#), along with the *arrow* of 4D events (Heraclitus), and we will look at the *next* “[turtle](#)”, *ad infinitum*. Sure enough, the [Unmoved Mover](#) cannot be *directly* detected either. Thank God, this is impossible.

The quantization of spacetime manifold with the so-called atom of geometry is based on the old idea of the Dragon ([Ouroboros](#)) biting its tail: see the endless *cycle* (Sic!) explained at p. 3 in [Penrose-Norris Diagram](#), and in Fig. 3 at p. 16 in [zenon.pdf](#). Notice the **potential future** in Fig. 3: it harbors the *atemporal* Platonic reality manifested with Platonic **matrix** mentioned at [p. 6](#) and at pp. 8-10 in [The Physics of Life](#). The *irreversible past* is the arena of the physical or rather *physicalized* 4D world, which is being **re-created** at every instant ‘here and now’. The total energy of the **re-created** Phoenix Universe is *exactly nullified*, hence *exactly* conserved (p. 15 in [zenon.pdf](#)) — one-**cycle**-at-a-time, as read with physical clocks. Implications at p. 27 and p. 31 [therein](#), as well as at p. 1 [above](#) (BCCP).

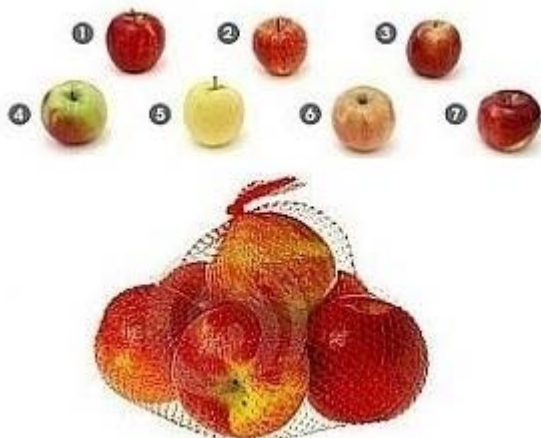
We only need Mathematics: read the excerpt from my website at [this http URL](#).

D. Chakalov  
September 14, 2019, 11:06 GMT

## APPENDIX IV

Mathematicians are lucky people. They are not interested in Physics. They derive their mathematical axioms just by pondering on the macroscopic world accessible with our senses, after which they produce "intuitively obvious" axioms backed by sheer introspection. Happy lucky creatures, indeed.

Consider, for example, [Baldy's Law](#): Some of it plus the rest of it is all of it. If you have 7 apples, then obviously 3 apples plus 4 apples makes 7 apples or 'all of it' (see below).

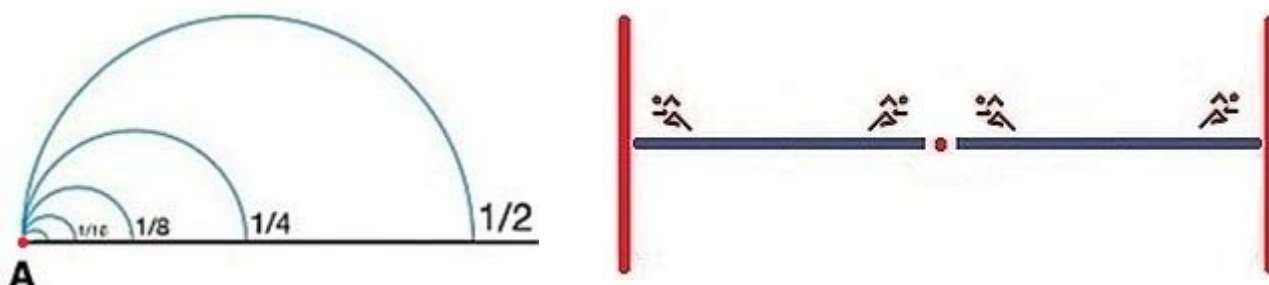


True or false? **YAIN** (Yes And [neIN](#)). If you consider inanimate (dead) macroscopic objects, the Baldy's Law is indeed correct. You may also suggest, after [Georg Cantor](#), the notion of 'set', like the *bag* of apples above, referring to your *knowledge* of 'apples *per se*'. But what is 'knowledge'? Try the experiment with your brain at p. 22 in [zenon.pdf](#). We of course claim that Baldy's Law and the notion of 'set' are *not exactly* applicable to the living world, because 'the whole is *greater* than the sum of its parts' ([Wikipedia](#)). Try to apply the notion of 'set' to the living-and-quantum world (p. 1 [above](#)): what is the *quantum correlate* of 'knowledge' in the [human brain](#) (p. 2) and in [the quantum world](#)?

It is the *atemporal* Platonic reality, *Res potentia* (p. 6), called **matrix**. For example, proton's **matrix** acting as proton's memory: **if A**, then **B** (p. 7 [above](#)). Can we unravel the **matrix** in Mathematics?

Yes we can. It (not "He") provides the ultimate cutoff on "infinite" regress ([Wikipedia](#)), for example, Aristotle's Unmoved Mover (p. 9). Here we face a brand new type of spacetime manifold, dubbed Zenon manifold: read [8] at p. 2 in [zenon.pdf](#). Unlike the *bag* of apples in the drawing [above](#), the set-forming **matrix** of the Zenon manifold is always *exactly nullified* in every member of its set.

Look at the drawing below (left), from p. 1 in [zenon.pdf](#), and imagine that the geometric point **A** is at The Beginning of spacetime at "time zero": **A does not belong** to the *physical* spacetime. It is the **matrix** of the Zenon manifold, and the ultimate, yet *physically* unattainable, **cutoff** depicted below.



The horizontal **blue** line in the drawing at right presents the *surface* of the inflating balloon in Fig. **B** at p. 21 in [zenon.pdf](#). All Platonic **matrix** are "embedded" in each other, being 'both one and many' (p. 25 in [zenon.pdf](#)) and acting as the *memory* of the Universe (p. 7), ever since The Beginning at **A** ([John 1:1](#); [Luke 17:21](#)). God does exist, being both *mathematical* object and the unconditional Love ([1 John 4:8](#)). We only need Mathematics: read the excerpt from my website at [this http URL](#).

D. Chakalov

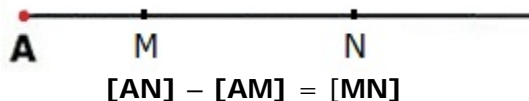
September 4, 2019

Last update: September 8, 2019, 12:35 GMT

## Comments and References

1. The Beginning of spacetime at “time zero”, denoted with **A** in the drawing at p. 10 [above](#), is widely known problem related to the **topology** of spacetime. Once we introduce *metric* of spacetime, as Hermann Minkowski did on [21 September 1908](#), we face the origin of spacetime at point **A** [above](#), which must have existed “**before**” the instant of creating spacetime **already** endowed with metric. This *metric paradox* prompted Yakov Zel’dovich to joke (p. 2 in [Platonic Theory of Spacetime](#)) that “long time ago, there was a brief period of time during which there was still no time at all.”

Strangely enough, people do not notice this staggering topological problem. If we take two points from the cosmological time, denoted with **M** and **N** in the drawing below, **A** can and will “disappear”.



Just like the energy density of the vacuum, we care only about energy *differences*, like **MN** above: “quantum field theory only cares about energy *differences*”, [John Baez](#). The crucial **cutoff** at **A**, with respect to which we define any *finite invariant spacetime interval* **MN**, can and *must* “disappear”.

Thus, the Platonic **matrix** of the *entire* spacetime does not belong to its *physical* spacetime “points”: [Zenon manifold](#). Read again the text [above](#) and look at Slide 12 below, from [Quantum Spacetime](#):

## Atemporal Quantum Reality: Quantum Cosmology

Without quantum cosmology based on the quantum-gravitational **matrix** of spacetime, we would need some Biblical “miracle” to raise a robust Lorentzian metric within  $10^{-30}$  seconds “after” the “big bang”, starting *much earlier* at  $10^{-35}$  seconds “after” the “big bang”, when the **classical** (not **quantum**) spacetime would be about 1 cm across and a causally connected region would have been only  $10^{-24}$  cm across (the horizon problem), in such way that one could **later** “inflate” the spacetime by a factor of  $10^{78}$  and then *safely* keep the Lorentzian metric for at least 13.798 billion years rooted on the Planck scale at which the spacetime “points” are *totally* fuzzy and the principle of **locality** has lost *any* meaning.

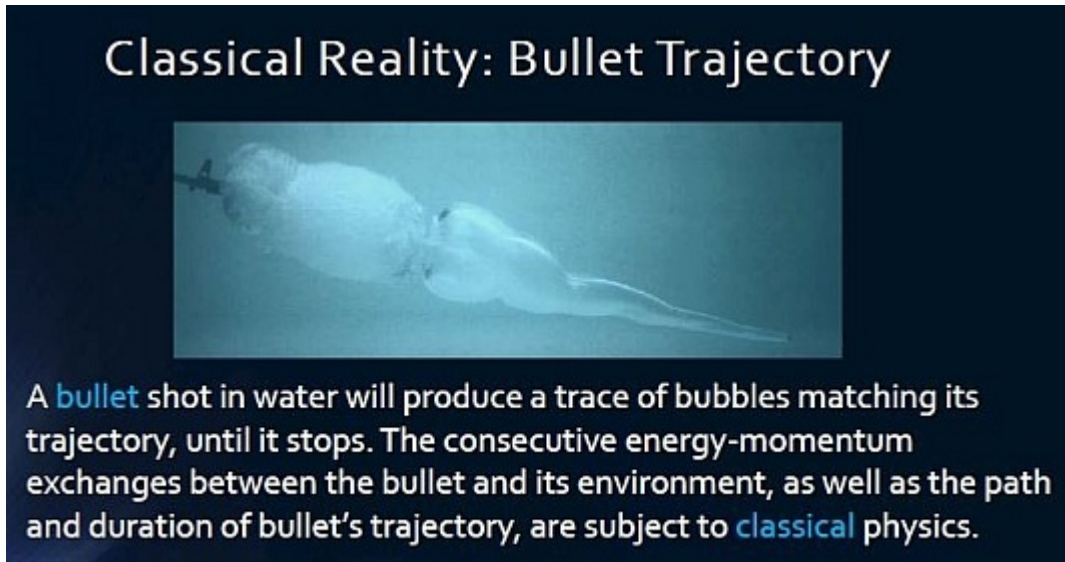
Slide 12/18

Yes, God [does exist](#). You can’t argue with Mathematics. You don’t need “faith” in Mathematics either.

2. Regarding the **matrix** fixing the proton mass at p. 7 [above](#): read about the **spin-2** boson **G** in Chao-Qiang Geng *et al.*, [arXiv:1210.5103v2](#). As to my prediction from 9 January 2003, follow the links at the paragraph at p. 9 [above](#), particularly D. Stancato and J. Terning [arXiv:0807.3961v2](#), and A. Falkowski and M. Perez-Victoria [arXiv:0901.3777v2](#). This is just the tip of the iceberg. We face the *generic mechanism* of unleashing the **precise** amount of positive energy density from the quantum vacuum (p. 3), controlled by the **matrix**: read p. 8. No need for *physical* “**Higgs field mechanism**”. Mother Nature is [smarter](#).

3. Regarding [Charles Wilson](#) from 1911 (Slide 7 in [Quantum Spacetime](#)) at p. 6 [above](#): people read in QM textbooks that the only problem was how a “spherical” wave function could lead to a straight path of quantum particles in [Wilson could chamber](#), which was resolved by [Sir Nevill Mott in 1929](#). I raised the issue of “quantum time” depicted in the drawing at p. 6 [above](#) on 5 February 1987 (p. 3).

A few weeks later, I lost my job at the Institute of Solid State Physics of the Bulgarian Academy of Sciences: read p. 4 in [Penrose-Norris Diagram](#). My former BG colleagues failed to understand the essence of 'quantum spacetime': the quantum of action is not governed by "probabilities", as Erwin Schrödinger stressed on [18 November 1950](#). The seemingly innocuous "time parameter"  $t$  in the Schrödinger equation encapsulates the crux of the quantum spacetime ([p. 6](#)). It is *not* like the time parameter of a bullet passing through water: see Slide 5 below, from [Quantum Spacetime](#).



If we denote the duration of bullet's trajectory with **MN**, from the drawing at p. 11 [above](#), how can we map **MN** to the duration of the **quantum** "trajectory" (forget about that mythical "[decoherence](#)") in Slide 7 at p. 6 [above](#)? Sir Nevill Mott never discussed the perpetual wave function "[collapses](#)" in his paper from [2 December 1929](#). He only mentioned that the complex-valued "*amplitude of this wave gives the probability that both atoms are excited, and that the particle is moving in a given direction after exciting both.*" (*Ibid.*, [p. 84](#); emphasis mine.) If we apply this requirement to bullet's trajectory in Slide 5 [above](#), the bullet could pass through water iff all atoms along its path **MN** were **already** "excited". But of course the macroscopic bullet does not need such requirement.

The message from the [quantum spacetime](#) is very simple, yet "[counterintuitive](#)": the [quantum of action](#) is governed by its *atemporal* Platonic **matrix**, as explained at [p. 1](#) and [p. 2](#). The **matrix** is placed **between** the *physical* points: read p. 9 [above](#). To explain the meaning of '[atemporal](#)', suppose we use the classical notion of time, as read with a physical clock: if you are a quantum "particle" and have to move, for whatever reason, from **M** to **N** in the drawing at p. 11 [above](#), *first* you will have to "smell" all your *potential* trajectories ([Werner Heisenberg](#)), and *then* select the one in the Feynman path ([p. 2](#)), *after* which you're finally ready to go and can make your **first** step, from **M** toward **N**. Of course, all these temporal requirements, ordered with 'first', 'then', and 'after', do not hold in the [Quantum Spacetime](#). The so-called "[wave function collapse](#)" is an *artefact* of the macroscopic spacetime at the length scale of tables and chairs. The **matrix** is always alive and well: recall the [EPR-like pre-correlated dice](#) at pp. 1-2 [above](#), the electron "[clouds](#)" from the periodic chart ([Wikipedia](#)), and Wheeler's "cloud" at p. 7 in [zenon.pdf](#). [Henry Margenau](#) explained it in [1954 \(p. 3\)](#).

Mother Nature does not make "calculations". The **UN**colorizable ([KS Theorem](#), p. 18 in [zenon.pdf](#)) and *atemporal* Platonic **matrix** (called also [John](#)) is 'both one and many' ([p. 10](#)), thanks to which it *instantaneously* chooses **one** — among *infinitely* many — physicalizable '[jacket](#)' to become the **next** physicalized 4D state ([p. 6](#)) placed in the *irreversible* **past**: one-**cycle**-at-a-time ([p. 9](#)), *ad infinitum*.

Dead matter makes quantum jumps; the living-and-quantum matter is [smarter](#).

Physicists boldly disagree, without even a shred of evidence ([p. 5](#)), or suggest the simplest "solution" to their problems: "Buzz off, idiot!" (p. 8 in [Wendelstein\\_7-X.pdf](#)). Any other suggestion, please?

D. Chakalov

September 7, 2019

Last update: September 11, 2019, 10:00 GMT

## The Kochen-Specker Theorem: Tripod with different legs

A tripod has three different legs, but if sometimes it can have only *two* legs, then it is not 'tripod'. But what does this mean (Erwin Schrödinger, [p. 6](#))? It means that the expectation-catalog ([p. 6](#)) is *fundamentally* incomplete, as it cannot *in principle* include the **UNcolorizable** "legs", if any. Namely, the quantum world involves the **UNcolorizable** 'monad without windows' [as well](#). Simple, isn't it?

In 1960, Ernst Specker raised the question about the so-called *Infuturabilien* (translated by [Michael Seevinck](#) as 'future contingencies'), that is, the question whether the omniscience of God extends to all events that would have occurred in case something would have happened, but did not happen:

**Ernst Specker, Die Logik Nicht Gleichzeitig Entscheidbarer Aussagen, *Dialectica*, 14: 239-246 (1960), S. 243.**

Die Schwierigkeiten, die durch Aussagen entstehen, welche nicht zusammen entscheidbar sind, treten besonders deutlich hervor bei Aussagen über ein quantenmechanisches System. Im Anschluss an die dort übliche Terminologie wollen wir solche Gesamtheiten von Aussagen als nicht gleichzeitig entscheidbar bezeichnen; die Logik der Quantenmechanik ist zuerst von Birkhoff und von Neumann in [1] untersucht worden. Auf ihre Ergebnisse soll zurückgekommen werden. In einem gewissen Sinne gehören aber auch die scholastischen Spekulationen über die «Infuturabilien» hierher, das heisst die Frage, ob sich die göttliche Allwissenheit auch auf Ereignisse erstreckt, die eingetreten wären, falls etwas geschehen wäre, was nicht geschehen ist. (Vgl. hierzu etwa [3], Bd. 3, S. 363.)

Ernst Specker concluded that it is **impossible** to have consistent predictions about a quantum mechanical system, except in the case of Hilbert spaces of dimension 1 and 2. Seven years later, he and Simon Kochen delivered the famous Kochen-Specker (KS) Theorem, which demonstrates the generic **UNcolorizable** quantum world (cf. Helena Granström, p. 18 in [zenon.pdf](#)). **It** (not "He") is *bona fide* 'monad without windows', as "the monads have no windows through which something can enter or leave" (Leibniz, [Monadology 7](#)). **It** is the UNSpeakable [Noumenon](#) or [Das Ding an sich](#).

Can we prove or disprove 'the monad without windows'? The KS theorem has not been empirically tested. To quote from [Stanford Encyclopedia of Philosophy](#): "KS themselves describe a concrete experimental arrangement to measure  $S_x^2$ ,  $S_y^2$ ,  $S_z^2$  on a one-particle spin-1 system as functions of one maximal observable. An orthohelium atom in the lowest triplet state is placed in a small electric field  $E$  of rhombic symmetry. The three observables in question then can be measured as functions of one single observable, the perturbation Hamiltonian  $H_s$ .  $H_s$ , by the geometry of  $E$ , has **three distinct possible values** (emphasis mine – D.C.), measurement of which reveals which two of  $S_x^2$ ,  $S_y^2$ ,  $S_z^2$  have value 1 and which one has value 0 (see Kochen and Specker 1967: 72/311)."

Let me replace the "three distinct possible values" with three people, Tom, Dick, and Harry (p. 18 in [zenon.pdf](#)), presenting 'tripod with three different legs' (read [above](#)). Suppose Tom (**T**), Dick (**D**), and Harry (**H**) can show either their right hands (**R**), or their left hands (**L**), or their two hands (**RL**): see the six rows in the table below. If the three guys can do it along the six rows, the "colouring" of the Kochen-Specker (KS) sphere will be 100% complete. We will always have 'tripod with three different legs', and its expectation-catalog (read [above](#)) will be complete. No way, says KS Theorem (Karl Svozil, [arXiv:quant-ph/9902042v2](#); C.J. Isham, J. Butterfield, [arXiv:gr-qc/9910005v1](#), p. 3). Namely, in certain cases/rows, either **T** ( $S_x^2$ ), or **D** ( $S_y^2$ ), or **H** ( $S_z^2$ ) will have no arms ([legs](#)) at all.

<b>T<sub>R</sub></b>	<b>D<sub>L</sub></b>	<b>H<sub>RL</sub></b>
<b>T<sub>R</sub></b>	<b>D<sub>RL</sub></b>	<b>H<sub>L</sub></b>
<b>T<sub>L</sub></b>	<b>D<sub>R</sub></b>	<b>H<sub>LR</sub></b>
<b>T<sub>L</sub></b>	<b>D<sub>LR</sub></b>	<b>H<sub>R</sub></b>
<b>T<sub>RL</sub></b>	<b>D<sub>L</sub></b>	<b>H<sub>R</sub></b>
<b>T<sub>RL</sub></b>	<b>D<sub>R</sub></b>	<b>H<sub>L</sub></b>

As Andrew M. Gleason showed in 1957 ([Wikipedia](#)), “there is no bivalent probability measure over the rays of a Hilbert space (as long as the dimension of that space exceeds 2)”. Simon Kochen and Ernst Specker examined a set of 117 distinct projection operators on 3-dimensional Hilbert space (compare it to the Tom-Dick-Harry table [above](#)), and showed that “there was no way to consistently assign values in  $\{0,1\}$  to these projection operators” (Del Rajan, Matt Visser, [arXiv:1708.01380v3](#)). The end result is “quantum value indefiniteness” (Karl Svozil *et al.*, [arXiv:1207.2029v4](#)). But in the case of KS theorem, the “quantum value” is not just “indefinite”. It is the **UNcolorizable** ‘monad without windows’, which **cannot** fit in the Hilbert space anymore: it is *not* ‘tripod’ anymore ([p. 13](#))!

Yet ‘the quantum state’ (Schrödinger, [p. 6](#)) can switch from *its own* physical, colorable, and [normalized](#) quantum observables in the Hilbert space to *its own* unphysical, **UNcolorizable** ‘windowless monad’, and go back ([cycle!](#)) into the physical world ([p. 2](#)): **NB** at p. 16 in [zenon.pdf](#).

Contrary to the ‘expectation-catalog’ in the trivial case of Hilbert spaces of dimension 1 and 2, the *colourable* fraction in the KS Theorem “tends to 68% as **N** approaches infinity” (Helena Granström, [arXiv:quant-ph/0612103v2](#), p. 2), and hence the remaining 32% will be the **UNcolorizable** ‘monad without windows’, like a tripod that is not ‘tripod’ *anymore* (p. 13 [above](#)). Only God ([John 1:1](#)) could perhaps “see” such windowless monad, but we can neither prove nor disprove such statement.

We can only **add** or **delete** *new* context-dependent ([Wikipedia](#)) entries to Schrödinger’s expectation-catalog ([p. 6](#)), making sure that, in all “updated” expectation-catalogs, the “probabilities” for observation ([Erwin Schrödinger](#)) can sum up to [unity](#). But we cannot produce an exhaustive **set** of all **counterfactual** and context-dependent entries, like some all-inclusive expectation-**supercatalog**, because such “set” must have non-denumerable cardinality — not like the classical set at [p. 10](#). Here we need ‘quantum set’ and the maximal extension of set theory, called ‘maximal set theory’ (MST), in which the **UNcolorizable** monad without windows acts as the ultimate *cutoff* ([p. 9](#)) on the human cognition — not on Nature, [p. 11](#) — to avoid the infinite regress problem ‘[turtles all the way down](#)’. Read pp. 29-30 in [Platonic Theory of Spacetime](#) and p. 15 in [Spacetime Engineering](#).

On a side note related to present-day GR, compare the [preferred basis problem](#) (“the expansion of the final composite state is in general not unique,” [Max Schlosshauer](#)) to the [non-tensorial puzzle](#) explained at p. 19 in [zenon.pdf](#): can we suggest the path to [quantum gravity](#)? The “[pseudotensorial](#)” puzzle, explained at p. 19 [therein](#), would occur if two observers with different coordinates, say, in Paris and in London, look at the Moon, but only one of them could see it. If the Moon was not fixed physical reality but *potential* ([p. 6](#)), context-dependent ([Wikipedia](#)) quantum-gravitational reality, both observers will see only the *physicalized* 4D “jackets” of the Platonic ‘Moon *per se*’ ([John](#)), cast from “different” expectation-catalogs (read the paragraph [above](#)). However, the current version of GR is classical theory ([MTW p. 467](#)) based on [tensors](#). Now, if the only thing you have is a (tensorial) hammer, everything will look to you like a **nail**. So, if you’re dealing with a stone, your “answer” will be that it is some “[non-nail](#)” stuff. There’s *nothing* more you could say in GR about **non-nail** stones. Briefly, the **origin** of gravity is not like “gravitational pizza”: read p. 7 [above](#) and p. 26 in [zenon.pdf](#). Instead of “[wave function collapse](#)”, we switch, also by hand, to “[flat](#)” geometry: read p. 15 [therein](#).

Why people believe in “[quantum computing](#)”, I wonder. The quantum **matrix** ([p. 7](#)) is *always* alive and well, and cannot “collapse” ([p. 12](#)). It cannot be manipulated “locally”, at the length scale of tables and chairs: the horizontal **blue** arrow of macroscopic bubbles in the Wilson cloud chamber **cannot** control the invisible horizontal **red** quantum arrow in the drawing at [p. 6](#). **No way**. Recall Henry Margenau from 1954 at p. 5 [above](#). The human brain does not perform “calculations” ([p. 12](#)). The Baldy’s Law ([p. 10](#)) is not valid in the living-and-quantum world. The notion of ‘quantum set’ must involve the **UNcolorizable** monad without windows, which can and **must** “disappear” ([p. 11](#)) in the [Zenon manifold](#). Again, we only need Mathematics: read the excerpt from my website [here](#).

In summary, my interpretation of the Kochen-Specker Theorem was suggested in April 2011, with the Tom-Dick-Harry table at p. 13 [above](#). I tried to explain the crux of KS Theorem without math, for Tom, Dick, and Harry. Then I emailed [Simon Kochen](#) at Princeton University and [Ernst Specker](#) at ETH Zurich and asked for their critical comments, offering the link to my (now archived) website. Ernst Specker replied, very politely, and wrote that “will try to read it” (email from Wed, 20 Apr 2011 18:41:44). But he was seriously old at that time, and a few months later, on [10 December 2011](#), he left his deteriorated “jacket” and went back home. He was a good man. God bless his soul.

Subject: Non-commutative measure spaces evolve in time: Connes time  
 Date: Mon, 16 Sep 2019 10:03:11 +0100  
 Message-ID: <CAM7EkxmXQk\_UzboGFKm\_=gVJWivY8JJJ=idm9jvuLfn1HtT9xQ@mail.gmail.com>  
 From: Dimi Chakalov <dchakalov@gmail.com>  
 To: Alain Connes <alain@connes.org>  
 Cc: Tejinder <tpsingh@tifr.res.in>, Palemkota <p.maithresh@cbs.ac.in>, Hendrik <h.ulbricht@soton.ac.uk>, Angelo <bassi@ts.infn.it>, Kinjalk <kinjalk@tifr.res.in>, Seema <satin@imsc.res.in>, [Max](mailto:Max@up.edu) <schlossh@up.edu>, svozil@tuwien.ac.at, helfera@missouri.edu, andreas.doering@comlab.ox.ac.uk, erik@strangebeautiful.com, gfrellis@gmail.com, hvanelst@karlshochschule.de, baez@math.ucr.edu, norbert.straumann@gmail.com, vitasta9@gmail.com, seri@math.princeton.edu, unruh@physics.ubc.ca, c.isham@imperial.ac.uk, ksavvidou@upatras.gr, anastop@upatras.gr, giulini@itp.uni-hannover.de, teta@mat.uniroma1.it

Cher Monsieur Connes,

I was never able to understand your 'non-commutative geometry' (NCG):  
<http://www.god-does-not-play-dice.net/Connes.jpg>

Recently, a colleague of yours made an intriguing statement about what he called 'Connes time' [Ref. 1]. Please help me understand your statement "non-commutative measure spaces evolve in time" by explaining the puzzle from 1911 at [p. 6](http://www.god-does-not-play-dice.net/BCCP.pdf) in 'Brain-Controlled Cold Plasma' at <http://www.god-does-not-play-dice.net/BCCP.pdf>

The feedback from your colleagues will be appreciated as well.

Yours sincerely,

Dimi Chakalov  
[chakalov.net](http://chakalov.net)

[Ref. 1] Tejinder P. Singh, From quantum foundations to quantum gravity: an overview of the new theory, arXiv:1909.06340v1 [quant-ph], 13 Sep 2019.  
<https://arxiv.org/abs/1909.06340v1>

p. 8: "The second relevant and extremely significant result from NCG is the existence of a fundamental time parameter, which is there only in the non-commutative case, and absent in ordinary commutative geometry. (...) As Connes puts it, 'non-commutative measure spaces evolve in time'. We call this Connes time, and denote it by  $\tau$ . When ordinary space-time is lost because of non-commutativity, Connes time emerges, and helps us to formulate quantum theory without classical time."

#### NOTE

[Alain Connes](#) never responded to my email messages, since 2006. I've been only asking him, very politely indeed, for help with his "[non-commutative](#)" (whatever). I'm afraid he has become [Russian](#).

The human cognition is relational, and we cannot "see", not even with Gedankenexperiment, the fundamental *flow* of 4D events pictured at [p. 9](#), for reasons explained [therein](#). It is *perfectly* hidden, along with the [atemporal](#) Platonic world, by the Time & Continuum: the elementary step in Time **dt** creates **perfect** spacetime continuum (p. 1 in [zenon.pdf](#)). Thanks to the "speed" of light, we are always confined "inside" the continual balloon surface (Fig. **B**, p. 21 in [zenon.pdf](#)), in which the **radius** of the [inflating balloon](#), enabling the fundamental *flow* of 4D events ([p. 9](#)), is being *perfectly re-nullified* ([p. 7](#)), one-[cycle](#)-at-a-time ([p. 9](#)). More from the Kochen-Specker Theorem at [p. 13](#).

D. Chakalov  
 September 16, 2019  
 Last update: September 18, 2019, 10:40 GMT

## Anomalous Aerial Vehicle

Any sufficiently advanced technology is indistinguishable from magic ([Arthur C. Clarke](#)).



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.

Robert Powell and Alejandro Rojas, [Scientific Coalition for UAP Studies](#) (link to the full report [here](#); discussion at p. 12 in [zenon.pdf](#)).

The video showing AAV (left) has been recorded by U.S. military pilots off the coast of San Diego on November 14, 2004.

In December 2017, the *New York Times* and *Politico* revealed (hardly by accident) a secret U.S. government program focused on unexpected convergences of our guests and members of the U.S. military. The object shown in the snapshot above is called Anomalous Aerial Vehicle ([AAV](#)), which is one step above Unidentified Flying Object (UFO) but one step below Alien Visiting Craft (AVC). Recall the AVC over Xiaoshan International Airport in Hangzhou, China, detected by air traffic controllers at around 8:40 p.m. on [July 7, 2010](#). According to CCTV ([07-10-2010](#)), *only* the residents near the airport took two photos of the AVC, shown [here](#). We are expected to believe that nobody at Xiaoshan International Airport had digital camera. The government officials there promised wholeheartedly to investigate the event. As of today, however, they have said nothing, from the bottom of their hearts.

Luckily, their U.S. colleagues are introducing different approach. On December 16, 2017, Helene Cooper, Ralph Blumenthal and Leslie Kean published a piece in NY Times, *The Pentagon's Mysterious U.F.O. Program*, at [this http URL](#). Quote: "Officials with the program have also studied videos of encounters between unknown objects and American military aircraft — including one released in August of a whitish oval object, about the size of a commercial plane (Sic! – D.C.), chased by two Navy F/A-18F fighter jets from the aircraft carrier Nimitz off the coast of San Diego in 2004."

Interested? Read p. 2 [above](#). What is the origin of AAV's energy? Read p. 3 [above](#). How could we eliminate the weight of a "commercial plane" (read above) and fly by [propellantless propulsion](#)? Perhaps with 'reversible elimination of inertial mass' (REIM): pp. 23-24 in [zenon.pdf](#). It is about the *origin* of [gravitational rotation](#) and inertia (p. 7 in [zenon.pdf](#)): pp. 32-46 in [about spacetime.pdf](#).

Most importantly, we urgently need [unlimited clean energy](#) — read p. 3 [above](#) and my proposal for producing electricity at pp. 7-8 in [Wendelstein 7-X.pdf](#). We have just [ten years](#) to constrain and (hopefully) avoid the devastating [climate catastrophe](#) (p. 5 in [q coin.pdf](#)). Watch [Greta Thunberg](#), September 18, 2019, at [YouTube](#). Two days later, millions of people from estimated [185 countries](#) demanded urgent actions by all governments in the world to cut emissions and stabilize the climate.

I sincerely hope and pray they will make it ([p. 12](#)). Watch Rachel Maddow, 17.10.2019, [here](#).

D. Chakalov

September 19, 2019

Last update: October 18, 2019, 09:52 GMT



## Conclusion and Outlook

Nobody likes spacetime engineering. It is grounded on God as *unconditional* Love ([p. 10](#)), and those in power would not welcome God and the universal moral norms based on our common conscience. Just one example: watch Edward Snowden, [45:18 - 50:01](#), from the timeline of the video below.



Full Interview: Edward Snowden On Trump, Privacy, And Threats To Democracy | The 11th Hour | MSNBC. Sep 17, 2019, <https://www.youtube.com/watch?v=e9yK1QndJSM>

Edward Snowden made a very strong point at [45:18 - 50:01](#): all the spying we're subjected to is **not** about our "safety". He is still banned by his government to come back and face a fair trial. And we all know, from our conscience, that he deserves a fair trial. We don't need any government official to "inform" us what is right and what is not. We judge it with our conscience, which is a gift from God.

Now try to imagine, for the sake of the argument, that Edward Snowden was spacetime engineer as well. He won't back down and shut up. You can't do that, if you have moral backbone. Is there any government, which would allow him to live in their country? For we don't tolerate *any* spying. None.

We don't accept "[moral relativism](#)" and don't work for any government either. Recall Jesus in [Mark 5:34](#): "Daughter, your faith has healed you. Go in peace and be freed from your suffering." Jesus could not even think of [gathering additional information](#) about this woman. Or recall the conversion of water into wine at the [Wedding at Cana](#): it was not some "miracle" but spacetime engineering, and most importantly — Jesus could not work for *any* government ("the good guys") to hit *any* people ("the bad guys"). You can't. Spacetime engineering is exactly **opposite** to parapsychology, which many (tremendously wealthy) "[magicians](#)" use to show off and entertain bystanders on the street. Spacetime engineering is driven *exclusively* by God as Love ([1 John 4:8](#)) and the Law of Reversed Effort (p. 38 in [Platonic Theory of Spacetime](#)). We are not the 'actors' here. Besides, if we are genuinely aggressive, we could never tune in to [the Universe as ONE](#) and its power ([p. 16](#)).

As of today, the outlook of spacetime engineering is grim. People are prone to [stereotypes](#) and the only acceptable stereotype in our society is that of some "magician" (p. 9 in [Spacetime Engineering](#)). Nobody is interested in [clean energy](#) to combat climate change ([p. 16](#)). And nobody cares ([p. 3](#)).

Watch 'Spacetime Engineering 101' on Wednesday, 15 January 2020 at [this http URL](#). To obtain the password for watching the video (app. 20 min, 720p, MP4), please follow the instructions at pp. 2-3 in [Spacetime Engineering](#). For other inquiries, notice the excerpt from my [website](#) at [this http URL](#).

D. Chakalov  
 September 26, 2019  
 Last update: September 29, 2019, 11:26 GMT

## BCCP vs. nuclear and fossil-fuel power plants

I wrote about fossil-fuel power plants, such as those burning coal, on p. 28 in [zenon.pdf](#). The problems (p. 12) with [nuclear power plants](#) were addressed at pp. 7-8 in [Wendelstein\\_7-X.pdf](#):

The proponents of [ITER](#) are not interested in fundamental research, and have chosen another approach. On the one hand, they cannot copy & paste the fission ignition mechanism, which can indeed create [enormous neutron radiation](#) to “[strike nearby nuclei](#)” (no quantum tunneling) and “compress and heat a separate section of fusion fuel” ([Wikipedia](#)). On the other, they cannot replicate the Genuine Stellar Nucleosynthesis (GSN) either, as explained at p. 5. Their approach is *entirely* different: heat up the plasma “to about 100,000,000 K” ([Encyclopedia Britannica](#)), and see what will happen. Again, it’s a gamble. But suppose, as a purely hypothetical scenario, that one day the smart [people at ITER](#) will not only heat the plasma at the above temperature, but also manage to keep the confined (not entangled) particle orbits *indefinitely*.

Will they replicate the *enormous* compression (Sic!) from the [fission reaction](#)? When pigs fly.

My proposal for producing electricity is totally different (p. 4 in [The Physics of Life](#)): swing the [steam turbine rotors](#) in the current [nuclear power plants](#) with spacetime engineering (Fig. E). No water supply, heat, or hazardous [nuclear fuel](#) are needed. It shouldn’t be a problem to rotate a chunk of metal – gravity can *effortlessly* rotate a [whole galaxy en bloc](#). We must find out the origin of gravitational rotation ([Richard Feynman](#)). This is the way to solve the task for unlimited clean energy and save our planet – read p. 28 in [zenon.pdf](#). Not [nuclear fission](#).

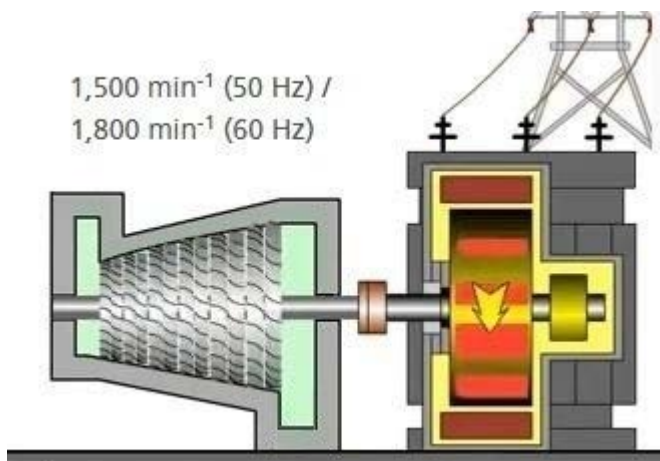


Fig. E

Spacetime engineering, p. 21 in [zenon.pdf](#)

Fig. F

Flamanville 3 in north-western France

Compare my proposal (Fig. E) to [Flamanville 3](#), the latest [conventional nuclear power plant](#) in France (Fig. F). According to [Wikipedia](#), it “was planned to involve around €3.3 billion of capital expenditure from EDF, but latest cost estimates (from 2018) are at €10.9 billion”. How much you will pay by 2024? My project is much cheaper and as a bonus we will have quantum gravity (pp. 26-30 in [zenon.pdf](#)).

Quote from [Wikipedia](#):

On Earth it is very difficult to start nuclear fusion reactions that release more energy than is needed to start the reaction. The reason is that fusion reactions only happen at high temperature and pressure, like in the Sun, because both nuclei have a positive charge, and positive repels positive. The only way to stop the repulsion is to make the nuclei hit each other at very high speeds. They only do that at high pressure and temperature. The only successful approach so far has been in nuclear weapons. The hydrogen bomb uses an atomic (fission) bomb to start fusion reactions.

And another one from [ITER](#):

At the core of fusion science is plasma physics. At extreme temperatures, electrons are separated from nuclei and a gas becomes a plasma—an ionized state of matter similar to a gas. Composed of charged particles (positive nuclei and negative electrons), plasmas are very tenuous environments, nearly one million times less dense than the air we breathe. Fusion plasmas provide the environment in which light elements can fuse and yield energy.

Three conditions must be fulfilled to achieve fusion in a laboratory: very high temperature (to provoke high-energy collisions); sufficient plasma particle density (to increase the likelihood that collisions do occur); and sufficient confinement time (to hold the plasma, which has a propensity to expand, within a defined volume).

Let's put the challenges with the plasma particle density and confinement time aside, for a moment. First and above all, [ITER](#) needs *very high* temperature "to provoke high-energy collisions", on the order of 150,000,000° Celsius, which is 10x higher the temperature at Sun's core, 15,000,000° Celsius ([space.com](#)), and also *very high pressure*, to stop the repulsion and make the nuclei hit each other at *very high* speeds. They can't use quantum entanglement and quantum tunneling (p. 4 in [Wendelstein\\_7-X.pdf](#)). Only *brutal* temperature and pressure, which of course run against each other, like in a pressure cooker: check out Fig. C at p. 3 in [Wendelstein\\_7-X.pdf](#) and pp. 4-6 [therein](#).

**NB:** Has anyone calculated (i) the *enormous* pressure (p. 18) after the [fission reaction](#), and subsequently (ii) the values of plasma's temperature and pressure needed to *replicate* it? 150,000,000,000° Celsius maybe? Because this is all you have to play with. You can't replicate the Genuine Stellar Nucleosynthesis (GSN). You need [quantum gravity](#) and [BCCP](#).

Where are the calculations of (i) and (ii) above? No reply to my messages from [4 August 2019](#) has been received so far. The UK experts ([ian.chapman@ukaea.uk](#), [nick.holloway@ukaea.uk](#), [d.gann@imperial.ac.uk](#)) are obviously very good at PR, as they somehow managed to convince the current PM Boris Johnson to spend another £220 million, all taxpayers' money, for "the world's first nuclear fusion plant" ([The Telegraph](#), [27.09.2019](#)).

Are these UK experts fluent in plasma physics as well? When will they deliver their homework? When pigs fly, of course.

D. Chakalov

September 30, 2019

Last update: October 4, 2019, 22:18 GMT

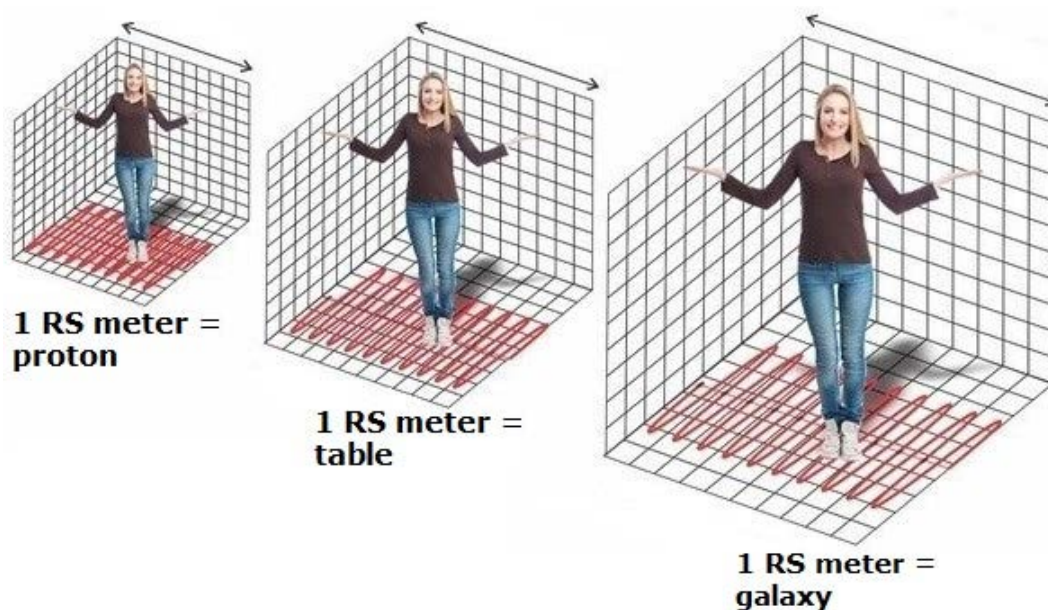
## Your global time is ZERO

Sunday, October 20th, 2013  
 Your Local Time: 45 minutes past 8 P.M.  
 Your Global Time is ZERO

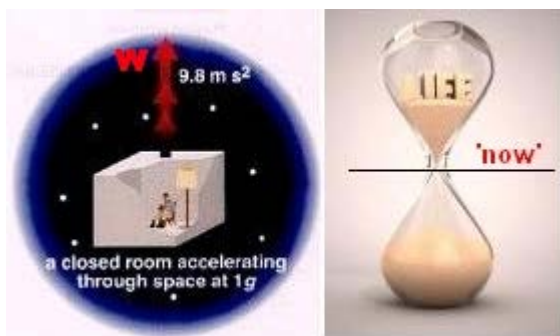
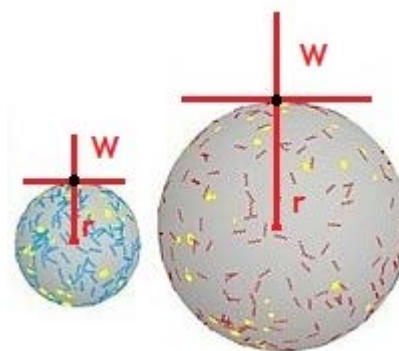
Six years ago, on 20 October 2013 at 20:45 GMT, I managed to 'connect the dots' and suggest the theory of [quantum gravity](#). It took well over twenty-three years to add gravity to my model of spacetime and causality from [January 1990](#), which was in turn the result of eighteen years of studying the physics of the [human brain](#), since January 1972. The task to solve was very difficult: what could be the *physics* of the brain ([p. 2](#)), given the fact that it has mind and [volition](#)? Try the experiment with your brain at [p. 22](#) in [zenon.pdf](#) and read [p. 7 above](#).

The breakthrough on 20 October 2013 was based on the proposal for two *modes* of spacetime, local (physical) and global (Platonic, see [below](#)), which I announced on 21 September 2008, in commemoration of the 100<sup>th</sup> anniversary of the discovery of spacetime metric by Hermann Minkowski on [21 September 1908](#). The proposal looks very simple, compared the task above: unlike the 4D local *mode* of spacetime, our global "time" (read my posting at [Quora here](#)) is always ZERO. Namely, it is *atemporal Macavity* ([p. 32](#) in [about\\_spacetime.pdf](#)). It took over five years, from September 2008 until October 2013, to solve the puzzle of [the physics of Life](#).

But what is the meaning of 'your global time is ZERO'? Read the explanation at [p. 9](#) and [p. 15](#). The ([hyperimaginary](#), along **W**) topological properties of spacetime are explained with Fig. A and Fig. B on [p. 21](#) in [zenon.pdf](#), reproduced [below](#). The *origin* of gravity does not live in the local mode of spacetime, but in the global (Platonic) mode. The latter is *exactly re-nullified* ([p. 15](#)) in the local mode ([p. 9](#)). To understand how to add gravity to the quantum world, read [pp. 10-11](#) in [zenon.pdf](#), [p. 5](#) in [st\\_eng.pdf](#), and [p. 33](#) in [about\\_spacetime.pdf](#). The idea of Relative Scale (RS) spacetime is depicted below. It's all relative, as uncle Albert used to say.

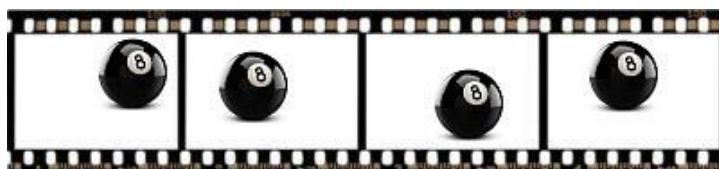


The Platonic reality, called also *Res potentia*, lives along the hyperimaginary axis **W** (global mode) depicted in Fig. A and in Fig. B below. It is being *exactly re-nullified*, once-at-a-time ([p. 9](#) and [p. 14](#)). It acts on the *physicalized* 4D word (local mode) as *atemporal* ([p. 2](#)) Platonic [matrix](#) ([p. 7](#)), e.g., the [matrix](#) of proton's mass ([p. 7](#)) or the [matrix](#) of 4D spacetime ([p. 11](#)).

Fig. A, read p. 15 [above](#)Fig. B, p. 11 in [st\\_eng.pdf](#)

Notice that the (hyperimaginary) axis  $W$  is “erected” at light-like zero intervals — both along the **radius**  $r$  (Fig. B) of the **inflating balloon** and orthogonal to it. To understand the **bundle** of normal and tangential directions “along” light-like zero intervals, read the explanation at [this http URL](#). It will be difficult to overestimate the importance of this crucial mathematical fact.

But let’s go back to the initial question: what is the meaning of ‘your global time is ZERO’? Look at Fig. A above: the “black space”, with respect to which the “closed room” is being “accelerated” **up** along  $W$ , is not *physically* observable, as we know after the negative result from the [Michelson-Morley experiment](#). This *absolute* (p. 15) “direction” **up** along  $W$  is “zero”, as it creates temporal “orientation” of 4D spacetime by two *symmetric* (CPT) — and always **squared!** — past/future “**pointing vectors**”. Also, the *absolute* “direction” **up** *must* be *exactly re-nullified* in the spacetime equipped with metric in such way that the local mode of spacetime becomes *perfect* continuum (p. 9): the global and *atemporal* Platonic mode of spacetime *must* be *exactly re-nullified*, once-at-a-time (p. 20). Otherwise it will be part and parcel from the local mode of spacetime, like the strips between snapshots from a movie reel.



Read p. 17 in [zenon.pdf](#): before Zen, mountains are mountains and trees are trees; *during* Zen, mountains are no longer mountains and trees are not trees; after Zen, mountains are once again mountains and trees once again trees:

[mountains and trees] **Zen** [mountains and trees]

Now, place **Zen** (also called John, p. 2) in the *atemporal* (p. 2) global mode of spacetime. It will never “collapse” (p. 12) by casting its 4D “**jackets**” in the local mode, as we know since 1911, after Charles Wilson (p. 6). In the global mode we operate only with the Platonic images (p. 9) of ‘tree’ and ‘mountain’. There is no metric there, so we can “pull up” and “rotate” them effortlessly, like we move our thoughts, and their physical “jackets” will follow (p. 16).

Again, don’t forget the bundle of inertia & gravitational rotation (p. 7 in [zenon.pdf](#)), because you need it to produce unlimited energy: the Platonic ‘rotor’ (p. 18) is *not heavy* during **Zen**. This is how we can save our planet (p. 5 in [q\\_coin.pdf](#)). We *must* help our children (p. 16)!

D. Chakalov

October 4, 2019

Last update: October 9, 2019, 12:00 GMT

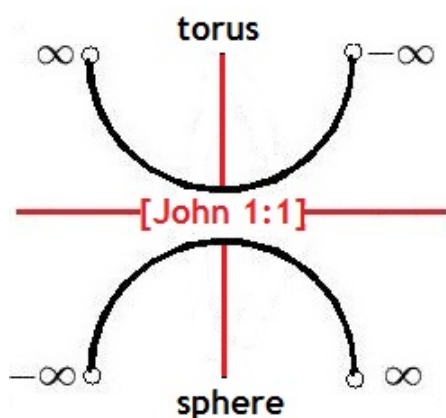
## Questions and Answers

Q1. How would you rotate (Fig. E) a metal object with mass 60+ tons?

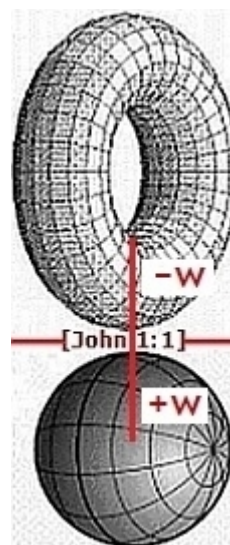
A1. With gravitational rotation and REIM (p. 16). It's not "magic". More on 15 January 2020 (p. 17). Let me quote from p. 39 in *Platonic Theory of Spacetime* (about\_spacetime.pdf):

To avoid misunderstandings, keep in mind that the Platonic state of the entire Universe as ONE (global mode of spacetime), which is *exactly* nullified ( $|\mathbf{w}|^2 = 0$ ) at every consecutive 4D event 'here and now' from the local (physical) mode of spacetime, is presented as an atemporal **pre-geometric** medium (p. 37 above). An observer there will be able to "see" all points in the local (physical) mode of spacetime *simultaneously* from all directions in 4D spacetime, including the inner structure of solid objects and things obscured from three-dimensional viewpoint; for example, all six sides of an opaque box and *everything* that is inside the box (Wikipedia): read ref. [33] in [Hyperimaginary Numbers](#) and follow the links. Needless to say, the Platonic matrix springs from this atemporal **pre-geometric** medium. We see only **physicalized** 4D "jackets" (p. 36 above) with positive (never **negative**) mass.

Check out also ref. [33] at p. 18 in [Hyperimaginary Numbers](#) and notice the sphere  $\Leftrightarrow$  torus transitions at p. 6 [therein](#). The local mode of spacetime (p. 21) is being **re-created** "around" the breaking point 'here and now', yielding **asymptotically flat 4D spacetime** (see below, adapted from [Eric Schechter](#)). God (p. 10) is always "inside" the atom of geometry (p. 9).



See Fig. B on p. 21 [above](#)



The breaking point in the sphere  $\Leftrightarrow$  torus transition above leads to **nullification** (p. 7) of the radii **-w** and **+w**, ( $|\mathbf{w}|^2 = 0$ ) viz. hyperimaginary numbers. There are many mathematical issues: the global "time" (p. 21) in the Catch 22 paradox at p. 3 in [Spacetime Engineering](#), the last paragraph at p. 28 in *Time and Continuum: Zenon Manifold* (zenon.pdf), and many more. The **phase space** of the **matrix** (p. 20) is completely unknown (p. 21), but so is the phase space of the human brain or a centipede (p. 2). We need Mathematics, not **pseudoscience**.

Back to Q1 [above](#): lifting and rotating a metal object with **mass 60+ tons** will be far more complicated than an apple (p. 24 in [zenon.pdf](#)). If people are **not interested** – fine (p. 4).

D. Chakalov

October 10, 2019

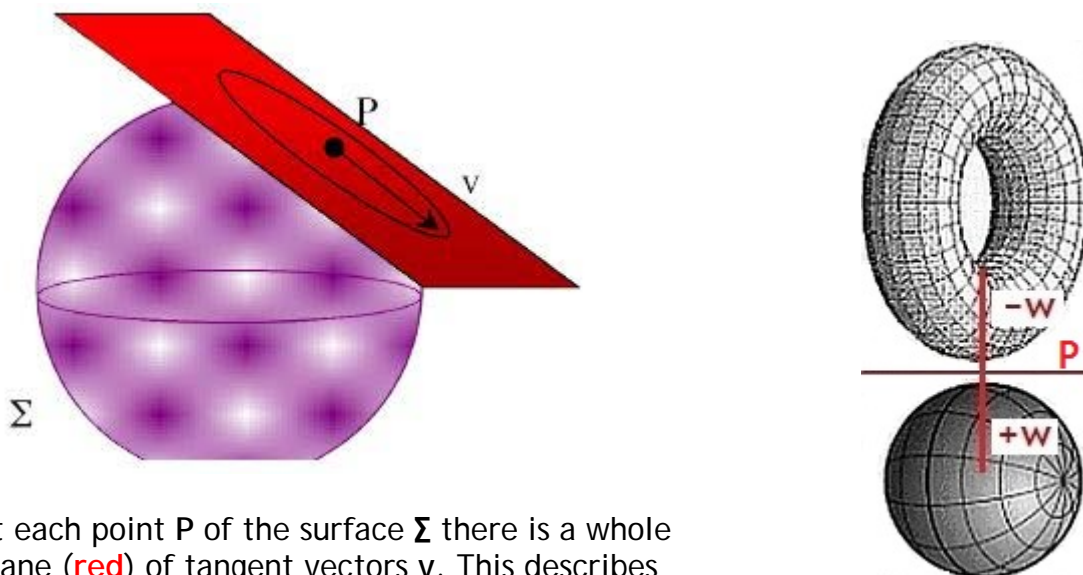
Last update: October 27, 2019, 13:36 GMT

## How to bind **matter to matter**?

As stated previously, the first paper on spacetime and causality (dubbed **biocausality**) from January 1990 was based on eighteen years of studying the physics of the **human brain**, since January 1972 (p. 20). Before addressing the task of how to bind *mind* to matter (p. 25), we must understand how to bind *matter* to matter (p. 21), leading to **matter acting on itself**. By its spacetime? But what is 'spacetime'? Here is the first thing we know that we do *not* know.

On 25 April 1972, Erwin H. Kronheimer and his colleagues tried to add 'ideal points' to causal spacetimes (R. Geroch, E. Kronheimer and R. Penrose, Ideal points of space-times. *Proc. Roy. Soc. Lond.* (1972) A327, 545-567). It was a brave effort, which helped us understand that one cannot derive the spacetime – purely **geometric entity** – from matter and fields. That is, one cannot derive the bare grin on the face of Cheshire cat (*Quora*), from the cat. For example, we can only imagine an ideal Platonic sphere by looking at a football. Yet the ideal Platonic object, called 'spacetime', has unique topological properties implemented by 'ideal points', which *cannot* be derived from its "source", matter and fields, placed in the right-hand side of **Einstein's equations**. As José Senovilla noticed ([arXiv:physics/0605007v1](https://arxiv.org/abs/physics/0605007v1), pp. 5-6), we face "some kind of boundary, or margin, which is **not part of the space-time** but that, *somehow*, it is accessible from within it". Thus the necessity of a rigorous definition of the **boundary** of spacetime pertaining to "isolated" gravitating systems (**Jürgen Ehlers**) at null-and-spacelike infinity (**Helmut Friedrich**). The conformal compactification recipe by **Roger Penrose** ( $\Omega = 0$ ), valid only for **spherically symmetric spacetime**, is 'not even wrong'. The list goes on and on.

To cut the long story short, I added new 'ideal points' in terms of *atemporal* Platonic reality (p. 2). Look at the drawing at left, from Eric Zaslow, [arXiv:physics/0506153v1](https://arxiv.org/abs/physics/0506153v1), pp. 9-10, and notice the point **P** in the second drawing, as shown at p. 22 with sphere  $\leftrightarrow$  torus transitions.

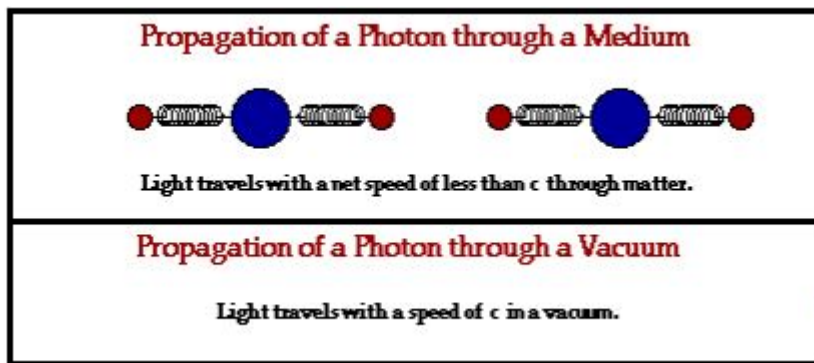


At each point **P** of the surface  $\Sigma$  there is a whole plane (**red**) of tangent vectors  $v$ . This describes the tangent bundle as a vector bundle.

Compare Zaslow's drawing to Fig. B on p. 21: the new 'ideal points' are placed along **W** **orthogonal** to the surface  $\Sigma$ . Will be happy to elaborate, if you are interested in **Mathematics**.

If you are interested in Physics and wish to understand 'spacetime as geometry', like 'the grin on the face of **Cheshire cat**, but *without* the cat', recall the propagation of waves – classical, quantum, and gravitational. How do they couple *matter* to matter (p. 21)?

The propagation of classical waves, such as [wind waves](#), is simple: we have a medium, which is “waving”. However, we also have propagation of EM quanta, called [photons](#):



“In a vacuum electromagnetic waves travel at the speed of light”, says [Wikipedia](#). But *where* is this “vacuum”? See the “black space” in Fig. A at p. 21 [above](#). We “remove” the vacuum, yet nevertheless observe EM radiation with [invariant speed](#) (p. 24 in [zenon.pdf](#)). This is a big mystery. Read also about the “quantization” of spacetime at p. 9 [above](#). If you prefer, call the “vacuum” [Zen](#) (p. 21). Point is, the “quantization” of spacetime, as performed by Mother Nature, leads to a *perfect* continuum (p. 15) of geometric points interpreted as 4D events. Many smart people have tried, very hard indeed, to suggest some “quantization” of spacetime based on so-called “[gravitons](#)”, only to find out that “[gravitons](#)” inevitably lead to [dead end](#).

The case of ‘[quantum waves](#)’ endowed with *complex* phase (p. 1) is perhaps more puzzling. In the first place, there is *nothing* in the quantum world, which “[oscillates](#)” to produce such “[waves](#)”. Currently, there is no quantum geometry: read my email to Alain Connes on p. 15.

Lastly, we have “gravitational waves”, which propagate ... you guessed it, *within themselves*. These mythical “waves” do not propagate in any *physical* medium, like EM waves (see [above](#)), because these (*linear*) GWs *cannot* transport energy: the gravitational “field” does not carry energy-momentum ([Zhaoyan Wu](#)). It just can’t. If it could, gravity will become *physical* field and will have to be placed in the right-hand side of [Einstein’s equations](#). Read p. 12 instead. We face [endless atemporal](#) (p. 2) [ONE](#), in which gravity-and-inertia is being [re-created](#) (p. 9).

Don’t be fooled by [Kip Thorne](#) and his collaborators: read p. 13 in [zenon.pdf](#). Try to produce “[gravitons](#)” by waving *rapidly* your arms like a [Hummingbird](#), as suggested by Kip Thorne in ‘Gravitational Waves and Experimental Tests of General Relativity’ from 7.09.2012, [pp. 31-32](#):

Exercise 27.8 Problem: *Gravitational waves from arm waving*

Wave your arms rapidly and thereby try to generate gravitational waves.

(a) Compute in order of magnitude, using classical general relativity, the wavelength of the waves you generate and their dimensionless amplitude at a distance of one wavelength away from you.

(b) How many gravitons do you produce per second?

That’s it, straight from the horse’s mouth. Alternatively, read p. 9 and all papers listed in the first paragraph of the text at my [website](#). If you’re interested (p. 16), check out p. 17 [above](#).

To sum up, the answer to the question ‘how to bind *matter* to matter’ (p. 23) is simple: by its spacetime. The dark strips separating different states (4D events) of the billiard ball on p. 21 are *exactly* nullified: we cannot observe the underlying “vacuum” mentioned on p. 24 [above](#).

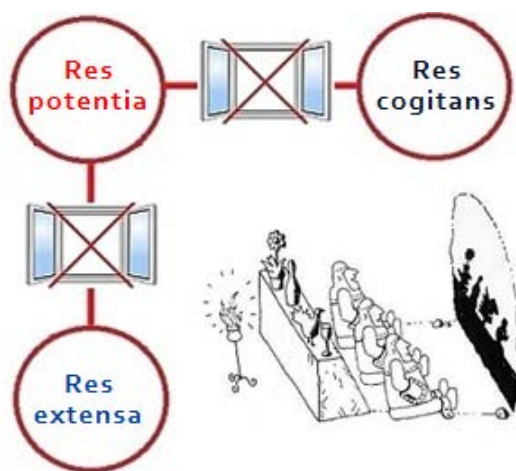


If we try to think of this “vacuum” as the *medium* of propagation of quantum waves (Werner Heisenberg) and insert the notion of time as ‘change’, we inevitably end up with all sorts of “paradoxes”, from Einstein’s *Gespensterfelder* to “zombies” in the Feynman path (p. 2). You cannot obtain the right answer to the wrong question (MTW p. 467): the *physicalized* “quanta” of gravity are localized on a *perfect* spacetime continuum, exactly like the propagation of a photon through a *physical* medium (p. 24). You have to use the so-called *global mode* of spacetime (p. 20) to rotate (Fig. E) a metal object with mass 60+ tons (p. 22). Read p. 18 in arXiv:1604.05484 by Wen Zhao and Larissa Santos, and watch the “dark matter” puzzle [here](#).

Again, we cannot reach the spacetime as *geometry* – the grin on the face of Cheshire cat, but without the cat – from the *physical* world. As Tini Veltman stressed in hep-ph/940435, “space and time are not part of the perturbative dimensional formulation and are thus defined only through Fourier transformation”.

Thus, we can reach the Platonic world (p. 9) only *via* the spacetime: the entry point is the *global mode* of spacetime (p. 20) at the Zenon *cutoff* (p. 10). You only need your brain (p. 2). Read Slide 14 in [Quantum Spacetime](#) (reproduced below) and the references therein.

To explain *res potentia* and the doctrine of *trialism*, imagine the following situation: you are an Eskimo, and you have never seen and will never see an elephant in your life. Yet you can make observations on elephant’s *trunk* by two complementary devices measuring either properties of *your* arm or properties of *your* nose.



You can never imagine the common source of *your* arm (*res cogitans*) and of *your* nose (*res extensa*), which you blindly called *trunk* (*res potentia*), because the latter does not have arm-like “windows” nor nose-like “windows”: it (not He) is ‘the true monad *without windows*’. (Leibniz *Monadology* § 7)

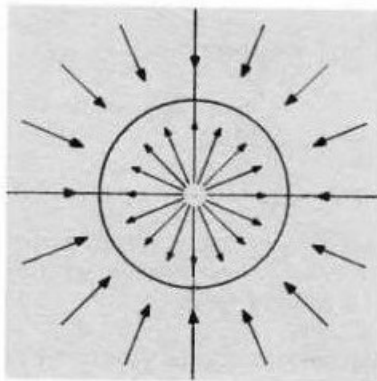
You may suggest, after Leibniz, that what *you* see as an arm (*res cogitans*) is always *pre-correlated* with what *you* see as a nose (*res extensa*) by *pre-established* harmony. But again, you’re an Eskimo and cannot even imagine the ‘trunk’ (*res potentia*).

Read the doctrine of *trialism* at pp. 10-11 in [The Physics of Life](#); details at p. 9 therein. More on Wednesday, 15 January 2020 (p. 17). Yes, God does exist as mathematical object (p. 10). We are “Eskimos” and cannot comprehend the *dual* object “trunk” at the *cutoff* (p. 10). For if we look at the “trunk” from the *physicalized* 4D world, it will look like a “nose”: the entire Universe as ONE, with *physical* explications possessing *always* bi-polar structure, A vs. not-A. But if we look at the same “trunk” from our subjective world (*res cogitans*), we will again end up at *God as ONE*, but now there will be no symmetrical or bi-polar structures: 1 John 4:8. Once *entangled* with people *by* God as Love, you cannot misuse spacetime engineering (p. 17).

The *cutoff* (p. 10) is at the breaking flat *interface* of the sphere  $\leftrightarrow$  torus transitions (p. 22).



In the drawing below (adapted from Mark Armstrong, *Basic Topology*, 1997, Fig. 5.7, p. 104), the breaking flat **interface** of the sphere  $\Leftrightarrow$  torus transitions is shown with a circle depicting **3D space inversion**, like the continual transformation of a left glove into right glove and back.



Read Table 1 in *The Spacetime* at p. 14, shown below. The sphere  $\Leftrightarrow$  torus transitions pass through **asymptotically flat 4D spacetime** (local mode of spacetime), endowed with **CPT symmetry**. There are three physical cases (Cases I - III) and one theological case (Case IV), to present the **phase space** of the **matrix** (p. 20) and the interplay of the physical and Platonic worlds (p. 9) along the **hyperimaginary** (p. 7) axis **W** (p. 21).

<p>Case I: <math> w  \rightarrow 0</math>, classical physics</p> <p>Case II: <math>0 &lt;  w  &lt; \infty</math>, quantum gravity and <b>life sciences</b></p> <p>Case III: <math> w  \rightarrow \infty</math>, hyper physics (?)</p> <p>Case IV: <math> w  \equiv 0 \equiv \infty</math>, physical theology. At the 4D interface 'here and now' (p. 21), we pass through God (Luke 17:21) at <b>absolute infinity</b></p>
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Table 1

Case I corresponds to classical physics and classical sets, such as the set of apples at p. 10, and hence the influence (p. 7) of their **matrix** is FAPP zero. For example, we may associate a vanishing small **Compton wavelength** to a football, yet it will have strictly **classical trajectory**.

Case II corresponds to the **quantum** and the living world viz. to quantum sets and their **matrix** (p. 20). Regarding **life sciences**, just one example: the **neural pathways** in the human brain are *flexible*, not "uncertain". If we treat them like **computers**, we will hit **contradiction with facts**, e.g., **homunculus**. Read Erwin Schrödinger from 1943 in *The Physics of Life*, and p. 20.

Case III corresponds to new type of physics, called 'hyper physics'. Perhaps it is related to the extreme *flexibility* of the Universe immediately "after" The Beginning (p. 11).

Case IV corresponds to physical theology, as understood by "Eskimos" (p. 25). See the drawing at p. 8 in *Platonic Theory of Spacetime* and pp. 29-30 therein. God (p. 10) is always residing "inside" the atom of geometry (p. 9). The Zenon manifold (p. 10) requires only Mathematics.

*Der Herrgott würfelt nicht!* (Albert Einstein, 4 December 1926). God casts the **matrix** (p. 20), not the dice (p. 6). If **nobody is interested** – fine (Matthew 7:6).

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 October 14, 2019  
 Last update: October 31, 2019, 16:58 GMT