

Gravitational Wave Parapsychology

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Report URL: <https://chakalov.net/GWP.pdf>

Abstract

After analyzing the alleged [polarization angle](#) of gravitational waves (GWs) and other related issues, adopted by Kip Thorne and his LIGO collaborators, it is concluded beyond any doubt that the so-called 'first direct detection of gravitational waves and first observation of a binary black hole merger', announced on [11 February 2016](#), are **absurd**. You can't detect [pink unicorns dancing with red herrings](#). We need a new theory of [gravitational radiation](#).

1. Preliminaries

It is well known that Einstein's general relativity ([Sec. 4](#), [Q1/A1](#) and [Q3/A3](#)) is still [essentially incomplete](#), as acknowledged by Albert Einstein:^[1]

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 of as yet unknown structure.

The core unsolved issue, ever since the inception of GR in November 1915, is the absence of “mutual action of gravitational fields *on matter*”.^[2] As an analogy, the *shape* of a mountain is determined by the mountain, but there is no ‘mutual action’ by the shape *itself* on its mountain. All efforts to find some *local* gravitational energy-momentum^[3] have failed miserably. To the best of my knowledge, we do not have any *non-local and non-linear theory* of gravitational radiation, from which one can calculate some ‘weak limit’ and suggest ‘linearized approximation’ of the initial *strong non-linear GWs*.

Thus, the alleged “direct detection” of very weak GWs by Kip Thorne and his LIGO collaborators on 14 September 2015 is based on *wishful thinking*. You can’t detect *pink unicorns dancing with red herrings*. No way (p. 18).

This is the crux of *GW parapsychology* (GWP), *plain and simple*.

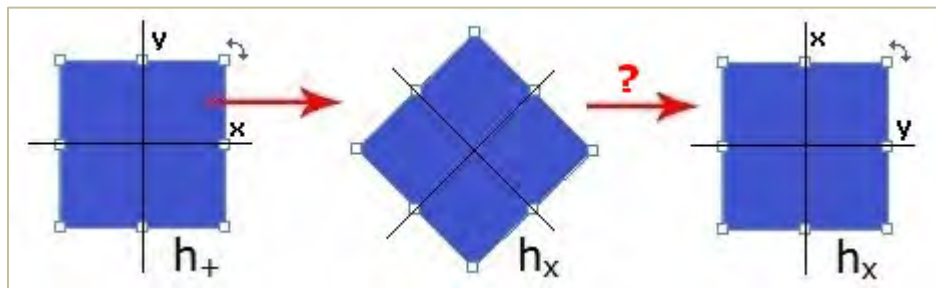
Let’s move to the bold facts related to the so-called *GW150914*.^[4] In the next section, I will examine the unsolved issues with the ‘*intangible*’^[5] gravitational energy. Later I will focus on “gravitons” (Kip Thorne) and the hypothetical “*polarization*” of GW fields, and will address the astronomical observation on 17 August 2017: yes, the transport of energy by the genuine gravitational radiation (not by *fake GWs*) is a bold fact. Kip Thorne and his LIGO collaborators have not suggested any coupling of their “*gravitons*” to EM field (Sec. 3). We need a brand new theory of *gravitational radiation*. Not *GW parapsychology*. In Sec. 4, I will offer my personal, and most likely *strongly biased*, opinion on the *gravitalized* mass-energy of the genuine gravitational radiation (forget *the fake GWs*), which can perhaps replace the *zero-point “dark energy”*.^[8] Summary in Sec. 5 and p. 18.

2. Gravitational Energy

In the theory of relativity, energy must be *always* localized^{[5],[6],[13]} and our first off task is to unravel the *quasi-local* (*Sic!*) presentation of ‘*localized* gravitational energy-momentum’.^[3] We read in Wikipedia^[4] that “events in the cosmos would cause “ripples” in space-time — distortions of space-time itself — which would spread outward”, and that “objects moving in an orbit would lose energy for this reason (a consequence of the law of conservation of energy), as some energy would be given off as gravitational waves”. But

once the energy *from* gravity is added to any gravitating system, the total energy cannot be “[conserved](#)” in principle.^[6] Therefore, [Kip Thorne](#) and his collaborators cannot somehow remove ‘by hand’ ([Sec. 5](#)) the vector (spin-1) and scalar (spin-0) polarizations,^[7] and *all* “GW polarizations” will conflate and intermingle like [spaghetti bolognese](#). Sad but true. Why?

Because in GW parapsychology,^[9] “the effect of each GW polarization is to contract fractionally the proper distance along one axis, while expanding it along the other (these axes being (x; y) for h_+ , and axes rotated by 45° with respect to (x; y) for h_x).” But what phenomenon could possibly produce an **exact 45° angle** between h_+ and h_x (see the drawing below) and then keep it **exactly** fixed **within** the “superposition” of the two oscillating metric fields ([Kip Thorne](#)), in such way that the latter will *never* conflate and intermingle? What kind of stuff could sustain the *phases*? Moreover, if the rotating angle reaches 90° , the net effect from h_+ & h_x will be zero:



While it is quite possible that a collision of two neutron stars can produce short gamma-ray bursts (sGRBs), as detected on 17 August 2017 in galaxy NGC 4993 with alleged “dark matter” halo of $193.9 \times 10^{10} M_\odot$ ([Wikipedia](#)), the [gravitational correlates](#) of EM radiation & “dark matter” are [unknown](#).

What if on [17 August 2017](#) LIGO has [accidentally](#) detected the gravitational radiation (not **fake GWs**) propagating in [longitudinal](#) and [transverse](#) modes?

3. Gravitons (if any)

Assuming that “gravitons” are dispersed in vacuum like massive particles, Kip Thorne and his collaborators managed to calculate the “graviton mass” at $m_g \leq 7.7 \times 10^{-23} \text{ eV}/c^2$ ^[10], but failed to explain how “massive gravitons” live in the quantum vacuum, and hence deliver their quantum gravity.^[18] They also boldly declared that “in classical general relativity, a *vacuum* BBH merger does not produce any EM or particle emission whatsoever”.^[11]

If so, it is completely unclear how these “gravitons” could unleash powerful EM radiation detected by 70 astronomical laboratories on [17 August 2017](#).

To produce “gravitons” that would create and support the tantalizing 45° angle between h_+ and h_\times in the drawing at [p. 3](#), you should only wave your arms rapidly like a [Hummingbird](#), as proposed by Kip Thorne: ^[12]

Exercise 27.8 Problem: Gravitational waves from arm waving

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

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

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

Sadly, the exercise from Kip Thorne is not an April 1st joke. It is [diagnose](#).

Do not ignore Albert Einstein ([Sec. 1](#)) and Sir Hermann Bondi. ^[5]

4. [Gravitalized](#) (not “[gravitational](#)”) energy

Robert Wald^[13] raised the following question: “How may gravitational radiation be detected? If a gravitational wave passes through matter, the ripples in the space-time curvature will *induce* (emphasis mine - D.C.) stresses in the matter. If these extremely tiny stresses can be measured, one can detect gravitational waves.”

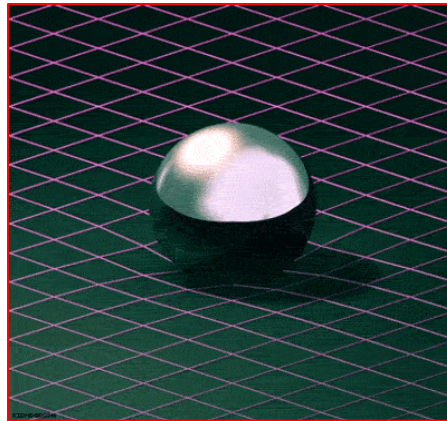
But how can the massless ‘shape’ *induce* stresses in its ‘mountain’ ([Sec. 1](#))?

Piotr Chrusciel wrote in his *Lectures on Energy in General Relativity*: ^[14]

“First, one expects that generic gravitating systems will emit gravitational waves. Detecting such waves requires a transfer of energy between the field and the detector, and to quantify such effects it is clearly useful to have a device that measures the energy carried away by the gravitational field. (...) The hunting season for an optimal definition of “quasi-local” energy is still open!”

NB: But again, can the massless ‘shape’ *induce* “quasi-local” ([YouTube](#)) stresses in its ‘[mountain](#)’? The ‘shape’ is just massless *geometry*, ^[15] not a physical field. ^[3] The mantra ‘only matter interacts with matter’ leads to a nontrivial challenge. ^{[2],[5],[6]} We need [new physics](#). ^[15] Here’s the puzzle.

The popular “explanation” of gravity deals only with attractive gravity, so once physicists observe a phenomenon that looks like *repulsive gravity*, they would simply call it “*dark energy*” and get Nobel Prize. But the idea of ‘attractive gravity’ is not simple and clear. Look at the *trampoline* below.



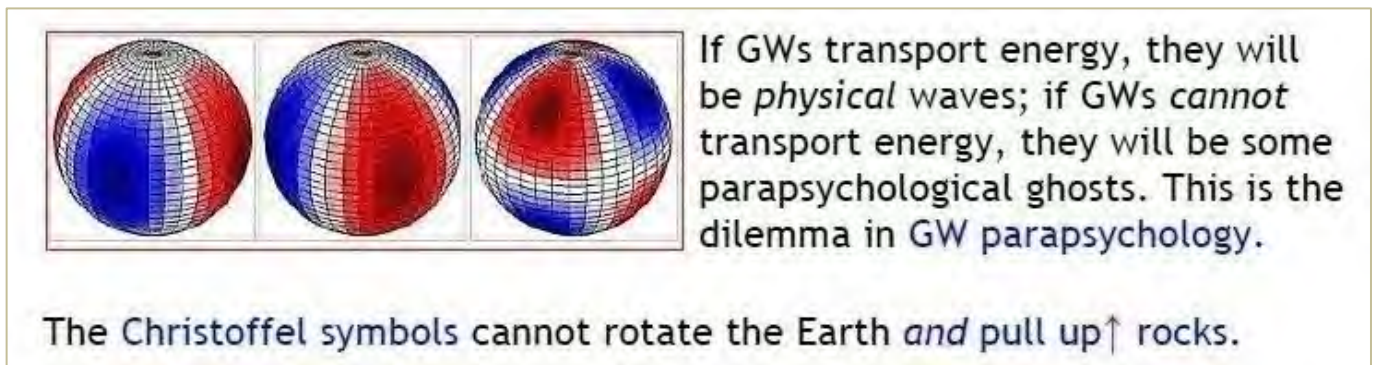
The *springiness* of the trampoline cannot be applied to the massless ‘shape’ of the ‘mountain’ (Sec. 1). The trampoline and the *bouncing ball* interact because they both are made of the physical stuff we believe understand^[19] and call ‘*positive mass*’, but we cannot “inject” it in the massless ‘*shape*’.

According to GR, the attractive form of gravity is not a mundane force that pulls things together like a magnet, but a “consequence” of what physicists bravely call “*spacetime curvature*”. And the more positive mass or positive energy the ball has, the more it will “bend” the *spacetime* around it. This affects not only the motion of objects, but also the *passage of time*.

Go figure. For comparison, bosons and gluons in the *standard model* are considered “force carriers” and the fermions (leptons and quarks) are thought of as “matter”. Similarly, what are the “force carriers” of gravity? Some (otherwise smart) people, like *Kip Thorne*, will vote for “gravitons”.

To illustrate the puzzle of *gravitalized* (not “*gravitational*”) energy, recall that we never observe *directly* the *quantum vacuum* itself. Likewise, in the case of gravity we observe only the *gravitalized* (Sic!) force of gravity — not the underlying *intangible* (*Hermann Bondi*) origin of gravity that “*collapses*” and “*vanishes locally*” (*Mikio Nakahara*) by casting its *gravitalized* “*jackets*” or “*eigenstates*” at every consecutive 4D instant ‘*here and now*’ along the *arrow of Time* grounded on the *intangible quantum-gravitational vacuum*.

For example, we see every day the *gravitalized* force of gravity pulling up water in the oceans and the rocks underneath, and creating [Earth tides](#):



We do not understand the gravitational rotation ([Richard Feynman](#)) either. The issue of quasi-local ([Piotr Chrusciel](#)) *gravitalized* energy is still [unclear](#).

Time for new physics, right? It is about Time.^[15] In my personal and perhaps [biased](#) opinion, the only plausible path toward the mathematical theory of 'force carriers' of *gravitalized* energy (explained [above](#)) and the [zero-point "dark energy"](#) is with the universal [Fifth Force](#).^[15] Any other ideas?

5. Summary and conclusion

If it walks like a duck and quacks like a duck, then it probably is a duck. We can't be certain, but it should be most likely a duck. But our case is many times stronger: if we observe a gravitational phenomenon that transports its source, then we have *definitely* encountered the genuine *non-linear*^[5] gravitational radiation. It *must* be non-linear in order to transport its own source,^[17] otherwise it will be a *powerless shadow* in flat 4D spacetime.^[16] Those who disagree are kindly invited to explain the [Earth and ocean tides](#).

Also, the proponents of [fake GWs](#) deeply believe that their "celebrated" [Hulse-Taylor binary](#) has obeyed the "law of conservation of energy",^[4] which is manifestly [false](#).^{[5],[6]} Thus, the [quadrupole formula](#) (the change of the (mass) [quadrupole moment](#), [Wikipedia](#)) is like the [joke about Nancy](#).

NB: The *nonconservation* law in GR^[6] does *not* forbid [monopole and dipole radiation](#); more from [Cliff Will](#) and from Kip Thorne and his collaborators.^[7]

Moreover, the proponents of [fake GWs](#) absolutely need their "gravitons" ([Kip Thorne](#)) plus a new topology of spacetime to facilitate their mythical "propagation" (*ibidem*). The list goes on and on, way back to the article by Albert Einstein on [31 January 1918](#). Here's a brief summary and conclusion.

The gravitational radiation (not [the fake GWs](#)) is real, but gravity ([Sec. 4](#)) is not a mundane [force field](#). It is an intricate *non-linear*^[5] and *quasi-local* ([Sic!](#)) phenomenon, which cannot be studied with the linear field theory of gravitation in flat spacetime.^[16] In my humble [opinion](#), the [fake GW150914](#) was manufactured with LIGO's "[blind injections](#)" à la [GW100916](#), and then announced with their childish hope 'fake it until you make it'. As of today, Kip Thorne and his [1500+ collaborators](#) are still suppressing the indisputable bold facts about [GW parapsychology](#). Enough is enough ([p. 18](#)). [Period](#).

Acknowledgements

I am deeply grateful to [Henry Margenau](#) for his encouragement in June 1990 and to my beloved parents Gocho G. Chakalov and Dany Chakalova for their longstanding moral and financial support. They all went [back home](#) and are now with [Jesus](#).

References and Notes

1. [Albert Einstein, *Philosopher-Scientist*](#), ed. by Paul Arthur Schilpp. Tudor Publishing Company, 1951, p. 75.
2. Hans C. Ohanian, [Gravitation and Spacetime](#), W.W. Norton & Company, 1976, [p. 103](#).
3. Charles W. Misner, Kip S. Thorne, John Archibald Wheeler, [Gravitation](#), W. H. Freeman, 1973, [p. 467](#).
4. First observation of gravitational waves, [Wikipedia](#). Retrieved on 2 June 2023.
5. Hermann Bondi, Conservation and Non-Conservation in General Relativity, *Proc. R. Soc. Lond. A* 427 (1990) 249-258, [p. 249](#).
6. Hans C. Ohanian, The Energy-Momentum Tensor in General Relativity and in Alternative Theories of Gravitation, and the Gravitational vs. Inertial Mass, [arXiv:1010.5557v2 \[gr-qc\]](#), 28 Feb 2013. Quote from [p. 3](#): In GR, the "geodesic motion can be shown to be a consequence of the "conservation"

law for nongravitational matter. But this is really a *nonconservation* law — it reveals to what extent the energy-momentum of the nongravitational matter is *not* conserved.”

7. LIGO Scientific collaboration and Virgo Collaboration, GW170814: A Three-Detector Observation of Gravitational Waves from a Binary Black Hole Coalescence, [arXiv:1709.09660v3 \[gr-qc\]](https://arxiv.org/abs/1709.09660v3), 13 Oct 2017, p. 141101-6:

“One of the key predictions of GR is that metric perturbations possess two tensor degrees of freedom [151,152]. These two are only a subset of the six independent modes allowed by generic metric theories of gravity, which may in principle predict any combination of tensor (spin-2), vector (spin-1), or scalar (spin-0) polarizations [11,12]. While it may be that any generic theory of gravity will be composed of a potential *mixture of polarization modes* (emphasis and link mine - D.C.), an investigation of this type is beyond the scope of this Letter.”

8. Dimi Chakalov, Are Gravitational Waves Directly Observable? [physics/0507133](https://arxiv.org/abs/physics/0507133), 17 Jul 2005. Quote from the abstract: “Alternatively, a hypothetical case related to the so-called dark energy would render the task impossible in principle.” Read more at p. 5 in [facts.pdf](#). Regrettably, the [talebans at arXiv.org](#) deleted my article without any explanation.

9. Michele Vallisneri *et al.*, The Emergence of Gravitational Wave Science, [arXiv:1607.05251v1 \[gr-qc\]](https://arxiv.org/abs/1607.05251v1), 18 Jul 2016; Michele Maggiore, *Gravitational Waves: Theory and Experiments*, Oxford University Press, 2007, p. 32: “However, it would be hopeless to look for exact solutions for the gravitational waves emitted by realistic astrophysical sources.”

Note: Here I fully agree with [Michele Maggiore](#). According to [Kip Thorne](#), the alleged GW150914 was “by far the most powerful explosion humans have ever detected except for the big bang”, yet the “explosion” went off *totally* silent, simply because “a *vacuum* BBH merger does not produce any EM or particle emission whatsoever”.^[11] Also, the same “most powerful explosion” was “detected” with a special GW pattern that was **absolutely not** altered due to [non-linear interactions](#) of strong GWs (MTW p. 968) with matter and fields in the cosmos for well over *one billion years* (although it should be *many more* years, [Bernard Schutz](#)), before being “detected” by LIGO on [14 September 2015](#). This is an insult to our intelligence, to say the

least. By the [end of 2023](#), there will be an *enormous* scandal about the [fake GW150914](#) made with LIGO's "[blind injections](#)" à la [GW100916](#). Kip Thorne and his [1500+ collaborators](#) may not suppress the [facts](#) indefinitely.

It is simply *impossible* to convert "gravitons"^[18] ([Sec. 3](#)) into the gamma-ray burst that "lasted for a whopping *ninety* seconds" on [17 August 2017](#).

How many honest physicists are ready to shout out 'the [Emperor](#) is naked'?

10. LIGO Scientific collaboration and Virgo Collaboration, GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2, [arXiv:1706.01812v2 \[gr-qc\]](#), 23 Oct 2018.

11. Kip S. Thorne *et al.*, Localization and broadband follow-up of the gravitational-wave transient GW150914, [arXiv:1602.08492v4 \[astro-ph.HE\]](#), 21 Jul 2016.

12. [Kip Thorne](#), *Gravitational Waves and Experimental Tests of General Relativity*, version [1227.1.K.pdf](#), 7 September 2012, pp. 31-32.

13. Robert M. Wald, *Space, Time, and Gravity*, University of Chicago Press, 1992, [p. 120](#).

14. Piotr T. Chrusciel, *Lectures on Energy in General Relativity*, 22 February 2013, p. 3. Available online at [this http ULR](#).

15. D. Chakalov, *Platonic World: The Force of Life, Time and Gravity*, 31 May 2023, pp. 6-9, pp. 25-27, pp. 35-38. Available online at [this http ULR](#).

16. Hermann Weyl, How Far Can One Get With a Linear Field Theory of Gravitation in Flat Space-Time? *Am. J. Math.* **66** (1944) 591. To quote Hermann Weyl (emphasis and links added by me - D.C.): "At its present stage our theory (*L*) accounts for the force which an electromagnetic field exerts upon matter, but the gravitational field remains a *powerless shadow*. From the standpoint of Einstein's theory this is as it should be, because the gravitational force arises only when one continues the approximation [beyond the linear stage](#). We pointed out above that no remedy for this defect may be found in a gauge invariant [gravitational energy-momentum tensor](#)."

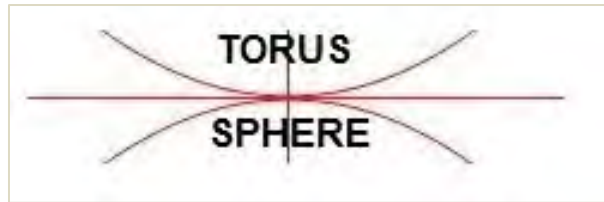
17. The talebans at arXiv.org deleted [this article](#) on [GW parapsychology](#), exactly as they did on 18 July 2005.^[8] Back then, I was hoping to prevent the [LISA Pathfinder](#) disaster of European Space Agency (ESA), which later wasted [430 million euros](#) — the “key technologies required to detect and study gravitational waves in space” ([Karsten Danzmann](#)) were *not at all* relevant to the idiotic “[polarization angle](#)”. This is a **fact**. Ten years later, on 27 May 2015, Jose Pereira wrote on [p. 8](#) in his ‘Gravitational waves: a foundational review’, [arXiv:1305.0777v3 \[gr-qc\]](#): “gravitational wave must be nonlinear to transport its own source, otherwise it is not a gravitational wave. *This is not a matter of approximation, but a conceptual question.*” The talebans at LIGO^[2] ignored Jose Pereira as well. They are just [Russians](#).

18. Leszek Sokolowski, Andrzej Staruszkiewicz, On the issue of gravitons, [arXiv:gr-qc/0606111v2](#), 6 Oct 2006. Quote from p. 6: “Particles interacting with other particles individually and not as collective systems, e.g. a neutrino coming from the space is captured by an individual nucleon in one atom in the Earth rather than by the entire planet. On the contrary, both emission and absorption of gravitons by a body is a kind of collective process (perhaps like the [quasi-local holomovement of fish?](#) – D.C.) arising due to the ([EPR-like?](#) – D.C.) correlation between all particles of the body.”

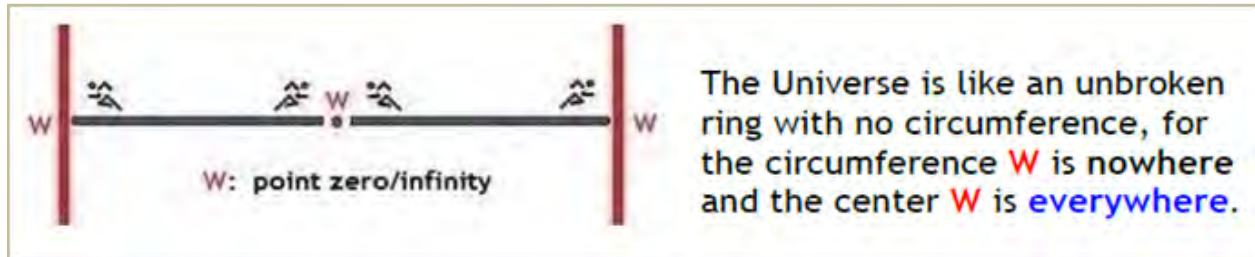
19. Chiu-Chu Melissa Liu, Shing-Tung Yau, Positivity of Quasilocal Mass, [arXiv:gr-qc/0303019v2](#), 19 Jun 2003. Quote from p. 231102-1: “When we evolve the data according to Einstein equations, we need local control (as well as [global control](#) on the entire [time-orientable](#) spacetime – D.C.) of energy to see how the space (and the crucial [rate of time](#) – D.C.) changes. The positivity of quasilocal mass is essential for such an investigation.”

Note: In my opinion, the positivity of [quasilocal mass](#) is a [big can of worms](#), firstly because [time-orientability](#) of spacetime is introduced just ‘[by hand](#)’. We have to uncover a new dynamical phenomenon in the [arrow of Time](#), which **re**-creates [asymptotically flat 4D spacetime](#) at every ‘[here and now](#)’.

But it is unclear how to derive asymptotically flat spacetime at some *limit* of the dynamical, tug-of-war [positive & negative](#) global [curvature](#), namely, at the [inflection point](#) “around” asymptotically flat 4D spacetime pictured with the orthogonal flat lines below (p. 9 and pp. 12-14 in [The Fifth Force](#)):



The dynamics of spacetime topology is expected to reveal a new *Weltbild*:



Read *Platonic World*,^[15] pp. 2-3 and p. 7 in [FI.pdf](#), and p. 6 in [Force.pdf](#).

To slightly paraphrase Arthur Conan Doyle, when you have eliminated the [impossible](#), whatever remains, however improbable, *should* be the truth.

Back to the main issue ([Sec. 5](#)): unlike the electromagnetic (EM) radiation, which does *not* carry its source (electrically charged particles undergoing [acceleration](#)), the [non-linear](#) gravitational radiation (forget [the fake GWs](#)) *always* transports its source: not the classical “timber” in Einstein’s field equations (p. 9 in [text.pdf](#)) but the gravitational dipole in [quantum gravity](#):



Here the [gravitalized](#) (not “[gravitational](#)”) energy is always (+) positive. It is [dynamically balanced](#) (not “conserved” by $T^{ab}_{;b} = 0$) and propagates by gravitational quasi-local holomovement^[18] resembling a [school of fish](#).^[15] In my opinion, the [positivity](#) of quasi-local mass^[19] is the cornerstone of [gravitational radiation](#). It is an immensely powerful phenomenon bundled with [gravitational rotation](#), which could be exploited to produce [electricity](#).

Forget [the fake GWs](#) ([Cliff Will](#)). Who will shout out ‘the [Emperor](#) is naked’?

D. Chakalov

25 August 2023, 04:28 GMT

[Winners don't quit and quitters don't win.](#)

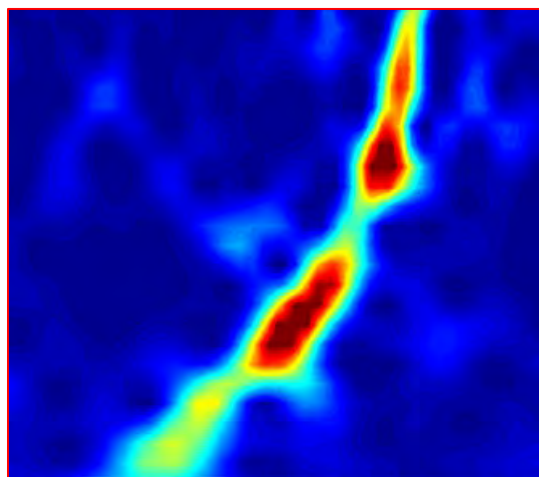
Questions and Answers

Q1. Do you have an alternative to Einstein's GR?

A1. Quantum gravity (p. 5). Read Ch. 4 and pp. 19-20, and pp. 35-38 in my book.^[15] I believe only the first off idea in GR is correct: there is no pre-existing 4D background spacetime in Nature. To quote Antonio Machado: "Traveler, there is no path. The path is made by walking." What we call 'spacetime' is a dynamical object **re**-created by 'walking' the *consecutive action* ($P \rightarrow Q$) of gravity interacting with the rest of the physical world, thanks to which all gravitating systems become *self-interacting* (p. 16 in *Platonic World*^[15]), and their space*time* becomes *distorted*. Those who disagree are kindly invited to explain the *Earth and ocean tides* at p. 6.

But quantum gravity^[15] requires a lot of work to understand, and since the theory is falsifiable, I offered a simple way to *refute* it by proving any of the facts in *this article* false. Read also my note to Cliff Will's *article*.

It is like claiming that it never rains on Wednesdays — you don't have to read the whole theory^[15] but only to show at least one rainy Wednesday. Please do not hesitate (p. 6). For if you cannot find *any* error in *this article*, rest assured that very soon there will be an *enormous* scandal about the **fake** GW150914 made with LIGO's "*blind injections*" à la GW100916. Kip Thorne and his 1500+ *collaborators* cannot suppress the *facts* indefinitely.



Fact: This "*blind injection*" was called GW100916, a fake simulated signal inserted secretly into the data streams of the detectors by LIGO "experts". Are we stupid enough to trust the next "blind injection" called GW150914? What if on 17 August 2017 LIGO has *accidentally* detected the gravitational radiation (not **fake** GWs) propagating in *longitudinal* and *transverse modes*?

Again, the gravitational radiation (not **fake GWs**) propagates in *longitudinal* direction as well: recall the immense gravitational force from the Moon (and to lesser extent from the Sun) producing **Earth and ocean tides** (p. 6).

Thus, gravity does carry energy, but energy of *what*? Hermann Bondi^[5] was conspicuously silent on the puzzle of converting the "*intangible*" energy to the "tangible" energy, and **back to the "*intangible*" energy**. His colleague "Mr. Smith" suggested only a thought experiment in March 1957, known as the '**sticky bead argument**', at the *Conference on the Role of Gravitation in Physics* (University of North Carolina, Chapel Hill): "I think it is easy to see that if gravitational waves can be created they can carry energy and can do work. (...) Hence it rubs the stick, and generates heat. (...) In view therefore of the detailed analysis showing that gravity waves can generate heat (and therefore carry energy). I conclude also that these waves can be generated and are in every respect real." Later he elaborated (**Wikipedia**): "It is simply two beads sliding freely (but with a small amount of friction) on a rigid rod. As the wave passes over the rod, **atomic forces** (link added - D.C.) hold the length of the rod fixed, but the proper distance between the two beads oscillates. Thus, the beads rub against the rod, dissipating heat."

But the mechanism by which the "*intangible*" energy^[5] interacts with the tangible **atomic forces** is unknown. We need quantum gravity (p. 5).

In December 1922, **Arthur Stanley Eddington** stressed that GWs are just ripples in coordinates, "merely sinuosities in the co-ordinate-system". It is totally unclear how these 'ripples in coordinates' at the length scale of tables and chairs could *interact* with **atomic forces**. For example, Robert Wald^[13] suggested that "the ripples in the space-time curvature will *induce* (emphasis mine - D.C.) stresses in the matter", but failed to explain them.

Again, we need quantum gravity^[15] to understand the *gravitalized* (**Sec. 4**) **energy from gravity** (Hans Ohanian^[2]) and the **gravitational rotation**. More from Richard Feynman (*Character Of Physical Law*, MIT Press, 1967, p. 8):

"The next question was — what makes planets go around the sun? At the time of Kepler some people answered this problem by saying that there were angels behind them beating their wings and pushing the planets around an orbit. As you will see, the answer is not very far from the truth.

The only difference is that the angels sit in a different direction and their wings push inward."

We have to start *ab ovo*. On 24 August 1920, [Arthur Eddington](#) called the genuine gravitational radiation *ether waves*: "for though ether waves are not usually classed as material, they have the chief mechanical properties of matter—viz., mass and momentum".

Oct. 1920.] *Internal Constitution of the Stars.* 345

interior of a star are far more cogent. Secondly, the outflowing stream of ethereal energy is powerful enough to exert a *direct mechanical effect* on the equilibrium of a star. It is as though a strong wind were rushing outwards. In fact, we may fairly say that the stream of radiant energy is a wind; for though ether waves are not usually classed as material, they have the chief mechanical properties of matter—viz., mass and momentum.

And on 5 May 1920, Albert Einstein gave a speech at the University of Leiden, entitled [Ether and the Theory of Relativity](#) (link added - D.C.):

Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to the general theory of relativity, space without ether is **unthinkable**; for in such space there not only would be no propagation of light, but also no possibility of existence for [standards of space and time](#) (measuring-rods and clocks), nor therefore any spacetime intervals in the physical sense.

But this ether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked through time. The idea of motion may not be applied to it.

I believe *faute de mieux* that Einstein's *ether* and Eddington's *ether waves* pertain to the *intangible*^[5] [quantum-gravitational vacuum](#) (p. 5 and Sec. 5), because the current theory of gravity^[6] resembles the old Tanzanian saying:

How do we know that Father Christmas has a beard? We know it, because [snow falls](#) when he shakes his beard.

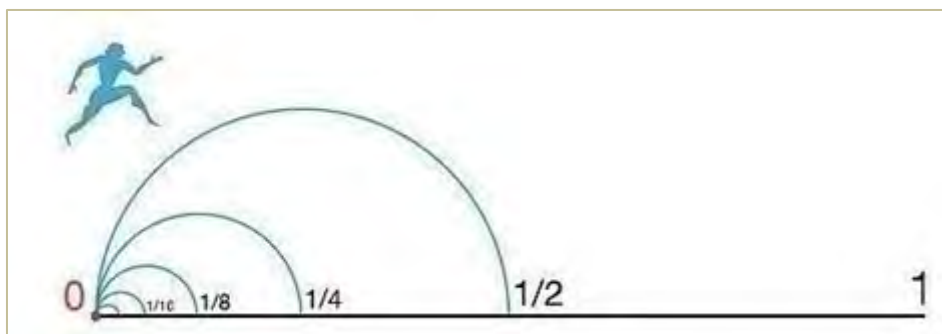
The only feedback to my project came in 2012 from [Maurice de Gosson](#): "Buzz off, idiot!" (Mon, 21 May 2012 18:47:46 +0200). Any other ideas?

Q2. I don't understand your Note on [p. 10](#) and the sphere-torus drawing.

A2. It shows the perpetual *dynamics* of spacetime topology, driven by the [arrow of Time](#), thanks to which we enjoy [relativistic causality](#). The arrow of Time ([p. 12](#)) is the origin of both [gravitational radiation](#) (not the **fake GWs**) and the invariant, non-relational "speed" of light: read [p. 8](#) and [pp. 25-26](#) in *Platonic World*.^[15] In present-day theory of relativity, the arrow of Time is "[collapsed](#)" ([flattened](#)), and hence we cannot pinpoint the new 'ideal' inflection point depicted in the sphere-torus drawing [above](#). In my opinion, this new *ideal point* (term borrowed from [Geroch-Kronheimer-Penrose](#)) does not belong to 4D spacetime. In November 2020, I tried to contact Ted Newman regarding his [H-space](#), hoping to learn whether he can place the new *ideal point* and the H-space in the [complex Minkowski space](#), but he did not respond (perhaps he was ill, as he went [back home](#) in [March 2021](#)).

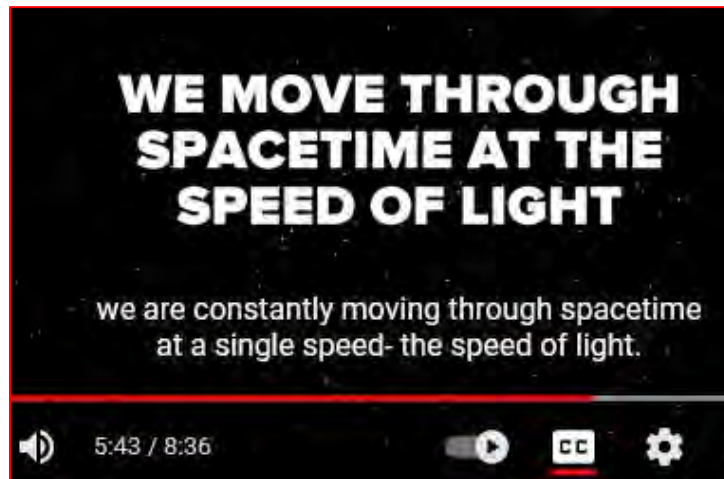
This issue is [very important](#) to the proposed [two modes of spacetime](#) along the [arrow of Time](#). Please read closely [pp. 10-11 above](#) and let me know (i) exactly what you could not understand, and (ii) exactly why. Please be very specific and offer concrete examples on (ii), because I will start from it.

As a warm up, recall the paradox of motion from [Zeno \(Wikipedia\)](#) and read very carefully the explanation at [p. 37](#) in *Platonic World*.^[15]

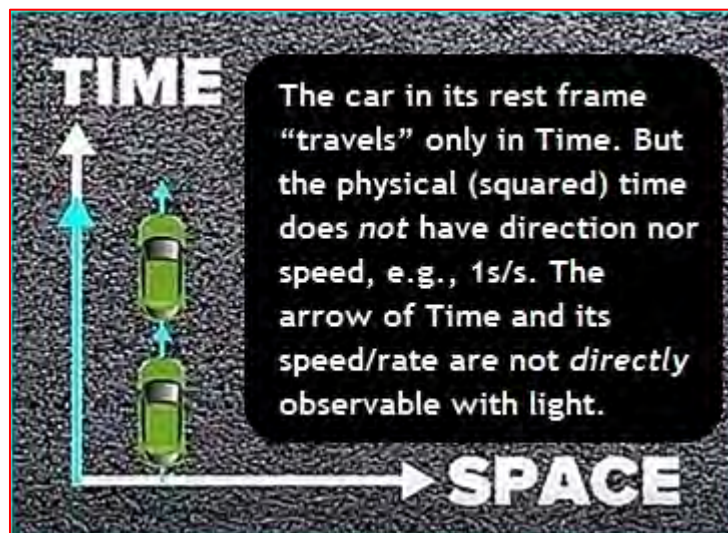


Next question: what is the *maximal* distance from *any* spacetime point to the "edge" of the asymptotically flat 4D spacetime ([p. 11](#))? You can't reach [infinity](#) in the [local mode of spacetime](#) and get back to where you started: read [p. 5](#) in *Platonic World*.^[15] On the other hand, at any spacetime point we are placed at the *ideal point* in the [global mode of spacetime](#) as well, and from there to Cantor's [absolute infinity](#). Thanks to [Finite Infinity](#), we have access to the entire [local mode of spacetime](#), including its asymptotic edges exactly at infinity. There is no need for some "unphysical manifold" ([Roger Penrose](#)) and similar mathematical [shenanigans](#). Sorry if it hurts.

Back to the [arrow of Time](#) (p. 12) and the invariant, non-relational “speed” of light: it is *not* observable with light. If it were, the theory of Relativity will be demolished (p. 17 in [Newton.pdf](#)). There is a misconception about the non-relational “speed” of light, advertised by Don “[Fermilab](#)” Lincoln:



True or false? JAIN (yes and no). The “[collapsed](#)” ([flattened](#)) direction of “moving through spacetime” **does not belong to 4D spacetime**: see the sphere-torus dynamics [above](#). The omnipresent [arrow of Time](#) never stops:



Mathematically, there is no trace of any *asymmetry* in the physical time ‘as read with a clock’, and mathematicians are trying to introduce some *ad hoc* “[smooth timelike vector field](#)”. But the physical (squared) time is a *scalar* quantity like length. As [Robert Geroch](#) boldly proclaimed: “There is no dynamics within spacetime itself: nothing ever moves therein; nothing happens; nothing changes.” We do need new Physics (p. 10) to understand the [arrow of Time](#) and the [nature of light](#). Are you interested (p. 14) ?

Q3. Can you explain in simple terms why you criticize [GW150914](#)?

A3. Let me start with a simple analogy: the color of my hair. It is already white, but you won't say that the color of my hair was the *cause* of getting old — white hair is just a common *property* of old people (I'm over 70).

Replace hair's color with particular *property* of "[curved spacetime](#)" in GR ([Q1/A1](#)), quantified with the Christoffel symbols (see *affine connections* in [Wolfram](#)). Obviously, the [Christoffel symbols](#) are not the *cause* of gravity. It will make no sense to claim they rotate the Earth *and* pull up rocks ([p. 6](#)).

The *cause* of gravity is still a mystery ([p. 5](#)): read Albert Einstein at [Sec. 1](#). The unequable *rate* of time ([Bill Unruh](#)) — the hallmark of gravity — is used to correct [GPS navigation](#), but the *property* of time flowing unequally from [place to place](#) cannot be mapped to the fact that an apple can fall from a tree and hit your head, as observed (allegedly) by [Newton](#). Then comes the puzzle of inertia ([Dennis Sciama](#)): how spacetime applies "brakes" to every accelerating body with the rule "mass *there* governs spacetime geometry *here*" ([John Wheeler](#))? Physicists rarely acknowledge that the inertial forces are instantaneous: there are no '[inertial waves](#)' propagating in the cosmos.

We face two animals in '[the room](#)': an elephant (gravitational mass) and a gorilla ([inertial mass](#)), which are totally different, yet they happen to have, to [very high precision](#), equal values. The 'elephant' is [always present](#), but the 'gorilla' shows up (i) *only* upon acceleration, and (ii) *instantaneously*. [Total mystery](#). What we know for sure is that once we include gravity, the total energy *cannot* be conserved: read [NB](#) at [p. 6](#). We have to start from scratch ([pp. 13-14](#)), as soon as possible: read [p. 38](#) in [Platonic World](#).^[15]

Again, the detection of short gamma-ray burst on 17 August 2017 ([p. 3](#)) is yet another example of the unknown *cause* of gravity. Forget the [fake GWs](#).

Kip Thorne and his [1500+ collaborators](#) need quantum gravity^[18] to explain how the 'ripples in coordinates' *interact* with atomic forces at " 10^{-21} m", from the length scale of tables and chairs to that of galaxy NGC 4993 ([p. 3](#)).

Now to your question: why criticize [GW150914](#)? There are [tons of reasons](#), but I trust you can easily restore the professional reputation of [Kip Thorne](#) by creating "gravitons" ([p. 4](#)), and qualify for your [Nobel Prize](#). Good luck.

To summarize, here are the main problems with the so-called [GW150914](#), which Kip Thorne and LIGO “scientific” collaboration (LSC) claim to be the first direct detection of gravitational waves (GWs) and first observation of a binary black hole merger, recorded on 14 September 2015 at 09:50:45 UTC ([arXiv:1602.03837](#)). It was a **Big Dumb Dirty Lie**: p. 9 in ‘[Modified Gravity](#)’.

1. Kip Thorne and LSC do not have a theory of non-linear GWs ([MTW p. 968](#)) at the immediate vicinity of the alleged binary black hole (BBH) merger, which is critically needed to derive the limit to the *sufficiently* weak GWs detectable by LIGO (Michele Maggiore, ^[9] [p. 32](#)). They ignored the research by [Marin Walker](#) and declared their weak GW “limit” with [wishful thinking](#).

Corollary: Kip Thorne and LSC assume that the GW pattern of [GW150914](#) was **absolutely not** altered due to [non-linear interactions](#) of strong GWs with matter and fields for over *one billion years*, before being “detected” by LIGO on [14 September 2015](#). Otherwise they could not use LIGO.

2. Kip Thorne and LSC suggest a unique “[polarization angle](#)” of GWs ([p. 3](#)), which needs new spacetime topology. Otherwise they could not use LIGO.

3. Kip Thorne and LSC ignore the inevitable mixture of the six possible^[7] “polarization modes” ([Clifford Will](#)). Otherwise they could not use LIGO.

4. Kip Thorne and LSC suggest “gravitons” ([p. 4](#)), yet failed to explain how gravitons live in the quantum vacuum, and deliver their quantum gravity.^[18] But they absolutely need “[gravitons](#)”, otherwise LIGO will be useless junk.

5. Kip Thorne and LSC declare that “objects moving in an orbit would lose energy for this reason (a consequence of the law of conservation of energy), as some energy would be given off as gravitational waves”^[4], in sharp contradiction with the law of energy **nonconservation** in GR ([p. 6](#)).

6. Kip Thorne and LSC made a grave conceptual error by suggesting a **fake linear** GW. It is an oxymoron: “a gravitational wave must be nonlinear to transport its own source, otherwise it is not a gravitational wave” ([p. 10](#)).

These are the first off facts of GW parapsychology. The full list is [longer](#).

By the [end of 2023](#), I expect to read the reviews of (1)-(6) by [experts in GR](#), published at arXiv.org and submitted to peer-reviewed academic journals.

Also, I am ready to offer additional facts and references from March 2009 about my proposal to convert LIGO's tunnels to [wine cellars](#). What else?

Q4. What do you mean by "[gravitational radiation](#)"?

A4. The genuine gravitational radiation ([p. 11](#)) is impossible in current GR ([Sec. 1](#)). Quote from Angelo Loinger, On Gravitational Motions, 24 Apr 2008, [arXiv:0804.3991v1](#), p. 9 (comment and links added - D.C.):

"Consider the general concept of wave (without any adjective). There exist waves that are undulatory perturbations of material media (as air, water, etc.; formerly, [cosmic ether](#)), and waves that are undulatory perturbations of fields in vacuo with respect to an infinite class of physically privileged reference frames, as the [Lorentzian frames of special relativity](#). (...) Now, in the exact (read again [Sec. 1](#) - D.C.) formulation of GR the metric tensor g_{jk} *is* the spacetime; thus, an undulatory g_{jk} lacks of any spatio-temporal substrate through which it can be propagated." [Forget the fake GWs](#).

Thus, the "substrate" through which the *gravitational radiation* [propagates](#) is not the dead frozen spacetime in GR textbooks ([Robert Geroch](#)). We need new physics ([p. 10](#)) to understand the [arrow of Time](#). If you are interested, watch [Paul Steinhardt](#) and click the drawing below to read the explanation.

4 apples: $T^{ab}{}_{;b} = 0$	5 apples: $T^{ab}{}_{;b} = 0$	2 apples: $T^{ab}{}_{;b} = 0$.
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Read Sean Carroll ([Feb 22, 2010](#)): "in general relativity spacetime can give energy to matter, or absorb it from matter, so that the total energy simply isn't conserved." Why? Because the spacetime itself is [evolving](#). Simple, no?

Read also the explanatory note on p. 6 in [rule.pdf](#), [QM_rule.jpg](#), and the details at p. 9 in my book.^[15] Let me know (i) exactly what you could not understand about the *gravitational radiation*, and (ii) [why](#). Please be very specific and offer concrete examples on (ii), because I will start from it.

About Angelo Loinger (1 April 1923 - 21 December 2020): we had many discussions by email from 1997 to 2018. Pity I couldn't convince him that the *gravitational radiation* (forget the [fake GWs](#)) is a [holistic phenomenon](#), resembling the [holomovement of fish](#) due to [EPR-like correlations](#) of its 4D *gravitalized* ([Sec. 4](#)) "fish" or "[apples](#)" — the *gravitalized* "[eigenstates](#)" of quantum gravity ([Q1/A1](#)). We need quantum gravity ([p. 5](#) and [p. 11](#)), not the [essentially incomplete](#) GR ([Sec. 1](#)). Am I talking to a brick wall ([p. 14](#))?

I want to be perfectly clear about the purpose of this article (title at [p. 1](#)).

My article from 17 July 2005^[8] was deleted by the moderators at arXiv.org without any explanation.^[17] Eighteen years later (Sic!), Kip Thorne and his [1500+ collaborators](#) are still suppressing the indisputable bold facts about [GW parapsychology](#). But nobody can argue against facts.

By the end of 2023, there will be an *enormous* gigantic scandal about the [fake GW150914](#) made with LIGO's "[blind injections](#)" à la [GW100916](#). Kip Thorne and his LIGO collaborators can reanimate their "project" only by addressing the objections (1)-(6) at [p. 18](#) and prove *all* six objections false. All of them, *en bloc*. I trust they possess self-respect and dignity, and will demonstrate their intellectual honesty. [The sooner the better](#). As of today, despite receiving my email from [June 15th](#), they still play [Sergeant Schultz](#): "I see nothing! I hear nothing! I know nothing!"

Moreover, there is another issue mentioned at [p. 3](#): what if on [17 August 2017](#) LIGO has *accidentally* (recall [Nancy](#)) detected the true gravitational radiation (not [fake GWs](#)) propagating in [longitudinal and transverse](#) modes? It cannot be ruled out that the "advanced" LIGO might detect yet another gamma-ray burst (GRB) during their next "run" (O4) starting in [March 2024](#). Kip Thorne and his [collaborators](#) will be [fascinated](#). But then they will have to either use their [GW parapsychology](#), or get professional. How is gravity associated or coupled to EM radiation? The first effort to explain the puzzle was made by Gunnar Nordström in [1914](#), and was completely unsuccessful. In GR, you can't entangle the "marble" with its "timber" (p. 9 in [text.pdf](#)).

You need quantum gravity from the genuine gravitational radiation ([p. 11](#)) exhibited in the arrow of Time ([Slide 1](#)). But what is [the force of Time](#)? You cannot find it in GR textbooks ([p. 19](#)): there is no *physical* stuff endowed with "[dark energy](#)", which could supply the entire physical 4D universe with some *unidirectional* force *en bloc*, resembling a burning detonating cord.



There is no physical “pool” of energy-momentum and angular momentum, which is reserved *exclusively* for gravity, so that gravity can ‘act back’ on its physical source in the right-hand side at Einstein’s field equations.

As [Zhaoyan Wu](#) stressed on [28 July 2023](#), “the metric field g contains all geometric information of the spacetime. (...) The name we call metric field of spacetime “gravitational field” sounds as if it’s a force field, not non-material. But spacetime metric field does not exchange energy-momentum with matter particles and matter fields. We say it does not carry energy-momentum. In physics, force or interaction always means exchange of energy-momentum. The so-called gravitational field (actually the metric field of spacetime) is not a force field, and gravity is not a natural force.”

Yes, we can make gravity a natural force, but only with the Fifth Force along the arrow of Time (p. 7 in [waves.pdf](#)): read again p. 11 [above](#). Thus, gravity is neither some unphysical “ghost” that “does not exchange energy-momentum with matter particles and matter fields” ([Zhaoyan Wu](#)) and yet can nevertheless ‘act back’ on matter, nor some mundane physical field that “burns” like the detonating cord [above](#). Have your cake and eat it. 😊

We face the same non-trivial situation with the physics of the [human brain](#): yes, the unphysical [human mind](#) can influence its brain, but the “mediator” interacting with the [human brain](#) is neither paranormal “ghost” nor some mundane physical field — read Erwin Schrödinger at p. 11 in [waves.pdf](#). In both cases, the underlying phenomenon is the dynamics of spacetime *itself*: read pp. 5-8 in [waves.pdf](#) and p. 19 [above](#). This is the [Fifth Force](#) in action.

We can see (with light) only an animated [school](#) of [self-acting](#) ‘4D gloves’ — not with Bondi’s “[intangible energy](#)” but with *gravitalized* energy (p. 5) of the *physicalized* manifestations of the arrow of Time (p. 7 in [waves.pdf](#)).

In short, the [Fifth Force](#) is the alternative to “[dark energy](#)”: the mysterious smooth stuff spread evenly across the entire universe, which does not emit nor reflect light, and has “[negative pressure](#)”. Tell it to the Marines. It is an insult to our intelligence, exactly as “the most powerful explosion humans have ever detected except for the big bang” (Nobel Laureate [Kip Thorne](#)).

How many honest physicists are ready to shout out ‘the [Emperor](#) is naked’?

I am fully prepared for the possibility that the [independent experts in GR](#) ([Sec. 1](#)) will also play [Sergeant Schultz](#) and will keep dead silent. They may

refuse to review my objections to GW parapsychology at [p. 18](#), hoping to avoid the *enormous* scandal about the **fake** [GW150914](#). But I know how to make them shout out ‘the [Emperor](#) is naked’, and will certainly do it. I will lose nothing from exposing the **dirty little secrets** of GW parapsychology. Only the “experts” in [GR textbooks](#) and the [crooks at LIGO](#) will lose — a lot. As a bonus, we may find a way to fix the problems of [Einstein’s GR](#), known since its inception ([p. 1](#)), and move to [quantum gravity](#) ([p. 6](#) in [waves.pdf](#)). There is no “[uncertainty](#)” in the Platonic quantum world: God casts the die, not the dice ([Albert Einstein](#)). For details, read NB at [p. 10](#) in [waves.pdf](#).

Q5. Dimi, how can you make physicists shout out “the Emperor is naked”?

A5. It’s all relative. Put yourselves in the shoes of NASA administrators (yes, they know this report [very well](#)). Right now, they have to choose whether to support [Kip Thorne and Barry Barish](#), or the indisputable facts at [p. 18](#). Of course they will support their [buddies](#). Who cares about some facts?

But things change. The future is open to new events, including the *unknown* unknown. Suppose, for the sake of argument, that I offer NASA to study the [propellantless propulsion](#) of the ‘[gimbal](#)’, provided they supported the facts at [p. 18](#) and agreed to trigger the scandal about the **fake** [GW150914](#) made with LIGO’s “[blind injections](#)” à la [GW100916](#): read [p. 20](#). NASA will realize the overwhelming benefits from studying [modified gravity](#) and will tell their GR experts to get professional. Who cares about a bunch of [crooks at LIGO](#)?

Then the ball will start rolling. There will be an [enormous gigantic scandal](#) about the **fake** [GW150914](#), which will be remembered forever. If NASA does not agree for whatever reason, I will have to knock on the next door.

Don’t tell me this is “impossible”, [Stavros](#). The only impossible thing is to put on your jeans through your head. The [Fifth Force](#) can make all things possible (think of creative [non-unitary transitions](#)), and then we can make them happen ([p. 9](#) in [SEM.pdf](#)). Winners [don’t quit](#) and quitters don’t win.

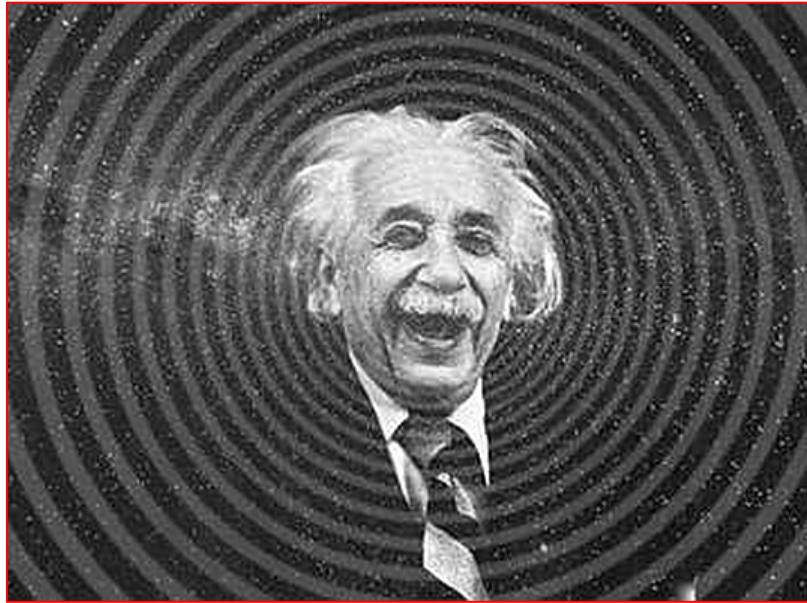
Besides, I always follow ‘the two rules for success’:

Rule #1. Never tell everything you know.

Cite as:

D. Chakalov, Gravitational Wave Parapsychology. 25 August 2023, 22 pages.
<https://chakalov.net/GWP.pdf>

Why would gravitating systems emit “waves”, for God’s sake ?



Unlike in electromagnetism, [Einstein’s GR](#) offers only one physical “charge” called ‘positive mass’. There is no gravitationally-neutral physical system, with respect to which one could measure the properties of the unique “positive charge”. So, [why would gravitating systems emit some “waves”](#)?

For comparison, recall that there is no universal quantum “drum” in the quantum world, which could send quantum waves to all quantum particles. There is no “vibrating” drum with complex phase of quantum waves. What if the origin of gravitational waves resembles the origin of quantum waves?

Look at a centipede and notice the [wave-like holomotion](#) of its legs:



More in *Universal Holomotion: Think Globally, Act Locally* ([waves.pdf](#)). Those interested in topology and diff geometry should consult [canvas.pdf](#).

D. Chakalov

17 October 2023, 19:11 GMT