

## Modified Gravity: A Research Proposal

I have a research proposal of [modified gravity](#) with [confirmed](#) experimental predictions, which I will deliver immediately after I see the reviews (plural) of my report on the mythical "[gravitational waves](#)", hopefully by the end of 2023: read [pp. 18-20](#) in 'Gravitational Wave Parapsychology' ([GWP.pdf](#)). All reviews of [GW parapsychology](#) by prominent experts in GR should be posted first at arXiv.org and submitted to publication in peer-reviewed academic journals prior to the next run (04) of LIGO, which will begin in [March 2024](#).

Thus, we will have, in chronological order, my report on GWP above, the reviews of "[gravitational waves](#)" by many experts in GR, and the reported observations (if any) of "gravitational waves" ([if any](#)) by [LIGO community](#).

My theory of attractive/repulsive gravity was mentioned at my [website](#) and explained in Ch. 4, pp. 14-16 in *Platonic World* ([book.pdf](#)). My [experimental results](#) from 2022 were not published, because they were not recorded and verified by independent researches at a modern technical laboratory in EU (I contacted 13 technical labs in 8 European countries in [January 2022](#)), so here I can use as examples of modified gravity only demonstrations posted on social media, e.g., those by [Steve Freyne](#) and [Wang Yifeng](#) (see below).



Chinese "magic", [vimeo.com/734682937](https://vimeo.com/734682937)

Rest assured that modified gravity is a fact. My experimental results will be available [immediately](#) after I see the reviews of [GWP](#), notably [pp. 18-20](#).

To give you a glimpse at what you can expect, let me mention the "secret" of gravity: the *rate* of time. As [William Unruh](#) stressed in 1993, "gravity *is* the unequal flow of time from place to place". What he failed to explain

in the past 30 years is why the *rate* of time cannot be rigorously formulated in the theory of relativity: there is no sense to talk about the *rate* of time as 'one second per second', for example. We only know as an empirical fact that the *rate* of time is slower on Earth relative to [GPS satellites](#) (p. 17 in [GWP](#)). But what if the *rate of Time* creates [gravitational rotation](#) as well?

Everything said above is relevant to attractive gravity. As an illustration, suppose you throw up a stone in the air: at some moment it will stop and then will go down in a '[free fall](#)' driven only by the attractive gravity of GR.

But imagine that, at the instant the stone is at rest in the air, it suddenly begins to accelerate up, faster and faster, driven only by the "[dark energy](#)" of [nobody-knows-what](#). That will be repulsive gravity. We don't know what change – if any – can happen to the *rate* of time in [repulsive gravity](#).

But let us suppose, just for the sake of argument, that (i) the *rate* of time in repulsive gravity is "opposite" (to be explained [later](#)) to the *rate* of time in attractive gravity, and (ii) it has always existed, but was vanishing small in attractive gravity. Then at the instant at which the stone is at rest in the air, the repulsive gravity can kick in and accelerate up the stone along the *opposite* 'free fall'. Can we create a gravitationally-neutral '[stone](#)', which will have *exactly* balanced attractive and repulsive gravity? If yes, perhaps we could accelerate it in *any* direction at will, and fly like a '[gimbal](#)'. This will be *bone fide* modified gravity: we tweak gravity and fly just like we'd move our [gravitationally-neutral thoughts](#). Is this possible? Well, [perhaps](#).

Bottom line here is that modified gravity is possible only by tweaking the potential [future](#) in the [Arrow of Time](#) (Fig. 6 on p. 4 in [canvas.pdf](#)). Read also p. 5 in [waves.pdf](#) and Simple QM ([quanta.pdf](#)). If you use only the time from your clock, the [Arrow of Time](#) will be "flattened" (p. 7 in [waves.pdf](#)) to a [dead frozen 4D spacetime](#), the genuine *gravitational radiation* will be impossible (p. 19 in [GWP](#)), and you could never explain the [force of gravity](#) coupled to the fundamental gravitational rotation ([Richard Feynman](#)).

Perhaps [Steve Freyne](#) and Wang Yifeng (see [above](#)) have learned, to some extent, to play with modified gravity and entertain people to get wealthy.

My objectives are [different](#). If everything goes as expected, my project can be completed by [October 2025](#). The first step is to expose the [dirty little secrets](#) of [GW parapsychology](#): LIGO's [GW150914](#) was a [Big Dumb Dirty Lie](#).

Don't ever say you knew nothing about it!

[D. Chakalov](#)

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## Questions and Answers

Q1. You speculate about gravitationally-neutral “stone” and refer to the alleged [Black Knight](#). Why?

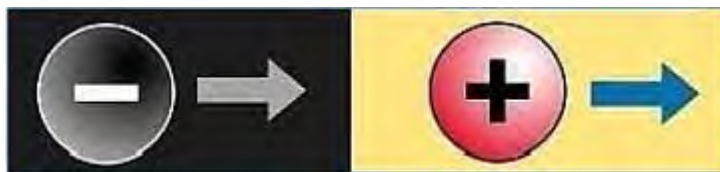
A1. What I mean by gravitationally-neutral “stone” is the gravitationally-neutral *correlates* of human thoughts, which can be accelerated at will in the [mental space](#) without *any* resistance from [inertia](#). Notice that the same gravitationally-neutral *correlates* of [human thoughts](#) can be instantaneously accelerated in 4D spacetime as well, like a ‘[gimbal](#)’ or [reactionless drive](#).

The subject is complicated at first glance; I mentioned it on [30 May 2002](#). In brief, the gravitationally-neutral *correlates* of human thoughts inhabit the potential [future](#) of the [Arrow of Time](#) (Fig. 6 in [canvas.pdf](#)). These are neither matter nor psyche alone, but *correlates* of both matter and psyche – a new form of reality “just in the middle between possibility and reality” ([Werner Heisenberg](#)). We can expect various “[anomalous](#)” effects similar to the *physicalized* “[jackets](#)” shown in Fig. 1 in [Simple QM](#): read Q2/A2 on pp. 6-7 in [waves.pdf](#). Why? Because [quantum gravity](#) is ‘[contextual](#)’ as well.

What we called [Black Knight](#) is a large Earth satellite moving much faster than ours, e.g., [Sputnik 1](#). NB: It is orbiting Earth in the *opposite* rotation to Earth. NASA fell in [cognitive dissonance](#) and called it “[accidental space junk](#)”, hoping the story will fade away. Do you expect from our guests to build a spying satellite that looks exactly like ours? They aren’t [Russians](#). 😊

Back to the gravitationally-neutral “stone” and repulsive gravity ([p. 2](#)). For example, in the case of [Dipole Repeller](#), “the structure of the flow exhibits a pattern of repulsion and attraction” ([Daniel Pomarède](#), [01:03](#)). I suggest a dynamical, tug-of-war equilibrium of [attractive and repulsive](#) gravity, which shapes the cosmos (pp. 8-11 in [Newton.pdf](#)) and creates galaxies from [dust](#).

Bottom line here is that there is no “[negative mass](#)”. It is an artifact of the wrong model of spacetime in current theory of relativity ([p. 2](#)). With light (recall [Macavity](#)), we can’t observe “negative mass”. The latter is [smuggled](#) into the [fundamental mechanism](#) of [re-creating](#) positive mass and energy (the *evolution equation* from 8 November 2015) along the [Arrow of Time](#).



There is no “[dark energy](#)” either. The puzzle goes back to what physicists called ‘[positivity mass conjecture](#)’ ([p. 11](#) in [GWP.pdf](#)). More [upon request](#).

Q2. Can you fly, Dimi?

A2. What is your wild guess, [Stavros](#)? Let me first see the reviews (p. 1) of my report on the paranormal "[gravitational waves](#)", hopefully by the end of this year: read pp. 18-20 in *Gravitational Wave Parapsychology* ([GWP.pdf](#)). Otherwise the physicists will reject my [experiments](#) confirming the genuine *gravitational radiation* (p. 19 in [GWP.pdf](#)), and endorse [Kip Thorne's GWs](#).

Notice that the genuine *gravitational radiation* & [gravitational rotation](#) ([Richard Feynman](#)) are inseparable, and are rooted on the [Arrow of Time](#). The end result is *gravitalized* (not "gravitational") [force & spin](#). Those who prefer the [orthodox theory of gravity](#) are invited to explain the [Earth and ocean tides](#) and the pathetic "[dark energy](#)". Use math [as much as you can](#).

You can [modify gravity](#) with [REIM](#) only for the **next** step (p. 5 in [waves.pdf](#)) along the [Arrow of Time](#) (Fig. 6 in [canvas.pdf](#)), like learning to move your hand (p. 12 in [book.pdf](#)). It will be a painstaking [learning process](#), however.

But [general relativity](#) claims that you can't modify gravity fixed by [matter](#). [Yes you can](#). The first steps are to reveal the true origin of gravity (pp. 1-2) and expose the [dirty little secrets of GW parapsychology](#) — the "detection" of "gravitational waves" on [14 September 2015](#) was a **Big Dumb Dirty Lie**.

## Potential Reality & Proper Relativistic Interpretation of QM

To avoid misunderstandings, notice my approach to theoretical physics at pp. 1-2 in *Universal Holomotion* ([waves.pdf](#)): I collect many indisputable facts from [life science](#) and [psychology](#) to 'connect the dots', ensuing also from the [arrow of Time](#) and the doctrine of [trialism](#), and then I examine current theoretical physics ([GWP.pdf](#)) to find out if my theory fits there.

The Potential Reality & Proper Relativistic (PR<sup>2</sup>) interpretation of Quantum Mechanics (abbreviated PR2IQM) was suggested in September 2010. It is based on Aristotle's *potentia* ([Werner Heisenberg](#)) and the [two modes of spacetime](#) along the fundamental [arrow of Time](#) (Fig. 1). The *atemporal* correlation ([Slide 1](#)) is performed in the [global mode of spacetime](#) and is *simultaneously* sent to all (infinitely many) entangled quantum "[jackets](#)", hence their *instantaneous* correlations occur in line with the [principle of locality](#): think globally, [act locally](#). This is the path toward understanding the *instantaneous* inertial reaction forces (p. 17 in [GWP.pdf](#)) of [quantum-](#)

**gravitational** “jackets”. The core idea is from July 1986 (p. 2 in [waves.pdf](#)); read closely *Simple Quantum Mechanics* ([quanta.pdf](#)).

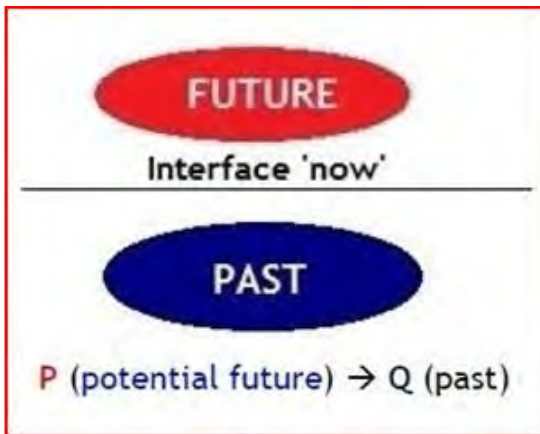


Fig. 1. Read p. 4 in [canvas.pdf](#).



Fig. 2. Read p. 9 in [book.pdf](#).

Metaphorically, the *physicalized* “jackets” are like a physical ‘glove’ with Platonic ‘**hand**’ inside it (Fig. 2). We have strictly local interactions only in the inanimate macroscopic world. In the **living world** and in the **quantum-gravitational world**, all interactions are *quasi-local* (pp. 7-8 in [canvas.pdf](#)). With **light**, we see only **self-acting** “jackets”. Have your cake and eat it. 😊

In practical terms, we can fly our 4D “jackets” by modified gravity (REIM): read Q2/A2 [above](#). There is no “**magic**” in **quantum gravity**. Only 4D **waves** transporting energy-momentum and angular momentum (**Richard Feynman**) in the **continuum** of 4D ‘gloves’ (Fig. 2), in both transverse and **longitudinal quasi-local** modes. Those paranormal “gravitational waves” (pp. 18-20 in [GWP.pdf](#)) cannot carry any physical stuff of any shape or form whatsoever. Only pathetic “**gravitons**”.

Get real. Kip Thorne’s [GW150914](#) was a **Big Dumb Dirty Lie**.

Don’t ever say you knew nothing about it!

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[https://chakalov.net/modified\\_gravity.pdf](https://chakalov.net/modified_gravity.pdf)

## The elephant in the room: Energy conditions of general relativity

Ten year ago, I asked [Chris Fewster](#) a very simple question: will the energy conditions of GR survive if the Strong Energy Condition (SEC) is violated? He did not reply. I think the puzzle is much deeper. Read p. 2 [above](#).

The puzzle resembles the [ultraviolet catastrophe](#) from late 19<sup>th</sup> century, in the sense that if the *total* energy of gravitation systems could be [negative](#), we won't be around to read these lines. Why are negative energy densities not *directly* detectable? The quantum inequalities do not seem to offer a full explanation: "it is not clear that simply restricting the occurrences of large negative energies to *short times* (emphasis mine - D.C.) is enough to rule out unphysical effects" ([Adam Helfer](#)). If you compare the *short times* in quantum inequalities to the *short times* of [virtual particles](#), how come the latter have many physical [manifestations](#)? This is 'the elephant in the room': it is *very* big, but is invisible and *always* "dressed" in [positive mass](#), and the physical world is protected from "nullification" ([Robert Forward](#)).

We don't have *quantum* gravity to understand 'the elephant in the room'. [Classical GR](#) cannot offer *any* [energy conservation](#), as rigorously proved by [Hans Bauer in 1918](#). So, what is the origin of "intangible" energy ([Hermann Bondi](#)), which is also *very* big and always stays invisible as well? To quote [Sean Carroll](#), "in general relativity spacetime can give energy to matter, or absorb it from matter, so that the total energy simply isn't conserved." This is as it should be, because the spacetime *itself* is dynamical system: watch [Paul Steinhardt](#) and read p. 5 in *Universal Holomotion* ([waves.pdf](#)).

Another quote from 'Twilight for the energy conditions?' by Carlos Barcelo and Matt Visser ([16 May 2002](#)): "If you believe the recent observational data regarding the accelerating universe, then the [SEC](#) is violated on cosmological scales *right now!*" Of course, no catastrophe has happened. The 'elephant' is still with us and is *always* "dressed" in [positive mass](#).

Why? Not because of "[energy conditions](#)" but thanks to the [asymmetry](#) of Time ([p. 2](#)) embodied in the 'chooser' in [Simple QM](#). More in my *evolution equation* from 8 November 2015. It is available upon request ([p. 3](#)). But first, you have to write up a brief review of "[gravitational waves](#)": read [pp. 18-20](#) in [GWP.pdf](#). Then upload your review (use math [as much as you can](#)) at arXiv.org ([p. 1](#)) and send me the link. I will reply within 72 hours.

But if you are some otiose good-for-nothing [Ruzzian](#), such as [Eli Hawkins](#), don't bother. Read Max Planck from 1936 on p. 9 in *Universal Holomotion* ([waves.pdf](#)). I don't cast pearls before swine ([Mathew 7:6](#)).