

Physics of Life: The Fifth Force

D. Chakalov <dchakalov@gmail.com>
chakalov.net/#reports

Abstract

A brief exposé of my project aimed at elucidating the [physics of Life](#) [6].

On 23 June 2022, I announced a major breakthrough in [Physics](#): a new force of Nature, called the [Fifth Force](#). Let me highlight the major events in its history, starting from January 1972. I was freshman in chemistry (age 19) and was striving to understand the *physics of Life* [5] ([Erwin Schrödinger](#)) and of the [human brain](#) endowed with mind, [self-awareness](#), volition, etc.

What is the two-way “mediator” (*sit venia verbo*) of the mind to its brain, and of the brain to its mind? How does the ‘mediator’ interact (p. 5) with that [wet soft chunk of grayish matter](#), a thermodynamically-open system consisting of many billions of neurons and [trillions of synapses](#) ([photo 2](#))? Some (otherwise [smart](#)) people claim that the brain is the hardware and the mind is its software, which is of course crap. The opposite claim made in parapsychology, dubbed [dualistic interactionism](#), is also dead false [5].

What is the *physics* of this mediator (p. 5)? The latter is neither a physical field nor some parapsychological “[ghost](#)”. Take for example walking on fire: the entry in [Wikipedia](#) (“firewalkers do not spend very much time on the embers”) is a typical example of [cognitive dissonance](#), at best.



Yes, firewalking is real and truly anomalous. Point is, can we enhance the [workings of the brain](#) for mundane purposes, such as our [cognitive activity](#)?

Back in January 1972, I only knew that there *must* be a solution to the puzzle of ‘two-way mediator’ [above](#). I decided to study QM and [QED](#), and also Einstein’s GR, hoping that one day I will find the solution. I never focused on the psychological track of the ‘mediator’ — the phenomenon called ‘[qualia](#)’. It is a fundamental phenomenon that cannot be understood. As [Thomas H. Huxley](#) wrote in 1869, “How it is that anything so remarkable as a state of consciousness comes about as a result of irritating nervous tissue, is just as unaccountable as the appearance of the Djin when Aladdin rubbed his lamp.” But I strongly believed that the *physical* correlate of the [mediator](#) — only matter interacts with matter — is obviously a simpler task.

Why “obviously”? Because I was 19, and felt that there is nothing in the world that I could not achieve. Little did I know that I will face enormous difficulties. Suppose the physical correlate of the ‘[mediator](#)’ in the [human brain](#) is somehow *emerging* from the quantum world. How is it “elevated” in all [living organisms](#)? I was only hoping that, once I unravel the physical correlate of the ‘[mediator](#)’ in QM and QED textbook, there will be a hint at this puzzle. Thus, I started searching for *the* correct presentation of what is called in physics ‘[quantum state](#)’, as it soon became clear that Einstein’s GR cannot fit the bill (p. 15 in [Time and Continuum: Zenon Manifold](#)).

After many dreadful years of successive failures (I was so desperate that I even studied [tachyons](#)), I realized by the end of 1987 that physicists only describe what the ‘quantum state’ is not. Nobody tells you what kind of *reality* is presented with ‘*the* quantum state’. Read [Erwin Schrödinger](#):

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

Then comes the [Gleason’s theorem](#), which proved that there is no *bivalent* probability measure over the rays of a Hilbert space (**H**), provided that the dimension of that space is 3 or more, and the [Kochen-Specker theorem](#). Thus, in Hilbert spaces with dimensions 3 or more, *the* quantum state cannot fit there and we cannot talk about its *physicalizable* “[jackets](#)” [\[7\]](#).

Again, physicists can only say what *the* quantum state is not. I was reading a lot about the foundational issues of QM in 1980s, and tried to explain the problem at a seminar in February 1987 (p. 4 in [Penrose-Norris Diagram](#)). In June 1990 (at that time I was living in the U.S.), I sent a letter to Henry Margenau regarding his *latency interpretation* of QM [\[1\]](#), and suggested that in the general case ($H \geq 3$), *the* quantum state is ‘[never there](#)’ anymore [\[7\]](#). I had announced my research program in [January 1990](#) and sent letters to many brain research centers and leading theoretical physicists in the U.S., but never heard from any of them. I only had — and still keep — the advice by [Sir Winston Churchill](#): “Never give in. Never, never, never, never.”

Fast forward to 21 September 2008: I announced [two modes of spacetime](#) to facilitate the idea of *biocausality* ^[2] from [January 1990](#), and focused on the structure, topology, and dynamics of spacetime ^[3,4]. I have no idea why I needed over 18 years to realize that there is [no other way to proceed](#), but I guess hindsight is 20/20 ^[8]. Anyway, now I announced the [Fifth Force](#) and am ready to go public. Perhaps [many physicists](#) will be “surprised”. Or will keep [dead silent](#), as always. The fun part is just around the corner!😊

30 September 2022, 13:34 GMT

References and Notes

1. Henry Margenau (March 26, 1954), Advantages and disadvantages of various interpretations of the quantum theory, *Physics Today* 7(10), [6-13](#) (1954), p. 10.

The distinction between primary and secondary qualities is indeed of lesser interest today and may be regarded as settled, as Jeans believes. But though it be dead, its ghost is still very much alive and amongst us. The contrast, or at any rate the difference, is now between what I have called elsewhere *possessed* and *latent* observables. Possessed are those, like mass and charge of an electron, whose values are “intrinsic”, do not vary except in a continuous manner, as for example the mass does with changing velocity. The others are quantized, have eigenvalues, are subject to the uncertainty principle, manifest themselves as clearly present only upon measurement. I believe they are “not always there”, that they take on *values when* an act of measurement, a perception, forces them out of indiscriminacy or latency.

2. Given the proposal by Heraclitus about a fundamental [arrow of Time](#), the idea of *biocausality* ([January 1990](#)) suggests that every successive event ‘here and now’ is determined *jointly* by its history in the irreversible past, and by its potential [future](#). The latter solves the main problem of [Quantum Theory](#), stressed by Albert Einstein on 29 April 1924: “I find the idea quite intolerable that an electron exposed to radiation should choose of its own free will, not only its moment to jump off, but also its direction. In that case, I would rather be a cobbler, or even an employee in a gaming house, than a physicist.” (Einstein to Hedwig Born. In *The Born-Einstein Letters*. Correspondence between Albert Einstein and Max and Hedwig Born, 1916-1955, with commentaries by Max Born. Macmillan, New York, 1971, [p. 82.](#))

3. D. Chakalov (2 July 2022), *The General Rule $1 + 0 = 1$* , pp. 4-5. Available online at [this http URL](#). *Idem* (25 April 2021), *Quantum of Spacetime: Zenon Connection*, pp. 3-4, pp. 23-25. Available online at [this http URL](#).

4. Unlike the torsion-free connection on the tangent bundle of a perfectly smooth manifold ([Wikipedia](#)), the so-called *Zenon Connection*^[3] – the [infinitesimal shift](#) $Q_1 \rightarrow Q_2$ ([Slide 1](#)) executed by the [self-acting](#) ([Sic!](#)) Fifth Force – is intrinsically bundled with quantum-gravitational [spin](#). The reason is simple: non-tensorial Christoffel symbols [cannot rotate the Earth and pull up rocks](#). We don't use [tangent spaces](#) but the potential [future](#)^[2].

To understand the structure of 4+0 D spacetime, read about the Platonic [matrix here](#) and also pp. 36-38 in *Can Geometry Produce Work* at [this http URL](#). The [self-acting](#) Fifth Force springs from the [Unmoved Mover](#) and gives the spacetime unique topology and [dynamics](#). Namely, the [Fifth Force](#) *animates* the [two modes of 4+0 D spacetime](#) in ‘the atom of geometry’ (*ibid.*, p. 9) with [self-action](#). The ‘atom of geometry’ is not some abstract zero-dimensional mathematical object that “has no part” ([Euclid](#)), but a composite object with real (in the past) and *hyperimaginary* (in the [future](#)) parts ([Slide 1](#)). It will be impossible to introduce the [self-action](#) “within” a 0-dimensional mathematical point. I suggested the *hyperimaginary numbers* (W) which, “[when](#)” squared ($W^2 = 0$), denote an *exactly nullified* Platonic [matrix](#) (dubbed ‘[John](#)’), which empowers the state in the past ([Sic!](#)) with [self-acting](#) Fifth Force. Those who prefer the orthodox model of spacetime (which is neither [time-orientable](#) nor [space-orientable](#)) used in today's [General Relativity](#) ([MTW p. 467](#)) should read the “sampler” available [here](#).

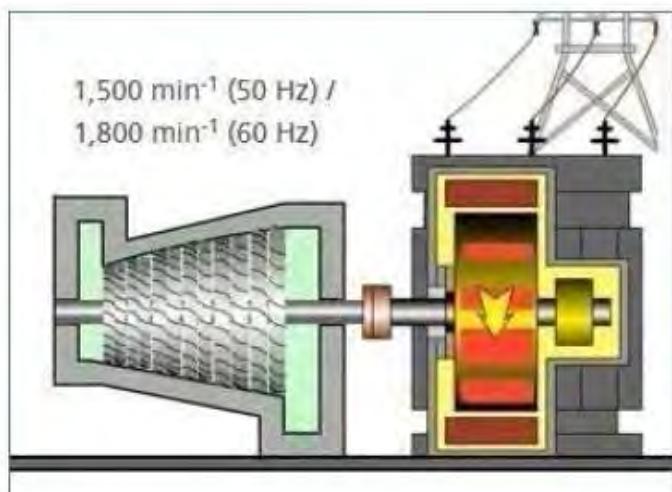
5. In 1944, Erwin Schrödinger (*What Is Life?*, pp. 28-29) stressed that “we are here obviously faced with events whose regular and lawful unfolding is guided by a mechanism entirely different from the probability mechanism of physics. (...) We must be prepared to find a new type of physical law. (...) It is nothing else than the principle of quantum theory over again.” Read closely p. 2 in [homeostasis.pdf](#) and *The Fifth Force* (23 June 2022).

6. [This report](#) was submitted to arXiv.org on 14 July 2022, and the [talebans](#) immediately rejected it: “arXiv’s moderators have determined that your submission will not be accepted and made public on [http://arxiv.org](#).” All the issues raised [above](#) could have been resolved many years ago, after my paper ‘Are Gravitational Waves Directly Observable?’ from [17 July 2005](#), but the [talebans](#) at arXiv.org were again “determined” to delete it, without [any evidence in support of GW parapsychology](#). Billions of USD and EUR for the so-called LIGO (over [\\$1.1 billion](#)) and for LISA Pathfinder ([450 million EUR](#)) could have been saved, and [Kip Thorne](#) and his [collaborators](#) would have never been granted [Nobel Prize 2017](#). You can't argue with [talebans](#).

7. Read the story of John's jackets from April 2000 at p. 20 in *The so-called GW150914 is FRAUD here*, p. 23 in *Can Geometry Produce Work here*, and *The Physics of Life: Flipping a Quantum Coin here*. The first off proposal from 1990 about *biocausality* [2] was inspired from Bernstein's *construction of movements* published in 1947: read about the *Ist-Wert–Soll-Wert* model on p. 13 in *The Physics of Life here*. The quantum version of *biocausality*, called *quantum causality* (p. 26 in *Notes on Spacetime Engineering here*), requires new physics [5] (*Slide 10* and *Slide 12*): in the *inanimate* 4D physical world, the Platonic *matrix* (dubbed 'John') is "already" nullified ($W^2 = 0$), which *animates* matter and fields with the *self-acting* (Sic!) Fifth Force [4]. There is no chance for "runaway motion", because the so-called "negative mass" occupies the potential *future* ("carrot") in the *atom of geometry* [4]. See the so-called *evolution equation* at p. 28 in *The Physics of Life here*.

In brief, instead of searching for some brand new *physical* field to play the role of a 'two-way mediator' (p. 1) that *interacts* with the brain (*photo 2*), we tweak the mantra 'only matter can interact with matter' by suggesting that matter can interact with *itself*, by the *self-acting* (Sic!) Fifth Force [4]. Thus, the Fifth Force is the origin of *gravitalized energy* as well. **Voila.**

Check out my proposal for producing electricity with gravitational rotation [here](#). Yes, it is possible to save our planet from the [climate catastrophe](#).



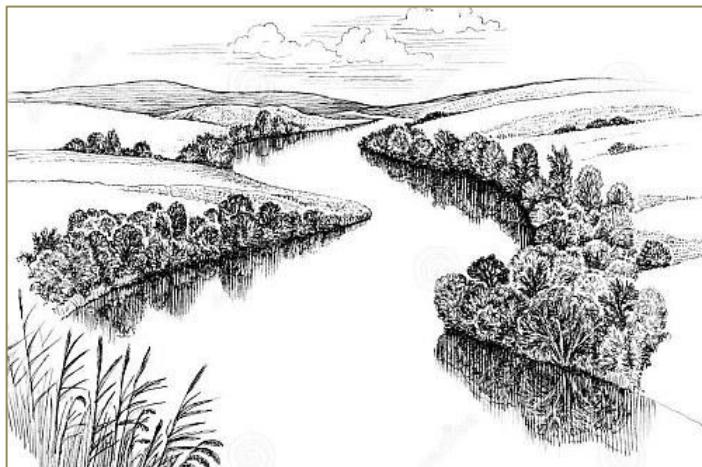
My proposal for producing unlimited electricity is based on gravitational rotation, as gravity can rotate a *whole galaxy en bloc*. Just spin the steam turbine rotors in the *power plants* with spacetime engineering. There is no need for water supply, heat, nor coal or poisonous nuclear fuel. Is this possible? Why not?

To watch my *proof of concept*, read first [here](#). It is about [quantum gravity](#). I do not entertain people with [parapsychology](#) or Chinese "magic". Capiche?

vimeo
[The Fifth Force: Proof of Concept](#)

8. Yes, hindsight is 20/20 (p. 3). In my first report from 31 October 1989, entitled ‘How To Bind Mind To Matter?’, I wrote (p. 3 in [mind-matter.pdf](#)): “The mind, placed in the potential future of matter, is capable of guiding matter by acting **on** matter **through** matter.” Sounds like a [jabberwocky](#). Or like the story from [Baron Munchausen](#). What I meant to say is the following.

Recall Heraclitus’ arrow of Time:



Everything changes and nothing remains still — you cannot step twice into the same stream, for fresh waters are ever flowing in upon you.

[Heraclitus](#). [Wikipedia](#), 2021

We can only reveal the [blueprints](#) of the arrow of Time (p. 3) left on the [local mode](#) of spacetime.

Pin down the phrase ‘[fresh waters](#)’. It entails the fundamental difference between 4D spacetime in the [orthodox model of spacetime](#), and the *arrow* of Time. The latter is a complex phenomenon with necessary ([physical](#)) and sufficient ([fifth force](#)) components (p. 1 in [The Fifth Force](#)). Namely, the ‘[fresh waters](#)’ spring from the potential [future](#) in the arrow of Time. Sure enough, the [infinitesimal](#) transition of the potential [future](#) into irreversible past *cannot* be observed [online](#): p. 3 in [The Fifth Force: Proof of Concept](#). Which is why I suggested the ‘hand in a glove’ metaphor (*ibid.*, p. 2). And since we observe with light *only* the physical 4D ‘glove’, we notice that the ‘glove’ is endowed with [self-action](#) (*ibid.*, p. 10), thanks to which the [fifth force](#) “is capable of guiding matter by acting **on** matter **through** matter”, as I wrote on 31 October 1989 (read [above](#)). This is the crux of *biocausality* [2].

On that day, I wrote another jabberwocky (p. 1 in [mind-matter.pdf](#)): “the description of the bond “between” mind and matter and the description of the topology of spacetime are, in essence, one and the same problem”. To understand the topology of spacetime, read [Relative Scale \(RS\) Spacetime](#), and p. 9 and pp. 12-13 in [The Fifth Force](#). Perhaps the next generation of physicists will be interested in [quantum gravity](#) and [spacetime engineering](#), but it will be too late to save our planet from [climate catastrophe](#). Sorry.

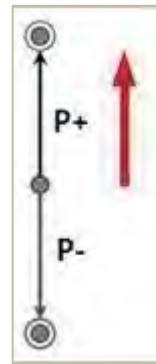
With the benefit of hindsight, I claim that in September 2008 (p. 3) we did have a chance to [get the job done](#): read my website [here](#). Five days ago, on 25 September 2022, I made a short clip, just 85 seconds ([YES.mp4](#)), and sent the link to [dozens of people](#). But given the history of my project, I do not expect any reply. The only feedback I had since September 2008 (p. 3) hit me in May 2012, from Dr. [Maurice de Gosson](#) at the University of Vienna: “Buzz off, idiot!” (Mon, 21 May 2012 18:47:46 +0200).

Writing about the history of my project since January 1972 (p. 1), let me explain the prerequisite to my proposal for producing unlimited electricity, sketched on p. 5. We have two distinct gravitational phenomena (Table 1), which I will call ‘weight’ denoted P, and ‘inertia’ denoted N. Numerically, $P = N$ ([Loránd Eötvös](#)). The “room” (Case A) is the *entire 4D physical world*: not “closed” but [isolated system](#) with [re-interpreted positive mass](#) (p. 12).



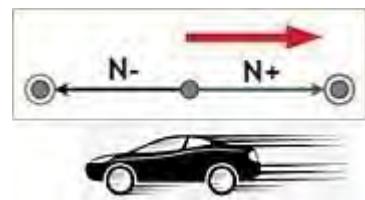
The vector W is the [arrow of Time](#)

Case A



Case B

Table 1



Read [Dennis Sciama](#)

Case C

In Case B above, you are sitting in driver’s seat in your car, which is [at rest](#) with respect to the road. You are pushing your seat down with P_- , which is balanced with P_+ , in line with Newton’s [third law](#). You do not experience the force of inertia N_+ , as in this case $N_+ = N_- = 0$. Now you press the gas pedal and begin to accelerate your car, depicted in Case C. During the acceleration, you will experience your weight ($P_+ = P_-$), and [the force of inertia](#) will push you back by N_+ , in line with the [third law](#), $N_+ = N_-$. But the [emergence of the force N+ from zero is instantaneous](#): [no lag time](#). Now, in order to [modify gravity](#), you have to modify both P and N “[before](#)” (recall [Macavity](#)) the two are being fixed. But how? With the [self-acting Fifth Force](#). Read closely [chakalov.net/text.pdf](#) and [chakalov.net/talk.pdf](#). The [red](#) vector W in Case A has mental correlate called ‘cognitive vacuum’ (read [here](#), [here](#), and [Slide 14](#)) accessible with [spacetime engineering](#). As to gravitational rotation (p. 5) – well, it is still a long way to go ([YES.mp4](#)).