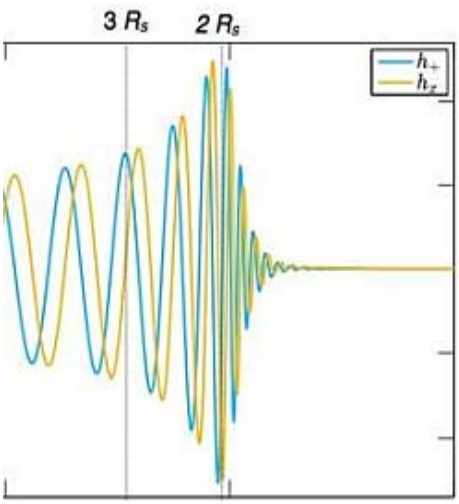
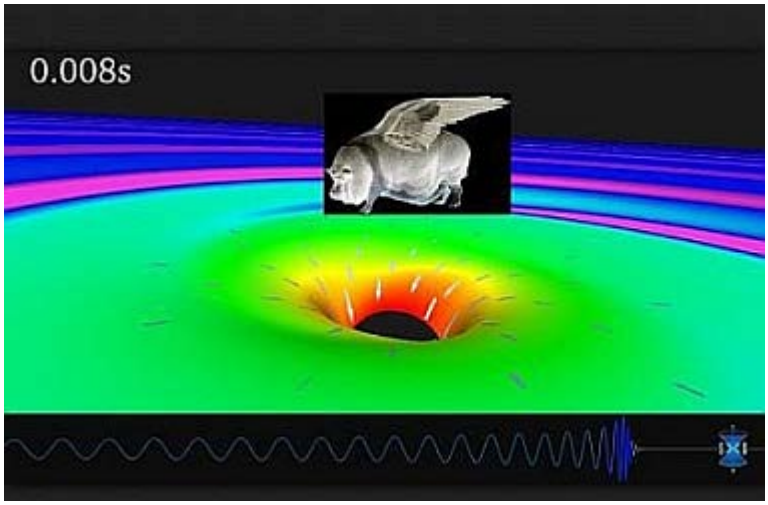
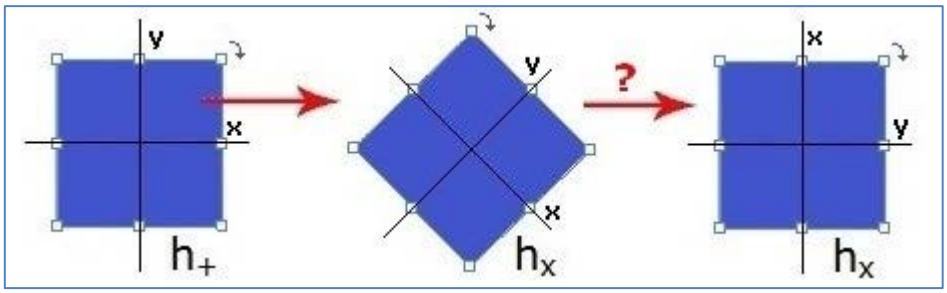
D. Chakalov, The so-called GW150914 is **FRAUD**. Report available at chakalov.net, 27.09.2020.

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. $m_g \leq 7.7\times10^{-23}$ 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. It is a special *vacuum* ghost.





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" with pure imagination and wishful thinking. It is plain **FRAUD**: read p. **25** in viXra:1712.0017vA. Read also *Gravitational Wave Miracles?* (gw_miracles.pdf).

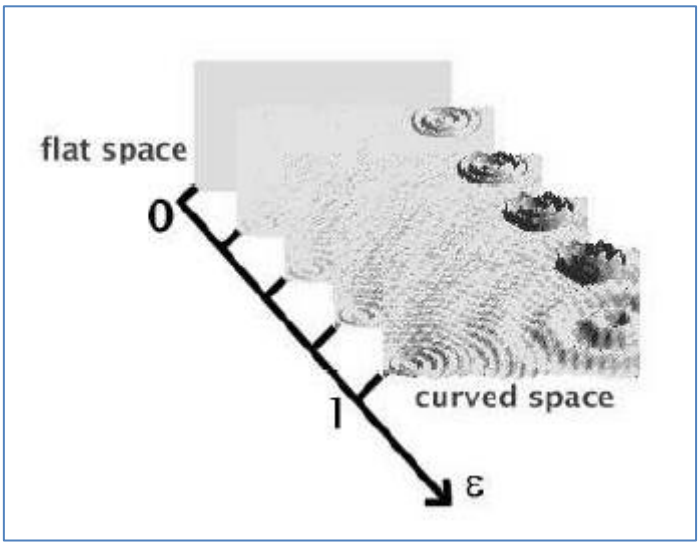


Q1: What phenomenon could possibly produce an **exact 45° angle** between $\mathbf{h_+}$ and $\mathbf{h_\times}$ *and* keep it **exactly** fixed **within** the "superposition" of these oscillating metric fields, in such way that the latter will *never* conflate and intermingle? What could sustain the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

Q2: How could these "gravitons" be arranged in vacuum spacetime to keep the **45° angle** between h_+ & $h_\times$? For if the angle reaches **90°**, the net effect from h_+ & $h_\times$ 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 waves" 18 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 list goes on and on.

Regrettably, there are many experts in GR, who are perfectly aware of the **FRAUD** by Kip Thorne and LIGO "scientific" collaboration above, yet are keeping quiet. For example, read my question to Piotr Chrusciel regarding his recent *Elements of General Relativity* (2019), p. 150 and look at the drawing by Bernard Schutz in Schutz.pdf, reproduced below. Do you smell rat?



No, you may not even imagine "realistic astrophysical sources" (Michele Maggiore) with strongly non-linear GWs decaying to Minkowski spacetime. ***Absurd***. Why? Because of GR: MTW p. 968. And if you nevertheless push your imagination to "infinity", you will hit *reductio ad absurdum*:

> From a physical point of view, null infinity is *very* far away. A measure of how far one has to get from a source to be "near" infinity is to consider the divergence of the true curved-space light-cones from their flat-space approximations, which wind up at spatial infinity. Martin Walker first pointed out the enormous distance required to separate these cones by just one wavelength or period of the gravitational wave, a reasonable length scale for a radiation problem. The separation is something like $2M\ln(r/M)$. Setting this equal to λ for the Hulse-Taylor pulsar, we solve for r and find that it is a bit more than 10^{10^9} km! This is unimaginably bigger than the observable Universe, whose radius is a mere 10^{23} km.

Now look again at the official "report" of the "discovery" by Kip Thorne and LIGO "scientific" collaboration above: you are supposed to believe that the *wave pattern* (shown above) of binary black hole (BBH) merger, dubbed **GW150914**, **exactly** matches the wave pattern of *very* strong GWs at the immediate vicinity of the same BBH merger over **one billion years ago**, because the *wave pattern* was absolutely **not** altered due to non-linear interactions of very strong GWs with matter and fields in the cosmos for over **one billion years**, before being "detected" by LIGO on 14 September 2015. This is how Kip Thorne and his collaborators got their Nobel Prize in 2017.

Read pp. **7**-**8** in Can Penguins Drink Warm Water? (8.07.2020). All these issues could have been resolved fifteen years ago, after my paper 'Are Gravitational Waves Directly Observable?' from 17 July 2005, but the talibans at arXiv.org deleted it without any explanation. Billions of US dollars and euros – all taxpayers' money – for the so-called "advanced" LIGO and LISA Pathfinder could have been saved, and Kip Thorne and his collaborators could not have the chance to fool us again and get Nobel Prize. Fool me once, shame on you; fool me twice, shame on me.

D. Chakalov
July 8, 2020, 12:15 GMT

For the Record

The first feedback to my report above came today (8 July 2020) from viXra Admin by email (Wed, 8 Jul 2020 17:27:07 -0400). The person (probably Philip Gibbs) immediately rejected my submission, and wrote that "the article title is not scholarly (it is accusatory, inflammatory and arrogant)".

Arrogant? I call a spade a spade. Yes, the so-called GW150914 is indeed a gigantic **FRAUD**. It is also terribly dilettante fraud: their "ringdown phase" (shown above) was ***absolutely*** "perfect". I suspect the template for mock GW "data", called now GW150914, was crafted by Kip Thorne (gr-qc/9506084), although many of his collaborators were also manufacturing "blind injections". "Only four LIGO leaders know when such injections are made" (Adrian Cho). How about LIGO's Godfather? But GW150914 was not enough for Nobel Prize: see GW 170817 from 17 August 2017.

Inflammatory? Well, if Philip Gibbs believes in pink unicorns dancing with red herrings (called for short GW150914), then I've certainly hurt his feelings. Take for example the "inflammatory" claim by Kip Thorne that GW150914 were "by far the most powerful explosion humans have ever detected except for the big bang" (read above): **5.58×10^{47}J** or **13.33×10^{37}** tons of TNT. Yet this "most powerful explosion" failed to produce "any EM or particle emission whatsoever" (p. 9 in arXiv:1602.08492v4). Only some "gravitons" with mass app. $m_g \leq 7.7 \times 10^{-23}$ eV/c^2 (read above). Strangely enough, Kip Thorne "forgot" to prove his "gravitons" by developing his renormalizable perturbative quantum gravity. Instead, he suggested an experiment at ***creating*** gravitons. **Fact**. Read p. **7** in Can Penguins Drink Warm Water (8.07.2020).

Accusatory? I list the **bold facts**. Facts are what they are. They are *not* accusations.

Regrettably, Philip Gibbs failed to show at least **1** (one) case in my report, which is not 'fact' but an **opinion**. I sincerely urge all my readers to help him.

Please don't hesitate. Send your **facts** (*not* opinions) to Dimi Chakalov <dchakalov@gmail.com>. Thank you very much in advance.

Those who are new to the issues of GW energy (read above) may find the illustration by Rainer Weiss very helpful: watch him expanding and contracting little squares from a plastic mesh wine bottle protector, in *Science Bulletins: Gravity-Making Waves*, YouTube, May 10, 2012, 3:35:

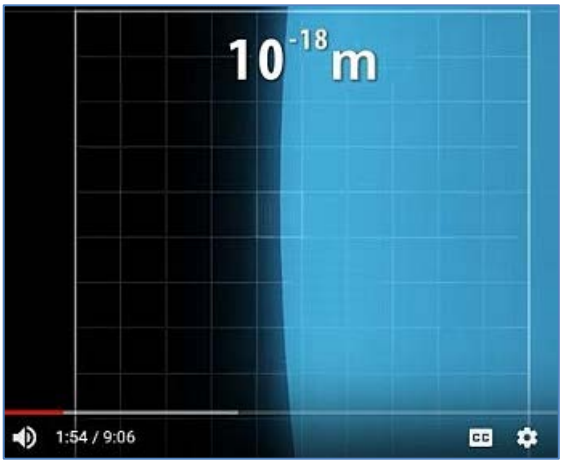
"The waves can be represented by this object I found on a wine bottle. And it's a mesh that you can see. And the waves cause transverse to the direction in which they're moving. They're moving forward, and transverse to that the space gets tugged like this, and collapses like that. (...) And that's the key to the whole thing." (3:35 from the timeline.)

This first obvious problem is that Rainer Weiss is some *unphysical* meta-observer, who is immune to the inevitable alteration of his rods and clocks, so that he can "measure" GWs: the universality of gravity explicitly forbids such "neutral" observer. **No way**.

For comparison, recall that to measure properties of EM field we ultimately need an object that is ***not*** influenced by it, so that we can measure EM field ***with respect to*** such neutral object.

So, how did Kip Thorne and LIGO "scientific" collaboration manage to square the circle?

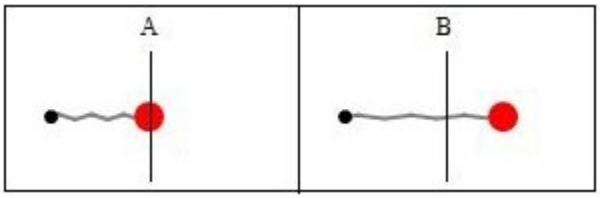
Watch closely Dr. Rana Adhikari in *The Absurdity of Detecting Gravitational Waves* at YouTube, January 5, 2017, 7:52-8:23:



According to Rana Adhikari, "all of the uncertainty, which comes of quantum mechanics, is completely crammed (**Sic!** - D.C.) into this other thing that we don't care about." This is how Kip Thorne is trying "to engineer quantum noise" (8:23 from the timeline). With "GW magic".

Read again Kip Thorne at p. **7** in Can Penguins Drink Warm Water (8.07.2020). It is a diagnose.

Now, people look at the long list of "gravitational wave events" (Wikipedia) and say, 'these guys might have detected something really *weird*, what the heck is it?' My answer will be delivered at the international conference ***GRAVITY 21*** on 26-27 March 2021 in Munich (p. **13** in Can Geometry Produce Work). As an analogy, one ***cannot*** detect the quantum waves *themselves*, with some special extra-sensitive *macroscopic* oscillator, "influenced" by "quantum noise":



Only the quantized "chunks" called quantum particles: read Erwin Schrödinger. Likewise, one cannot detect Einstein's *Gesamtfeld* itself. Only its ***gravitalized*** **4D** "jackets" (**Q**) explained at p. **7** in Can Penguins Drink Warm Water (forget spin-2 metric "polarizations" and powerless "vacuum" with $\mathbf{T}^{\mathbf{ab}} = \mathbf{0}$). Not surprisingly, the **4D** "jackets" can exhibit wave-like holomovement *resembling* the wave pattern in the double-slit experiment. The spacetime metric is ***dynamical***: read E. Taylor and J.A. Wheeler at p. **15** in Can Geometry Produce Work. And this is what makes the genuine gravitational radiation, under perpetual energy **non**-conservation, *really* important.

We need brand new quantum gravity (*ibid*., p. **5**). The fun part is just around the corner!

D. Chakalov
July 8, 2020
Last update: August 12, 2020, 18:25 GMT

Physics, abstract physics/0507133

From: Dimi Chakalov [view email]
Date: Sun, 17 Jul 2005 18:59:24 GMT (196kb)

Are Gravitational Waves Directly Observable?

Authors: Dimi Chakalov
Comments: Comments, corrections, suggestions will be appreciated
Subj-class: General Physics; Space Physics

We take for granted that Gravitational Waves (GWs) exist, but examine critically the possibility for their direct observation with ground and space-based laser interferometers. It is argued that the detection of GWs can, at least theoretically, be achieved iff three requirements are met en bloc. Alternatively, a hypothetical case related to the so-called dark energy would render the task impossible in principle. The discussion is kept at conceptual level, to make it accessible to the general audience.

Full-text: PDF only

Which authors of this paper are endorsers?

Links to: arXiv, physics, /find, /abs (-/+), /0507, ? form interface

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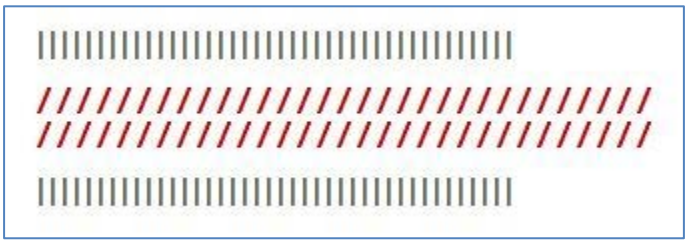
As I mentioned at p. **2** above, my manuscript 'Are Gravitational Waves Directly Observable?' from 17 July 2005 was deleted by the talibans of arXiv.org without any explanation. **Billions** of US dollars and euros — all taxpayers' money — for the so-called "advanced" LIGO and LISA Pathfinder (read p. **8** in Can Penguins Drink Warm Water) could have been saved, and Kip Thorne and his collaborators could not have the chance to fool us again and get Nobel Prize. Fool me once, shame on you; fool me twice, shame on me.

Fifteen years ago, I wrote (quote from the abstract): "It is argued that the detection of GWs can, at least theoretically, be achieved iff three requirements are met en bloc." I was trying to be polite. These 'three requirements' are ***absurd***, plain and simple. Says who? The **bold *facts***. Nobody can argue with facts. Read this report, starting from p. **1** above.

I also wrote (quote from the abstract above): "Alternatively, a hypothetical case related to the so-called dark energy would render the task impossible in principle." Let me explain, with the benefit of hindsight.

In one sentence, the spacetime is endowed with **elasticity** — it can *deflate* and *inflate* (p. **25** in Can Geometry Produce Work). This is the crux of so-called "dark energy" and "dark matter", called collectively "mystery matter". As an illustration of *nonlocal* gravity (Laszlo B. Szabados), imagine looking at a hill covered with a forest, with some of the threes leaning at an angle:



The swathe of trees above (in **red**) are leaning in the same direction, and you can *infer* that they were exposed to strong wind (passing gravitational radiation), yet the wind itself is not visible: you can only *claim* that some orientable-by-wind trees have been correlated *en bloc*. In order to detect such passing "wave" **locally** (Sic!), you will have to install at some local tree, depicted with **/** above, a new detector endowed with the faculty of **self-acting**, resembling the human brain. You cannot trace the origin of such holistic effects made by 'the whole forest', hence you will interpreted its *local* effects as "**dark**" (p. **6** in Can Geometry Produce Work). Again, you are a single local tree (**Q**), which cannot "see" the entire forest *en bloc*. Simple, no?

The illustration with "strong wind" above is not original. Back in October 1920 (excerpt here), Arthur Eddington spoke about *ethereal energy* possessing "the chief mechanical properties of matter—viz., mass and momentum". In the context of my ansatz, the energy-momentum and angular momentum are delivered by the physicalized ***mediators*** (**Q**) of the **Platonic** energy (**P**), like a **Platonic** 'hand' (**P**) in **4D** 'glove' (**Q**). Read pp. **6**-**8** in Can Penguins Drink Warm Water.

How "large" is the virtual pool of not-yet-physicalized *intangible* energy (Hermann Bondi) pertaining to the *atemporal* Platonic state (**P**) of the quantum-gravitational '**brain**' (**Q**)?

Indefinite. It ranges from "positive energy density of about 6×10^{-10} joules per cubic meter" (John Baez) to 3×10^{47} joules of energy released in less than a minute in gamma-ray bursts. Or perhaps much more. The upper bound (if any) on **Q**'s positive energy density is unknown. How much energy (Paul Steinhardt) was needed to create the Universe at The Beginning (John 1:1)?

Perhaps we have *unlimited* source of clean energy from the genuine gravitational radiation to resolve the upcoming climate crisis. Read p. **28** (last) in Brain-Controlled Cold Plasma. I am already old and have perhaps a few more years left, but my children and grandchildren will have *devastating* problems (p. **47** in Can Geometry Produce Work). Time is running out!

Back to my paper from 17 July 2005. If you subscribe to GR textbooks, read Angelo Loinger in arXiv:physics/0506024v2: "*no "mechanism" exists in GR, which is capable of producing GW's*. In other terms, if we displace a mass, its gravitational field and the related curvature of the interested manifold *displace themselves along with the mass*." More from Angelo Loinger here. Read also Bernard F. Schutz (2 August 2002) above, straight from the horse's mouth. Period.

Acknowledgements

I thank Professor Dr. Dr. h.c. Bernard F. Schutz and Nobel Laureate Kip S. Thorne for their illuminating errors, which provided crucial (though unintended) help to my modest efforts at understanding Time and gravity (p. **39** in Can Geometry Produce Work). I hope they will be thoroughly scrutinized by many experts in differential geometry and topology at the conference ***GRAVITY 21***, 26-27 March 2021, Munich (p. **13** in Can Geometry Produce Work). Qui vivra verra.

D. Chakalov
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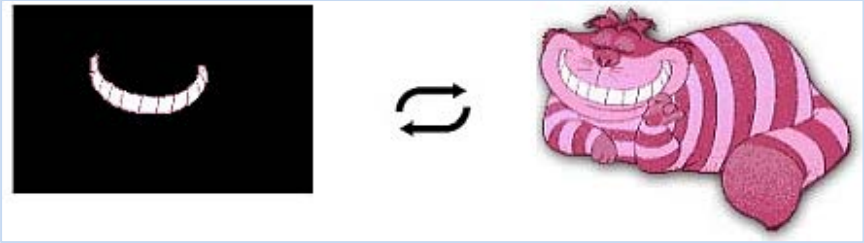
17 July 2020, 18:59:24 GMT

Gravitational Radiation for Dummies



Unlike Alice, we cannot see the grin on the face of Cheshire cat *without* the cat. We picture the grin as 'pure geometry', like we'd imagine an ideal geometric sphere, but cannot observe them *in principle*. We always see the *physical* Cheshire cat *and* its grin, like a physical football with a spherical shape or like a mountain with particular shape. And the other way around: we cannot observe *only* the physical Cheshire cat, *without* its geometric 4D grin, either. The two make an inseparable bundle, and their "negotiation" makes the ***gravitalized*** cat **self-acting** (p. **6**).

So, how is this story relevant to the way gravity "carries" throughout the cosmos its physical ***source*** (energy-momentum and angular momentum, p. **6** above) by gravitational radiation? The mythical "gravitational waves" (GWs) **cannot** *in principle* travel (p. **2**) in the cosmos, but only in some *fictitious* mathematical "vacuum" which, according to GR textbooks, "must contain no energy. But the gravitational field can do work, so we must expect the gravitational field itself to possess energy, and it does." Correct. But we face fundamentally *non-linear* interactions.

On the one hand, gravity is presented with 'spacetime' modeled with geometry (pictured at the left-hand side of the drawing above), which is ontologically different from its physical ***source*** placed at right-hand side of the same drawing. We don't want to even think of gravity as some parapsychological "ghost", which would act on matter and fields *without* possessing the only stuff that can interact with matter and fields: energy-momentum and angular momentum (p. **6**).

On the other hand, we don't want to even think of gravity as some *physical* field, like e.g. the EM field. Besides, electromagnetic (EM) waves do not carry their sources (charged particles), whereas the gravitational radiation **does**. This is one of the crucial differences between the mythical GWs and the genuine gravitational radiation. Can we have our cake and eat it (p. **6**)?

Yes we can, with quantum gravity. We abandon GR textbooks (read Angelo Loinger at p. **6**) and suggest the **Platonic** quantum gravity based on *not-yet-physicalized* **Platonic** 'hand' (**P**) in **4D** 'glove' (**Q**): see Escher's 'drawing hands' here. The physicalized **4D** 'glove' (**Q**) ***always*** carries its **Platonic** *pre-geometric* source — the *not-yet-physicalized* **Platonic** 'hand' (**P**). It's a bundle. Hence the *gravitalized* **4D** 'glove' (**Q**) ***interacts*** with **itself**, just like your brain does. Read p. **2,** p. **6**, and pp. **22**-**23** in Can Geometry Produce Work, and notice Slide **2** and Slide **3** from my talk on 21 September 2020. Regarding gravitational radiation, read pp. **5**-**6** in Gravitational Energy.

To cut the long story short, the gravitational radiation is immensely powerful phenomenon, and the human brain might have access to it with spacetime engineering. I hope to present the path to quantum gravity (no tensors) at the conference ***GRAVITY 21*** in Munich, 26-27 March 2021: read pp. **23**-**25** in Can Geometry Produce Work. Surely the theory is very speculative, like the dubious map used by Christopher Columbus in August 1492. But if he didn't go west, with the insane hope to find some shorter route to the Far East, how could have he discovered America?

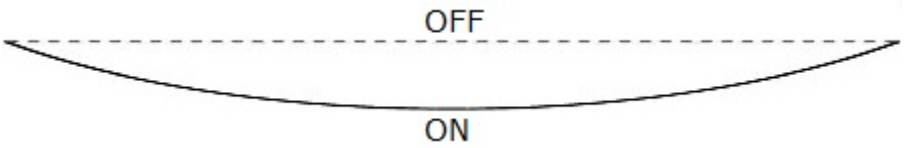
D. Chakalov
chakalov.net
17 July 2020, 18:59:24 GMT

Gravitational Messenger

In order to transmit and receive information with Gravitational Messenger, we need to harness the gravitational radiation from the nonlocal "forest" (pp. **5**-**6** above): the Cheshire cat (p. **7**).

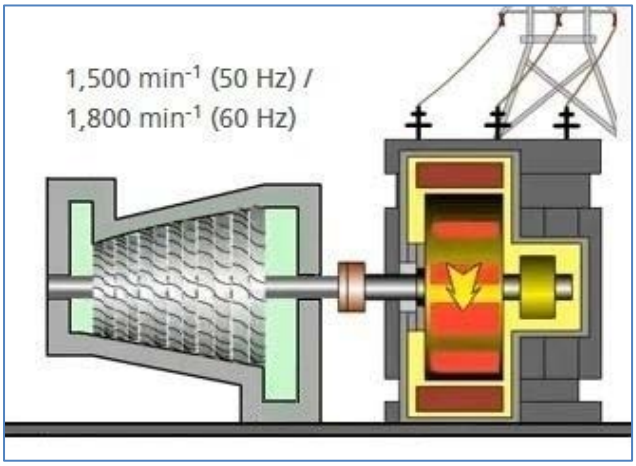
As Piotr Chrusciel explained, we have to use the "transfer of energy between the field and the detector" that "measures the energy carried away by the gravitational field". To the best of my knowledge, there is no mathematical model of gravitational **self-interactions** (Thomas Wilson). See again Escher's 'drawing hands' here. Without mathematics, my theory of quantum gravity is very speculative and, most importantly, cannot be verified by experiment or observation — yet. Nevertheless, let me just outline the idea of Gravitational Messenger, as Gedankenexperiment.

We refer to the genuine gravitational radiation (p. **7**). Not some spin-2 metric "polarizations". The detector measuring the energy carried away by the nonlocal gravitational field (pp. **5**-**6**) is denoted with **Q**: read p. **4** above. To explain the idea, I will use the gravitational "rope" below (p. **4** in Can Penguins Drink Warm Water), exhibiting two **Q**-states denoted OFF and ON:



We always carry the detector of gravitational radiation — the **self-acting** human brain. Read pp. **21**-**25** in Can Geometry Produce Work and follow the links. One thing to always keep in mind is that, in my theory quantum gravity, we explore the *pre-geometric* dimensionless **Platonic** world (**P**) along null surfaces, which wraps and bootstraps the entire **4D Q**-world (p. **6**). We have two types of distances between spacetime points: (**i**) metric distance defined with the *invariant* interval Δs^2 (Robert Wald), and (**ii**) **Platonic**, which is *exactly* **nullified**. We use both (**i**) and (**ii**). To find out whether you can train your brain, try the experiments at p. **5** in Gravitational Energy and at p. **22** in Time and Continuum: Zenon Manifold. Read about the **c**ognitive-and-**q**uantum **v**acuum (**CQV**) at p. **25** therein. Why? Because if you don't know how to train your brain, you will be only 'kicking spoons on the floor' (p. **13** in Über Die Gravitationsfeldrelativitätstheorie).

I wrote above that the theory cannot be verified by experiment or observation — yet. As of today, I still cannot *rotate* a heavy chunk of metal with gravitational rotation (p. **18** in BCCP).



My proposal for producing unlimited electricity is based on gravitational rotation (p. **4** in The Physics of Life): spin the steam turbine rotors in all power plants with spacetime engineering (p. **6** in Gravitational Energy). No water supply, heat, or hazardous nuclear fuel will be needed. It shouldn't be a problem to rotate a chunk of metal — gravity can *effortlessly* rotate a whole galaxy *en bloc*. This is the way to solve the task for unlimited clean energy and save our planet from the upcoming climate crisis — read p. **28** in BCCP. We must not use nuclear fission nor coal.

Taking the risk to be terribly boring (again), let me repeat that inertia (Dennis Sciama) and gravitational rotation (Richard Feynman) are fundamentally interwoven presentations of gravity.

Challenges? Yes, tons of them. In addition to those related to gravitational radiation (p. **7**), the LIGO "scientific" collaboration will not admit that they committed a gigantic **FRAUD** (p. **1**), and the oil and gas industry (Rachel Maddow) will almost certainly block real breakthrough. Besides, the establishment hates any new revolutionary technology by default. If you read, for example, about cold fusion at Wikipedia, you may gather the impression that cold fusion reports are junk, like those poltergeists in old Scottish castles. Just read Franco Scaramuzzi and Andrea Rossi. The latter showed in 2013 "excess heat with a resulting energy density that was at least one order of magnitude, and possibly several, higher than any other conventional energy source". It is just a hint, but perhaps an *immensely* important one, like a potential cure for COVID-19.

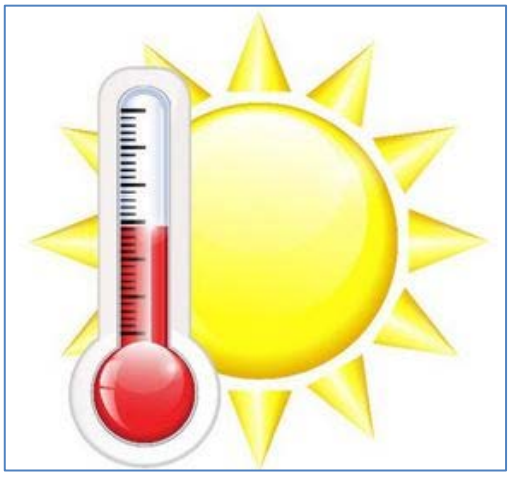
But unlike vaccine for COVID-19, don't expect low-energy nuclear reactor (LENR). Why not? "There is currently no accepted theoretical model that would ***allow*** (emphasis mine – D.C.) cold fusion to occur" (Wikipedia). Ditto to producing electricity with gravitational rotation (p. **8**). There is currently no accepted theoretical model that would ***allow*** inertia (John Wheeler) and gravitational rotation (Richard Feynman) to "occur". There is currently no accepted theoretical model that would ***allow*** the effect discovered by Charles Wilson in 1911 to "occur". There is currently no accepted theoretical model that would ***allow*** the Universe to "occur" — **ever**. There is currently no accepted theoretical model that would ***allow*** protons to "occur" either. I cannot convince theoretical physicists to even ***read*** Erwin Schrödinger. The list goes on and on.

The most recent example, from 28 July 2020: "The International Thermonuclear Experimental Reactor (ITER) aims to build the world's largest tokamak — an experimental machine designed to harness the energy of fusion. It will be built in southern France with parts and funds provided by each of the eight members. These are China, the EU, India, Japan, Korea, Russia, the UK and the US." EU is providing "45 per cent of the estimated €13 billion required, with the remaining countries each covering 9.1 per cent. Construction is expected to be finalised in 2025."

These "**estimated €13 billion**" are money for nothing. You cannot compensate for the ***absence*** of crucial quantum tunneling by heating the plasma to 100,000,000 K. The quantum tunneling and temperature are *apples and oranges*. You cannot *replace* the genuine quantum phenomenon — quantum tunneling — with brutal force, by raising the temperature from 10^7 K to 10^8 K and trying to squeeze the plasma with *artificial* magnetic fields. You can only try to replicate the enormous ***compression*** from nuclear fission. Perhaps at 10^{12} K? This is your only choice.

However, the ***compression*** from nuclear fission cannot be substituted with temperature.

≠



You may say that ITER is *not* trying to replicate the conditions for nuclear fusion in the H-bomb (the syringe). Again, **this is your only choice**, because you ***cannot*** replicate Sun's engine above. You *cannot* squeeze the hydrogen nuclei to 10^{-15} m of each other by brutal force alone. **No way**.

Read pp. **4**-**7** in Can We Replicate Stellar Nucleosynthesis? (8 August 2019). There is a lot more: the devil is in the details. And now China, EU, India, Japan, Korea, Russia, UK and the US will pay *humongous* penalty for ignoring Erwin Schrödinger and Werner Heisenberg. Nature employs quantum gravity. You can't. You cannot implement quantum tunneling (Frank Trixler) either.

Now let me take the stand of ITER's staunchest supporters. It is an *experimental* reactor, and science involves risks. It's gamble. As reported by BBC News Science on 14 December 2011, Robert Jan Smits, the former Director-General of Research and Innovation at the European Commission (July 2010 to February 2018), has said in December 2011: "In the middle of a big economic crisis (do we have one now? – D.C.), there could not have been a worse moment. (...) Of course, it is an extremely risky project and we do not know the outcome." So, let's run it and see what happens. You just never know. Besides, these "**estimated €13 billion**" (p. **9**) are peanuts for China, EU, India, Japan, Korea, Russia, UK and the US. We may fail, but who cares?

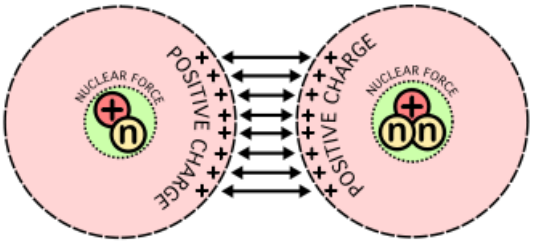
We do. Very much indeed. Before playing poker with *our* money taken from *our* taxes, you must do your homework. First things first. Namely, (**i**) show us the conditions under which your ITER will ultimately **fail**, and (**ii**) explain specifically the ***risk*** of ITER's failure due to your inability to employ the crucial quantum tunneling, thanks to which "nuclei can tunnel through coulomb forces" (Wikipedia). This is *conditio sine qua non* for Sun's engine depicted at p. **9** above.

Again, we know only the H-bomb, but it is not applicable to continuous nuclear fusion at ITER, firstly because the enormous ***compression*** from nuclear fission *cannot* be substituted with temperature (p. **9**). We do ***not*** know the engine of stellar nucleosynthesis either, firstly because we *cannot* apply classical gravity to Sun's plasma. We need quantum gravity to understand how the Sun was created in the first place. By some "collapse" of a "giant molecular cloud" maybe?

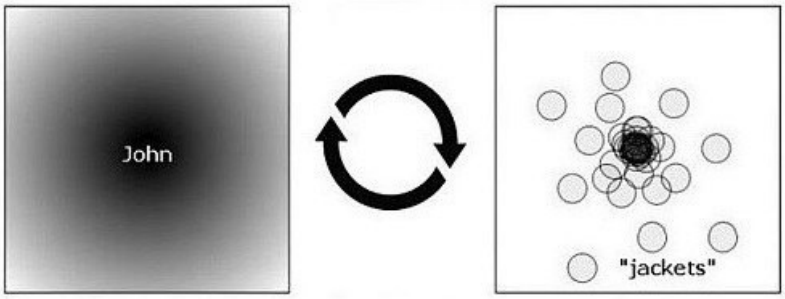
As Sir Arthur Eddington noticed in 1927 (*The Nature of the Physical World*, p. 291), "*something unknown is doing we don't know what* — that is what our theory amounts to."

What can you suggest, other than your wishful thinking and *our* money? Do your homework (**i**) and (**ii**) professionally and with scrupulous intellectual honesty. Will you?

The reason why I am raising criticism of ITER is *not* because I expect those ITER physicists to get professional — they could not care less about Physics. The reason is that Sir Arthur was right: the quantum phenomenon by which "nuclei can tunnel through coulomb forces" (Wikipedia) is "*something unknown is doing we don't know what*".



Don't take the "tunneling" literally.



Read Erwin Schrödinger and Werner Heisenberg.

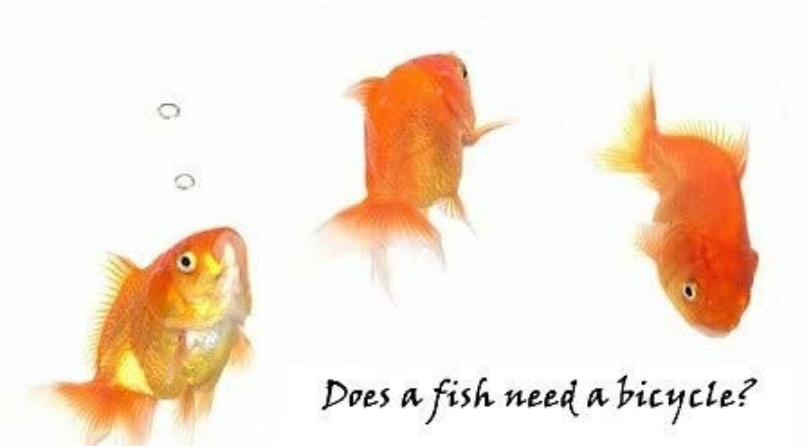
The quantum tunneling is multifaceted phenomenon (Frank Trixler) originating from quantum entanglement (*Verschränkung*) — "*the* characteristic trait of quantum mechanics, the one that enforces its entire departure from classical lines of thought" (Erwin Schrödinger). It can create "bizarre" effects, such as the low-energy nuclear reaction (LENR) suggested by Andrea Rossi. And *much* more, including gravitational radiation (p. **7**). Don't let Kip Thorne (p. **1**) fool you!

To those interested in Physics, check out Sir Arthur's *Space Time and Gravitation* (1920, Ch. **3**, pp. 48-51). We do *not* live "in a perfectly determined scheme" (*ibid*.): the spacetime itself is **flexible** (p. **5**). As Erwin Schrödinger stressed in *What Is Life?* (1943, p. **28**):

> We are here obviously faced with events whose regular and lawful unfolding is guided by a 'mechanism' entirely different from the 'probability mechanism' of physics. We must be prepared to find a new type of physical law.

Exactly. I introduced the *atemporal* **Platonic** world — read pp. **9**-**10** in Can Penguins Drink Warm Water, and p. **20** and p. **9** (*atom of geometry*) in Can Geometry Produce Work, and you're done. To paraphrase Einstein, God (p. **15**) casts the **matrix**, not the dice.

Anyway. I personally don't need unlimited electricity (p. **8**). I'm fine.



D. Chakalov
chakalov.net
18 July 2020
Last update: 12 August 2020, 05:54 GMT

Addendum

An hour ago, I learned that Mr. Renatas Mazeika, Head of Unit ITER (ENER.D.4), has declared (04/08/2020 16:08 UTC+02) that "fusion reactors such as JET in the UK and TFTR in the US have already demonstrated that fusion energy can be produced in a controlled way on Earth."

False. ITER needs quantum tunneling to mimic Sun's engine (p. **9**). Not PR propaganda.

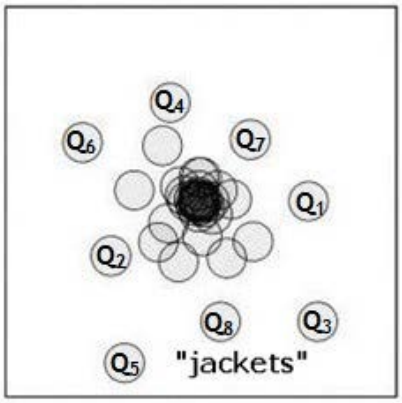
TFTR was dismantled in September 2002, as it "never achieved its goal" (Wikipedia), but JET in the UK is still operational. Quote from JET website: "In a fusion reaction, energy is released when two light atomic nuclei are fused together to form one heavier atom. This is the process that powers the Sun and other stars, where hydrogen nuclei are combined to form helium."

Now physicists at JET and ITER have to do their homework: read p. **10** above. Stop dreaming. Get real. Without quantum tunneling, you might produce only an *ephemeral* burst of energy. No, you cannot outsmart Nature. ITER may only look "exciting", like a **€13 billion** Titanic.

D. Chakalov
4 August 2020, 22:38 GMT

Quantum Tunneling for Dummies

Fusion and Quantum Tunneling



Read E. Schrödinger and W. Heisenberg

NB: The physical world and its "barriers" are *transparent* to the unphysical **Platonic** wave. In QM textbooks, the presentation of 'quantum tunneling' is simple and straightforward, only there is a little problem — nobody can understand Quantum Mechanics (Richard Feynman). To explain the problem, imagine you hold in your right hand a glass of scotch, in which there is a large ice cube: it cannot "suddenly" move into your left hand. The ice cube is a macroscopic object, so it is either in your glass of scotch, or is 'not there'. *Tertium non datur.* (Google it.)

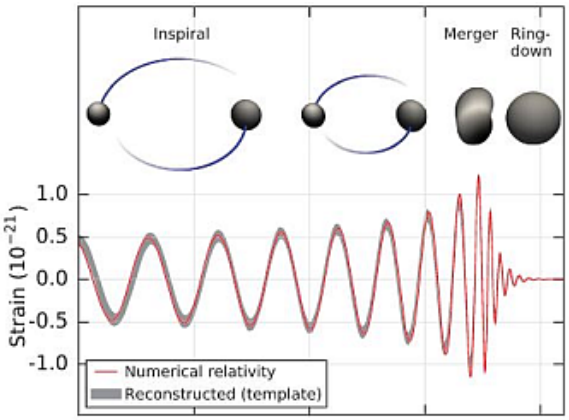
However, if the ice cube is *quantum* stuff, meaning *both* "particle" *and* "wave", it can easily show up in your left hand by performing 'quantum tunneling' (watch the clip above). And here comes the common misconception: people strongly believe (for unknown to me reason) that the *quantum* ice cube has somehow "overcome" the barrier of vertical walls of your glass, and then speculate, for example, that "nuclei can tunnel through coulomb forces" (Wikipedia). But in the quantum world, nothing "tunnels through" any "barrier". Why not? Because there is no *classical* trajectory of *quantum* objects in the quantum world (Werner Heisenberg). That's the key point.

Look at the second drawing above, in which I labeled the *quantum* ice cube with **Q**, from the *atemporal* **P** → **Q** transition explained at p. **2** in Can Geometry Produce Work. Suppose you have a **set** of eight *consecutive* **Q**-states, from $\mathbf{Q_1}$ to $\mathbf{Q_8}$, all of which are explicated by quantum "tunneling". These *consecutive* **Q**-states do not build up *classical* trajectory, and hence *none* of the **Q**-states "tunnels through" any "barrier" *whatever*. This is the crux of Quantum Spacetime. As explain previously (p. **8**), I dare to suggest *two* types of distances between spacetime points: (**i**) metric distance defined with the *invariant* interval $\mathbf{\Delta s^2}$ (Robert Wald), and (**ii**) **Platonic** one, which is *exactly* **nullified**. We use both (**i**) and (**ii**). Read Frank Trixler and the Kochen-Specker Theorem at pp. **13**-**14** in BCCP. If you say 'no way Jose', read p. **9**. Many so-called "magicians" misuse the **UNcolorizable** phenomenon (**P**) to entertain people, but that's another story.

On 21 September 2008, commemorating 100 years of Hermann Minkowski's lecture *Raum und Zeit* on 21 September 1908, I suggested two *modes* of spacetime: local (**physical**) and global (**Platonic**). The local mode is only the *necessary* condition for spacetime continuum endowed with causality and locality. Read p. **11** in Can Penguins Drink Warm Water. There is no "magic".

D. Chakalov
5 August 2020, 23:41 GMT

Abstract

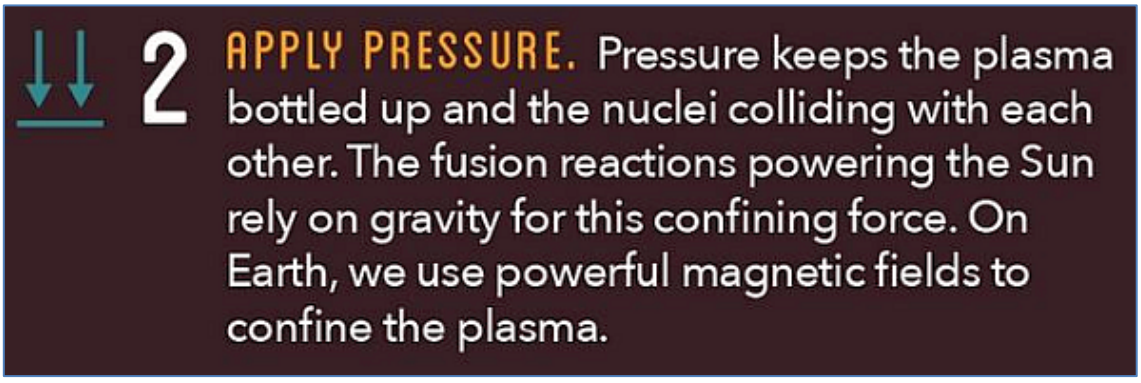


This is not GW "event" but one of **452 simulations** available at Georgia Tech.

This is my Linda. She is not interested in origin of gravity or ITER, but only in her juicy bone.

Many experts in GR are *perfectly* aware of the **FRAUD** committed by Kip Thorne and his collaborators, yet are keeping quiet (p. **1**). How do I know? Because any expert in GR, if asked to review GW150914, will denounce their "ringdown phase" above. Kip Thorne's "gravitons" are insult to our intelligence, to say the least. Let's call a spade a spade: read p. **3** and Phil Gibbs. LIGO "scientific" collaboration will never confess their **FRAUD** (p. **1**) for various reasons, one of which is very simple — ***money***. It is a **big juicy bone**.

The case with the International Thermonuclear Experimental Reactor (ITER) is different (p. **10**). According to Wikipedia, the U.S. Department of Energy has estimated the total construction costs to 2025 to be **$65 billion**. This is ***really* big juicy bone**. ITER will of course fail, and will fail *miserably*. How do I know? Read p. **11** above, it is just the tip of the iceberg. ITER might only look "exciting", like a **$65 billion** Titanic. Read (**ii**) in p. **10**.



The 'confining force' mentioned by U.S. Department of Energy above is what Sir Arthur Eddington called in 1927 "*something unknown is doing we don't know what*" (p. **10**). No, you cannot replace "*something unknown*" — gravitational entanglement and tunneling — with brutal force alone (R.B. White). Mother Nature does not use Alfvén mode chirping.

It is indeed shocking to read that plasma nuclei and their "cloud" of plasma electrons are treated as cannonballs which, if squeezed "close enough" (Wikipedia) by *classical* gravity or with some "powerful magnetic fields" here on Earth, would ***replicate*** what Sir Arthur called "*something unknown is doing we don't know what*". What is ITER actually trying to achieve, given the ***bold fact*** that we don't know Sun's engine? Yet another juicy bone?

I tried *very* hard to save ITER, but can't see how this can be done: see my brainstorming at p. **7** in Can We Replicate Stellar Nucleosynthesis. No way. **Forget ITER**. **Period**.

Do not *ever* say that you knew nothing about it. Don't be "surprised" when ITER fails in 2025. There is a lot more, and I am always ready to elaborate. Pity nobody cares.

Lastly, notice my idea of producing electricity with gravitational rotation (p. **8**) and the explanation of quantum tunneling (p. **12**). Read the abstract of my report on GWs from 17 July 2005 18:59:24 GMT at p. **5** and feel free to keep silent, as always. I can take it.

D. Chakalov
10 August 2020
Last update: 15 August 2020, 19:08 GMT

I find the idea quite intolerable that an electron exposed to radiation should choose of *its own free will*, not only its moment to jump off, but also its direction. In that case, I would rather be a cobbler, or even an employee in a gaming house, than a physicist.

Albert Einstein, 29 April 1924

D. Chakalov, Dynamics of **4**+**0** D Spacetime: The Atom of Geometry. Talk on 21 September 2020, in commemoration of Hermann Minkowski's *Raum und Zeit*, 21 September 1908. Subscribe by email to watch it at Vimeo at this http URL.

NB: Time **re**-creates spacetime dimensions by consecutive **Δs** & **Δt** — once at a Time. In August 2020, Ethan Siegel explained the difference between space and time: time is not 'just another dimension'. We are simultaneously "moving" through both space and time (Slide **4**). Even if we are at (relative) rest and *not* moving through 3D space, we are nevertheless "moving" through time at the ***rate*** of, say, one second per second. But what is the ***rate*** of time (W.G. Unruh)? With respect to what? We could try to imagine the river banks of Heraclitean *flow* of Time at *absolute* rest, and speculate about some "ideal" observer measuring the ***rate*** of Time (water) per second, with her absolute/ideal clock, but the luminiferous Aether (Wikipedia) is *not* physical entity and cannot be observed. Can we unravel it? **Sure**. It is mathematically hidden in the invariant spacetime interval. Recall the null interval $(\Delta s)^2 = 0$ (**1**) and note the minus sign in the *squared* interval (**2**).

$$(\Delta s)^2 = 0 \ \text{ iff } \ (\Delta \mathbf{ct})^2 = (\Delta x)^2 + (\Delta y)^2 + (\Delta z)^2; \ \ \pm\, \mathbf{ct} = \mathbf{s} \qquad (\mathbf{1})$$
$$s^2 = -(\mathbf{ct})^2 + x^2 + y^2 + z^2 \ \text{ (metric signature: } -, +, +, +) \qquad (\mathbf{2})$$

Let me zoom on the null interval (**1**), ***before*** it got squared in GR textbooks. I will move to **sub-photon** level and will **split** the geometric point to show the Atom of Geometry. As suggested on p. **8** and p. **12**, there are *two* types of distances between spacetime points: (**i**) metric distance defined with the *invariant* interval $(\mathbf{\Delta s})^2$, and (**ii**) **Platonic** "distance", which is *exactly* **nullified**. We use both (**i**) and (**ii**). Can we use Kähler manifold and try to tweak the imaginary part of Hermitian metric to recover the condition 'both (**i**) and (**ii**)' ?

Again, the **Platonic** world is *pre-geometric* plenum, which may look *from* the physical world as *both* "zero" (the null interval (**1**) above) *and* 'absolute infinite' (Georg Cantor). We need Mathematics. People like Phil Gibbs and his colleagues are not fit for the job.

20 August 2020, 12:32 GMT

Questions and Answers

Q1. Your paper is too complicated, can you explain the main idea?

A1. Let me try. On 5 February 1987 (p. **4** in Penrose-Norris Diagram), I suggested *atemporal* quantum reality, ensuing from the interpretation of QM by Henry Margenau from 1954, the transactional interpretation of QM (TIQM) from 1986, and the first off mystery in QM, discovered by Charles Wilson in 1911. It may sound complicated, but the task to solve is actually *very* simple: read Erwin Schrödinger from 1935 here. The notion of 'physical reality' is *not* applicable to Schrödinger's cat, so the only way to introduce 'reality' in QM textbooks is with *atemporal* **Platonic** reality, after Plato.

The **Platonic** 'cat *per se*' is ***different*** from its two physicalizable "shadows", either live cat or dead cat. It does not "collapse", because it does ***not*** belong to the physical world. Sure enough, it is not mental stuff either. It is a new (to some physicists) kind of reality, "just in the middle between possibility and reality" (Werner Heisenberg).

More from Erwin Schrödinger at p. **11** above and in my unpublished paper from January 1990. It took over 23 years to connect the dots of Quantum Gravity on 20 October 2013. The Schrödinger cat and the gravitational energy are not 'physical reality', because they cannot *in principle* be reconciled with the Theory of Relativity. If it were possible to "discover" a *local* expression for gravitational field energy density, the gravitational field will be a local tensorial observable (L. Szabados and MTW p. 467) and gravity will become a classical force field. Therefore, GR cannot be a *bonafide* classical theory. But it cannot be quantum theory either. We need Quantum Gravity. The gravitational radiation does exist, but you need Die Gravitationsfeldrelativitätstheorie. Not the crap by Kip Thorne.

Q2. What do you mean by "platonic reality"?

A2. The axiomatic foundation of Platonic theory of spacetime includes, but is not limited to, three elements of 'reality' and a new phenomenon called 'non-reality'. Namely, physical reality (*Res extensa*), noetic reality (*Res cogitans*), and their common source **Platonic** reality (*Res potentia*), which is neither matter nor mind (p. **25** in BCCP); the set of three types of 'reality' is defined *relative to* 'non-reality' about which we cannot say *anything*, because 'non-reality' is the incomprehensible Noumenon (***not*** some empty set). As Ludwig Wittgenstein noticed, "whereof one cannot speak, thereof one must be silent". Read the doctrine of *trialism* at p. **25** therein and at pp. **11**-**12** in The Physics of Life.

NB: This is how **God** (**John 1**:**1**; **Luke 17**:**21**; **1 John 4**:**8**) and the Aristotelian Unmoved Mover can in fact exist, being the ultimate cutoff on the *physicalized* **4D** partition 'turtles all the way down' of the entire 'Universe as **ONE**'. Yet this is an **UN**decidable proposition.

Briefly, the non-relational Universe as **ONE** is *not* Cantorian set, as it includes *absolutely* everything: the three types of 'reality' and their *complementary* 'non-reality'. To those interested in Mathematics, read my endnote here. Back to question **Q2** above: notice the **UNspeakable** cognitive vacuum (19 April 2014) demonstrated with the experiment with your brain on p. **22** in Time and Continuum: Zenon Manifold, and the **UNcolorizable** (Sic!) quantum vacuum as 'monad without windows' in Kochen-Specker Theorem at pp. **13**-**14** in BCCP. Mother Nature is incomprehensible. We can only formulate (but not understand) our **UN**decidable propositions. Nur die Fülle führt zur Klarheit, und im Abgrund wohnt die Wahrheit (Friedrich Schiller).

Q3. Are you saying that the gravitational energy is unphysical?

A3. **JAIN** (Yes and No). Read **A1** above, the explanation at p. **12**, and follow the links. Let me offer an illustration of the input of "gravitational" energy leading to non-conservation of the total energy. The rule is simple: if the spacetime is "waving" at the left-hand side of EFE, this will affect its counterpart at the right-hand side, like Escher's drawing hands. Suppose you (matter and fields) are kicking a football (p. **2** in Gravitational Energy).

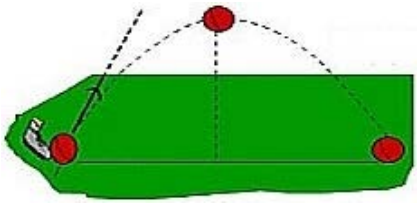


Fig. **A**

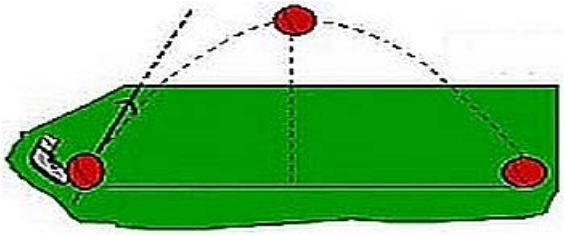


Fig. **B**

The football in Fig. **B** is ***gravitalized***, as it has gained "energy and momentum from the gravitational field" (Hans Ohanian) and "the *intangible* energy of the gravitational field" (Hermann Bondi) has *already* (**Sic!**) become *perfectly* 'tangible'. By the same token, the football in Fig. **B** can ***lose*** energy-momentum and angular momentum, as shown in Fig. **A**.

Now replace the two drawings above with Earth tides (Wikipedia), and you're done. Read pp. **2**-**7** in Can Penguins Drink Warm Water and follow the links. Note the last paragraph at p. **3** therein, regarding the *total* energy of the human brain: if it were unphysical (**Q3**), you would carry a parapsychological "ghost" above your neck, but if the *total* energy of your brain were produced *exclusively* by classical force field (p. **15**), you would have a computing machine in your brain, performing "1,000 trillion calculations per second". Thus, the physics of Life (Erwin Schrödinger) and the *origin* of gravitational energy (**Q3**) are two challenges in Quantum Gravity (p. **12**), which have to be resolved *en bloc*. The crux of the issue is the **self-acting** faculty of living organisms and quantum-gravitational systems: read p. **4**, Escher's drawing hands and pp. **5**-**6** in Can Geometry Produce Work. Regarding Spacetime Engineering 101, read pp. **9**-**11** in Can Penguins Drink Warm Water.

NB: The global non-relational Heraclitean Time (p. **14**) **re**-creates and **re**-assembles a ***perfect* 4+0 D** spacetime continuum (Slide **4**) by consecutive **Δs** & **Δt** — once at a Time (Slide **1**). Read about the *atemporal* **Platonic** world at pp. **9**-**10** in Can Penguins Drink Warm Water, and at p. **20** and p. **9** (*atom of geometry*) in Can Geometry Produce Work.

Alternatively, read Lisa Goggin and the crap from Kip Thorne and LIGO at p. **1** above. If you wish to learn more, subscribe by email to watch my lecture on 21.09.2020 (p. **14**). You only have to write up a brief mathematical paper (I will explain in details) regarding the so-called GW150914 (p. **1**) and post *your* paper at https://arxiv.org/archive/math-ph

Then the ball will start rolling. The **FRAUD** by Kip Thorne and LIGO collaboration (p. **1**) will trigger an ***enormous*** scandal. It will be everywhere: CNN Breaking News, Deutsche Welle, France24, EuroNews, CGTN, you name it. Then we will organize the conference **GRAVITY 21** on 26-27 March 2021 in Munich (p. **13** in Can Geometry Produce Work). It won't be easy, and I strictly follow the 'two rules for success' by Roger H. Lincoln:

1. Never tell everything you know.

D. Chakalov
2 September 2020, 11:20 GMT

The hottest places in Hell are reserved for those who,
in times of great intellectual crisis, choose to keep silent.

For the Record

Since 8 July 2020, the links to this report and to my website were sent to hundreds of mathematicians and physicists. All these thorny issues could have been resolved **fifteen** years ago, after my paper from 17 July 2005 (p. **5**). According to GR textbooks, any "device that measures the energy carried away by the gravitational field" (P. Chrusciel) *must* be made of some stuff placed in the right-hand side of Einstein's field equations, which inevitably ***requires*** conversion of "the *intangible* energy of the gravitational field" (Hermann Bondi) into some 'tangible' energy and stresses (Robert Wald), under perpetual **non**-conservation (Hans Ohanian). Yes, the ***gravitalized*** energy-momentum and angular momentum can be measured, but we need brand new detector of gravitational radiation, capable of **acting on itself** (p. **6**). There is no such animal in the right-hand side of EFE. We need Quantum Gravity, not the crap by Kip Thorne. How would you "install" some GW mirror *exactly* at null-and-spacelike infinity? Or maybe at the very "edge (∑) = ∅"**?** ☹

The other issue raised here is the 'confining force' in Sun's nuclear engine (p. **13**). The International Thermonuclear Experimental Reactor (ITER) is based on a deadly false idea: if you have not one but three apples, you may produce an orange. Replace 'apples' with those "powerful magnetic fields" mentioned by U.S. Department of Energy (p. **13**), and 'orange' with "*something unknown is doing we don't know what*" (Sir Arthur Eddington). Classical "apples" — no matter how much you squeeze them with "powerful magnetic fields" under very high temperature — cannot produce a quantum-gravitational "orange". Again, we need Quantum Gravity (p. **12**), not wishful thinking spiced with exotic math.

To sum up, there is no *physical* proof of **Platonic** *pre-geometric* plenum that can **pull up**↑ (Slide **2**) the entire physical universe and make it "fly" (John Wheeler) in **Time** (Slide **1**). Such *physical* proof will destroy the Theory of Relativity by detecting the river banks of Heraclitean Time at *absolute* rest (p. **14**). Read again **NB** at p. **16**. As Albert Einstein acknowledged in his book *Relativity: The Special and the General Theory* (1920, Ch. 3): "In the first place, we entirely shun the vague word "space," of which, we must honestly acknowledge, we cannot form the slightest conception." Needless to say, I do not know the **origin** of 'space' either. Perhaps the Heraclitean Time is produced by both 'change *in* space' (relativistic coordinate time, as read with a clock) and the **atemporal** 'change **of** space' (Slide **2**). Read closely p. **23**, p. **20** and pp. **7**-**12** in Can Geometry Produce Work, pp. **31**-**33** in Platonic Theory of Spacetime, and p. **12** above. To find out more about my project, read p. **26** in Can Geometry Produce Work (10 May 2020) and pp. **20**-**28** in BCCP.

We need new physics: Erwin Schrödinger at p. **11**. As of today, 21 September 2020, I've received only three automatic 'out of office' messages to my last email (printed here).

The latest version of the report 'The so-called GW150914 is **FRAUD**' can be downloaded from my website chakalov.net or directly at this http URL. My talk from 15 January 2020 is not available anymore, for the same reason my first video lecture from 19 April 2014 and the second one from 21 September 2018 were taken off the Internet. To quote Jesus according to St. Matthew: Do not give dogs what is sacred; do not throw your pearls to pigs. If you do, they may trample them under their feet, and turn and tear you to pieces.

D. Chakalov
21 September 2020, 10:30 GMT

Spacetime Engineering: The Centipede

In the summer of 1984, I hit the dead end of my efforts to find any possible path to the physics of the human brain. Nothing worked. I have tried everything and anything from QFT and GR. I was so desperate that even studied tachyons and negative probabilities. No, present-day physics cannot indeed offer *any* solution to the physics of Life (p. **11**).

Given the overwhelming facts from neurobiology and psychology, it is clear that there *must* exist some physical mediator (for lack of a better word) of the human mind and volition, which can *avoid* (Sic!) the false "options" mentioned at p. **16**, but what *is* it? I've been studying this mediator (4D 'glove' **Q**) since January 1972. At that time I was freshman in chemistry and asked my professor to help me understand how come nothing goes wrong with these complicated electron "orbitals". His reply was that nothing can go wrong, because the probabilities (Sic!) for these "orbitals" have been calculated with the highest precision. But the probabilities themselves cannot do work, just as geometry *alone* (Sic!) cannot produce work. What makes quantum "waves"? What creates gravity? Only the phenomenon creating *geometry* (p. **7**): the **Platonic** 'hand' (**P**) in **4D** 'glove' (**Q**).

Read **A3** above and watch the wave-like holomovement of centipede's legs at YouTube, correlated by the rule 'think globally act locally' (p. **6**), like a holistic school of fish.

The common error in GR literature (e.g., Piotr Chrusciel) is to model the *entire* universe as some 'compact' (closed and bounded) object, like the centipede at left. The idea is 'not even wrong', because the alternative option is **false** as well. The non-trivial topology of the Universe is unknown. What we *do* know is that trying to calculate the gravitational "waves" like a **bartender** is manifestly false.

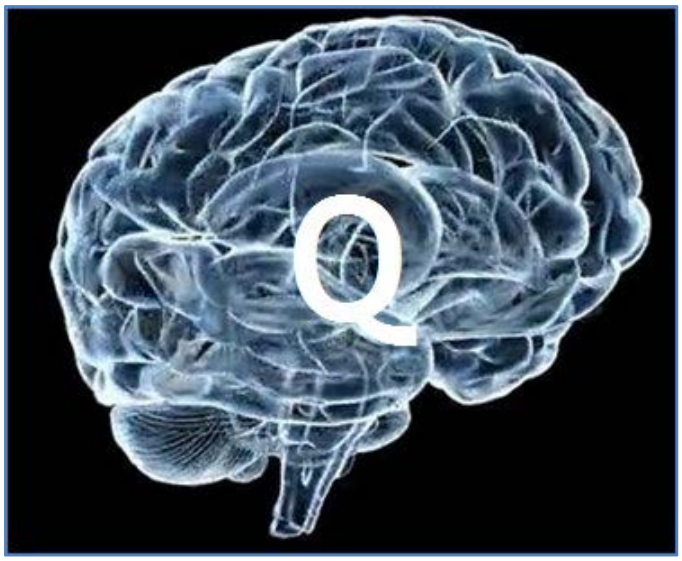
There is no *physical* source of quantum "waves", as we know from QM. No *physical* agent produces these unphysical "waves" with *complex* phase. There must be 'something else', which can bootstrap and EPR-like correlate the entire quantum world, much like Escher's drawing hands. The same phenomenon should work in the human brain, correlated with brainwaves, as well as in the centipede above. But what *is* it? My answer: *biocausality* (January 1990). And on 20 October 2013 at 20:45 GMT, I managed to 'connect the dots' and include the genuine gravitational radiation, outlining the path to Quantum Gravity.

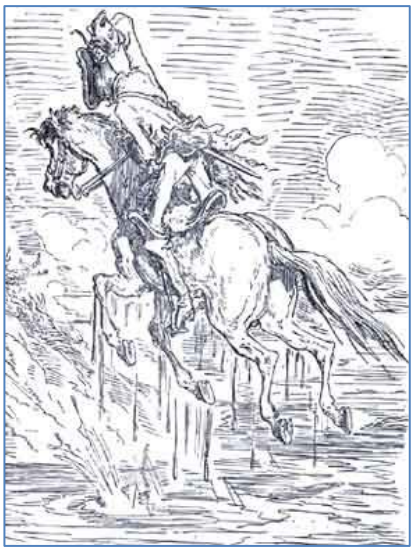
We need the so-called Relative Scale (**RS**) spacetime (pp. **20**-**27** in BCCP). Namely, the global phenomenon in RS spacetime, creating the Large and the Small, creates gravity as well, only applied locally: it "shrinks" the spacetime metric to produce local gravitational attraction and "inflates" the spacetime metric to produce local gravitational repulsion, until the two tug-of-war manifestations of gravity reach dynamic equilibrium. This is how gravity works in the cosmos by bootstrapping the entire *physical* universe, like in a **brain**. No need for non-baryonic "dark matter", "dark energy", or ghostlike "mystery matter".

NB: Forget the crap by Kip Thorne shown at p. **1**. If you wish to learn more, read p. **16**. Then the ball will start rolling, after W. Heisenberg, D. Bohm, and Erwin Schrödinger.

D. Chakalov
27 September 2020, 15:12 GMT

What makes the human brain self-acting? What can pull up↑ the whole world?





First, what makes matter and fields **self-acting**? Gravity: read **A3** above. To quote John Baez in gr-qc/9902017v1: "Unlike in special relativity, where the Minkowski metric is a 'background structure' given a priori, in general relativity the metric is treated as a field which not only affects, but also is (at ***exactly*** the same instant — D.C.) affected by, the other fields present." Thus, the **Platonic** *pre-geometric* world (**P**) makes the ***gravitalized*** matter and fields (**Q**) **self-acting** (p. **16**). Read p. **6** in Can Geometry Produce Work and pp. **6**-**7** in Gravitational Energy. How? You only have to ***learn***: read p. **43** in the 'manual'.

The crucial phenomenon **P** → **Q** (p. **12**) makes the human brain and all living organisms **self-acting** (p. **7**). Nikolai Bernshtein laid out the physiology of activity in 1960s. We need the physics of Life: read Erwin Schrödinger at p. **11**. The elementary particles alone *cannot* conduct research on themselves à la Baron von Münchhausen. Let me contrast classical physics, applicable to inanimate matter (David Bohm), with the physics of Life.

> We begin with a brief summary contrasting classical and quantum concepts. Classical concepts are characterized by three assumptions concerning the properties of matter:
>
> (1) The world can be analyzed into distinct elements.
>
> (2) The state of each element can be described in terms of dynamical variables that are specifiable with arbitrarily high precision.
>
> (3) The interrelationship between parts of a system can be described with the aid of exact causal laws that define the changes of the above dynamical variables with time in terms of their initial values. The behavior of the system as a whole can be regarded as the result of the interaction of all of its parts.

With classical physics, you would have a computing machine above your neck (p. **16**). We need the **UNcolorizable** *monad without windows* (p. **12**) from Kochen-Specker Theorem: read pp. **13**-**14** in **BCCP**. **It** (not "He") is the *atemporal* **Platonic** *pre-geometric* world (**P**), thanks to which biological and quantum-gravitational systems **interact with themselves**. How? By interacting (Slide **3**) with their *atemporal* **Platonic** states (**P**). Otherwise they will be a chunk of dead macroscopic matter, subject to classical physics (read above).

Let me explain by referring to the theory of Quantum Spacetime from 14.03.2017 (p. **12**). Imagine a *quantum* coin **|ψ>** (bra-ket notation) with two *modes of explication*, either **|**heads**>** or **|**tails**>,** in the inanimate macroscopic world. (**NB**: ***Not*** in the quantum world.) If the coin was a classical macroscopic object (David Bohm), it will look like this:

Only it isn't. In the two-dimensional ("qubit") Hilbert space, the quantum coin **|ψ>** is manifested by two *modes of explication,* called 'windows' in Leibniz's Monadology. But the quantum coin **|ψ>** is not the genuine **UNcolorizable** 'monad without windows'. We need the Kochen-Specker Theorem above and Gleason's Theorem: no *bivalent* probability measure exists over the rays of a Hilbert space with dimensions **n** ≥ **3**. The Born rule is about probabilities, but probabilities cannot *in principle* reveal the ***windowless*** **intact** quantum state (**P**) in **n** ≥ **3**. And even the Schrödinger cat is ***more*** than **|**dead cat**>** + **|**alive cat**>**, as they *emerge* (Sic!) from their **Platonic** 'cat *per se*' (**P**). **It** is the *atemporal* **Platonic** *pre-geometric* world as **ONE**, about which we cannot say *anything* (**A2** at p. **15**).

To explain this proposition, I suggested in April 2000 the story of John's jackets. Suppose you chase a guy (called John) on the street. You can and will catch (measure) John, but he will leave in your hands only *one* of his "jackets", one at a time. You will *never* catch John himself. In a two-dimensional Hilbert space, John offers only two *physicalizable* and *colorizable* "jackets", either **|**heads**>** or **|**tails**>**. Stated differently, John will have two Leibnizian 'windows', called here 'modes of explication'. But if the dimension of the Hilbert space exceeds **2**, you will hit Gleason's Theorem and Kochen-Specker Theorem above. An infinite-dimensional Hilbert space has an infinite set of "basis vectors" viz. an infinite set of *physicaliz**able*** and *coloriz**able*** "jackets", yet we cannot in principle "catch" the *atemporal* **Platonic** *pre-geometric* world (**P**), called John. If we could, we will be doing classical physics. Baldy's Law 'some of it plus the rest of it is all of it' is valid only in the macroscopic world (David Bohm). Read Werner Heisenberg and Erwin Schrödinger, and the 'general rule' (1 + **0** = 1) at p. **2** in Gravitational Energy. Something *will* happen with certainty (unit probability), but at the expense of eliminating John himself, as the latter *always* has ***exactly*** **zero** probability to show up in the physical world, as explained by Plato many centuries ago (p. **7**). All this is widely known, I only suggested the so-called hyperimaginary numbers ($|\mathbf{w}|^2 = \mathbf{0}$) and **4**+**0** D spacetime (p. **16**). There can be no "collapse" of the *atemporal* **Platonic** *pre-geometric* world (**P**) called John, simply because **It** (not "He") does *not* belong to the physical world made by **4D** "jackets". The latter are being "filtered" through the classical spacetime at macroscopic length scale: Gott würfelt nicht (Albert Einstein). Yes, the quantum-gravitational world does exist, only ***we*** cannot "see" it with light (p. **20** in Can Geometry Produce Work).

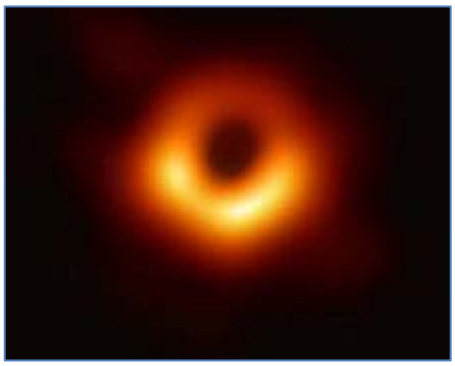
Do not ignore metaphysics: recall the metaphysics of quantum vacuum (Peter Milonni). Nobody signed up since 15 January 2020 to watch Spacetime Engineering 101. Obviously, sheeple prefer that cheap crap by Kip Thorne and his LIGO collaborators (p. **1**). So be it**.**

D. Chakalov
20 October 2020, 45 minutes past 8 P.M.

What is “event horizon”?

How do we know that Father Christmas has a beard? We know it, because snow falls when he shakes his beard. This is the guiding principle of Nobel Committee for Physics in 2020.

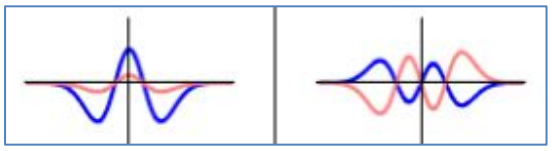
The small ***black dot*** you see at left (courtesy of Reinhard Genzel) is a “supermassive black hole” hidden from observation by some “event horizon”. What you see at right is “the event horizon and its shadow” (Wikipedia). Sadly, this is not a joke.



NB: I kindly ask Roger Penrose, Reinhard Genzel <genzel@mpe.mpg.de> and Andrea Ghez <ghez@astro.ucla.edu> to show at least one mathematical proof of the existence of “event horizon”. What makes black holes black is their ***null hypersurfaces*** fixed by some “teleological” condition: “One cannot exactly locate the horizon without knowing the entire future history of the spacetime” (Diter Brill). More from Pankaj Joshi.

This is a mathematical fact. To follow the saying above, we know that snow falls in the winter, but before jumping into speculations about Father Christmas’ beard, we should critically examine all possible alternatives. Read Yakov P. Terletskii’s *Paradoxes in the Theory of Relativity* (Springer, 1968, Ch. VI) and check out my evolution equation here.

As to GR “predictions”, recall that GR is an essentially incomplete theory: read **A3** above. Vacuum EFE are ‘spherical cow’ approximations applicable to the ***local*** gravitational effects only (see the left drawing above) — not to the ***global*** properties of spacetime.



The *quantum* oscillator is an approximation as well, but nobody would claim that it has been detected, because we successfully use it to derive and confirm predictions of QM and QFT.

The “back holes” are spherical cows (Stephen Crothers) that can live *only* in “vacuum”. You will also hit the *time-like* naked singularity and the Cosmic Censorship Conjecture (Rituparno Goswami), which were tacitly ignored by the Nobel Laureates in Physics 2020. Surely Reinhard Genzel and his colleagues can detect gravitational rotation at the vicinity of their “supermassive black hole”, but it will be just “snow”. Read Richard Feynman.

We need quantum cosmology. The first challenges are the origin of inertia (John Wheeler and Dennis Sciama) and the topological property of spacetime, called spin/rotation (Wen Zhao and Larissa Santos, arXiv:1604.05484v3, Sec. VI). Again, the inertia and gravitational rotation are fundamentally interwoven presentations of gravity (p. **8**). More information is available upon request. I will be happy to explain the issue in details (p. **16**).

Alternatively, you may choose to ignore quantum gravity and embrace the cheap **crap** by Kip Thorne and his LIGO collaborators, debunked at pp. **1**-**6** above. The choice is yours.

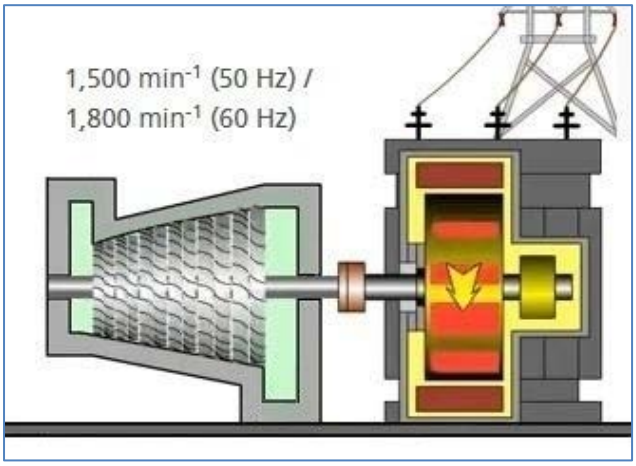
D. Chakalov
20 October 2020, 45 minutes past 8 P.M.

Experimental Tests of Spacetime Engineering

By the end of October 2025, I plan to complete two large-scale experiments with spacetime engineering. The 'proof of concept' will be shown at *GRAVITY 21* (p. **13** in GR_textbook.pdf). No, I do not entertain people with "magic" (ibid., p. **24**). It is all about the *origin* of gravity.

1. Gravitational rotation

As acknowledged on p. **8** in facts.pdf, the theory still cannot be verified with experiment or observation. As of today, 20 October 2020, I still cannot rotate a *heavy* chunk of metal with gravitational rotation (p. **18** in BCCP).



My proposal for producing unlimited electricity is based on gravitational rotation (p. **4** in The Physics of Life): spin the steam turbine rotors in all power plants with spacetime engineering (p. **6** in Gravitational Energy). No water supply, heat, or hazardous nuclear fuel will be needed. It shouldn't be a problem to rotate a chunk of metal — gravity can *effortlessly* rotate a whole galaxy *en bloc*. This is the way to solve the task for unlimited clean energy and save our planet from the upcoming climate crisis — read p. **28** in BCCP. We must not use nuclear fission nor coal.

2. REIM

REIM is an acronym from 'reversible elimination of inertial mass'. This second test requires the support from various institutions. We make **two** round trips with a private jet over a distance of at least 500 km: the pilot, two inspectors, and the author of these lines. We also need two high precision portable atomic clocks ($1500 each), which will be synchronized before flying. One of the synchronized portable atomic clocks will be placed in the jet. After the first round trip with average speed of, say, 500 km/h, the two inspectors will compare the atomic clock in the jet with the one kept on the ground, to verify that no measurable time dilation has occurred. Then we make the second round trip of 500 km, and once the jet reaches its maximum height at app. 41 000 ft or 12.5 km, the pilot will let me fly the jet. I will make it a **REIM** drive and fly until we come back and approach the airfield, at which point I will let the pilot safely land the jet, and the inspectors will compare the atomic clock in the jet with the one on the ground. If the time dilation has occurred, I will consider the theory confirmed (p. **10** in wegtransformierbar.pdf)[‡].

Perhaps one could also test the theory by observation, as recorded with video cameras installed on the cockpit window, facing forward. If the **REIM** drive (the jet with idling engines) is flying in our **RS** reference frame with 5 km/h and with **RS** factor **Ω** = 1000, an observer on the ground will measure our speed as 5000 km/h[‡]. It cannot be ruled out that the video cameras in the cockpit will record an anomalous behavior of 3D space in front of the jet, meaning that the space itself will look like moving toward the **REIM** drive at rest. It's all relative, as uncle Albert used to say (pp. **20**-**21** in BCCP).

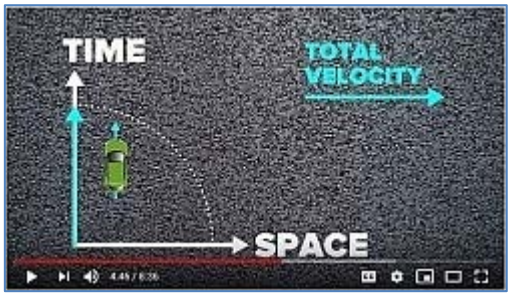
As always, I strictly follow the 'two rules for success' by Roger H. Lincoln:

Rule #1. Never tell everything you know.

D. Chakalov
20 October 2020, 13:50 GMT

‡ As an illustration of the hypothetical **RS** effect predicted at p. **10** in wegtransformierbar.pdf, think of two cars, called Alice and Bob, traveling with speed **A** and **B** over the same *spacetime* interval (Wikipedia) of 5 km. If **A** = **B** = 5 km/h, the two cars will trespass 5 km for **1** hour. Now, separate the cars in their **RS** reference frames (pp. **20**-**21** in BCCP) and "inflate" the metric for the second car **B** by **RS** factor **Ω** = 1000, *relative to* **Ω** = 1 in the **RS** frame of the first car **A**: 1 **m** to Bob will match 1 **km** to Alice. Bob with **RS** speed **B** will trespass or "consume" 5 km for 1000x less time, because in his **RS** frame the ***rate*** (Sic!) of the *global* Time is 1000x greater. Let me explain the *grid* of Relative Scale (**RS**) spacetime, created and **calibrated** by the phenomenon we call 'global Heraclitean Time'. **It** (not "He") is at **absolute** rest and cannot be detected due to the invariant "speed" of light (pp. **19**-**20** in GR_textbook.pdf). **It** also **pulls up**↑ (Slide **2**) the physical **4D** universe and makes it "fly" (John A. Wheeler) in the global **Time** (Slide **1**).

Think of the *rate* of **Time** as 'speed'(read here), so if this *rate* is 1000x greater for Bob in his **RS** frame, his proper time to trespass 5 km will be 1000x smaller — ***relative to*** Alice. Which means that Bob with **RS** speed **B** will "consume" 1000x less time, ***relative to*** Alice: not **1** hour (3600 s) but **3.6** s, and people may interpret it as time dilation. In the case of **REIM** above, we have **RS** factor **Ω** = 1 for Alice with speed **A**, and **RS** factor **Ω** = 1000 for Bob with speed **B**. They "fly" (read p. **4**) over the *grid* of Relative Scale (**RS**) spacetime with the invariant "speed" of light (Slide **4**) in which **1 RS** meter equals 3.33564 x 10^{-9} s of ***light-travel time*** (E.F. Taylor and J.A. Wheeler). And the ***rate*** of the *light-travel time* (p. **11** in synopsis.pdf) makes the **grid** *flexible*.



With the exception of photons, the global **Time**, pictured with the vertical arrow (left), does not stop. All physical objects with non-zero positive mass "fly" with the invariant "speed" of light but with different *rates* of **Time**, which makes the **grid** *flexible*.

NB: In all **RS** frames, **1 RS** meter equals 3.33564 x 10^{-9} s of proper ***light-travel time*** pertaining to the *invariant* "speed" of light. The only difference is the ***rate*** of global Heraclitean **Time**, **embedded** in the ***light-travel time***: **It** (not "He") ***renders*** 1000 **RS** meters in Alice's **RS** frame as **1 RS** meter in Bob's **RS** frame. Hence the global ***unobservable*** Heraclitean **Time** (Slide **2**) makes the invariant *spacetime* interval (Wikipedia) viz. the **RS** meter ***infinitely flexible*** (read below). **Not** the local *metric* time **τ** (C. Rovelli). There is no "true" time (J. Butterfield and C.J. Isham).

Briefly, if the **REIM** drive above will fly with 1000x greater speed, the atomic clocks, after the *second* round trip (read above), may show time dilation. By how much? Well, stay tuned. With current theoretical physics, you may speculate that the **REIM** drive above will fly with "dark energy". Wrong. Forget "mystery matter". The **RS** spacetime is far more interesting, because it denounces the *absolute* (hence ***unacceptable***) length scale (Wikipedia): what we call Large and Small (watch our Alice in *Powers of Ten*) is a *relative* phenomenon. At macroscopic **RS** frame, at the length scale of tables and chairs, we raise a **3D** "axis" **r** with opposite **3D** directions, with *positive* **RS** factor **Ω** toward the Large and *negative* **RS** factor **Ω** toward the Small. If we instruct Bob to "travel" along the **3D** "axis" **r** with increasing *positive* values of **RS** factor **Ω**, his **RS** size will reach the size of a galaxy and beyond, and Bob will look "inflated" to Alice in her **RS** frame. Subsequently, the light emitted by Bob will be redshifted due to the Hubble Flow. Yet in Bob's **RS** frame, his **RS** size will remain ***unchanged***. Only his **RS** meter will be "inflated" — relative only to Alice. Not to Bob. Ditto to the inverse case of Bob "diving" into the Small by increasing *negative* values of **RS** factor **Ω**. This is the blueprint for quantum gravity (20 October 2013).

Is there a "right" etalon of meter-and-second? **No** (p. **11** in synopsis.pdf). All is relative. It is impossible to detect the Aether at "absolute rest", relative to which the photon (see above) would be at rest. It is impossible to detect the banks of the Heraclitean river, which would be also at rest. It is impossible to define the ***flow*** of global Heraclitean **Time** as "liters per second" and determine the ***rate*** of Heraclitean **Time**. **It** (not "He") is simply **non**-relational. We cannot *in principle* calculate some "intrinsic" flow of **Time** in the way we calculate Gaussian curvature, because the fundamental *asymmetry* of **Time** is *completely* eliminated in our **4D** spacetime: the invariant spacetime interval Δs^2 is *always* squared (Robert Wald). We introduce Killing fields only by hand, just like we introduce the "obvious" energy conditions. The list goes on and on. Point is, the *atemporal* **Platonic** world at "absolute rest" does exist, yet **It** *cannot* be observed. Otherwise the Theory of Relativity will be demolished. Let me go back to the origin of gravity.

The global phenomenon in **RS** spacetime (pp. **20**-**27** in BCCP), creating the Large and the Small, creates gravity ***locally***: it both "shrinks" the spacetime metric to produce local gravitational attraction and "inflates" the spacetime metric to produce local gravitational repulsion, until the two tug-of-war manifestations of gravity reach dynamic equilibrium (Daniel Pomarède). This is how gravity (W.G. Unruh) works in the cosmos, by bootstrapping the entire physical universe like a holistic brain. For more, get the **facts** in facts.pdf. Don't let Kip Thorne fool you again.

Finally, recall (read above) that the 'proof of concept' will be presented at the international conference *GRAVITY 21* (p. **13** and pp. **25**-**26** in GR_textbook.pdf). Before making any further steps, I need to have my theory discussed by many professional mathematicians and theoretical physicists. How much 'energy from geometry' (**λ**) is needed to propel **up**↑ the 'elevator' at rest (Slide **2**)? What (topological?) phenomenon is responsible for the ubiquitous inertia & rotation (Richard Feynman)? What if the physical world is just 'retarded light', given the interpretation of "photon" (p. **9** in GR_textbook.pdf) and "negative mass" (Hermann Bondi)? How about an alternative theory of fixing spacetime "boundaries", which can and will obliterate the Platonic theory of spacetime (p. **10** in GR_textbook.pdf)? Do we need new Mathematics? And above all, what if I am wrong? This is why the 'proof of concept' is indeed **crucial**. Nobody can work alone.

For comparison, consider the alternative 'proof of concept' with Wendelstein 7-X. According to Wikipedia, "it has been anticipated to achieve operations of up to approximately 30 minutes of continuous plasma discharge in 2021." So far at least **€1.06 billion** (ibid.) have been invested. The other 'proof of concept' with ITER, expected to be finalized in 2025, will cost *much* more: **€13 billion** (p. **13** in facts.pdf).

How much will cost an international conference on gravity, such as *GRAVITY 21*? As a bonus, we might learn something — anything — about the *origin* of gravity (W.G. Unruh) and gravitational rotation (Richard Feynman). It's a bundle. Forget "curvature" (p. **40** in GR_textbook.pdf). We need to show the global negotiation (M.C. Escher) of the *entire* Universe (Dennis Sciama) and every infinitesimal point 'here and now' (Fig. **B**) — think globally act locally — thanks to which every infinitesimal **4D** event (Slide **2**) is endowed with inertia (John A. Wheeler) and rotation. Then we can proceed to quantum cosmology and physical theology (p. **12** in synopsis.pdf): the *pregeometric* Universe as **ONE** ***wraps*** the physical world (p. **2**) at **RS** factors $\Omega = +\infty$ and $\Omega = -\infty$. In the doctrine of *trialism* (p. **25** in BCCP), we have two *complementary* explications of Nature. Let's be honest: we know nothing about the *origin* of gravity (p. **3**) and gravitational rotation. As Sir Arthur Eddington put it, "*something unknown is doing we don't know what*". All theories of gravity, mine included, sound like a Jabberwocky:

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

Frequently Raised Objections

O1. You may not "inflate" or "deflate" the invariant *spacetime* interval (Wikipedia)[‡].

A1. Read p. **2**: I disagree with the *absolute* (hence ***unacceptable***) length scale (Wikipedia). It could be 'absolute' iff there were some elementary spacetime domain with *finite* size **L**, which could be *the* elementary 'building block' at all length scales (ibid.), resembling the tiles in Fig. A. But there is no metric at Planck scale. See instead the 'atom of geometry' (Fig. B).

Fig. A

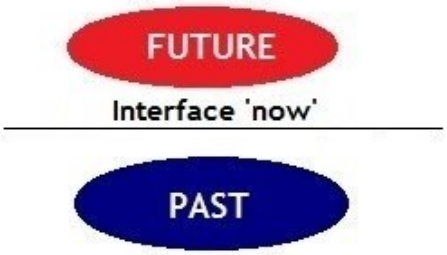


Fig. B

I will be happy to explain the atom of geometry in details (p. **9** and p. **27** in GR_textbook.pdf). Unlike the tiles in Fig. A, the atoms of geometry in Fig. B are *not* countable (Wolfram). The dimensionless geometric points from the real number line are *only* in the **past** (Fig. B) at which the Dragon has caught its tail (Slide **1**). Thus, all **4D** spacetime points, on which one can define metric (Sic!), are in the irreversible **past**, whereas the **future** is a *pre-geometric* **Platonic** plenum hidden by the "speed" of light, which leads to **4**+**0**-dimensional spacetime (p. **20** in GR_textbook.pdf). If we denote two *consecutive* physical states in the irreversible **past** with $\mathbf{Q_1}$ and $\mathbf{Q_2}$, the atom of geometry $\mathbf{\Delta T} = (\mathbf{Q_2} - \mathbf{Q_1}) > \mathbf{0}$, yet there is no *physical* stuff "between" $\mathbf{Q_1}$ and $\mathbf{Q_2}$, which makes **It** "that which has no part" (Euclid). In other words, at every consecutive **4D** instant 'here and now', the physical world has *already* passed through the *pre-geometric* **Platonic** plenum (p. **9** in BCCP) "between" $\mathbf{Q_1}$ and $\mathbf{Q_2}$: **It** is always **inside** us.

Again, we do not identify the **Platonic** plenum, called **It** , with God (John 1:1; Luke 17:21), because in the doctrine of *trialism* (p. **3**) we treat them as two *complementary* explications of Nature, in the same way physicists treat the quantum "particles" and quantum "waves" as two *complementary* presentation of quantum phenomena, in line with wave-particle duality. There is no need to introduce the so-called anthropic principle – **"**the universe would not even be possible if the laws of the universe had been incompatible with the development of sentient life**"** – because in the doctrine of *trialism* (p. **25** in BCCP) matter and psyche spring from their common source, and are therefore *pre-correlated* (Leibniz) from the Beginning.

To your objection above: two invariant *spacetime* intervals with size **1 m** and **1000 m**[‡] will always have ***identical*** "non-numbers" of uncountably infinite atoms of geometry, and hence the intervals can be "inflated" and "deflated" by introducing **calibrated *flexible*** metric on them: see the **4D** spacetime ***grid*** at p. **2** above and the *origin* of gravity at p. **3**. Again, the phenomenon which calibrates the *flexible* spacetime metric (p. **2**) is not physical (p. **3**). We are *not* doing metrology, like the duration of 9,192,631,770 periods (= tiles, see Fig. **A**) of the radiation "corresponding to the transition between the two hyperfine levels of the unperturbed ground state of the ^{133}Cs atom". You may not reproduce an invariant *spacetime* interval (p. **2**) with matter alone. You also need '**something else**' (C.J. Isham and J. Butterfield). Capiche?

To wrap up, let me go back to the convoluted statement from the YouTube video by Fermilab at p. **2** above: we all "fly" with the invariant "speed" of light, so if we are at relative rest and do *not* "consume" 3D space, we are not going anywhere, yet at ***the same*** instant we "fly" in time.

Sounds weird (Ethan Siegel). Let me show in Fig. C a snapshot from the video at p. **2**, whereas Fig. D (source here) shows how, **relative to** the platform, "time on the train completely stops."

Fig. C

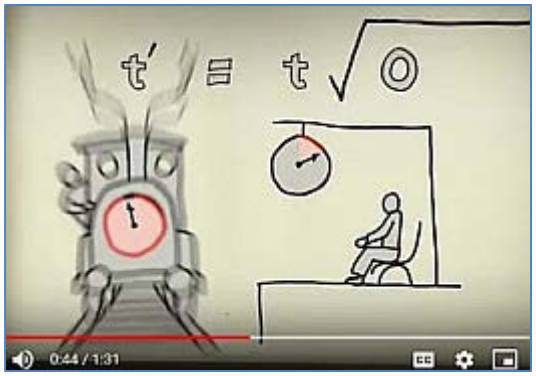


Fig. D

NB: But the train itself (Fig. D) is a photon endowed with **imaginary** (Arthur Eddington) **Time** (p. **3**). **It** lives only at null intervals at which $(\Delta x)^2 = (\Delta \mathbf{ct})^2$ viz. **x** = **±ct**: "A photon arriving in our eye from a distant star will not have aged, despite having (from our perspective) spent years in its passage" (Wikipedia). The most important events happen at null intervals (Kevin Brown): see Slide **2** and the drawings at p. **21** in BCCP, and then replace **0** in Fig. D with the so-called hyperimaginary unit $\mathbf{|w|^2 = 0}$. This is how I introduce the *global mode* of spacetime (p. **31** in about_spacetime.pdf) pertaining to the global Heraclitean **Time** **t´** of the photon: **t´** = **t** (**±w**) . Notice the new *quantization* of **4D** spacetime at p. **9** in BCCP, reproduced below, and read the explanation therein. Physically, the proper time **t´** of the photon is **zero** (Fig. D): **t´** = **t** (**±w**) .

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

The *global mode* of spacetime is being **re**-nullified at every **4D** instant 'here and now' (Fig. E), leading to **4**+**0**-dimensional spacetime (p. **9** and pp. **19**-**20** in GR_textbook.pdf). We need new physics, and I suggested the international conference *GRAVITY 21* in March 2021 (p. **3**). But how about the ***rate*** of **Time**? No clock can "measure" 1 s/s. Let me zoom on the rest frame (p. **4**).

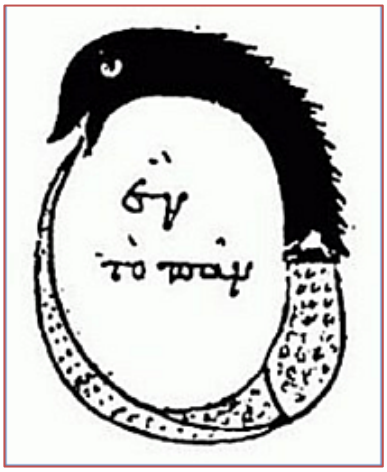


Fig. E, Slide **1**

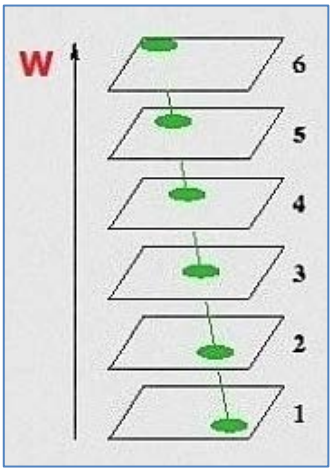


Fig. F, Photoshop layers

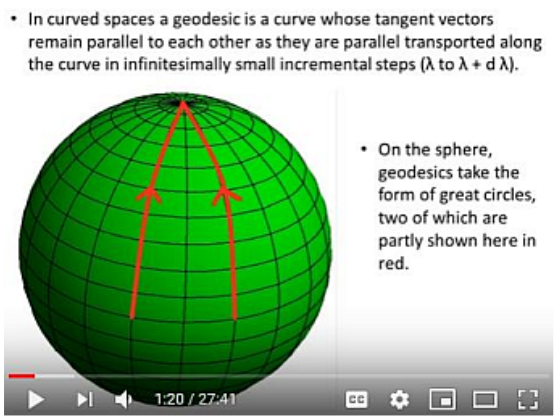
Once you merge all layers in Fig. F, you will nullify **W** and will obtain a *continual* line, **======** , in which all uncountably infinite segments (p. **4**) are *atoms of geometry* in Fig. **B** at p. **4** above. And the variable ***rate*** of **Time** will assemble the interval (**======**) with flexible **RS** size (p. **2**). Now we can explain the *origin* of gravity (p. **3**) and proceed to cosmology and physical theology.

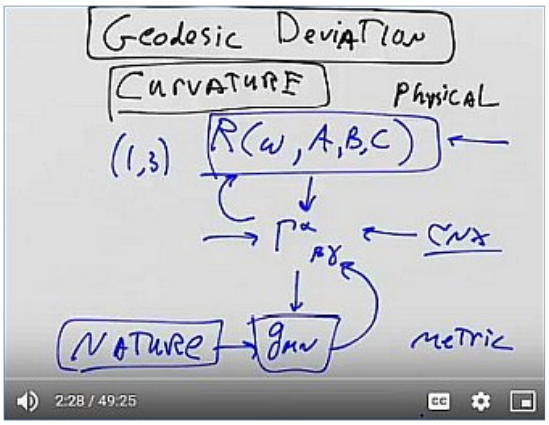
O2. Your ideas are too speculative and cannot be accepted.

A2. Speculative: relative to what? Let me remind you some *accepted* ideas in GR textbooks.

In the presence of gravity (John L. Synge), conservation laws do ***not*** exist (Hans Ohanian). You will have to explain the conversion of "*intangible* energy" (Hermann Bondi) to the *tangible* one, and back. Thus, the idea of some "geodesic" is too speculative and cannot be accepted. Also, GR is a classical theory, and so for systems described by a classical Lagrange action you need a well-defined ***boundary*** of the integration domain to suggest conservation laws: W. Wyss, p. 304. But gravity is fundamentally ***non-local*** (Laszlo Szabados), so the idea of "edge of space-time", shown with Cauchy surface endowed with some "edge ($\sum$) = $\emptyset$" (Robert Wald), is an oxymoron. You also need a well-defined ***boundary*** of the universe (R. Penrose) to define the mass '***there***': "Mass *there* governs spacetime geometry *here*" (John A. Wheeler and Ignazio Ciufolini, p. 270). Thus, the "explanation" of inertia is too speculative and cannot be accepted (Kevin Brown). To quote Matt Visser: "The essence of the problem lies in the fact that the Einstein equations of general relativity are local equations, relating some aspects of the spacetime curvature at a point to the presence of stress-energy **at that point**. What general relativity does *not* do is to provide any natural way of imposing *global* constraints on the spacetime – certainly the Einstein equations provide no such nonlocal constraint. In cosmology this leads to the observation that the global topology of space is not constrained by the Einstein equations; spatial topology is an independent discrete variable that has to be decided by observation." But the spatial topology cannot be "decided" by observation, simply because there is too much "mystery matter".

Back to the "local" manifestation of gravity: try to explain Earth tides (Wikipedia) by using the accepted ideas in GR textbooks (p. **1** in GR_textbook.pdf). Can you convert gravity as geometry to the *enormous* physical force producing Earth tides? By some deviation from geodesics maybe? Watch the video lectures below and read about the gravitational "pizza" in gr_energy.pdf.





Sorry, this "deviation" is too speculative and cannot be accepted. Moreover, it totally misses the task of explaining the Earth tides (V. Petkov). Imagine you at your terrace in a summer day. You are looking at the readings of your weather thermometer (pp. **2**-**4** in Unruh.pdf) and notice two things: (**i**) the readings are "deviating", and (**ii**) the weather is getting warmer. Would you speculate that the "deviations" of the readings of the thermometer have ***caused*** the warming? Are you getting old ***because*** your hair now is whiter than 5 years ago? More at p. **16** in facts.pdf.

O3. There is no "flow of Time" (C. Rovelli), only global hyperbolicity. This is a well-known fact.

A3. There is no *physical* stuff (Fig. G) at "absolute rest", which could propel the entire universe along the global Heraclitean **Time** (p. **2**). Otherwise the Theory of Relativity will be demolished (p. **3**). As Asher Peres used to say, these things are well known to those who know things well.

Back in January 1990, I wrote: "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." Put aside the mind-matter problem (the doctrine of *trialism*, p. **25** in BCCP), and focus on the *topology* of spacetime shown with the new 'atom of geometry', Fig. **B** at p. **4**: if you can prove it wrong, the theory of Heraclitean **Time** (p. **2**) – *Panta rhei conditio sine qua non est* – will be obliterated. Let me explain the conditions under which the entire theory (p. **5**) will be proven wrong.

Look at Fig. G below: can you make the 'burning cord' *physical* (not "dark") and hence resolve "the worst theoretical prediction in the history of physics!" (Mike P. Hobson *et al*.)?

Fig. G, pp. **27**-**32** in GR_textbook.pdf

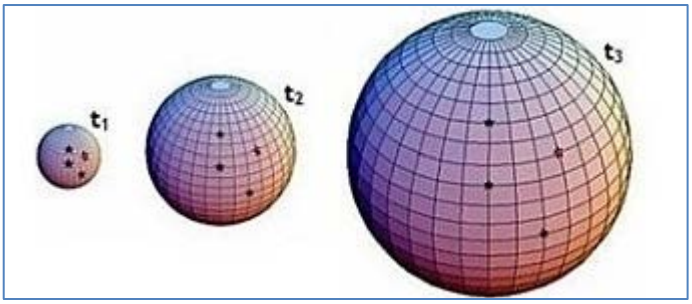


Fig. H, Slide **2**

Physically, the *atemporal* **Platonic** world is always **nullified** at $\mathbf{t_1}$, $\mathbf{t_2}$, $\mathbf{t_3}$, etc. (Fig. H). We can see with light (p. **20** in GR_textbook.pdf) only matter acting on ***itself***: the universal **self-action** (*ibid*., p. **6**) by the Unmoved Mover – Der Geist bewegt die Materie (*Mens agitat molem*, Virgil). If in life science we followed the "logic" of many (otherwise smart) physicists, we would have to declare some "dark" computer in the human brain, which of course does not and cannot exist.

Last but not least, the **potential** future in the 'atom of geometry' (Fig. **B** at p. **4**) is making the so-called negative mass *physically* unobservable, resembling Eliot's cat Macavity (Adam Helfer). **It** is **Platonic** reality as well (p. **6** and p. **23** in GR_textbook.pdf), which I believe can be tested with two experiments (p. **1**). The proof of concept will be demonstrated at *GRAVITY 21* (p. **3**).

O4. You suggest purely metaphysical ideas.

A4. I suggest two ***modes*** of spacetime: local (physical) mode in which distances in 3D space and duration in time are defined with ***metric*** (Fig. **A** on p. **4**), and a global **Platonic** mode, which is ***bootstrapping*** all physical points of the local (physical) mode: "Every two points in spacetime are connected by a contiguous set of lightlike intervals whose absolute magnitudes are zero" (Kevin Brown). Once you blend the two spacetime *modes* with the *atom of geometry* (Fig. **B**), you will obtain Quantum Spacetime and Causal Field (pp. **6**-**7** in wegtransformierbar.pdf). The theory (p. **5**) has unique predictions (p. **7** in facts.pdf), which can be tested with experiments. I do not predict some "runaway process" but an enhanced holomovement. More at *GRAVITY 21*.

O5. You have not published any experimental tests of your theory.

A5. But what if I am wrong (p. **3**)? As I wrote in February 2020 (p. **8** in wegtransformierbar.pdf): "I have so far 5 (five) confirmations of spacetime engineering. That's a whole new ball game. Not "discovery", as Eq. 1 above is still in symbolic form". The second equation in p. **5** above is also in symbolic form, firstly because the postulated *hyperimaginary numbers* are not spelled out in details. We need hypercomplex analysis, but I am not mathematician. Nobody has so far responded to my numerous messages. My proposal for producing electricity at p. **1** is ***the* only** option to reduce CO_2 emissions by 7.6 per cent *every year* from 2020 to 2030. If we fail now, by **2025** the cut needed will jump to 15.5 per cent *every year* (p. **28** in BCCP). Yet nobody cares. And nobody is even trying to explain the effect of gravity we see *every* day: Earth tides (p. **6**).

Suppose, just for the sake of the argument, that next summer some guy decides to fly over the River Thames in London. Many tourists there will be fascinated (they *love* free entertainment), but will the established mathematicians and theoretical physicists suddenly become interested in the *origin* of gravity (p. **6**), general topology, set theory, and number theory? When pigs fly.

O6. Your "hyperimaginary unit", $|\mathbf{w}|^2 = \mathbf{0}$ (p. **5**), makes no sense. It is absurd.

A6. Does the Born rule from 1926 make *any* sense? Yet it works very well, as long as you are not trying to understand it — just 'shut up and calculate'. The condition $|\mathbf{w}|^2 = \mathbf{0}$ and the 'general rule' (**1** + **0** = **1**), explained at p. **20** in facts.pdf, are still in symbolic form, waiting to be uncovered. Both the gravitational energy (MTW p. 467) and 'the quantum state' (John) are wegtransformierbar. If it were possible to "discover" a ***local*** expression for the gravitational field energy density, the gravitational field will be a local tensorial observable and gravity will become classical force field (p. **5** in GR_textbook.pdf). Read about the hyperimaginary numbers in p. **8** in GR_textbook.pdf and pp. **20**-**22** in BCCP, and recall 'the two rules for success' at p. **1**.

O7. "Buzz off, idiot!" (email by Prof. Dr. Maurice de Gosson at the University of Vienna, dated Mon, 21 May 2012 18:47:46 +0200).

A7. No comment.

Please do not hesitate to send your objections (p. **4**) to spacetime engineering. In my opinion, in order to understand the phenomenon applying *instantaneous* "brakes" to an accelerated body, we should start with the phenomenon applying *instantaneous* **pull up↑** (Slide **2**) to the entire **4D** universe *en bloc* and hence making it "fly" (John A. Wheeler) in **Time** (Slide **1**). More about the large scale structure of spacetime (S. Hawking and G.F.R. Ellis) will be delivered at *GRAVITY 21*. I will first argue that bodies in free fall do not trace the ***rate*** of global Heraclitean **Time** (p. **2**). The latter is fully transparent, until they become accelerated, at which instant the same bodies will *instantaneously* recover their "latent" weight and inertia. In order to fly, now you have to tweak your local ***rate*** of global Heraclitean **Time** until your local weight is exactly compensated by *repulsive* gravity (p. **3**). Then you can fly your body in the same way you move your thoughts in your brain (p. **5** in wegtransformierbar.pdf). It is called **REIM**, from 'reversible elimination of inertial mass' (p. **1**). Works like a Swiss watch. How? Read the **facts** in pp. **18**-**20** in facts.pdf.

Notice that there is no privileged direction in **4D** spacetime, which could be mapped to the axis **W** in Slide **2**. This (hyperimaginary) "direction" is always **nullified**, leading to **4**+**0** D spacetime (p. **5**) endowed with global Heraclitean **Time** and non-trivial topology inducing spin/rotation in the physical world (Wolfram). This is *completely* unchartered territory (p. **3**). I assume that the global phenomenon, applying *instantaneous* **pull up↑** (Slide **2**) to the entire **4D** spacetime, is creating topological rotation **as well** (p. **1**). As a crude analogy, see the right-hand rule in Fig. **I**, and in Fig. **J** the centrifugal and centripetal forces at the **4D** event **P** reproduced from Slide **2**.

Fig. **I**. The axis **W** along null intervals.

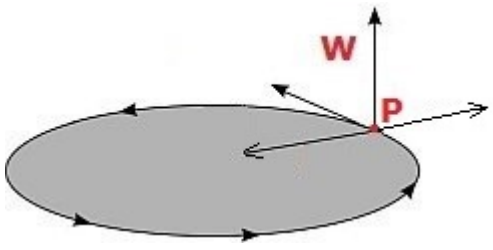


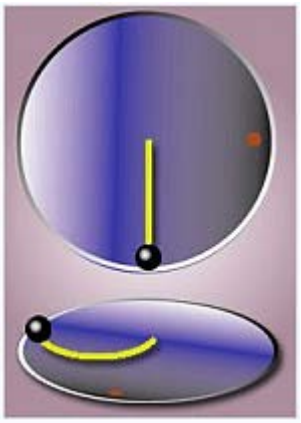
Fig. **J**. See Fig. **B** on p. **21** in BCCP.

The centripetal and the centrifugal vectors in Fig. **J** show the attractive vs. repulsive gravity in

dynamic equilibrium (p. **3**), whereas **P** belongs to the rotating-and-inflating **1D** ring therein, taken from the rotating-and-inflating **4D** space*time* (not just "3D space"). To fully understand the importance of normal and tangential directions at **P**, read the explanation at this http URL. It will be difficult to overestimate the importance of this crucial mathematical fact.

How can we model the (hyperimaginary) **curl** of the vector **W** (Fig. **I**) in Slide **2**? We have to get together at *GRAVITY 21* and examine all indisputable **facts** with scrupulous intellectual honesty. Don't let Kip Thorne fool you again (pp. **1**-**2** in facts.pdf). See instead Table **1** on p. **27** in BCCP.

People still fiercely insist on "spacetime curvature", shown in the drawing at p. **6**, so let me use the explanation of Fig. **J** above and compare it to the curvature from Coriolis force (Wikipedia):



"In the inertial frame of reference (upper part of the picture), the black ball moves in a straight line. However, the observer (red dot) who is standing in the rotating/non-inertial frame of reference (lower part of the picture) sees the object as following a **curved path** due to the Coriolis and centrifugal forces (see Fig. **J** above – D.C.) present in this frame." However, in our case the inertial frame of reference (the upper part of the picture) is not physical: read p. **3**. In theoretical physics' parlance, the *origin* of gravitational **rotation** is "dark". Hence the ***curved path*** in the lower part of the picture is caused by topological gravitational **rotation** evoked in the physical, **4D** spacetime. Simple, isn't it?

For comparison, if we have a bird-eye view on the *entire* spinning system, e.g., a spiral galaxy, we will see that its spiral arms are indeed curved. But in our case, we cannot have a bird-eye view on the physical, **4D** universe *en bloc*. Such inertial "reference frame" is not physical (p. **3**). Can you suggest some Gedankenexperiment with which one could (**i**) separate gravity from the ubiquitous gravitational rotation and (**ii**) show that gravity *alone* is related to some "curvature"?

Forget "spacetime curvature", it leads to a dead end (p. **6**). Read **Q2** on p. **15** in facts.pdf and pp. **9**-**10** in Unruh.pdf. My talk *The Bridge* (p. **23** in GR_textbook.pdf) is scheduled for 27 March 2021 at the international conference *GRAVITY 21* (limited to 30 participants) in Munich, Bavaria. In order to discuss the *rate* of **Time**, we must figure out the unification of space and time with ***light-travel time*** (E.F. Taylor and J.A. Wheeler), mentioned at p. **2**, and explain the ***dual*** time of photons – real and **imaginary** (Arthur Eddington). For example, consider a "rod-and-clock" of 500 sec, which is the *real* time, as measured with a clock, needed for Sun's light to reach the Earth: how would you show this invariant interval of 500 sec ***light-travel time*** in the light cone? In my opinion, we need a new model of **4D** spacetime, in which the ***ct***-coordinate has additional degrees of freedom encapsulating the *variable* rate of **Time** assembling the **4D** "rod-and-clock". The rate of "one second per second" (Ethan Siegel) is a self-referential poetry, in my opinion.

Should you wish to present your opinion, you'll have to write up a brief paper about GW150914 and upload it at arXiv.org. Then the ball will start rolling (p. **16** in facts.pdf). See you in Munich!

I am deeply grateful to the Eugene Higgins Professor Emeritus of Physics and Natural Philosophy at Yale University Henry Margenau for his moral support and encouragement in June 1990, and to my beloved parents Gocho G. Chakalov and Dany Chakalova for their longstanding moral and financial support. They went back home and are now with Jesus.

D. Chakalov

Addendum

To avoid misunderstandings related to the so-called **4+0** D spacetime (p. **8** and p. **5**) and the *atom of geometry* (p. **4**), let me outline my proposal for two *modes* of spacetime, called **local** (physical) and global (**Platonic**), presented at my talk *The Arrow of Spacetime* on 21 September 2008, on the occasion of Hermann Minkowski's lecture *Space and Time* on 21 September 1908.

Space is obviously real, but what if time is ***imaginary*** (Henri Poincaré and Arthur S. Eddington)? What is the meaning of $(ict)^2$? Let me step back and try to find evidence of ***imaginary*** time and Heraclitean *flow* of **Time** in the global (**Platonic**) mode of spacetime. The latter is hidden from direct observations, like a **Platonic** 'hand' in a physical, 4D 'glove' (p. **3** in gr_energy.pdf).

The global (**Platonic**) mode of spacetime refers to the input from the *atemporal* **Platonic** state of the entire Universe as **ONE** (p. **3**). Two examples: the physical time can never stop, even if we are at relative rest and do not "consume" 3D space (Fig. **K**), and the **pull up**↑ of the entire physical world (p. **2**), depicted in Fig. **L**. They do *not* have physical direction in 4D spacetime, nor a reference frame in which they can be '***at rest***', and their source is **non**-relational (p. **3**).

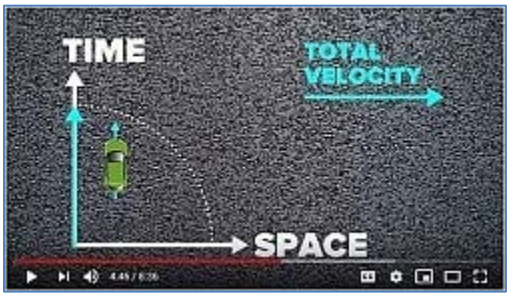


Fig. **K**, p. **2**

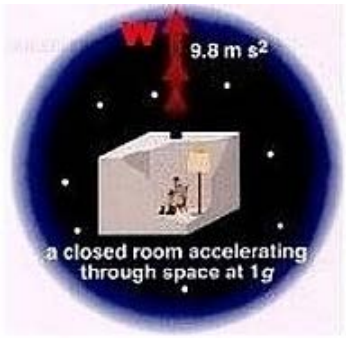


Fig. **L**, Slide **2**

Fig. **L** may be a bit misleading, because (**i**) the elevator, shown as 'closed room', is *the* only truly isolated system – "the whole universe" (Dennis Sciama) – and (**ii**) the black "space" is not some 'background' with respect to which the elevator can be '***at rest***', but the omnipresent yet **non**-relational **Platonic** **Ether** "shown" in Fig. **N** at p. **11** below.

Thus, I suggested on 21 September 2008 an *arrow of spacetime* produced by 'change **in** space' and 'change **of** space'; the former is the coordinate time (*local mode* of spacetime), whereas the latter pertains to the *unobservable* (p. **9** and p. **20** in GR_textbook.pdf) Heraclitean **Time** (p. **5**) in the *global mode* of spacetime. In the ***squared*** spacetime interval, the fundamental ***asymmetry*** of the Heraclitean **Time** – you cannot step twice in the same river, Heraclitus – is *exactly* **nullified**, which leads to **4+0** D spacetime. Subsequently, the local coordinate time as 'change **in** space' becomes ***real*** (not imaginary) quantity, which led Hermann Minkowski to unify the real space with the real *local* time into 4D spacetime. To understand the global (**Platonic**) mode of spacetime, read p. **8** and p. **5**, p. **19** in facts.pdf, and my essay on *gravitational energy* (gr_energy.pdf). Statements like "there is no dynamics within spacetime itself: nothing ever moves therein; nothing happens; nothing changes" (Robert Geroch) are false. Just ignore them. If the dynamics of spacetime were determined exclusively by some *physical* field, we will face the problem of infinite regress – '**turtles all the way down**'. Physically, **It** has to be **nullified**. The **Platonic** state of the Universe as **ONE** (p. **3**) exists *only* in the **future**: Fig. **B** in p. **4** above. More at the international conference *GRAVITY 21* (p. **13** in GR_textbook.pdf). We must reveal the origin of attractive and repulsive gravity (pp. **5**-**7** in gr_energy.pdf) and then move to the puzzle of how gravity works in the cosmos (p. **3**), without any "mystery matter" whatsoever.

NB: Most importantly, do *not* allow Kip Thorne and his collaborators to fool you. Have you seen pink unicorns dancing with red herrings? This is GW150914. Get the **facts**: pp. **1**-**6** in facts.pdf.

D. Chakalov
January 2, 2021, 11:41 GMT

Can you detect the Ether? Yes, with your brain.

What is Ether? **It** (not "He") is the **Platonic** state of the entire Universe as **ONE** (p. **3**): read p. **7** and the outline at p. **10** above, and my email from 21 December 2020 to Friedwardt Winterberg.

To illustrate how easy is to learn (p. **19** in facts.pdf) spacetime engineering, try the experiment with your brain at p. **5** in wegtransformierbar.pdf. It is indeed very easy, like learning to juggle three balls (p. **13** in synopsis.pdf). I tried to explain the task in my talk from April 2014; more in March next year (pp. **21**-**24** in GR_textbook.pdf). Let me suggest two coordinate-free analogies of the Ether; see the "background" in Fig. **2**, Fig. **3** and Fig. **4** at pp. **14**-**15** in GR_textbook.pdf.

You can't paint a colorful painting without a colorless canvas. The canvas (background) will be "nullified" and will *not* be observable. It will be like the vertical wall in Plato's cave: we see only the fleeting **4D** shadows, not the screen/canvas. Why? Because the 'canvas' itself is not observable with light (Sic!): see Fig. **B** at p. **4** and Fig. **N** below. **It** is called Ether (Wikipedia).

To visualize the Ether, let me first show what **It** is not: see Fig. **M** below (p. **3** in gr_energy.pdf), depicting a *finite* domain of the physical 4D world built by elements **"—"** endowed with metric, CPT invariance, and the so-called Archimedean topology (pp. **15**-**17** in about_spacetime.pdf).

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Fig. **M**. Read p. **9** in BCCP.

Notice that all elements **"—"** in Fig. **M** (resembling *consecutive* **4D** snapshots from a movie reel) must be ***separated*** by 'something **else**' (Isham & Butterfield), called Ether. But we *cannot* see the Ether in Fig. **N** below. **It** is the so-called Zenon Connection: p. **5** in gr_energy.pdf. **It** *must* be **nullified** (p. **10**) in the physical world (Fig. **M**), or else the Ether will become a ***physical*** entity.

Fig. **N**

Nowadays people reject the omnipresent yet **non**-relational **Platonic** **Ether** (p. **10**) "shown" in Fig. **N** above, but fail to explain "the time-reversal symmetry breaking" (Wikipedia), which singles out a *preferential* time direction and thus makes a distinction between **past** and **future**. Surely one can *post factum* distinguish past directions from future directions by "measuring the increase in entropy" (R. K. Sachs and H. Wu, *General Relativity for Mathematicians*, Springer-Verlag, 1977, p. 27), but the second law of thermodynamics cannot create distinction between **past** and **future**. It will be like saying that I am getting old ***because*** my hair is getting whiter. Yet people stick *exclusively* to the physical world (Fig. **M**), despite the bold fact that there is no ***physical*** stuff (Fig. **O**) that can create 'time as change'. My approach is different (Fig. **P**).

Fig. **O**. Read p. **28** in GR_textbook.pdf.

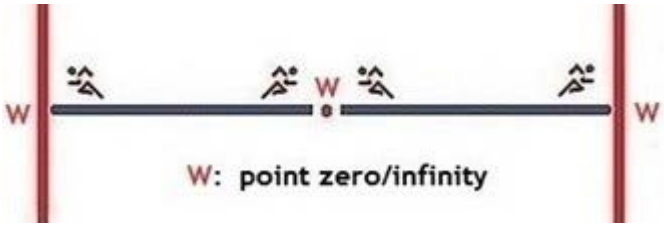


Fig. **P**. Read p. **10** in GR_textbook.pdf.

Can we detect the Ether? Yes we can, although **It** is **UN**speakable: read pp. **22**-**24** in zenon.pdf.

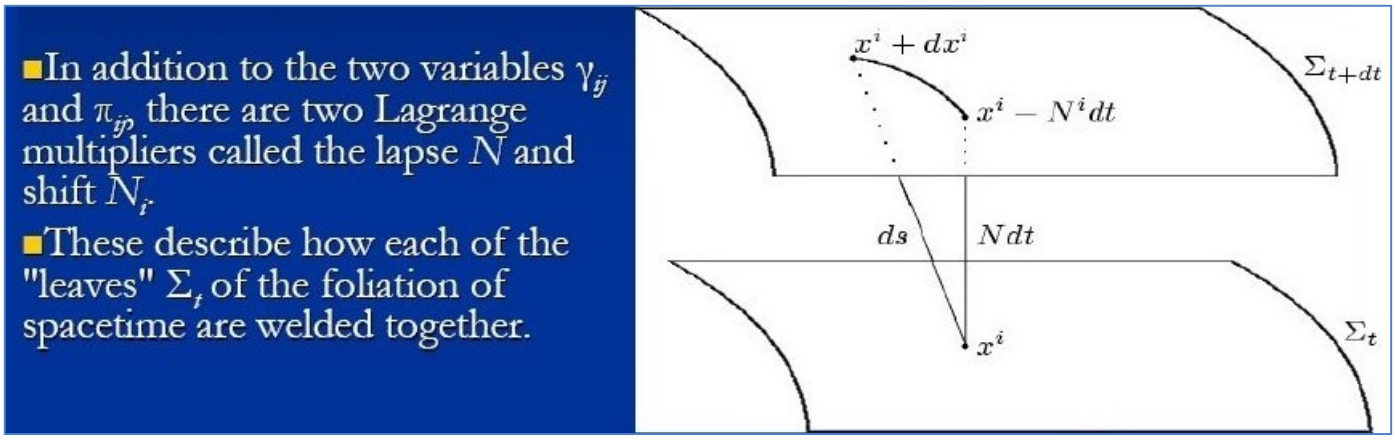
I wrote about the **UN**speakable feature of human memory **22** years ago, on 20 December 1998. And since I model the entire Universe as a Brain, the local one above your neck is embedded in the Universal Brain by their common Quantum Spacetime. The 1911 puzzle of 'quantum time' (Charles Wilson) is still unsolved. Read Werner Heisenberg and Erwin Schrödinger. The puzzle of 'gravitational time' is also unsolved, because it "has no metric properties and is not observable" (C. Rovelli) — read about General Relativity at p. **10** in gr_energy.pdf. The list goes on and on.

We need hyperimaginary numbers and new physics to develop quantum cosmology and physical theology: pp. **29**-**30** in about_spacetime.pdf. As to learning spacetime engineering, the main task is to develop the complementary view on the **4D** physical world ('glove', p. **10**) from the **nullified** Ether. You will be able to "see" all points in the physical world *simultaneously* from all directions in **4D** spacetime, including the inner structure of solid objects and things obscured from **3D** viewpoint; for example, all six sides of an opaque box (Wikipedia) and, *at the same instant*, everything *inside* the box, from "inside out": see Fig. **B**, pp. **11**-**12** in GR_textbook.pdf and try counting the little cubes at p. **8** in q_coin.pdf. Soon you will learn how to "look" at the *atemporal* **Platonic** image of the entire opaque box (pp. **5**-**7** in wegtransformierbar.pdf). Again, read how to juggle three balls at p. **13** in synopsis.pdf. Once you learn the theory, it will guide you like a navigation map. You won't need any special "training". It is all about **learning**. Keep in mind that we always work with two *complementary* explications of Nature: read about the doctrine of *trialism* at p. **25** in BCCP, pp. **10**-**11** in q_coin.pdf, and p. **9** in about_spacetime.pdf.

Everything said above, and also all my work since January 1972 (p. **26** in about_spacetime.pdf) will be immediately proven ***false*** iff the crucial statement by Robert Geroch is correct (p. 21):

"There is no dynamics within space-time itself: nothing ever moves therein; nothing happens; nothing changes. (O)ne does not think of particles as "moving through" space-time, or as "following along" their world-lines. Rather, particles are just "in" space-time, once and for all, and the world-line represents, all at once, the complete life history of the particle."

What is the difference between the statement above and the so-called Zenon Connection (p. **5** in gr_energy.pdf) "shown" in Fig. **N** at p. **11**? Recall the lapse $\mathbf{N}$ and shift $\mathbf{N_i}$ in ADM hypothesis:



The lapse $\mathbf{N}$ and shift $\mathbf{N_i}$ belong to **4D** spacetime, correct? **JAIN.** Read p. **9** and p. **21** in BCCP.

Yes, because **ds** and $\mathbf{Ndt}$ in the drawing above belong to the ***physicalized*** **4D** spacetime, and are located in the ***irreversible*** past: see the infinitesimal (Wolfram) denoted ($\mathbf{Q_2 - Q_1}$) in the new *atom of geometry* depicted in Fig. **B** at p. **4** above. **NO**, because the "***welding***" (Sic!) of the leaves $\sum_t$ (E. Courgoulhon) is not made by the ***physicalized*** **4D** spacetime in the ***irreversible*** **past** (Fig. **M**), but by the **Platonic** ***future*** (the **'hand'**) in Fig. **B** at p. **4**. Read again about the Zenon Connection (p. **5** in gr_energy.pdf) and the **nullified Ether** "shown" in Fig. **N** at p. **11**. Does light travel in **4D** spacetime (Fig. **M** and p. **8** in gr_energy.pdf)? **JAIN.** Read p. **9** in BCCP.

Again, the fundamental Heraclitean **Time** is inevitably and necessarily **nullified** in the physical, time-symmetric **4D** spacetime (Fig. **M**) due to the ***squared*** (Sic!) invariant spacetime interval (Robert Wald), which led to the infamous statement by Bob Geroch at p. **12** and Fig. **N** above.

Arlen Anderson posed the question "what time does the clock show?" (gr-qc/9507039v1, p. 2) and hoped for "a novel direction in quantum geometry which redresses the traditional unequal treatment of space and time in the quantum theory" (*ibid*., p. 17). I believe we should address Quantum Spacetime by correcting the unequal treatment of space and Heraclitean **Time** (p. **2**) in the Theory of Relativity (Slide **2**), and suggested **4+0** D spacetime (p. **20** in GR_textbook.pdf). But as of today, there is no genuine interest in my theory of spacetime and Geometry. The only feedback so far hit me eight years ago from Prof. Maurice de Gosson at the University of Vienna: "Buzz off, idiot!" (Mon, 21 May 2012 18:47:46 +0200). Sorry, I can't communicate with Russians.

There will be much more at *GRAVITY 21* (p. **13** in GR_textbook.pdf): don't miss **NB** at p. **10**. LIGO and Virgo will need a new theory of quantum gravity to dream about their GWs. **Forget it**.

The so-called GW150914 is indeed **FRAUD.** Don't ever say that you knew nothing about it.

The hottest places in Hell are reserved for those who,
in times of great intellectual crisis, prefer to stay silent.

D. Chakalov
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