

## Physics of Life: The Fifth Force

D. Chakalov <dchakalov@gmail.com>  
[chakalov.net/#reports](http://chakalov.net/#reports)

### Abstract

A brief expose of my project aimed at elucidating the [physics of Life](#) <sup>[6]</sup>.

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 <sup>[5]</sup> ([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 <sup>[5]</sup>.

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 Djinn 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 ( $\mathbf{H}$ ), 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](#)” <sup>[7]</sup>.

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 <sup>[1]</sup>, and suggested that in the general case ( $\mathbf{H} \geq 3$ ), *the quantum state* is ‘[never there](#)’ anymore <sup>[7]</sup>. 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* <sup>[2]</sup> from [January 1990](#), and focused on the structure, topology, and dynamics of spacetime <sup>[3,4]</sup>. 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. Anyway, now I announced the [Fifth Force](#) and am ready to go public. Perhaps [many physicists](#) will claim to be “surprised”. Or will keep [dead silent](#), as always. The fun part is just around the corner!☺

29 July 2022, 12:48 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.

To sharpen this issue, I propose a shift of attention. 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* <sup>[3]</sup> – 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** <sup>[2]</sup>.

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](#).

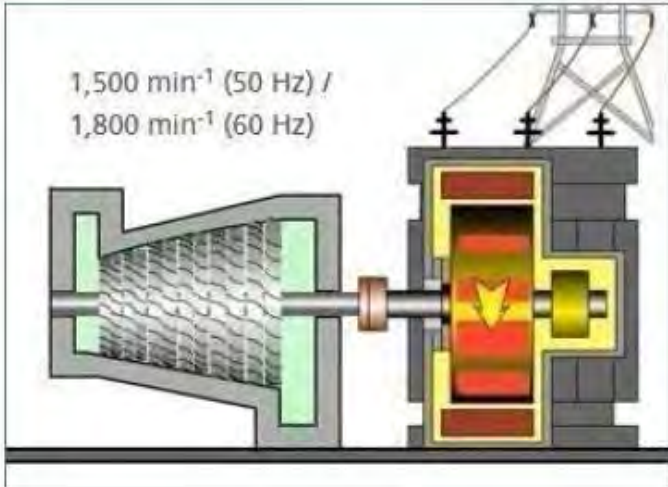
5. In 1944, Erwin Schrödinger (*What Is Life?*, pp. 28-29) stressed that “we are here obviously faced with events whose regular and lawful unfolding is guided by a mechanism entirely different from the probability mechanism of physics. (...) We must be prepared to find a new type of physical law. (...) It is nothing else than the principle of quantum theory over again.” Read closely p. 3 in *The Fifth Force* (23 June 2022) at [this http URL](#).

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* <sup>[2]</sup> 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 <sup>[5]</sup> ([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 <sup>[4]</sup>. There is no chance for "runaway motion", because the so-called "negative mass" occupies the potential **future** ("carrot") in the *atom of geometry* <sup>[4]</sup>. 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 <sup>[4]</sup>. 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?

