



Consider a spherical cow ...

GW150914: Are Cows Spherical?

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Abstract

I argue that vacuum spacetime with $T^{ab} = 0$ is highly exaggerated approximation, like the famous 'spherical cow'. If you are a cowboy and wish only to count the number of cows in your herd, you may of course think of them as 'spherical objects'. But imagine the following situation: as you walk in your grassland, you notice that the grass on a loan has been hardly pressed to the ground, as if some heavy object has passed through your grassland. Would you say that some brand new spherical cows have rolled over the grass? That will be just like GW150914, the alleged discovery of gravitational waves and black holes in vacuum spacetime.

Let me offer an excerpt from <http://www.god-does-not-play-dice.net/gravity.txt>:

Subject: GW150914 is a **FRAUD**.

Date: Fri, 17 Jun 2016 05:12:21 +0300

Message-ID: <CAM7EkxmopOWqrOYoiJeJAmi=w9oxadybZHb9HNNainrj7SQa8A@mail.gmail.com>

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Ladies and Gentlemen:

You have severe problem: GW150914 is a FRAUD.

How could it happen? See p. 15 in http://www.god-does-not-play-dice.net/gwa_rip.pdf

You need only one fact: the *prototype* of GW150914 at the immediate vicinity of the alleged binary black hole merger at a galaxy located more than one billion light years from Earth.

This *prototype* of GW150914 did NOT interact with matter and fields for more than one billion years, in order to carry its GW pattern, until it got veeeery weak and was called GW150914. If the *prototype* had interacted with matter and fields, it MUST have changed and you could have never "discovered" GWs and binary BHH merger. Thus, it did NOT interact with anything whatsoever, until it reached LIGO.

Ergo, GW150914 was produced by a ghost. If you don't believe in ghosts, GW150914 was a FRAUD: see p. 15 the link above.

Perhaps only Kip Thorne could have manufactured such "perfect" GW150914: "a *vacuum* BBH merger does not produce any EM or particle emission whatsoever." (LIGO & VIGRO, [arXiv:1602.08492v2](https://arxiv.org/abs/1602.08492v2), p. 9.) Only massive "gravitons" producing "the most powerful explosion humans have

ever detected except for the big bang" (Kip Thorne; reference at my website below).

What a pathetic nonsense. Worst of all, you can say nothing, because you have to praise Emperor's new clothes. Are they also made of massive "gravitons", in line with your groundbreaking theory of quantum gravity?

What a pity you cannot respond...

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The prolegomenon to GW150914 is the grin of the Cheshire cat without the cat, as observed by Alice (Lewis Carroll, Alice's Adventures in Wonderland, 1865, Ch. 6),

http://disney.wikia.com/wiki/Cheshire_Cat

In GW "astronomy", the grin is made of "[gravitons](#)" only, because the Cheshire cat is ... "vacuum". You have only "shape dynamics" in Ricci-flat manifolds:

https://en.wikipedia.org/wiki/Ricci-flat_manifold

"For example, in a Ricci-flat manifold, a circle in Euclidean space may be deformed into an ellipse with equal area. This is due to Weyl curvature."

https://en.wikipedia.org/wiki/Weyl_tensor

"In general relativity, the Weyl curvature is the only part of the curvature that exists in free space -- a solution of the vacuum Einstein equation -- and it governs the propagation of gravitational radiation through regions of space devoid of matter (Sic! - D.C.)."

Hence "a *vacuum* BBH merger does not produce any EM or particle emission whatsoever." (LIGO & VIGRO, [arXiv:1602.08492v3](https://arxiv.org/abs/1602.08492v3), p. 9).

Only "[gravitons](#)", ensuing from the mathematical fact that, due to Weyl curvature, a circle in Euclidean space may be deformed into an ellipse with equal area (see above), which produced "the most powerful explosion humans have ever detected except for the big bang" (Kip Thorne, see [gwa_rip.pdf](#) at the link in my initial email from June 17, 2016 above).

Thus, GW150914 proved, once and for all, that the Universe is just "space devoid of matter" (see above): you can never see the Cheshire cat itself. Only its grin made of "[gravitons](#)". To get your Nobel Prize, all you have to do is to derive "[gravitons](#)" from "shape dynamics" in Ricci-flat manifolds and solve the [cosmological constant problems](#). With lots of math, of course.

Well, I am not GW poet and don't indulge in [stretch 'n squeeze parapsychology](#):

https://en.wikipedia.org/wiki/File:Quadrupol_Wave.gif

Let's get serious. The non-linear GWs do carry energy, momentum, and angular momentum, but they do not have "polarization pattern" (see the .gif above) that would cause the GW detector to "expand" in one direction and at the same time to "contract" in the perpendicular direction, as speculated by [Kip Thorne and collaborators](#):

http://www.god-does-not-play-dice.net/kip_slide_5.jpg

Surely we can use the linearized approximation of GR for adjusting the [GPS Navigation System](#), but there is no way, not even in principle, to record the *dynamics* of energy transfer by GWs within a finite spacetime region, measured with a clock pertaining to the same spacetime region: check out Angelo Loinger,

On Gravitational Motions,
<http://arxiv.org/abs/0804.3991v1>

On the displacements of Einsteinian fields et cetera,
<http://arxiv.org/abs/physics/0506024v2>

In [Kip Thorne's theory](#), his watch reads the time parameter of the two "fields' evolutions $h_+(t)$ & $h_x(t)$ " without a hitch, keeping track on the background, undisturbed Minkowski space as well, like uneven or "disturbed" layer of butter spread over a fixed toast. Needless to say, the butter is made of "[gravitons](#)".

Moreover, in Thorne's theory, you have Cartesian coordinate system, which defines *exact* angles for the two wave strain components, h_+ and h_x . These angles must be kept intact in the *prototype* of GW150914, defined in very strong GWs and for over one billion years. Otherwise you cannot have any "polarization pattern", because the two wave strains will conflate and intermingle. Therefore, GW150914 was caused by some GW ghost: see my email from 17 June 2016 [above](#).

The LIGO-eLISA theory (see [Kip Thorne](#)) *requires* the assumption of so-called weak-field limit. To quote from Matt Visser (Mass for the graviton, [arXiv:gr-qc/9705051v2](http://arxiv.org/abs/gr-qc/9705051v2)): "To precisely specify the weak-field limit we will have to pick a particular background geometry for our non-dynamical metric. The most sensible choice for almost all astrophysical applications is to take g_0 to correspond to a flat space-time (Minkowski space)." And from Daniele Fargion and Pietro Oliva (LIGO-VIRGO GWs events: blurred or sharp astronomy? [arXiv:1603.09639v2](http://arxiv.org/abs/1603.09639v2)): "A LIGO GW connection to GRB? From above there are many reasons to foresee a fast e.m. transient associated to these LIGO-VIRGO astronomy. However as we have mentioned the BH BH merging in vacuum is a source only (or mostly) of silent EM GWs with no EM tail."

But with the so-called weak-field limit it is impossible to even imagine "gravitational waves emitted by realistic astrophysical sources", as acknowledged by Michelle Maggiore:

http://www.god-does-not-play-dice.net/Maggiore_p32.jpg

Therefore, LIGO & VIRGO "experts" have no clue whatsoever about the *prototype* of GW150914, nor about the "mass" (if any) of "[gravitons](#)" (if any). More from: Freeman Dyson, Is A Graviton Detectable? IAMP News Bulletin, January 2014, pp. 8-21,

<http://www.iamp.org/bulletins/old-bulletins/201401.pdf>

In Bondi's theory (Paper VII, p. 23 and Sec. 5, pp. 43-47), GWs do not have any "polarization pattern". Check out a general discussion in

Sir Hermann Bondi, Gravitational waves in general relativity,
Current Contents 30, 16 (23 July 1990),
<http://www.garfield.library.upenn.edu/classics1990/A1990DN22600001.pdf>

The "news" of gravitational radiation (cf. Fig. 1, p. 3 in [gwa_rip.pdf](#)) cannot be detected with LIGO, VIRGO, GEO, TAMA, KAGRA, IndIGO (LIGO-India), TianQin, eLISA, Einstein Telescope, and the like:

<http://www.god-does-not-play-dice.net/Jose.jpg>
<http://www.god-does-not-play-dice.net/Schutz.pdf>
<http://www.god-does-not-play-dice.net/Ruffini.jpg>

<http://www.god-does-not-play-dice.net/excerpt.jpg>

We all, GW poets included, know that vacuum spacetime with $T^{ab} = 0$ is highly exaggerated approximation, like the famous 'spherical cow',

https://en.wikipedia.org/wiki/Spherical_cow

If you are a cowboy and wish only to count the number of cows in your herd, you may of course think of them as 'spherical objects'. But imagine the following situation: as you walk in your grassland, you see that the grass on a loan has been hardly pressed to the ground, as if some heavy object has passed through your grassland.

Would you say that some brand new and very heavy spherical cows have rolled over the grass? That will be just like [GW150914](#). Again, the 'spherical cow' vacuum cannot do **work** on matter (no "[pseudotensors](#)"). It is *not* legitimate approximation, like, say, the [Schrödinger equation](#).

The situation can be illustrated with the quiz below:

Q: What is green, lives underground, has one eye, and eats stones?

A: The One-Eyed Green Underground Stone Eating Monster!

Get real. Stones do not disappear. Cows are not spherical. [Gravitons](#) do not exist -- you cannot define the energy density of the vacuum with any "gravitons":

http://www.god-does-not-play-dice.net/the_worst.jpg

LISA Pathfinder -- it wasted over 400 million EUR of taxpayers' money -- will not detect any hint of GW by the end of its mission in September 2016. The "evolved" LISA (eLISA) will fail to detect any GW either.

Why? Because non-linear GWs do not have any "polarization pattern". To understand spin-0 gravitational radiation, see the 'school of fish' analogy from [24 May 2016 below](#) -- the GW detector must have the faculty of self-acting, like the [human brain](#).

To sum up, the two fake results from [GW150914](#) are based on (i) the weak-field limit (see Hermann Weyl, ref. [3] in [gwa_rip.pdf](#)) and (ii) the [vacuum solution in GR](#). The proponents of GW astronomy know nothing about the actual astrophysical sources of GWs ([M. Maggiore](#)), such as the *prototype* of [GW150914](#) at the vicinity of some hypothetical binary black hole (BHH) merger, and they "derived" their "weak-field" approximation by sheer imagination and wishful thinking, which made the *prototype* of [GW150914](#) some [GW ghost](#) or Biblical "miracle", whichever comes first. We do **not** accept GW parapsychology. The second fake result is encoded in the title of this note: the Universe does not live in GR vacuum. The alleged "explanation" of [GW150914](#) that "a *vacuum* BBH merger does not produce any EM or particle emission whatsoever" (LIGO & VIRGO, [arXiv:1602.08492v3, p. 9](#)) **requires** that the Universe contains no matter and *actually* lives in [GR vacuum](#), contrary to [Lambda-CDM cosmology](#). This is their **third** absurd "discovery": cows are not spherical. If they insist on their 'spherical cow' discovery of "[gravitons](#)", their first off task is to explain the energy density of the vacuum (see [above](#)).

When will LIGO discover GWs from binary neutron stars (NSs) or mixed BH/NS system, with unavoidable [GRBs](#)? Or "[primordial](#)" GWs with ([dimensionless](#)) amplitude proportional to the [energy scale of inflation](#)?

[When pigs fly.](#)

D. Chakalov

June 17, 2016

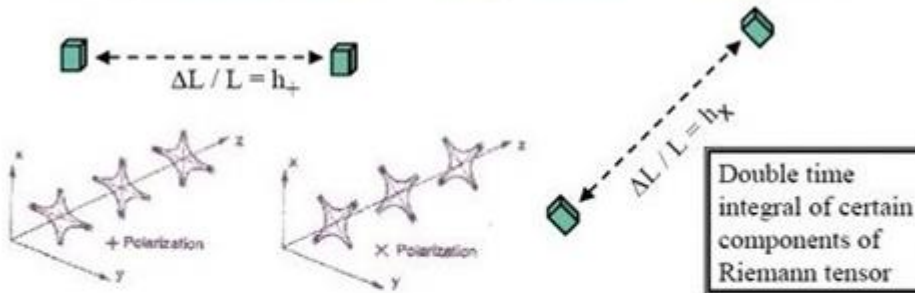
Last updated: July 1, 2016, 12:25 GMT

Addendum

[Two slides](#) from [Caltech's Physics 237-2002](#) by Kip Thorne. To quote from [Wikipedia](#), "Thorne's work has dealt with the prediction of gravitational wave strengths and their temporal signatures as observed on Earth. These "signatures" are of great relevance to LIGO (Laser Interferometer Gravitational Wave Observatory). (...) A significant aspect of his research is developing the mathematics necessary to analyze these objects.[7]" Which makes Kip Thorne one of the main suspects for manufacturing the fake "signature" dubbed GW150914: see p. 15 in [gwa_rip.pdf](#).

Physical Nature of Gravitational Waves - 4

- Each polarization has its own gravitational-wave field



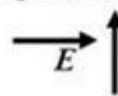
- These fields' evolutions $h_+(t)$ & $h_x(t)$ are the *waveforms*



(According to Kip Thorne, the amplitude of GWs along +/- h_+ and +/- h_x is "something that is dimensionless" - D.C.)

Physical Nature of Gravitational Waves - 3

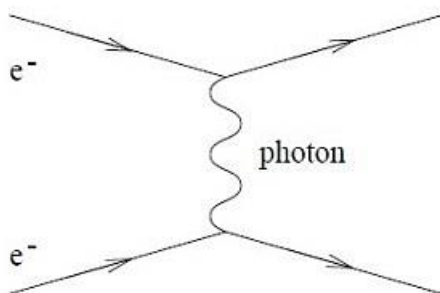
- Stretch and squeeze are:
 - *transverse* to direction of propagation
 - Equal and opposite along orthogonal axes (*trace-free*)
 - Force pattern invariant under 180° rotation
 - Contrast with EM waves: invariant under 360° rot'n
- (Spin of quantum) = (360 degrees) / (invariance angle) = 1 for photon, 2 for graviton
 - Irreducible representation of Little Subgroup of Lorentz grp
- Two polarizations: axes rotated 90° EM
 - 45° GW plus cross



To understand what is "graviton", check out [Wikipedia](#) and Sean Carroll's *Lecture Notes on General Relativity*, [arXiv:gr-qc/9712019v1](#), pp. 112-113 (emphasis mine):

The nonlinearity of general relativity is worth remarking on. In Newtonian gravity the potential due to two point masses is simply the sum of the potentials for each mass, but clearly this does not carry over to general relativity (outside the weak-field limit). There is a physical reason for this, namely that in GR the gravitational field **couples to itself**.

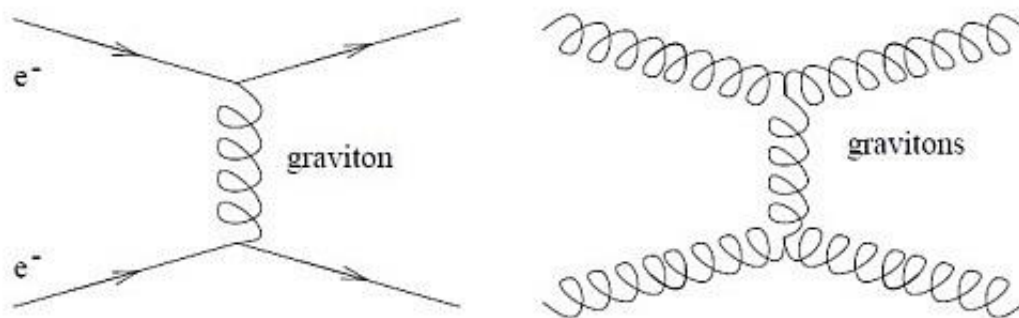
The electromagnetic interaction between two electrons can be thought of as due to exchange of a virtual photon:



But there is no diagram in which two photons exchange another photon between themselves; electromagnetism is **linear**.

The gravitational interaction, meanwhile, can be thought of as due to exchange of a **virtual graviton** (a quantized perturbation of the metric).

The nonlinearity manifests itself as the fact that both electrons and gravitons (and anything else) can exchange **virtual gravitons**, and therefore exert a gravitational **force**:



I will refrain from commenting on this "gravitational force". To quote [Freeman Dyson](#), "In the LIGO experiment, if it is successful, we shall detect a classical gravitational wave, not an individual quantum of gravity. A classical wave may be considered to be a coherent superposition of a large number of gravitons. (...) We have examined three possible kinds of graviton detector with increasingly uncertain results. First, the LIGO detector for low-energy gravitons, which we prove ineffective as a consequence of the laws of physics. (...) In addition to these three kinds of detector, there is a fourth kind which actually exists, the Planck space telescope, detecting polarization of the microwave background radiation. According to Alan Guth [13], the polarization of the background radiation in an inflationary universe could provide direct evidence of the existence of single gravitons in the primordial universe before inflation."

D.C.
June 25, 2016