

Excerpts from: Vesselin Petkov, [Physics as Spacetime Geometry](#). Chapter 8 in *Springer Handbook of Spacetime* (Springer, Heidelberg 2014), pp. 141-163.

p. 147: The importance of the experimental fact that falling bodies offer no resistance to their fall is that *it rules out* any alternative theories of gravity and any attempts to quantize gravity (by proposing alternative representations of general relativity aimed at making it amenable to quantization) that regard gravity as a *physical* field which gives rise to a gravitational *force* since they would contradict the experimental evidence. It should be particularly stressed that a gravitational force would be required to move particles downwards *only if* the particles *resisted* their fall, because *only then* a gravitational force would be needed to *overcome* that resistance. (Quote from [Wikipedia](#): “Gravitation therefore does not cause proper acceleration, since gravity acts upon the inertial observer that any proper acceleration must *depart* from. A corollary is that all inertial observers always have a proper acceleration of *zero*.” – D.C.)

p. 152: There is no gravitational force in general relativity.

p. 153: Fourth, if determining the shape of a free particle’s geodesic worldline by the spacetime curvature induced by a body’s mass-energy constituted gravitational *interaction*, that would imply some exchange of *gravitational* energy-momentum between the body and the particle. But there is no such a thing as gravitational energy-momentum in general relativity *itself* - its mathematical structure does not allow a proper tensorial expression for a gravitational energy-momentum. This counter-intuitive feature of general relativity is not surprising at all since i) there is no *physical* gravitational field (one can use the term *field* to describe gravitational phenomena only in the sense of a *geometrical* field, but such a field describes the *geometry* of spacetime and as such does *not* possess any energy), and ii) there is no gravitational force and therefore there is no gravitational energy either.

### 8.2.7 Is There Gravitational Energy?

Although this question was answered above it is necessary to explain briefly why the energy involved in gravitational phenomena is not gravitational. Consider the energy of oceanic tides which is transformed into electrical energy in tidal power stations. The tidal energy is part of gravitational phenomena, but is *not* gravitational energy. It seems most appropriate to call it *inertial energy* because it originates from the work done by inertial forces acting on the blades of the tidal turbines - the blades further deviate the volumes of water from following their geodesic (inertial) paths (the water volumes are already deviated since they are prevented from falling) and the water volumes *resist* the further change in their inertial motion; that is, the water volumes exert *inertial forces* on the blades. (...) It is that resistance force (i. e., inertial force) that moves the turbine, which converts the inertial energy of the falling water into electrical energy. According to the standard explanation it is the kinetic energy of the falling water (originating from its potential energy) that is converted into electrical energy. However, it is evident that behind the kinetic energy of the moving water is its *inertia* (its resistance to its being prevented from falling) - it is the *inertial force* with which the water acts on the turbine blades when prevented from falling. And it can be immediately seen that the inertial energy of the falling water (the work done by the inertial force on the turbine blades) is equal to its kinetic energy [8.15, Appendix B].

p. 155: If this turns out to be the case, the efforts to quantize the apparent gravitational interaction should be redirected toward what seems to be the actual open question in gravitational physics - how matter curves spacetime - since it is *quantum physics* which should deal with this question and which should provide the definite answer to the central question in general relativity - whether or not there exists *some kind of interaction* between physical bodies *mediated* by spacetime itself.

---

## Is There Gravitational Energy?

Let me put aside the convoluted statement by Vesko Petkov [above](#) that the “tidal energy is part of gravitational phenomena, but is *not* gravitational energy”. The crucial question is “whether or not there exists *some kind of interaction* between physical bodies *mediated* by spacetime itself”. Can you explain the Earth tides ([Wikipedia](#))? Read p. 6 in my report, entitled [Experimental Tests of Spacetime Engineering](#) (available at my website [chkalov.net](#)).

Here’s an illustration of the puzzle. Suppose Vesko orders a pizza from a restaurant in [Montreal](#) at 6 PM local time, and 20 min later it is delivered at his doorstep, after which he brings the pizza in his kitchen. The pizza in his kitchen (the *right-hand side* of Einstein field equations) is identical to the pizza cooked in the restaurant (the *left-hand side* of Einstein field equations), but now Vesko says – naah, there is no pizza ([MTW p. 467](#)) in *any* restaurant whatsoever (“no gravitational force in general relativity”, read [above](#)). Is the pizza (e.g., [Earth tides](#)) a ghost? Of course not. But *how* and *when* the **Platonic** “pizza” has transformed into a *physical* one?

The puzzle reminds me of vacuum energy ([Peter Milonni](#)): yes, we have physical stuff that has energy, but – no, it is not ‘vacuum’ *anymore*. It may only have a remote vacuum “origin”.

Read p. 16 in [facts.pdf](#) and my report above. It is just a hint to what Albert Einstein (p. 75) called *Gesamtfeld*:

The right side is a formal condensation of all things whose comprehension in the sense of a field-theory is still problematic. Not for a moment, of course, did I doubt that this formulation was merely a makeshift in order to give the general principle of relativity a preliminary closed expression. For it was essentially not anything more than a theory of the gravitational field, which was somewhat artificially isolated from a total field (*Gesamtfeld*) of as yet unknown structure.

What can we say about Einstein’s *Gesamtfeld*? **It** (not “He”) is the **non-relational Platonic** state of the entire world as **ONE**. **It** is also the *engine* of Heraclitean *flow* of **Time**, endowed with **Aristotelian self-action** (p. 7 in the [report](#)). **It** is the *atom of geometry* ([ibid.](#), Fig. **B** in p. 4). **It** does *not* need energy ([ibid.](#), Fig. **G** in p. 7) – your wristwatch needs energy from an electric battery or [mainspring](#). **It** creates 4D spacetime as ‘the grin of the Cheshire cat, but *without* the cat’ ([Alice](#)). **It cannot** be derived from the physical ‘cat’, because the [atom of geometry](#) is perfectly hidden by the “speed” of light. **It** creates the infinitesimal ([Wolfram](#)) displacements in the *physical* time ( $\Delta t$ ) and 3D space ( $\Delta s$ ). The latter are always *squared* in the invariant spacetime interval ([Robert Wald](#)), hence the temporal and spatial “orientability” of 4D spacetime has no [arrow](#). Only some “[global hyperbolicity](#)”. This is how **It** creates spacetime.

Does **It** create gravity (p. 3 in the [report](#))? **It** is *not* directly observable, just like the quantum vacuum (read [above](#)), so how do we know that **It** exists? As an illustration, imagine that the energy source of your wristwatch was “dark”, meaning it does not emit or reflect light, but is nevertheless driving your wristwatch perfectly well. You only know that it is *not* physical stuff, for the same reason you know that there is no “[homunculus](#)” in the [human brain](#). You may try to find some “[temporal](#)” mechanism driving your wristwatch *along time*, but of course there is no such animal. Why not? Because **It** is “dark”. Yet **It** *must* have *physical* manifestations in the *entire* wristwatch, which Albert Einstein called [Gesamtfeld](#). And here comes the crucial point: the *Gesamtfeld* is *perfectly interwoven* within all constituents of your wristwatch, meaning that one *cannot* isolate **It** from its *physical* manifestations embedded in the *entire* wristwatch.

**It** is like a **Platonic** ‘hand’ in a physical, 4D ‘glove’ (wristwatch). Hence the **Platonic It** is always “inside” us (4D glove). Namely, the ‘glove’ is residing in the **irreversible past** in the [atom of geometry](#) – see again Fig. B at p. 4 in [Experimental Tests of Spacetime Engineering](#).

To demonstrate Einstein’s *Gesamtfeld*, stretch your arms (see the drawing below) to show an [invariant spacetime interval](#) of 1m ‘rod-and-clock’ matching app. **3.3 ns** of [light-travel time](#):

-----  
Attention: The drawing is not [WYSIWYG!](#)

The drawing above stands for the 4D ‘glove’. The **Platonic** ‘hand’ inside the ‘glove’ is “dark”, and we can only claim that “spacetime has its own rods and clocks built into itself, even when matter and nongravitational fields are absent!” ([MTW p. 397](#)). No physical stuff *alone* – just the ‘glove’ – can assemble an *exact rod-and-clock* made by an *exact* number of cycles shown above with dashes (-) separated by ‘[something else](#)’. Nature does *not* employ [metrology](#). Last but not least, keep in mind that the drawing above *cannot* show the **non-relational** Continuum. In reality, the set of dashes (-) cannot have definite [cardinality](#), because the “number” (if any) of elementary dashes is **UNCountably infinite** ([Wolfram](#)): read my endnote [here](#). To understand the **non-relational Platonic** Continuum ([p. 2](#)), recall the unphysical structure of your memory: the **Platonic** idea of ‘tree *per se*’ is not “smaller” than the **Platonic** idea of ‘mountain *per se*’. There is no [metric](#) here. Yet your **self-acting brain** uses energy, e.g., by reading these lines, because the brain is the 4D ‘glove’ mentioned above. In this sense, the *collection* of brain’s “[bosons](#)”, implementing the **self**-interactions of [all constituents](#) of the brain, is what Einstein called *Gesamtfeld* ([p. 2](#)). Only matter interacts with matter. Not with the **Platonic** ‘hand’ **It**. Replace the brain with the 4D physical universe (the ‘glove’) and recall the so-called [anthropic principle](#) discussed at p. 4 in the [report](#). Details at p. 25 in [BCCP](#). This is Physical Theology 101. We don’t need [physical parapsychology](#) ([John A. Wheeler](#)). We only need [Mathematics](#).

Again, **It** is omnipresent but [invisible](#). And since **It** does *not* have [metric](#), we model **It** with a dimensionless geometric point stretched to the “size” of [entire Universe](#). In symbolic terms, the “size” of **It** is  $0 = \infty$ . **It** is simply “that which has no part” ([Euclid](#)). All interactions in the [bootstrapped](#) holistic 4D ‘glove’ pass through the *atemporal Platonic* ‘hand’ **It** ([Luke 17:21](#)), and their global **instantaneous** actions are perfectly *local*, as they [spring from every 4D point](#). People like [Sean Carroll](#) boldly claim that “in general relativity spacetime can give energy to matter, or absorb it from matter, so that the total energy simply isn’t conserved”. True, but this is only [the statement of the problem](#). The *origin* of [gravitational energy](#) and its [perpetual non-conservation](#) ([Hermann Bondi](#)) are still unsolved ([p. 2](#)), ever since [25 November 1915](#).

The only possible solution is the so-called *evolution equation* in a Phoenix Universe (Eq. 1 in [wegtransformierbar.pdf](#)): at every **consecutive** instant 'here and now', the total energy of the 4D 'glove' (p. 3) is **re-nullified** and **re-created** anew, ever since the Beginning ([John 1:1](#)).

To wrap up, let me go back to the question about the *origin* of gravitational energy at p. 2: how and when the **Platonic** "pizza" has transformed into a *physical* one? Replace the **Platonic** "pizza" with *the* quantum state (called [John](#)) and recall [Erwin Schrödinger](#) from 1935 (p. 158):

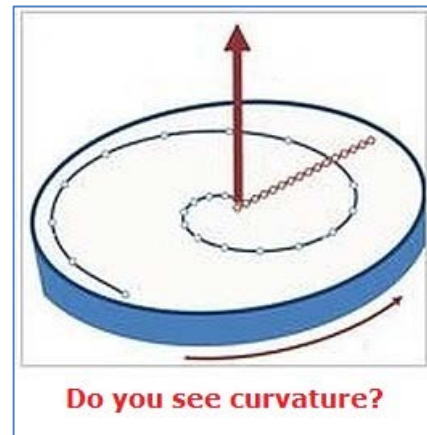
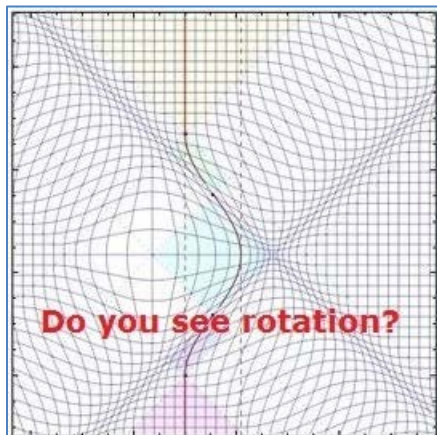
In general, a variable has no definite value before I measure it; then measuring it does *not* mean ascertaining the value that it *has*. But then what does it mean?

It means that [Erwin Schrödinger](#) and Albert Einstein (p. 2) have encountered the same puzzle (p. 2 in [GR\\_textbook.pdf](#)). Once we solve it, we will be on the path to [Quantum Spacetime \(1911\)](#). Alternatively, feel free to explore the tantalizing insight of [Paul Steinhardt](#) at [YouTube](#).

If you wish to present your opinion, please write a brief paper about [GW150914](#) and upload it at [arXiv.org](#). Then the ball will start rolling (p. 16 in [facts.pdf](#)). Perhaps one day we will find out how to *tweak* the **Platonic** 'hand' by [spacetime engineering](#) and release *unlimited* positive energy density ([Gary Horowitz](#)) in the 4D 'glove'. As of today, however, **nobody is interested**.



I am grateful to [Sawa Manoff](#) for his efforts in December 1986 to explain the gravitational "fictitious force" (p. 45 in [GR\\_textbook.pdf](#)), and to [Anastas Anastassov](#) and [Vesko Petkov](#) for many stimulating discussions in late 1980s of the alleged "acceleration of gravity" (see below).



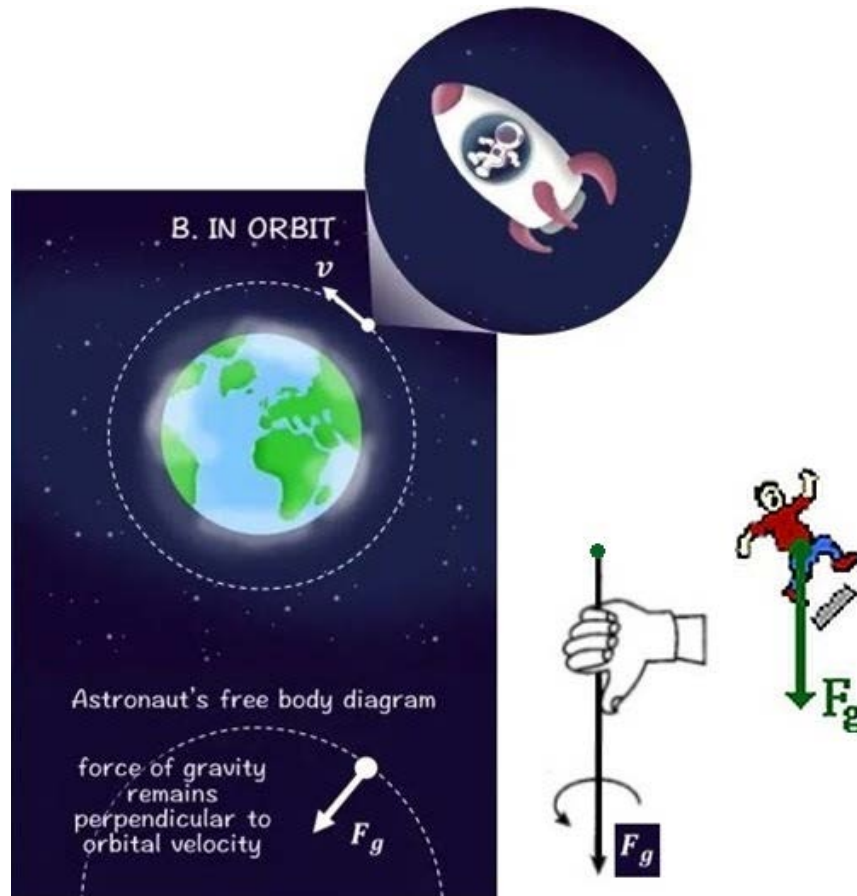
I suggested (pp. 8-9 in [Experimental Tests of Spacetime Engineering](#)) that bodies in **free fall** do not trace the *rate* of global Heraclitean Time (*ibid.*, p. 2). The latter is fully transparent, until they become **accelerated**, at which instant the same bodies *instantaneously* (**Sic!**) recover their latent **weight** and **inertia**. Here "the whole universe" ([Dennis Sciama](#)) is the **Platonic It** (p. 3). This is only an introduction to the puzzle of gravity (*ibid.*, p. 6). The solution is still unknown.

D. Chakalov  
24 November 2020, 22:14 GMT

## The Zenon Connection

The so-called Zenon Connection (ZC) is **pregeometric** connection “between” two consecutive 4D events ‘here and now’ (Slide 1) placed in the irreversible past of the *atom of geometry* explained at p. 4 in the report; details at p. 3. Notice that ZC is the alternative *both* to the torsionless **Levi-Civita connection** and to the Weitzenböck connection with torsion (**Engelbert Schücking**), as ZC is introduced to solve *from the outset* the problems of Time and Continuum *en bloc* (pp. 16-17 in [zenon.pdf](#)). Otherwise we cannot talk about the *rate of Time* and gravity.

As acknowledged above (p. 4), the puzzle of gravity is still out of sight (Q1). The rocket below (borrowed from [Lisa Heppler](#)) shows the **centripetal force** of gravity (the left hand rule) in the case of **free fall**. We still do not know the origin of gravitational rotation (**Richard Feynman**) and cannot suggest the *alternative* type of gravitational rotation, producing **repulsive gravity** and **propellantless propulsion**. Perhaps one can speculate that if the rocket used *repulsive* gravity (p. 3 in the report), it wouldn't have to orbit Earth and could stand still ( $v = 0$ ). Maybe. I am only certain that the **anomalous gravity** is a bold fact. Not some “**paranormal magic**”.



My project ‘**spacetime engineering**’ will be presented at the conference **GRAVITY 21** in Munich, 26-27 March 2021 (pp. 13-26 in [Can Geometry Produce Work](#)). To join us, you either have to write up a paper about [GW150914](#) and upload it at [arXiv.org](#) (p. 4) or explain Earth tides (p. 2). The Albert Einstein Professor in Science ([Paul Steinhardt](#)) is staying dead quiet. How about you?

## Questions and Answers

Q1. Can you explain the gravitational rotation?

A1. No I can't. Although "torsion and curvature form the two fundamental invariants of the connection" ([Wikipedia](#), Fig. A), in GR textbooks the enigmatic torsion is *assumed* to be *zero*, which "forces the affine connection to be equal to the Levi-Civita connection" ([Wikipedia](#)).

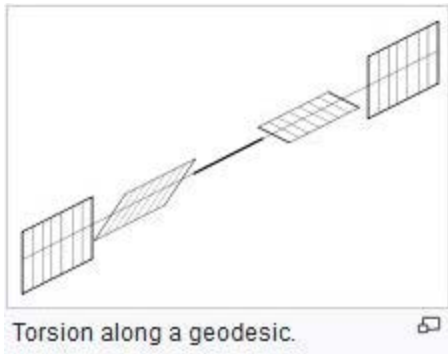


Fig. A



Fig. B

In my opinion, the torsion is inseparable part of the phenomenon which pulls **up** (Slide 2) the entire 4D universe *en bloc* and makes it "fly" ([John A. Wheeler](#)) in time, even at rest (Slide 4). Obviously, this complex phenomenon had to be "eliminated" in Theory of Relativity: p. 3 in the [report](#). To understand the difference between the gravitational rotation and physical rotation (Fig. B), let me quote [Jim Lucas](#) (May 10, 2019): "If you are observing a rotating system from the outside, you see an inward centripetal force acting to constrain the rotating body to a circular path. However, if you are part of the rotating system, you experience an **apparent** (Sic! - D.C.) centrifugal force pushing you away from the center of the circle, even though what you are actually feeling is the inward centripetal force that is keeping you from literally **going off on a tangent**." Obviously, there is no *physical* engine and rotating force (Fig. B) to create the gravitational rotation of all celestial bodies, e.g., the Sun and its [rotating planets](#).

Thus, I suggest that the gravitational rotation is a *forceless* effect produced by the *topology* of spacetime, from quantum spin ([Wikipedia](#)) to large-scale rotating structures (Wen Zhao and Larissa Santos, [arXiv:1604.05484v3](#), Sec. VI). You may speculate about "[dark matter](#)" and "[dark energy](#)" iff these gravitational effects were caused by some *physical* stuff (p. 7 in the [report](#)) placed in the [right-hand side](#) of Einstein field equations.

"A last possibility is that Einstein's theory of gravity is not correct" ([NASA](#)). Welcome aboard!

Q2. Can you demonstrate an experiment suggesting that Einstein's theory of gravity is wrong?

A2. [Yes I can](#), but *only* at the conference *GRAVITY 21* (p. 5). Why? Read the first paragraph at p. 8 in the [report](#). Most importantly, do *not* allow [Kip Thorne](#) to fool you (pp. 1-6 in [facts.pdf](#)).

Now, if you cannot wait until *GRAVITY 21* (p. 5), watch the demonstration of [repulsive gravity](#) by [Wang Yifeng](#) (Yif) at [YouTube](#), 1:25-1:47 from the timeline, and recall the so-called [gimbal](#).

Let me stress, however, that the sole purpose of my demonstration is to trigger interest in the *origin* of gravity viz. the Zenon Connection (p. 5). The fact of the matter is that nobody signed up to watch my video presentation [Spacetime Engineering 101](#), announced on 15 January 2020. I'm afraid many [sheeple](#) still prefer that [cheap crap](#) by [Kip Thorne and his LIGO collaborators](#). How about you?

---

## Is There Gravitational Energy?

### Abstract

It is argued that gravitational energy *per se* does not exist (p. 2 and p. 4). Explanation at p. 3. The spacetime of 'the Universe as ONE' is modeled with so-called Zenon manifold equipped with Zenon Connection (p. 5), and [two modes of spacetime](#) are introduced, called *local* (also physical; see the drawing at p. 3) and *global* or **Platonic** (p. 3). To understand the theory, the reader is kindly advised to start by explaining the Earth tides (p. 2) with Einstein's GR.

D. Chakalov

30 November 2020, 23:44 GMT

### Addendum 1

I will have to respond to an email from 1 December 2020, in which the [sender](#) did not ask any questions and showed that cannot understand the issue with the gravitational energy *per se*. Perhaps he could not understand the [perpetual](#) non-conservation ([Hermann Bondi](#)) either. Let me explain what the gravitational energy is not. The same tallies to the vacuum energy (p. 2).

Suppose you have 5000 euros in your bank account, and decide to withdraw 100 euros from it. The total amount of your 5000 euros will be "conserved", only 100 euros will switch to your wallet. Simple, isn't it? But in the case of gravitational energy, the initial "5000 euros in your bank account" are not euros, and the "bank" ([Hawking & Ellis](#)) is not physical stuff and does not have an *exact* location in 4D spacetime. Nevertheless, you again can withdraw any *finite* amount of *real* euros from it, say, 100 million euros. Why? Because your gravitational "bank" keeps *unlimited* (or rather *indefinite*) "amount" of *not-yet-physicalized* **Platonic** euros (p. 4). Thus, when you talk about *any* form of *energy*, you are referring only to the *physicalized* cash (*energy*) in your wallet (*kitchen*). Genuine gravitational energy, as well as genuine vacuum energy (p. 2), do not exist. By the same token, there is no genuine "mental energy" in your [self-acting brain](#) (p. 3), nor "ethereal energy" ([Arthur Eddington](#)) or some "negative energy" suggested by Albert Einstein Professor in Science ([Paul Steinhardt](#)) at YouTube [here](#). Capiche?

D. Chakalov

21 December 2020, 01:47 GMT

## Addendum 2

Regarding Einstein's *Gesamtfeld* and the drawing at p. 3 above: all 'elements of reality' are depicted below with dashes (–) 'inside the 4D train', separated by 'something else' called **It**.

-----

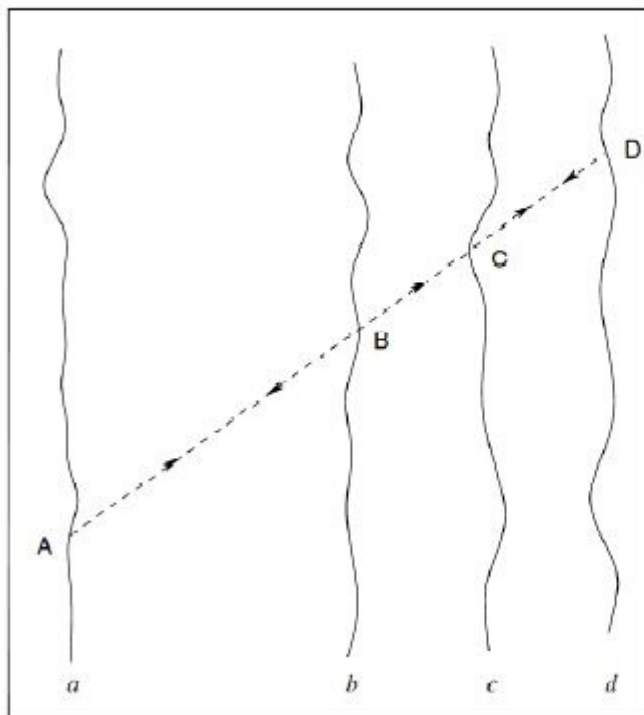
Attention: The drawing is not WYSIWYG!  
See Slide 1 and Slide 2, and ZC at p. 5.

Here "the whole universe" (Dennis Sciama) is modeled as 4D 'glove' (p. 3). The influence from the Platonic 'hand' **It** (p. 3) is "smuggled" inside the potential (W. Heisenberg) self-energy:



Explanation from Jayant Narlikar below. Here the points A, B, C, D, ... are bootstrapped by "a contiguous set of lightlike intervals whose absolute magnitudes are zero" (Kevin Brown): p. 3.

**Figure 7.** A retarded signal (shown by dotted line) leaving point A on the world line of 'a' hits particles b,c,d,... at points B,C,D,... at later times. Their advanced response returns to A along the same dotted track, no matter how far these particles are from 'a'. Thus even the remote parts of the universe generate instantaneous responses to the retarded disturbance leaving A. In short the response of the whole universe cannot be ignored.



*at later times. Their advanced response returns to A along the same dotted track, no matter how far these particles are from 'a'. Thus even the remote parts of the universe generate instantaneous responses to the retarded disturbance leaving A. In short the response of the whole universe cannot be ignored.*

Can you explain "the time-reversal symmetry breaking, which singles out a preferential time direction and thus makes a distinction between past and future" (Wikipedia)? Read p. 2 above.

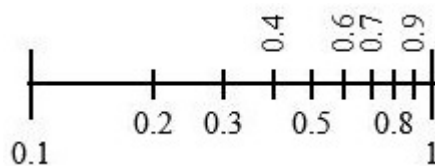


If you disagree, you have to find some “temporal energy” or “causal energy” (like the energy of your [wristwatch](#)) to create “time-orientation” (P.T. Chrusciel) and to *calibrate* (Taylor & Wheeler) 1m rod-and-clock to match 3.3 ns of *perfect* light-travel time. That will be “magic”. The grin of the Cheshire cat *without the cat* – pure geometry – does not have energy (p. 7). In my [opinion](#), gravity is related to the *rate* of Time (p. 4). More in Table 1 at p. 27 in [BCCP](#). To quote [Albert Einstein](#), “I want to know God’s thoughts – the rest are details.”

Perhaps the best way to understand why gravity-as-geometry does not have energy (p. 7) is to recall Karl Popper’s analogy of using the controls of his car (K.R. Popper and J.C. Eccles, *The Self and its Brain*, 1984, pp. 485-486). Suppose you are looking at a car driven by Karl Popper: he plays the role of *gravity* and drives the car by using its mechanical features, that is, he is **Platonic** hand (p. 3) inside its physical, 4D car/glove. The 4D glove has *physicalized* energy (p. 7) and steering mechanism (spacetime metric), whereas the **Platonic** hand (p. 3) does not have any energy at all – *gravity* is **potential** reality ([Werner Heisenberg](#)), like the “memory” of the **Platonic** Universe. To use the example with Earth tides at p. 2, gravity only *evokes* the **self-action** of matter and fields – only *matter interacts with matter*, *guided* by **geometry (P)** (p. 7 and pp. 19-20 in [facts.pdf](#)). The same **self-action** rules the physics of [human brain](#) (p. 7). Notice that the universal **self-action** originates from the [Unmoved Mover](#) (p. 7 in the [report](#)). See the *atom of geometry* (*ibid.*, Fig. B in p. 4) and [ZC](#) at p. 5 [above](#), and follow the links.

I hope to explain the so-called *evolution equation* (p. 4) at the conference *GRAVITY 21*, 26-27 March 2021 (p. 5). If the participants are interested, I will elaborate on the so-called ‘bridge’ (p. 22 in [GR\\_textbook.pdf](#)) and show a brief inflow of *physicalized* – neither “gravitational” nor “vacuum” (p. 2) – energy with [spacetime engineering](#) (p. 7 in [facts.pdf](#)). As Zhao-Yan Wu proved (2016 *Commun. Theor. Phys.* 65 716), gravity “does not exchange energy-momentum with both electromagnetic field and particles (charged and uncharged). Hence it does not carry energy-momentum. Gravitational field is not a force field, and gravity is not a natural force.” Namely, gravity is not a “natural pizza” (p. 2).

But what *is* it, then? [Plato](#) suggested the answer many centuries ago (p. 2 in [GR\\_textbook.pdf](#)). In my theory of gravity, all *nonlocal* interactions are **perfectly local**, as they spring from every point (p. 3). Both biological and quantum-gravitational interactions are *quasi-local*, following the rule ‘think **globally** act locally’. The *quasi-local* input from the **Platonic** ‘hand’ (p. 3) will *alter* – but not “curve” – the spacetime metric of its 4D ‘glove’, *guided* by **geometry (P)**. Can you spot a “curvature” in a [logarithmic scale](#)?

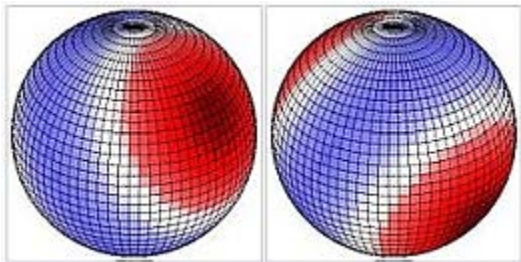


If it were possible to “discover” a *local* expression for gravitational field energy density, the gravitational field will become *local* tensorial observable (MTW p. 467) and gravity will become a classical **force field**. Therefore, gravity-as-geometry must not have energy (p. 7). Or think of the *shape* of a mountain: it is not a flat line, but does the shape *itself* have energy-momentum and angular momentum to push and [rotate](#) the mountain à la [John Wheeler](#) (p. 6 in the [report](#))?

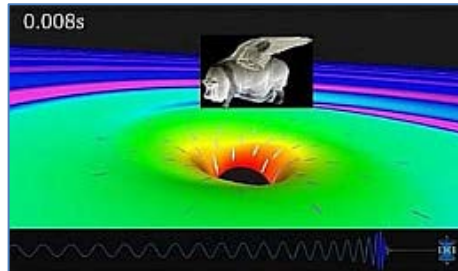
The solution is simple: recall the analogy with gravitational “bank” (p. 7) and replace ‘real money’ with ‘positive energy density’. Nature can withdraw any *finite* amount of positive energy density, say, from “ $6 \times 10^{-10}$  joules per cubic meter” (John Baez) to  $3 \times 10^{47}$  joules of energy released in less than a minute in [gamma-ray bursts](#) (p. 6 in [facts.pdf](#)). Or even more (GRB 190114C). And yet the *total* energy will be always “conserved”, thanks to the so-called *evolution equation* (p. 4) based on the proposed interpretation of [negative energy density](#) at “the edge of spacetime” (Hawking & Ellis). In the parlance of theoretical physics, the inflow of *physicalized* – neither “gravitational” nor “vacuum” (p. 2) – energy (p. 9) would have “dark” origin, like the origin of “*this drink*” in the two *modes* of spacetime from [September 2011](#). The origin of positive energy density is not “dark”, of course (p. 7 in the [report](#)): read p. 3 [above](#) and keep in mind that there are no *local* energy conditions in QFT (Arthur Jaffe *et al.*, 1965). To wrap up, we can extract *unlimited* clean energy from the 4D ‘glove’ (p. 3) and avoid the devastating [climate crisis](#). As a bonus, there is no need for spacetime “curvature” to explain gravity: “the phenomena we usually ascribe to gravity are *actually* caused by time’s flowing unequally from place to place” (William G. Unruh). Gravity *is* the different *rate* of Time (p. 4).

Again, in my theory of gravity (p. 9), all *nonlocal* interactions are *perfectly local*, because they spring from every point (p. 3), thanks to the new *pregeometric* Zenon Connection (p. 5). In GR, this is impossible due to the structure and [topology](#) of the spacetime manifold “that locally resembles Euclidean space *near* (notice the poetry - D.C.) each point” (Wikipedia). The dubious mathematical trick by which the intrinsically *nonlocal* connection (which “plays the role of the gravitational force field”, Wikipedia) can be taken to *zero* (MTW p. 467) “by an appropriate coordinate/gauge transformation” (Lazslo Szabados) runs against the mathematical facts that (i) “the gravitational energy and the spatial stress *cannot be localized to a point*” (*idem*) in the first place, and (ii) the Riemann tensor *cannot* suddenly “vanish” (John Synge). GR deals with only one “charge” (positive mass) and hence we *cannot* define the hypothetical “*geodesic*”, like we can define a *field line* (Wikipedia). Moreover, GR “is not a parametrized field theory” (Charles Torre) and does *not* possess an *observable* time  $\tau$  (Carlo Rovelli) either. All this makes the gravitational “field” mathematical poetry. Forget it. Read my endnote [here](#).

Those who [believe](#) that spacetime “*curvature*” makes gravity, will have to explain Earth tides (p. 2) and the **crap** by Kip Thorne and his [prominent collaborators](#). Have you seen [pink unicorns](#) dancing with [red herrings](#)? This is the so-called GW150914: read pp. 1-6 in [facts.pdf](#).



How can [spacetime metric](#) pull up rocks?  
How can geometry produce [EM radiation](#)?



The so-called GW150914 is **FRAUD**.  
We do *not* tolerate [GW parapsychology](#).

D. Chakalov

28 December 2020, 11:50 GMT