

Short Article

C²=Const and Affine Theory of Gravity

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Abstract

If we accept that c^2 =const is the measure of inertia and is not mass, we will get the right explanation of Einstein's theory of relativity. And not only that. As Emmy Noether has mathematically proven, Inertia already carries symmetry within itself. With c^2 =const as a measure of inertia, it is also shown that macroscopic causality and microscopic randomness are in mutual symmetry. This leads to far-reaching consequences. For example, the church dogma of Thomas Aquinas and the dogma of the so-called dialectical materialism are in mutual symmetry and only together do they become science and no longer dogma. Therefore, the claim that the LOGIC of nature is eternal and infinite, like God, only together with the claim that the MATTER of nature, what humans perceive as matter, is always, forever and infinite, only together do they constitute the full truth about the world and the universe. The conclusion must be that the world as a universe has neither a beginning nor an end, that therefore there is not just one big bang, but that every galaxy with an active galactic nucleus is a possible new beginning (because it ejects matter back and antimatter to the opposite side hundreds of thousands of light years away) just as a black hole is, well, just a quasi-end. All that is missing is for humanity to realize that it is better to invest money in building more powerful telescopes, sufficient for comparative spectral analysis of these two opposing jets in order to prove this claim, than in A- and H-bombs that could be the death of us.

1. Introduction

The book GRAVITY AND C²-INERTIA was published in Belgrade in 2020, bilingually, English and Serbian, printed in opposite directions, in a print run of only 350 copies, as the fourteenth book in the collected works edition, ISBN 978-86-900522-1-8. So, the right publisher for real circulation only in English is being looked at. (Hence pictures 1, 2, and 3). The book has six chapters – •The Big Bang and its Internal Logic: The Universe as Relative Zero • In Cosmology, C²=const is the Measure of Inertia, not Mass • Universe, Inertia and Universal Constants • There is no Coordinate System without Mass • Einstein's E=mc² and Dark Energy • Instead of Recapitulation – and a kind of preface.

Here is that **INSTEAD OF PREFACE**:

C²=Const and Affine Theory of Gravity January 23, 2020 Dear Professor Stojković, Dear Dejan,

I had no idea how important it would be for me to publish on the viXra portal, http://vixra.org/author/milan_d_nesic on your recommendation, thanks, and Stanko's request. It isn't that only Semantic scholar [1-4]. Did publish my four articles by downloading them from the viXra.org portal, but I recently saw that a key article was made available on other portals as well.

That encourages me to ask you. Is it appropriate to publish a book of these articles with an epilogue, for example, that I would just write, all in English, here with the sole purpose of having copies distributed little by little to publishers in the English speaking world? Of course, I would donate a certain number of copies to the National Library of Serbia, the department for international exchange, in this way many of my books have found a place in national libraries around the world, not only the only one in English (selected excerpts from the four-volume THROUGH SOCIALISM TO WAR). I think I would find a sponsor for a circu-lation of 200 or more copies. I suggested that Stanko write a foreword in Serbian for the Serbian part of the book, my original idea was the book had to be bilingual, but he drew my attention to the fact that it would have been too ambitious, more than the double cost of printing would certainly not have been coveredthere was simply no interest here in such a book, especially by an independent writer and publisher who was simply prevented by a monopoly over the public sphere.



So only in English. However!

Even such an endeavor would not make sense without the recommendation of a competent person, best of all, and a person of a career in America itself. So I ask you: would you perhaps be inspired to write a foreword? Of course, it's different with a recommendation, for example, for arXiv, thank you; the recommendation is still with less responsibility before the official profession, arXiv itself has, namely, its own peerreviewed reviewers. That's why I asked you if you were inspired–because

the book is as it is, not by a person from the official profession. But precisely because of this, I hope, it may be of special importance as a proposal for new interpretations with intuition to a large extent already in philosophy: and here is the paradox, as if just we, brought up in the spirit of **dialectical materialism**, had the opportunity to follow, it seems, a right trace of Nature in spite of the fact that the **dia**-mat has degenerated into an apologetic dogma of the communist one-party rule.



Back in 1976, I multiplied a typo script, and published it under the title **ESSAY ON GOD**. The book did not get access to book-stores, the then Ministry of Culture assessed it as religious, so they were incompetent to issue it a certificate that it belonged to the field of culture, they wrote that off for me. I also have the following text in that book:

»This time, a photon becomes real only in relation to the receiver. And vice versa: since it lost its original foothold in the atom, for it the only reality is that transmitterreceiver relation, that distance $\Delta l = \sqrt{\Delta x^2 + \Delta y^2 + \Delta z^2}$. Though for every other particularity, it is current, i.e. from moment to moment bigger or from moment to moment smaller-for this photon that distance is one and everything: everything real and everything constant for its whole life. Or, more precisely, it is the very mode of its world and life. What makes it special in the generality of all possible photons, which is the basis and minimum of its specificity in fact-is in fact $\Delta l = \text{const.}$ On the other hand, the property of all photons is c=const and this is the minimum of their commonality. Hence this conclusion: since $c\Delta t$ = Δl and since Δl is for each photon its own measure, so to speakin all inertial systems, i.e for each photon separately, the relation $c^2\Delta t^2 - \Delta x^2 - \Delta y^2 - \Delta z^2 = 0$ must be invariant.«

Although I struggled to formulate the text like this, I was left with the unpleasant impression that it still suggested a photon "knows" in advance into which receiver it will be caught. It hadn't been until I wrote about the Universe as a relative zero and came across the EPR paradox that little by little I realized that the formulation was just right—because it points to the fact that the photon only by its realization in the atom mass forms its c = const as a universal constant, adapting to the coordinate system related to that mass, it adapts, that is, to the length Δl of this mass. While in a vacuum, a photon has no definite measure of either length or time. The vacuum itself is like that.

Because of the $\Delta l = const$, I still had one doubt: if a photon realizes that $\Delta l = const$ only at receiving according to the law of inertia $c^2 = const-similar$ to, for example, future computers with tangled photons, which should use this feature to transfer memory–why do we need these for a long, long time only hypothetical gravitons to explain gravity at the quantum level, when photons hold the distance between the mass of the emitter and the receiver?

Well, due to Maxwell's wave equations, the spin of a photon is 1, just to turn the attractive force into a repulsive one when the same charges are repelled, and by that logic the attraction of two masses by gravitons, since they have no charge, would be the result of another inversion, i.e. spin 2–if not already 0. However, isn't the analogy with quantum electromagnetism too literally transferred to quantum field theory in general, to all the so called elementary particles? A neutrino with no matter how small a mass, but nevertheless a mass of rest, is a sign that something is still wrong.

That is why I was happy when I heard the lecture of Professor Božidar Jovanović at the Institute of Mathematics of SANU in 2017: **Affine geometry and relativity**, about Lorentz transformations, therefore the special relativity theory [5]. So that's it, I thought: an affine vacuum. And when I recently heard a lecture by Igor Salom [6]. From the Institute of Physics at the same place, I began to fantasize: maybe I finally and concretely sense the answer to the question *How has the World come to exist*? In a letter to one colleague, I wrote the following in passing:

When political circumstances finally permitted, all typescripts - FIRST DAYS (1974) - ESSAY ON GOD, On Relativity and Symmetry Regarding the Death of Grandpa John (76) - POLITICS, BREAD AND BOOKS (82) – PHILOSOPHY AND BELIEF, An Introduction to the Idea of a Contradictory Whole (86) - were published as one four-volume book 1991 THROUGH SOCIALISM TO GOD Publisher A-Š Delo The title is symbolic of how we suffered under one-party socialism and how each pursued his or her own hopes and beliefs, backwards through socialism to the older values and to parliamentarian government. 2010 THROUGH SOCIALISM TO WAR On English, ISBN 978-86-903845-7-0 Not a new book either, but consists of thirteen fragments from all four previous books, selected by the author and presented as a collection of tales in five parts, each with its own heading 2014 THE UNIVERSE AS A RELTIVE ZERO, How is it that the World exists? - ISBN 978-86-903845-8-7 2018 WAS GIORDANO BRUNO BURNED IN VAIN? ISBN 978-86-900622-0-1

»However, if Gamow once calculated the exact percentage of hydrogen, helium and lithium in today's universe from infinitely dense thermal energy as from one Point, why not, in the inverse calculation, finally answer the question How has the world come to exist? Instead of from singularity-through out the singularity. Boze imagines trapped photons as in a black body, so with a quantum calculation (statistically) he derives the formula of Planck's law of radiation. According to the general theory of relativity, "black holes" capture everything, even light-otherwise they are (mathematically) empty, only with a point mass at the center of infinite density. Recently, at the Institute, I heard a lecture on how to move from a spherical space-time metric to a Euclidean one by contraction at a point on the sphere, but with an infinite algebraic matrix, so that is the problem, that infinity. An extremely talented mathematician, he does not see, he says, a possible physical interpretation.

How can I tell them, well that's what I need! Why not try it with a "black hole" like Bose's volume that shrinks to a point at the center and thus ENTIRE the affine uncertainty of the cosmic vacuum, i.e. virtual photons without mass, passes into real quantum states through the singularity of infinity in one point, now from another direction, from the direction of NOTHING, i.e. massless particles, each state a matrix element—real particles with mass: Euclidean space of Maxwell Boltzmann probability of velocity distribution.«

Of course, dear professor, this is either an intuition or just a wish in a private letter, not to mention fantasy. But I have thought about it anyway.

Is there, I wondered, Hawking's "black hole" radiation recognized in official scientific circles? There is. Due to the virtual microfluctuation of the vacuum, pairs of antiparticle particle are continuously formed, even if they last a single instant only, as much as Heisenberg's uncertainty of energy and time $\Delta E \Delta t > h$ allows, a virtual electron-positron, usually with an instant sufficient for one of them, on the very horizon of a black hole, to be pulled into it while the other escapes. And now there is an electron, now a positron in a black hole, there are annihilations in it, there are captured photons as in Bose's volume, who his derivation in the historical article Planck's Law and Light Quantum Hypothesis begins with it: "Let the radiation be enclosed in the volume V and let its total energy be E." Of course, who knows what kind of particles from accretion suction are in the "black hole" too, but also the real black body is not only made up of photons but also atoms that release and absorb them until they are finally radiated. In the "black hole", on the other hand, until it finally collapses into its singularity. Mathematically in a single state. Entropy is therefore zero-it must explode. How? Well, by implosion and then-by explosion of vacuum. Or in the language of possible mathematics, by contraction and then by decontraction. It seems that an affine correction of the general theory of relativity is just necessary. In doing so, the cosmological constant would appear, for example, with a torsion tensor7-spin, spin, again that spinas a natural consequence of the unity of mass and affine vacuum, which without any dark energy would agree with the astronomical

observation that space-time metric at the greatest distances tends to align.

From the rotating "black hole" in the nuclei of active galaxies, for example, matter gushes there and opposite—so university astronomy textbooks write without specifying what that matter is—and hundreds of thousands of light years far away. That is what can be seen. At greater distances from the nucleus—and where are the quasars, what and how?—perhaps it is a gas of mass particles according to Maxwell-Boltzmann's velo—city distribution again in the quasi-Euclidean space when at last the "black hole" of "Big bang" lost all its mass.

And second, perhaps more important: the affine theory of gravitation with a given mass and its metric does not necessarily predict a closed universe. That's not true, I guess, that the universe is only where all metric is with a single initial mass defined by a single cmax As if the vacuum itself were not truly infinite, without measure and direction! As if it were not affine. And whether it will be seen from any zero point of any coordinate system that the universe is expanding or contracting, it depends on where it **by chance**, when and how big it **necessarily** exploded—the "big bang". This is exactly what explains the inflationary expansion—in the first moments of the creation of the World, as they say—the fact that in this way the maximum speeds of light still add up, each starting from its "big bang" as zero.

Hence, it seems that corrections of the relativity theory by mathematical improvement of Einstein's curvature tensor $R_{kl} - \frac{1}{2}g_{kl}R$, by non local modification starting from one point

as a coordinate origin of Euclidean space independent of any mass and all time, cannot give a lasting result even if such correction isotropically completely agrees with the current astro-nomical observations. In a million or a billion years, who knows where everything would be and what a "big bang" would be, and how the metric from a given point of the Universe would look like as (arbitrarily, *homocentrically*) zero starting point!? (What ever homocentricaly means in this context).

What would be nice, dear Professor, if it turned out that this is the right path to guess the answer to the question of *How has the World come to exist*?

The right path supported by science.

Whether, maybe?

If this can inspire you, dear Dejan, and if you found the time, I think that a foreword to a book like this would be the right place for that inspiration.

Well, I fantasized a little, I thought a little, and then I wrote, I cannot anymore.

So I rely on your assessment of a scientist who knows both matter and circumstances, but also a tool for dealing with that matter in given circumstances. And from your interview in the *Galaxy* (with Stanko, the title **END OF SPACE**) I see that you, first, do allow the possibility that the standard model of elementary particles (with the concept of quantum chromodynamics) is not complete and that it definitely needs correction and simplification (yesterday at the Institute, I heard that now the resting mass of neutrinos, no matter how small, is beyond any doubt) and, second, you say that this possibility is even more probable: *physics that we have not yet discovered*.

The physics of relativistic cosmology is really exciting.

Just-will we have time?

With cordial greetings, so whatever...

Milan Nešić, January 30, Belgrade

Of course, publishing a book like this, especially because it is bilingual, requires a solution to a special problem, how with a language that is not the writer's native language? That's why I asked the professor to help me also with that by engaging his postgraduates, Americans whose native language, I thought, is English. His response was as follows:

May 20, 2020

Dear Milan,

No problem, put in the imprint that I recommend the book. Secondly, I think English is good enough. In the fundamental sciences, language has much less weight than content. Anyone who is really interested in what is written will not pay much attention to some grammatical errors here and there. My best students are Chinese and Indians, they are much better than Americans. For most Chinese, the language is catastrophic, but it is them no problem to find very good positions after a doctorate. As a rule, foreigners make a much greater contribution to (fundamental) science than Americans, so no one pays more attention to the quality of English.

All the best,

Dejan

This answer encouraged me a lot, not only because of English, which I already saw as acceptable after the reactions to my publication on *viXra*, but also, especially, because of the information that language is less important in the fundamental sciences. Yes, the professor puts my announcement in the domain of fundamental sciences and not maybe just of some philosophical speculations and that is no longer just my opinion and it is not said by someone who is only well intentioned or without real competencies. Yes,

I owe gratitude to Professor Stojković for that. On this occasion, I would also like to thank Stanko Stojiljković, the editor of the popular science magazine *Galaksija.nova*, with the wish that we continue our cooperation, even in limited material possibilities.

For the text in English that I am publishing in this book, I would like to thank the professor from the Astronomical Observatory in Belgrade, Dr. Slobodan Ninković, who was a very careful reader, what would be modestly called in English proofreader, a trial reader. Not only is here the language of fundamental science, but also, of course, of fundamental philosophical thoughts about it, i.e. non-everyday abstractions into which even the most eminent translators do not enter easily. Although the bilingual edition doubles the cost of printing, I thought that the original text in Serbian was necessary. Philosophical abstract texts can often come across divergent interpretations, so it is always advisable to keep an eye on the original [7-13].

Milan D. Nešić, Belgrade, June 12, 2020

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