

The informational physical model: some fundamental problems in physics

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Abstract. In this article a number of fundamental physical problems are briefly considered in framework of the “The Information as Absolute” conception and the informational physical model, which is based on the conception, which were developed in 2007-2020. Now in physics there exist a number of publications, where the authors compose some lists of the problems. However the problems lists in such publications are essentially incomplete, by at least two reasons. First of all there exist a number of physical phenomena that are studied traditionally by philosophy also, and so corresponding problems usually are named as “metaphysical” problems, which relate, nonetheless, to some concrete physical phenomena. For example physics evidently studies Matter, and so the metaphysical problem “what is ontology of Matter?”, “what are “Space”?, “Time”?” and a few other physical phenomena and notions as well, are really a Meta-physical problem “what does physics study?”. Another problems that really are fundamental physical problems, but aren’t considered by this way in physics – and aren’t considered in the “fundamental problems lists”, are the problems, which really exist, but are incorporated into standard physical theories, and so are fundamental “implicitly”, when be “solved by default”. So further the fundamental physical problems are considered in the paper in corresponding sections – “Meta-physical”, ““Ordinary implicitly fundamental”, and “Other “ordinary” fundamental” problems, i.e. that are considered as fundamental in standard physics. Besides, in this paper a few cosmological problems and the problem “what is Life?” are considered as well.

Key words: informational physics, Matter, consciousness, fundamental physical problems, fundamental Nature forces, EM force, magnetic monopole, Gravity, fast body mechanics, Standard Model, cosmology, spacetime, experimental testing, quantum mechanics, relativity theories

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1 Introduction

In this article a number of fundamental physical problems are briefly considered in framework of the “The Information as Absolute” conception and the informational physical model, which is based on the conception, that were developed in 2007-2020 [3]-[17].

Now in physics there exist a number of publications, where the authors formulate, analogously to 1900 David Hilbert presentation of twenty-three problems in mathematics at the International Congress of Mathematicians in Paris [1] some lists of the problems, for example, [1], [2], the corresponding Wikipedia article, etc. Corresponding the problems lists are rather similar, and so in this paper we consider some problems in one of rather complete list in [2], which are considered in the main text, and briefly commented in the Appendix.

However the problem lists in such publications essentially is incomplete, by two reasons. First of all there exist a number of physical phenomena that are studied traditionally by philosophy, and so usually are named as “metaphysical” problems, which relate, nonetheless, to some physical phenomena - for example physics evidently studies Matter, and so the metaphysical problem “what is ontology of Matter”? is really Meta-physical problem “what does physics study?” as well.

As well as the metaphysical problem “what is ontology of Consciousness” relates to physics directly, starting from the physical problem “why and how physical measurements and interpretations of the measurements are sometimes adequate to the objective reality?”; this problem was rather actual on first stages of development of the quantum mechanics, and is rather actual now.

Or such metaphysical problems as what are the fundamental phenomena/notions “Space” and “Time”?, and a number of others, are really the fundamental physical problems as well.

Another problems that really are fundamental physical problems, but aren't considered by this way in physics – and aren't considered in the “fundamental problems lists”, are the problems, which are incorporated into standard physical theories, and so are fundamental “implicitly”. For example in [2] the problem “Why are the particles of ordinary matter copied twice at higher energy?” is pointed, when really firstly there exist the problem “what are particles?” at all, and seems as evident that only after answering the last problem it is possible to obtain the rational answer for the first problem, etc., however the list in [2] doesn't contain his problem.

So further all the fundamental physical problems are considered in corresponding sections – “Meta-physical”, ““Ordinary implicit” fundamental” (as the problem “what are particles” above), and “Other “ordinary”” problems, i.e. which are considered in standard physics.. Besides, in this paper a few cosmological problems and the problem “what is Life?” are considered (and are commented in Appendix) as well.

Note also, that the conception and the model are discussed and some papers are commented on the scientific “ResearchGate” Net, and so in the Sec. “References” for the papers the corresponding ResearchGate URL addresses are given, besides the standard reference data..

2 The Meta-physical problems

2.1 “What are the utmost fundamental in the recent philosophy and science phenomena/notions “Matter” and “Consciousness”?”

In the mainstream philosophy and further sciences both these, utmost fundamental in this case, phenomena/notions are principally transcendent,

- and so in the philosophy there exist numerous doctrines, schools, etc., which are based on different, often opposite – starting from the main fundamentally opposite philosophical doctrines “Materialism” and “Idealism”, principally non-provable, non-disprovable, and practically non-testable, initial postulated premises. Or, by another words, in the mainstream philosophy and science really there are no scientific

understanding – what “Matter” and “Consciousness” are. And so there is no answers on the physical questions in the Sec.1 above.

The correct answers on these questions turns out to be possible and are given, only in framework of “The Information as Absolute” conception, [3], [5], which was developed in 2007-2017 years,

- where it is rigorously proven that there exist nothing else besides some informational patterns/systems of the patterns that are elements of the absolutely fundamental and absolutely infinite “Information” Set.

Which - the Set - exists absolutely objectively really, because of it fundamentally – logically - cannot be non-existent, and so exists absolutely eternally, having no Beginning and no End.

Correspondingly additionally to the traditional utmost fundamental phenomena/notions above really there exist .a next, and really more fundamental than the existent in the mainstream problems, the problem

2.2 “What is “Information”?”

In the conception the utmost common definition of this absolutely fundamental¹ phenomenon - notion for humans - “Information” is:

“Information is something that is constructed in accordance with the set/system of absolutely fundamental Rules, Possibilities, Quantities, etc. – the set/system “Logos” in the conception”.

Or, by other words, the “Logos” set elements “make something to be some information”.

A few examples of the “Logos” elements, which will be, since they haven’t rational definitions in the mainstream science, scientifically defined and used further in this paper are, first of all, “Space”, “Time”, “Logical Rules”, “Energy”, “Change”

Correspondingly “Matter” and “Consciousnesses” become be scientifically defined –

“Matter” and “Consciousnesses” are nothing else than some informational systems, i.e. are made from the same stuff “Information”, and in accordance with the same “Logos” set’s elements.

From this definition follows the answer on the once more fundamental problem

2.3 “Why and how do humans sometimes effectively study Matter?”:

- since both, Matter and any [including human’s] consciousness are made only “from Information”, there is nothing surprising in that some informational system, which is able to obtain information about other informational systems, and to analyze logically the obtained information – i.e. “consciousness”, makes that sometimes adequately to

¹ Here and further “absolutely fundamental” relates to phenomena/notions that exist and are valid on whole “Information” Set, when (“simply”) “fundamental” relates to phenomena/notions that are fundamental. in Matter and “consciousness on Earth”, including human’s consciousness, and in the nature and social sciences.

the objective reality, including when processes obtained information about some objects, events and processes in Matter. More about the consciousness see the first approximation functional model of the consciousness [16].

2.4. Some “Logos” set’s elements as fundamental physical problems

Most of the “Logos” set’s elements are transcendent in the mainstream, when some of them are Meta-physical phenomena/notions, scientific definitions of which are corresponding fundamental physical problems. In this section the problems are

2.4.1 “What is Quantity “Energy”?”

- Energy is the “Logos” set element, which is absolutely fundamentally necessary for to change, including, of course, to create, of any/every informational pattern/system. That is because of the fundamental logical self-inconsistence of the other absolutely fundamental [also an element of the “Logos” set] phenomenon/notion “Change”::

- at every change of something this something’s state is simultaneously former, recent, and future states – when all the stats are different by definition. What is logical nonsense.

So to overcome this logical prohibition of changes at every change it is necessary to pay by two things:

(i) – to change [including to create] some informational pattern/system it is necessary to spend some non-zero portion of “Energy”, however that isn’t enough if the portion isn’t infinite, and so , besides,

(ii) – really at any change the changing state on some level/scale is uncertain – “illogical”.

From the above follows the answer on the next fundamental problem

2.4.2 Why in Matter quantum effects exist at all?

Note, though, that the fact that there cannot be deterministic continuous changes of anything was proven more 2500 years ago by Zeno in his brilliant aporias, when Zeno, in fact, predicted the quantum mechanics.

Relating to QM note also here, that from the conception follows the answer on next (implicitly) fundamental physical problem:

2.4.3 “Why does the QM postulate that all given type particles are identical exists, and is adequate to the reality?”

- this QM postulate is adequate to the reality because of all such particles are copies of the same informational pattern, that is quite possible situation in Information.

That above in this section is essentially an answer on the fundamental problem

2.4.4 “What is physical parameter “Energy”?”

- however the answer is “metaphysically” incomplete, Energy seems remains be as some mysterious Logos’s element. Nonetheless, besides the above [for what Energy is necessary], it is understandable that Energy is rather “dull” Quantity, and the changes in informational patterns/systems essentially eventually are determined by concrete information of concrete changing /creating patterns/systems.

However that till now isn’t too essential in physics, since Matter is rather simple logical system, which is based on a limited set of fundamental basic and universal logical rules/laws, links, and constants (more see below), where the exchange by energy at material objects interactions is, in depth, highly standardized and universal, the using and the redistribution of energy at interactions between informational patterns/systems “material objects” turns out to be highly universal an measurable.

And, besides, what seems as real – there exit more fundamental and mighty than Energy, phenomenon “Logics”.....

From the above follows the answer on the next fundamental physical question

2.4.5 “What is “Inertia?””

- Inertia is absolutely fundamental parameter that characterizes the logical resistance to changes because of the If-inconsistence of “Change” above. As the energy, the inertia in Matter can be, and is, according to Newton, characterized by the physical parameter “inertial mass”. Note here, that that has no relation to the existent in standard physics explanation of what is the inertial mass as some action of the Higgs field.

Besides note, that rather popular in official physics tenet something as “energy and mass are two faces for one coin one of them convert to another” is fundamentally incorrect. Both absolutely fundamental phenomena “Energy” and “Inertia” indeed exist always in every pattern/system, including in every material object, but they are fundamentally different, and so, say, at the interactions in Matter fist of all energy transforms/is distributed into energy – though with obligatory accompanying transformation/distribution of inertial mass.

2.4.6 “What are “Space” and “Time”?”

The answer on these questions in the conception is:

“Space” and “Time” are absolutely fundamental Rules/Possibilities [elements of the “Logos” set] that are absolutely fundamentally necessary for any informational pattern/system could exist:

- “Space” for every information could exist at all, and

- “Time” – additionally to Space – for some informational pattern/system could be dynamic, i.e. could change.

“Space” as the **Possibility** makes be possible to place in concrete “space” concrete informational patterns/systems, which (the space) at that is realized as concrete set of

“space dimensions”, which are necessary to actualize independent degrees of freedom of the concrete patterns/systems at changing of all their possible states.

Since Space is a logical possibility, the sets of dimensions form so concrete, and principally infinite, “empty space containers” for the concrete one type patterns/systems – for the space it is all the same – how many one type (i.e. having the same degrees of freedom at changes at being different) patterns/systems, which are constructed by the same concrete sets of logical rules/links/constants, and so have the same degrees of freedom at construction and changes, is placed in the container.

And it is all the same – in what places in the container the patterns/systems are placed. The unique requirement, when **Space** acts as the **Rule** is that between different patterns/systems must be non-zero “space interval”, and any pattern/system must occupy non-zero “space interval” [a “space volume”, if there are more than one intervals in different dimensions] as well. In that Space is the utmost universal grammar rule, which just so exists .in all humans’ languages.

Since any information absolutely fundamentally cannot be non-existent, in the “Information” Set everything had happened/existed; is happening/existing, and will happen/exist always;

- in concrete actualization of current state of concrete pattern/system, as that is for humans in this actualization of Universe evolution, the concrete patterns/systems, including Matter and consciousness, simply use always existent concrete spatial dimensions from the absolutely infinite number of spatial dimensions of the Set’s whole spacetime.

“**Time**” as the **Possibility** in main traits is analogue to Space, it is “the space for changing states of changing patterns/systems” – and exits/acts in concrete cases forming, including, corresponding “time dimension”.

However Time has essential difference from Space: for Time it is all the same by what reason/way, what degree of what freedom, etc., and in what informational pattern/system some change happened.

So in this case it is enough to have only one absolutely fundamental and universal, which exits and acts in whole “Information” Set, dimension for all changing states of all dynamic the Set’s element – the “true time” dimension.

Time as the **Rule** also acts as that between different states of changing patterns/systems must be non-zero “time interval”, however in this case this Rule, unlike Space, seem as is determined by a couple of two, on first glance different, absolutely fundamental and “external to time” causes: (i)- that any information if appeared cannot be non-existent, and so next changing state cannot “to erase” previous state; and (ii) - practically in every possible case, because of the logical self-inconsistence of the Change above, there cannot be continuous changing of states, the changes happen only along non-zero time intervals.

So here is the next principal Space and Time difference – at any change of any informational pattern/system this pattern/system moves in the time dimension on corresponding time interval Δt , in every case - when the changing pattern/system is fixed in the space, and at every change of its spatial position.

A sequence of passed time intervals at changing states of the same pattern/system is motion of the pattern/system in the true time dimension.

For concrete dynamical patterns/systems Space and Time so form concrete “empty containers” - “spacetimes”.

2.5 What is “Life”?

Two known now fundamental informational systems “Matter” and “Consciousness” are fundamentally different, because of are organized, exist, and change, i.e. evolve and develop their states, basing on fundamentally different sets of basal – though constructed in accordance with the same “Logos” elements, including “Logical Rules” - laws/links/constants.

At that note, that the main difference of Matter from any Consciousness in the Set, when now human know only one Consciousness’ version – “the consciousness on Earth”, diverse versions of which every living being on Earth, including humans, have,

- is in that Matter is fundamentally closed in the Set system of informational patterns/sub-systems, where interactions between the patterns/systems proceed as exchange by completely true and rigorously determined information. Including Matter is closed system also because of the material objects simply don’t understand informational patterns of other the Set’s elements; and, besides, in the language by which material objects communicate with each other, there is no notion “non-understandable information”,

- when consciousnesses, including the “homo sapiens sapiens consciousness” version, are able to communicate *in principle* seems with any of the Set’s element, starting in cases, when obtained information cannot be interpreted by some existent way, from defining such information as “non-understandable”.

Correspondingly every of both, Matter and Consciousness so exists and changes in essentially different spaces; though, consciousness operate also in Matter’s space when governs practically material system “body+brain”; and the both spacetimes have the fundamentally obligatorily common one true time dimension.

Including so there cannot be some “emergence” of any consciousness from any material structure, as that is suggested in many existent now “theories” and “solutions” of the “mind-body problem”, etc., in neuroscience and physics.

The informational system “the consciousness on Earth” could, in principle, exist in the Set in parallel with possible Matter’s Creator even before Beginning of Matter.

However, because of consciousness is principally open informational system, the “life” of such system in the unstable, and possibly destructive, the Set’s environment was rather cumbersome matter, and so this consciousness version has used some opportunity to make some, first of all as a stable residence and source of energy at operating, some material house form some stable Matter’s atoms – thus Life rather probably appeared a few billions of years ago on Earth.

However further “the consciousness on Earth” developed the practically material residence in accordance with seems evidently observed trend “more and more outside Matter into other the Set’s regions”, up to the “homo sapiens sapiens” version, which has well developed ability to process information in the highest – the “mind mode” – mode of operation abstractly, i.e. in some cases without direct relation to what happens in Matter, i.e. somewhere else in the Set.

In spite of that the consciousness fundamentally differs from Matter, she evidently is able to impact really on material patterns/systems when billions of years has made the first bio-molecules on Earth, and, say, really governs the practically material bodies of living beings, this ability is, at least for ordinary humans’ consciousnesses, including most of physicists, extremely weak, and so really in physics there is no the “observer problem”

– at any experiment every studied, including quantum mechanical, material object/system/process interacts with humans’ material instruments, including with observed “ Ψ -function collapses”, in rigorous consistence with laws/links/constants that act in Matter, when on the QM depth everything in Mater constantly happens as the endless chains of the “ Ψ -function collapses”, etc.,

- and all that, again, happens without any dependence on – there exists or not any “observer”.

More about “the consciousness on Earth” see the first approximation functional model of the consciousness [16], [17].

3 “Ordinary implicitly” fundamental problems

In the above the utmost common answer on the Meta-physical question “what is Matter at all?” is given – Matter absolutely for sure is some informational system of informational patterns, sub-systems, etc., which are particles, fields, bodies, cosmological objects, etc. In this section a number of the rational, and so rather possibly adequate to the reality, answers on existent in framework of the common fundamental question – why this informational system is as it is? problems, which mostly are used as solved “by default” in physics, in spite of really are transcendent, are presented.

3.1 What is Matter’s logical base?

The answer with a large probability must be, and so is, in the informational model, in accordance with two indeed fundamental findings in XX century:

- in accordance with the outstanding von Weizsäcker’s 1953-54 year “Ur-hypothesis” [18], [19] that if Matter is based on fundamental depth on a binary logics, then in this case the space should be 3D – and Matter’s spacetime indeed has 3 space dimensions. That was on one hand – the outstanding hypothesis that that explains – why Matter’s space is 3D, and, on the other hand, the fact that the space is indeed 3D was the mighty ground for that the hypothesis is true, and

- in accordance with the outstanding Fredkin-Toffli’s finding [20], who showed that if some patterns in a system are based on a reversible logic, it changes at interactions in the system without energy dissipation outside the system; in this Matter case -

dissipation somewhere in the Set; thus seems thrifty Matter's Creator used this fact; and so in Matter the energy conservation law acts.

Correspondingly the concrete spacetime of the concrete informational system Matter has 3 "purely space" dimensions and, since this system is dynamical system as that follows from experimental data, the spacetime has absolutely universal, common with all dynamical elements of the Set, the "true time" dimension, t . Further in the paper by some reason instead of " t " for the true time dimension is mostly used " ct ", c is the standard speed of light.

Besides to implement the reverse sequences of changes, which are in some sense "non-legitimate" in the true time, since are some "travels backward in time", which are principally prohibited in the true time, Matter's spacetime has once more dimension, which is really some specific space dimension, however in Matter it is actualized in many traits like the true time. And, besides, since that is just the time "what clocks show" [more see below], in the informational physical model this dimension is called the "coordinate time", " τ ", dimension, and mostly further for this dimension the version " $c\tau$ " is used.

Thus the Matter's spacetime is the absolute [5]4D Euclidian spacetime – as an empty container, where Matter exists and constantly changes - with the metrics $(c\tau, X, Y, Z, ct)$, where " $c\tau$ " is the "coordinate time" dimension, " ct " is the true time dimension, and X, Y, Z are 3 space dimensions. The dimensions, as that is shown in Sec. 2 above, by definition of Space and Time are principally infinite.

With the notion "spacetime" in physics there exist next fundamental problem:

3.2 Is Matter's spacetime absolute or not?

This problem didn't exist in mechanics till EM force was discovered, and even in first years after development of the Maxwell-Lorentz theory, where EM objects, events and processes existed and happened as some disturbances in some "ether", which was fixed in corresponding absolute Euclidian space. However in late 1800-th it became clear, that seems as the application of very mighty relativity principle to EM processes and events results in some paradoxical consequences, as, say, the "relativity of simultaneity"; and in that it seem that because of the principle it is impossible really to observe absolute space and corresponding absolute motion of bodies.

H. Poincaré wrote about the absolute motion in "Science and hypothesis" [21]:

"... Again, it would be necessary to have an ether in order that so-called absolute movements should not be their displacements with respect to empty space, but with respect to something concrete. Will this ever be accomplished? I don't think so and I shall explain why; and yet, it is not absurd, for others have entertained this view...I think that such a hope is illusory; it was none the less interesting to show that a success of this kind would, in certain sense, open to us a new world..."

However, though from that the absolute space cannot be observed evidently doesn't follow that it doesn't exist, nonetheless that was postulated in the first version of the special relativity theory in 1905 [22], where, besides, it was postulated that there is no corresponding ("luminiferous") ether, which would be a base of some absolute reference frame, when the theory was based on once more postulate that all/every inertial reference frames are absolutely completely equivalent and legitimate.

From the last postulate any number of evidently meaningless physical, logical, biological, etc., consequences directly and unambiguously follow, the simplest one is the well known “Dingle objection to the SR” [23] and its more known and more complex version “twin paradox” [15], etc. As well as that the fact that all inertial frames cannot be absolutely completely equivalent was proven by Zeno yet 2500 years ago: indeed in all reference frames, where Achilles and the turtle move with different speeds, Achilles really can leave behind the turtle, in spite of that is logically prohibited, if the motion of both is continuous – because of that $\Delta p \Delta x \geq \hbar$. But that is inessential in the frame, where the turtle is at rest; in this frame Achilles runs behind the turtle without any logical problems. However these SRT postulates are stated as true postulates in official physics till now.

Nonetheless from even one meaningless consequence, which directly and unambiguously follows from the postulate above, completely rigorously follows by completely rigorous “proof by contradiction” that Matter’s spacetime is absolute, and that follows from the definitions of Space and Time above as well.

Correspondingly observation of the absolute motion, i.e. the motion of a body in the absolute 3D space, is only the technical task, which, as that is shown in the informational model, can be principally solved, and the absolute velocity of a pair of clocks can be measured yet now [10], [11]

3.3 There exist or not in Matter some “ether”?

From the well grounded interpretation of the existent experimental data that Matter’s spacetime is the absolute [5]4D Euclidian spacetime with the metrics $(c\tau, X, Y, Z, ct)$ in the Sec. 3.1 above seem as quite rational to suggest that the dimensions of the spacetime relates to degrees of freedom at changing states of some analogues of the von Weizsäcker’s “Urs”, though, of course, not literally: the [5]4D fundamental binary reversible logical elements, (FLE). As well as introduction corresponding fixed in the absolute spacetime above ether, i.e. a dense lattice of the FLEs, as that is made in the informational model [7], is rather rational.

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Besides, in the model, basing on existent experimental data, it is postulated also that the 4 FLE “sizes” (in the spacetime metrics above) are identical and equal to the Planck length; when the changing of the binary FLE states “FLE flip time interval” is equal to the Planck time, therefore motion of material objects in the spacetime is as “equal footing” in all [5]4 dimensions of the spacetime.

Postulating of the [5]4D FLE ether allows to clarify a number of other fundamental physical problems:

3.4 What is “a particle”?

In official physics particles are principally some transcendent items – since are some objects of the transcendent “Matter”.

Besides from the informational conception above and from experimental data follows that particles – which are absolutely for sure are some informational patterns/systems, are some objects that constantly change their states; however, at that, are stable,

- seems well rationally follows that particles are some objects that cyclically change the states with frequency ω so that particles have energies $E = \hbar\omega = mc^2$, m is the inertial mass – as such hypothesis appeared yet in 1920-th as the “the “Zitterbewegung”. de Broglie hypothesis [24], [25].

From that a few naturally suggested – and postulated in the model above - seems as rational premises follow:

(i) – particles are some cyclic disturbances of the FLE matrix, which appear at impacting by some 4D momentum on some ether FLE, which, after the impact, “flips” further causing sequential flipping of neighbor FLEs.

To cause a flip – and corresponding sequential ether FLEs flipping along a straight 4D line, when the “flipping point” propagates in the 4D ether and 4D sub-spacetime with metrics $(c\tau, X, Y, Z)$ with the speed of light, $c = l_p / t_p$, is enough infinitesimal momentum. However, if the momentum isn't infinitesimal, the flipping point cannot propagate with the speed more than c , and so the unidirectional motion transforms into some “helical” “flipping point” motion along some 4D “helix” of cyclic sequential flipping – and so precessing FLE's..

However some “helix's 4D axis” doesn't exist as a 4D vector in the 4D sub-spacetime, so the propagation of the disturbance in the ether transforms into propagation of, possibly, propagating in the ether bi-vector or a tensor, and so the propagating is essentially not “point-like”- in both, in the spacetime and in the ether. Nonetheless the propagation has the direction – the direction of the impacting momentum's vector, and, besides, the FLE lattice disturbance “helix”, is observed as a pointlike particle at interactions with other point-like particles. It seems as rational to suggest so, that “pointlike interactions” are interactions of the particles' FLEs, i.e. the “interaction point's size” is near Planck length, in spite of the disturbance is well non-pointlike.

(ii) As well as from the existent experimental data seems as rather rational to suggest, that the “radius” of the “helix” above is equal to the particle's Compton length $\lambda = \frac{\hbar}{mc}$ and corresponding “helical” angular momentum of the particle's “FLE flipping point” is equal to the Planck constant \hbar .

(iii) Besides the always moving particles are, so, some “gyroscopes” which are always oriented relating to the propagating direction, and

(iv) Note also, that from the experimental data follows that in Matter there exist two main types of particles, dependently on – by which 4D momentums they are created, in the model that are “S-particles”, which are created by spatial momentums, and “T-particles”, which are created by momentums that were directed along the “coordinate time”, i.e. the $c\tau$ -axis.

So S-particles, e.g., photons, always move in 3D space only with the speed of light, T-particles move in “coordinate time” dimension with the speed of light, if are at rest in the absolute 3D space. If, after a space directed momentum a T particle moves also in the space, its speed in the “coordinate time” dimension decreases in the Lorenz factor in accordance with the Pythagoras theorem.

Note, though, that the above in this section relates completely only to fundamental particles, if a particle is composed from some fundamental particles, some points in the above aren't valid.

From the above seems as the next fundamental problem becomes be essentially clarified:

3.4.1 What is a particle's spin?

“Spin” is ad hoc introduced in QM as “purely QM” physical particles' parameter “spin”, aimed at fitting the theory with experiments, but in the model it obtains rather “classical” sense – that is indeed some angular momentum, which is the projection on the 3D space the 4D object above, and so quite naturally spin can be add/subtract to/from, say, “more classical” orbital angular momentums, what is ad hoc postulated in physical theories as well.

However, because of the mathematical limitation above, the observed in some particles 3D “angular momentum” “spin” differs from “real” the “momentum’s” value, which is equal to \hbar , and for some T-particles it is observed at interactions in the 3D space as be equal to $\frac{1}{2}\hbar$.

So fundamental T-particles are fermions. For S-particles the mathematical limitation above isn’t essential, and S-particles have the “real” spin \hbar (are bosons). Though here is an limitation as well, the S-particles angular momentum cannot have projection on the $c\tau$ -axis, and so has only two spatial projections.

That the above relates only to fundamental elementary particles, T- particles that are compositions of fundamental particles can have the integer spins.

From the definition what is the absolutely fundamental phenomenon “Inertia” above follows that all/every, S an T, particles have some inertia, and so all/every particles have inertial masses. But in this case there is, the though not principal, however physically essential, difference: T-particles differ from S-particles in that they have inertial “rest masses”, when S-particles quite naturally haven’t.

From this fact follows the essential clarifying of the next fundamental till now in physics problem:

3.4.2 Have or not the fundamental particles “neutrinos” non-zero rest mass?

- from experimental data follows that the neutrinos are fundamental fermions, so are T-particles, and so have non-zero rest masses.

4 Other “ordinary” fundamental problems

Now we can to clarify the next fundamental physical problem

4.1. “What are the Lorentz transformations?”:

If some T-particles constitute some rigid enough T-body (there aren’t, though, some rigid bodies that are composed from S-particles), then, if the body, say, is a rigid rod, which has a length L , and is at rest in the absolute 3D space, the rod occupies in the space corresponding spatial interval be equal to L , and all the rod’s points move in the $c\tau$ -dimension with the speed of light, all the points so have identical $c\tau$ coordinates’ values.

However if the body, after be impacted by some spatially directed momentum - as that always happens in mechanics, if we don’t consider the interactions in high energy physics, then, as that was shown above, the rod’s speed in coordinate time decreases in the Lorentz factor.

Since the motion in coordinate time is changing of internal state of particles (what is the running of the close-loop particles’ FLE algorithms), the changing of internal state when a particle is at absolute rest proceeds with maximal rate, but when a particle moves also in the space, its algorithm become be “diluted” by “blank” space steps, and so runs slower.

Correspondingly the moving particle's speed decrease along the $c\tau$ -axis means that the internal processes in the particle are slowed down in the Lorentz factor as well, what is observed experimentally – moving unstable particles live longer, moving clocks tick slower, etc.; and, besides,

- since moving in the space particles change their orientation in the 4D sub-spacetime, the particles, if are rigidly enough bounded in the body, rotate the body in the sub-spacetime as a whole. So, in this case the rod, if moves along X -axis with a speed V , rotates in the $(X, c\tau)$ plane on the angle, when the rod's front end becomes be “younger” than the back end on the “relativity of simultaneity” Voigt-Lorentz decrement $-\frac{VL}{c^2}$, again in accordance with the Pythagoras theorem.

So the rod's projection on the X -axis becomes be contracted in the Lorentz factor, as that was suggested by FitzGerald yet in late 1800-th [26]. At that the rod really occupies in the space the spatial interval lesser than it occupied when was at rest, and all other material objects really interact with the “contracted” rod.

However, because of on the rod the space interval etalons are contracted as well, the measured by an observer on the rod the rod's length is equal again L .

These points above are combined in the Lorentz transformations, which so are indeed quite naturally adequate to the reality, however, first of all, as:

- the Lorentz transportations are equations of motion of only points of moving in the absolute space rigid bodies in the absolute reference frame with using data about coordinates of these points, which are measured in the inertial reference frame that is set on this body.

As that are any other transformations between physical reference frames, including the Galileo transformations.

In the transformation the letters “ x ” and “ ct ” in standard version of the transformations by no means relate to all points in whole Matter's spacetime, as that is postulated in the Minkowski version of the SRT [27], and to points of some “local space” and “local time” in the Lorentz-Poincaré theory . [28]- [30]; besides, of course, the spacetime points that are occupied by the bodies points.

There don't exist, of course some “space contraction”, “time dilation” and other “relativistic properties of the pace, time, and spacetime” and corresponding “relativistic effects”.

Note, however, a few additional points in this case:

- first of all, because of the indeed mighty Galileo-Poincaré relativity principle, which exists and acts because of the fundamentally binary reversible logical base of Matter, the Lorentz transformations form the group so that they are symmetrically applicable between the “Einsteinian” reference frames, i.e. that Einstein used in first version of SRT in the 1905 year paper

“...The theory to be developed is based like all electrodynamics| on the kinematics of the rigid body, since the assertions of any such theory have to do with the relationships between rigid bodies (systems of co-ordinates), clocks, and electromagnetic processes...”

- though after the Minkowski illusory postulating of applicability of the transformations to all the spacetime points Einstein didn't support this 1905 year assertion about rigid bodies and frames' coordinate systems, and existent now standard version of SRT is the Minkowski version.

So using of every moving frame indeed allows to describe and to analyze objects, events, and processes in physical systems quite adequately to the reality, in spite of the measured parameters of material objects and systems in this case aren't real – the objects and systems have real parameters only in the absolute frames. At that all such frames so are indeed equivalent and legitimate in most practical cases, since are traceable to the absolute frame as well (more see [14]).

However that isn't completely true in any physical system. If some system is composed by free objects, in this case the Lorentz transformations don't work completely - as that, for example, correctly is discovered in the Bell paradox [43], and by using such systems it is possible to observe the absolute notion, in [10], [11] two methods are suggested.

And, besides, what is even more important, the real non-adequacy of SRT postulates to the reality becomes be an impediment in physics, when physics addresses to fundamental problems, i.e. outside the utilitarian applications in elaborations of concrete physical tasks and the technology. So indeed new physics is possible mostly at violation of the SRT.

A couple of examples, when really fundamental new results in physics turned out to be possible only as some violations of SRT are the discovering of the antiparticles, and the “Feynman–Stueckelberg interpretation” in QED [32], [33], where it is postulated that antiparticles move backward in time, where

- Dirac's prediction of the antiparticles [31] is based on the suggestion that there are some points in “sea of negative energy”, when “negative energy” doesn't exist in SRT (that doesn't exists at all, though),

- and moving of particles backward in time doesn't exist in SRT as well.

However both these fundamental findings in physics remain be unexplained, so really corresponding fundamental physical problems remain as well, in spite of that the predicted by Dirac antiparticles are well observed soon 100 years already, and the Feynman–Stueckelberg interpretation till now remains in physics as some strange mathematical trick, which, however, is very effective at application of very effective QED.

Both the last problems above become be essentially rationally clarified in the informational model:

4.2 What are antiparticles?

Note, again, though, that the answer on this section question is possible only at considering this problem in the [5]4D Euclidian spacetime, where in the 4D sub-spacetime the 4D momentums of particles are $\vec{P} = m\vec{c}$ (and particles' energies $E = Pc = mc^2$), when "4-momentums" in SRT physically are rather strange: the zero component of a 4-momentum of a particle is, in fact, the whole real 4D momentum (so antiparticles don't exist in SRT).

And so, say, when Dirac obtained his result considering possible consequences of two different formally possible having opposite signs versions of following from SRT QM equation $[\frac{W^2}{c^2} - p^2 - m^2c^2]\Psi = 0$ (c is the speed of light, m is rest mass, p is 3D spatial momentum of electron, Ψ is the electron's wave function), he indeed obtained formally that from the equation follows that "the electrons in the world to be started off in positive-energy states, after a time some of them would be in negative-energy states", though really there cannot be some "negative-energy states".

However if he would consider this problem as the "momentum problem", and knew that Matter's spacetime is Euclidian one (see above), where all the 4D momentums are unambiguously vectors - as that is in the informational model, he could consider the equation for the momentum $m_0c = \pm(\frac{W^2}{c^2} - p^2)^{1/2}$

- where the sign "±" for the momentum is undoubtedly legitimate, and so the hypothesis about some particles that move with negative speed of light – oppositely to electrons – in the $c\tau$ -dimension, would be well legitimate as well.

That above is, besides, the answer on the problem

4.2.1 What is the "Feynman–Stueckelberg interpretation" in QED [32], [33], where it is postulated that antiparticles move backward in time

The motion with negative speed in the $c\tau$ -dimension practically for sure happens in Matter, if, as that is again well rationally suggested and postulated in the model, the antiparticles have the same algorithms as the corresponding particles, but their algorithms run in reverse command order, and so indeed

- the antiparticles really move backward, however not in the true time, but backward in the coordinate time, which is just the time "what clocks show", and really is measured as experimental base of physical theories. That is another thing, that existent clocks are made from particles, and so real positions and motion of antiparticles on the $c\tau$ -axis are experimentally non-observable. If it would be a possibility to make a clock from antiparticles, that would be possible – as observation that on such clock the pointer rotates oppositely to the pointer on its made from particles twin.

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Note, though, also – the coordinate time isn't the time, and so, for example, if there would be two twins, one "material" and the other "antimaterial", their clocks would show opposite signs of their ages, but both twins will seem practically identically – as usual twins, since biologically they would age principally in the true time. Not

completely, though, moving in the space both twins would biologically age slower, than the twins at absolute rest.

4.3. “What are the fundamental Nature forces?”

- that is one of utmost fundamental and complex physical problems, and so it contains a number of other fundamental problems, including, say, – what is every of these Forces?.

In the informational model [7] the Forces are some logical marks, that can be – and are in Matter - assign to any FLE, so, that if such FLE is a “logical gate” in the algorithm’s FLE sequence of some particle, then at constant the algorithm’s cyclic running, when this FLE flips, that not only causes flipping of neighbor ether FLEs above, but

- these ether FLE’s become be marked by corresponding Force as well.

Such flipping propagates – as the Force mediator – in the FLE-ether, and when such mediator meet some other particle’s FLE with this Force mark, the mediator transmits some momentum to the other particle. This scheme is rather possibly too simple; for example, in physics nuclear force is an exchange by particles (mesons), however that isn’t essentially principal, and the scheme seems as rather effectively applicable at least for Gravity and EM Forces.

That the above answers on the fundamental problem

4.3.1 “What is a Force charge of a particle?”

- the charge of some Force is, first of all, the set – or part - of having the Force marks FLEs in the particle’s algorithm. However that isn’t complete, the Force strength also depend on – with what frequency this algorithm runs.

In the informational model now only two Forces are considered – Gravity and EM, and some initial models of them are developed [3], [7], [12], where two next fundamental problems seems are rather essentially clarified:

4.3.2 “What is Gravity ?”

From existent experimental data follows the rather rational premise that the Gravity charge, at least at absolute rest, is formed in a particle, and acts in the 3D space, by three conditions:

(i) - the frequency with a particles algorithm runs if particle is at absolute rest (in statics), which is $\omega = E / \hbar = m_0 c^2 / \hbar$, [for photons mc^2 / \hbar], where m_0 is the inertial rest mass, c is the speed of light, \hbar is the Planck’s elementary physical action, and

(ii) - in the model every particle’s algorithm has only one fixed gravitationally marked FLE, and so the gravitational charge is proportional to the same algorithm’s frequency ω , as the inertial mass above.

(iii) at every cycle the marked FLE of a particle initiates in the 3D space radial propagating of 2D ring “circular graviton” of flipping ether FLEs that can transmit, at

hitting in G-marked FLE of other particle, to this particle the momentum $p = -\frac{\hbar\vec{r}}{r^2}$, r is the radius-vector from the radiating to impacted particles.

Since the flipping of G-marked FLEs in both particles happens independently, and particles in the space at gravitational interactions practically aren't oriented specifically, the elementary interactions above are random. That isn't essential in Matter on macro scale, however allows, at interactions of lightest particles, first of all photons, to observe the quantum nature of Gravity [3], [8].

A couple of additional important notes: (i) - first of all from the existent experimental data follows that all/every particles have the gravitational charges, and (ii) - that the Gravity mark is completely symmetrical at particles and antiparticles algorithms running, and so everything in Matter attracts everything.

Besides from the points above the corresponding fundamental 300 years old physical problem

4.3.3. “Why the fundamentally different inertial and gravitational masses are equivalent at least at statics?”

- becomes be solved: both masses are equivalent since both are proportional to the same frequency, with which the particles algorithms cyclically run.

The next fundamental problem is

4.3.4 “What is Electric force?”

Experimentally the both forces are similar – the Newton's gravity law is similar to the Coulomb law, from what follows the rather rational premise in the informational model that the electric charge is formed like the Gravity charge relating to the condition (i) – (iii) in the Sec. 4.4.3 above, however in this case the particle's set of “electrically marked” FLEs is large, and, besides, when the number of gravitationally marked FLEs (only one) is fixed in all particles algorithms, in the case of Electric force the electric charge is actualized as the work of constantly relative – and essential – part of some particles algorithms' E-marked FLEs;

In the model this relative part is equal to $\alpha^{1/2}$, α is the fine-structure constant.

So having different inertial masses particles have, nonetheless, the identical electric charges.

The other fundamental difference of Electric force is in that the E-mark isn't symmetrical, and so there are two types of electric charges – positive and negative, what is actualized, for example in opposite running of electron and positron algorithms,

- and so the transmitted at interactions of the analogues of circular gravitons - “circular photons” - with E-marked FLEs momentum can have different signs, $p = \pm \frac{\hbar\vec{r}}{r^2}$.

Thus in the model once more fundamental physical problem

4.3.5 “Why the Gravity force in a number of tens orders of magnitude weaker than other forces?”

- becomes be solved as well, but not only.

In the Electric force model above the next fundamental problem

4.3.6 “Why $\alpha \hbar c = e^2 / 4\pi\epsilon_0$?”

- when in this equation fundamentally different in physics now parameters – the fundamental elementary action \hbar , the speed of light, c , elementary electric charge, e , and the fundamental fine-structure constant, α , by some unknown in the official physics way are united,

- becomes be solved as well.

At that seems as rather probably a next fundamental physical problem

4.3.7 “What are “virtual” particles” in recent physics?”

- which are mostly introduced in standard quantum dynamical theories as mediators of the forces becomes be principally clarified as well.

It seems as completely rational to suggest that really in Matter there is no “virtual” particles and interactions, and the “virtual particles” are nothing else than some mathematical trick, which by unknown now reason is effective at elaboration of physical tasks.

Really interactions in Matter are caused and happen as real interactions of real material objects, including the mediators of the forces really aren't “virtual”.

As that from experiments seems as rather convincingly follows at least for Electric force, the real interactions aren't caused by real “ordinary photons” – which in QED are introduced as “virtual photons” - in this case: there is no any experiment when in a system . of charged bodies some exchange by ordinary photon was observed, nonetheless the bodies completely really interact.

So the circular photons, which aren't observed by detectors of ordinary photons, including by human's eyes, can be such real Electric force mediators, when the studying of the problem – why the virtual photons adequately to the reality simulate the real interactions of the real circular photons with charges, rather probably can result in new information about how Matter is constructed on the QM scale.

Though seems some appearing in this case problems yet now have, at least initial, rational clarifying.

Firstly the next problems

4.3.8 “What is the magnetic force, including – there exist or not some magnetic monopole?”

- seems becomes be essentially clarified. It is well known from experiment and classical electrodynamics that the magnetic force appears only if an electric charge moves, and disappears if the charge is at rest (for example [34])

From the above seems follows as quite rational premise that really the magnetic force isn't some fundamental Nature force, which exists, using Newton's wording “of itself, and from its own nature”, and so which has own charge “magnetic monopole”.

However in the electrodynamics electric and magnetic forces seem as practically completely symmetrical, when, according to SRT, all relatively moving inertial reference frames are completely equivalent, and so the argument above, if SRT is completely correct, turns out to be inessential.

Correspondingly, after appearing of the Dirac's publication [35], where he gives some QM arguments from which some magnetic monopole can exist, the “magnetic monopole”, problem from 1931 year and until now is one of popular, and even a fundamental, physical problem.

Nonetheless, since the Matter's spacetime is absolute, and not all/every the inertial reference frames are completely equivalent and legitimate, when the absolute, i.e. that are at absolute rest in the absolute 3D space, reference frames are frames that differ from all other frames first of all by that only in these frames physical objects, events, and processes, have real values of their physical parameters, the argument above becomes be valid, and further, since the field of a charged a body that is at absolute rest is purely electric field,

- from that follows that magnetic monopoles really don't exist.

As well as it seems as quite rational to suggest that the magnetic force is some specific actualization of the electric force, when the ether FLEs in radiated by a moving charge circular photons obtain additional momentum that is proportional to the spatial speed of the charge, and, as that was pointed in the Sec. 3.4 for the case when the disturbance in the ether becomes be some close-loop sequence of flips of precessing FLEs “a particle”,

- the flipping FLEs in circular photons become be precessing as well, and at hitting in a E-marked FLE in an other moving charged particle transmits to this particle momentum, which is orthogonal to momentum that would be transmitted in the case when both charges are at rest, i.e. along direction of the radius-vector between the charges.

The next suggestion seem as rater rational as well: if a charge is accelerated, then the circular photon transforms into ordinary photon, when “electric” and “magnetic” momentums transmitted by precessing FLEs cyclically change each other.

Finally in this section note, that from these initial models directly follows the QM nature of both – Gravity and Electricity. However, when the QM nature of Electricity in mainstream physics principally seem as natural, the corresponding problem, if Gravity is considered, is the next fundamental problem, which in mainstream physics by some

reasons mostly is as the problem of quantization of GRT. What is fundamentally impossible, and so numerous attempts to develop some “quantum GRT” really failed, but that means only that the GRT is rather questionable physical theory.

In the informational model the problem

4.3.9 What is quantum Gravity”

- becomes be essentially clarified – from the definitions of “Space” and “Time” follows that postulated in GR interaction “mass-spacetime-mass” isn’t correct. Again, Gravity is nothing else than some “ordinary” fundamental Nature force, which absolutely fundamentally – as all other Nature forces - must be quantized,. QM is the fundamental consequence of the fundamental logical self-inconsistence of the absolutely fundamental phenomenon “Change”.

If the Gravity model (Sec. 4.3.2 above) is true, from that directly follows that gravitational interactions are quantized, and rather probably analogously to Electric force, including both, “ordinary” and “circular” photons and gravitons rather probably are correspondingly similar.

So the main problem at observation of the QM nature of Gravity appears because of extreme weakness of this force. However with a well enough non-zero probability the quantum nature of Gravity can be observed at experiment with photons [3], [8]. The experiment was suggested in 2007 year, and can be made yet now after a simple modification of practically any existent installation that was made aimed at detection of gravitational waves, by adding to two existing interferometer’s arms the additional arm, which is made orthogonally, say in a hole, to Earth surface.

Finally in this section consider two problems

4.3.10 ”What is the physical action and the “minimal physical action ” principle?”

As that is pointed above, Matter’s objects change their states basing on binary logics, i.e., “bit by bit”, when from existent experimental data seems follows – at least till now there are no any experimental data that would be inconsistent with this conjecture, and in the informational model quite rationally it is conjectured, that on utmost fundamental depth all changes proceed as steps on the Planck scale, when the physical action, S , is the number of binary operations, every of which changes information in a material object/system on one bit, what is observed as the change on fundamental elementary physical action \hbar .

Just that the Heisenberg inequalities mean: $\Delta S = \Delta P \Delta x \geq \hbar / 2$, $\Delta S = \Delta E \Delta t \geq \hbar / 2$, etc.

Which [inequalities] seems with rather large probability really are the equalities.

So, though the QM uncertainty is absolutely fundamental, this uncertainty, nonetheless, isn’t arbitrarily chaotic, and is actualized as uncertainty in pairs of non-commutative variables provided that in all cases $\Delta S = \hbar$.

Thus the “minimal physical action ” principle in macro physics seems is as that the changing states of interacting bodies proceeds provided the minimal number of

innumerable elementary binary steps – and by this way QM directly reveals itself in macro physics.

5 Cosmology

In cosmology there exist many problems, first of all since this physical branch relates often to some objects, events, and processes, which cannot be studied by humans in controlled conditions now, and so even at formulation of the problems in cosmology there exist some, in some cases principally insurmountable, uncertainty.

However the informational physical model allows to consider rationally enough of a few problems, which cannot be principally rationally solved or clarified in mainstream physics, i.e. outside the “Information as Absolute” conception and the model

5.1 The “Beginning problem”

This problem is utmost fundamental problem in cosmology, and it is rather evidently irresolvable in framework of official physics: because of the physics has no any reliable data about the objects, events and processes that could exist, appear, and happen in this case. Nonetheless in physics a number of theories exist, and in the standard cosmological “Big Bang” model [36] it is suggested concretely that

“.....As the Big Bang theory goes, somewhere around 13.8 billion years ago the universe exploded into being, as an infinitely small, compact fireball of matter that cooled as it expanded, triggering reactions that cooked up the first stars and galaxies, and all the forms of matter that we see (and are) today.....”

- in spite of that the existent physics principally isn't applicable to this “infinitely small, compact fireball of matter”, etc.

As well as to the next steps of Matter's creation, when in the model

“...more explosive phase of the early universe at play: cosmic inflation, which lasted less than a trillionth of a second. During this period, matter — a cold, homogeneous goop — inflated exponentially quickly before processes of the Big Bang took over to more slowly expand and diversify the infant universe.....”

- existent physics knows absolutely nothing about what was this “a cold, homogeneous goop” ; why “it inflated exponentially quickly before processes of the Big Bang”, by what reason this “inflation” stopped; and further by what reason and how that “took over to more slowly expand and diversify the infant universe”, etc.

Nonetheless from existent astrophysical data a lot of seems as rather rational model of Matter's evolution after Beginning, including, if we don't take into attention the remark above, the “phenomenological” description of states in Matter evolution above, seems as rational in a number of points:

- starting from the “inflation” state [37], [38], which, though is based on purely ad hoc postulated in the model existence of some vague “scalar fields” and corresponding these fields' properties, when the inflation by unknown reasons happened as some relaxation of the field's singularity, because of “a repulsive gravitational force” (?) [36], seems adequately to the reality phenomenologically describes the uniformity of matter density and of the material objects nomenclature on cosmological distances, the nucleosynthesis, etc.

Including the hypothesis in the standard model that during inflation matter was a cold, homogeneous goop, seems as rather plausible, since is consistent with cosmological observations, in spite of it seems as contradicts with “exploded into being, as an infinitely small, compact fireball of matter” in this model in the quote above.

The informational approach allows to formulate reasonable physical hypothesis [5], [7], which is in accordance with the existent experimental data and with seems reasonable points in the standard Big Bang model above, such as the inflation epoch, and that Matter after the inflation was rather cold, etc..

In the hypothesis it is suggested that the “Information” Set’s element “informational system “Matter”” was created by other the Set’s element “an informational system conscious smart “Creator””, which was indeed extremely smart, so that could design so logically simple, however functionally extremely complex, effective, and closed in the Set, informational system; and find at creation of this system in the Set a huge portions of indeed mysterious for humans till now phenomenon “Energy”..

So – see above - Matter is based on simplest binary and reversible logics + (at least) 4 fundamental logical marks, which humans observe as real 4 fundamental Nature Forces, including Gravity, see above, and few universal links and constants, which are “written” in the Matter’s utmost fundamental base - in correspondingly binary [5]4D reversible fundamental logical elements [FLE].

Further this design was actualized into Matter in next 3 steps – and portions of energy:

On the first step the [5]4D dense lattice of [5]4D FLE was created (“inflation epoch”) exponentially, for example as the result of programmed division, possibly on 2, of possibly one “primary FLE” (as that, say, bacteria spread in a Petri dish, if there is enough food) in corresponding Matter’s absolute Euclidian of course, [5]4D spacetime with metrics $(c\tau, X, Y, Z, ct)$,

- which “automatically”, i.e. by definition of the absolutely fundamental phenomena “Space” and “Time”, appeared at creation of the “primary FLE” (note, though, that this spacetime always existed in the Set, which exists absolutely fundamentally always, i.e. having no Beginning and End, as a sub-spacetime of the Set’s whole spacetime);

- on the second step in this lattice the energy portion with $c\tau$ -directed momentums was uniformly pumped, and in the lattice the completely symmetrical primary T-particles were uniformly created, and so Matter at that seems indeed was rather cold.

But not only, at that the next fundamental problem, in spite of that evidently contradicts with existent experimental data in high energy physics, and corresponding physical theories

5.2 “Why Matter now practically doesn’t contain antimatter?” ,

becomes be seems as well rationally solved:

- Matter doesn’t contain antimatter since didn’t contain antimatter at the second step – since the primary T-particles were completely symmetrical algorithms. In this case there is logically senseless to say about the difference “particle/antiparticle”, and so it

was logically completely permissible for all primary particles be only “particles” – and so have the positive momentums in the $c\tau$ -dimension, and

- since on the third step the primary particles, (in the hypothesis rather probably Planck mass particles or some other simple, i.e. having only completely symmetrical gravitational charges, particles) interacted by using only completely symmetrical Gravity force, the result was, rather possibly indeed a soup of “ordinary” particles, which was distributed again uniformly in the lattice.

The “soup” unstable particles decayed rather quickly, and – as that seems rather adequately to the reality standard cosmology asserts – the observable now particles eventually remained.

If the primary particles were the Planck mass particles, at interaction of two particles near 10^{19} “ordinary” baryons were created, and the next “soup” was rather warm, and so now CMB exists, however that rather possibly wasn’t some “singular” temperature, because of the most part of interactions energy was spend on creation of the ordinary particles.

At that for Creator it was no any necessity to know/to control - how the step-2 and step-3 happened. Creator well knew, that from the FLEs nothing besides some informational system “Matter” can appear, and, say, this Matter could have a number of thousands of galaxies lesser or more, but for Creator that wasn’t essential.

As well as in the hypothesis the seems rather rational answer on the fundamental physical problem

5.3. “What is the “dark matter””

- appears: there would be nothing surprising if, say, that the “dark matter” indeed exists, that can be the “primary particles”, when at creation of “ordinary” matter only 10-30% of these particles have interacted, and 70-90% of the “relict” exist till now. If that are Planck mass particles, then the density of the dark matter particles is in 10^{19} times lesser than the baryons’ density, i.e. 3-4 particles in a cube with the size 1 million of meters.

Since the primary particles interact only gravitationally, they practically interact with “usual” particles with probability that is extremely lesser than when that neutrinos do, and so (i) - the bodies, stars, etc., are practically transparent for these particles, which so rotate around some massive bodies’ centers along their single own orbits, forming corresponding haloes, and (ii) – they are practically non-detectable, by both reasons – extremely small cross section and extremely small concentration.

Though if some interaction will happen in some detector, that will be well observable, 10^{19} is rather observable energy.

5.4. “What is the “dark energy””

- it seems as rather rational to suggest that both interpreted as “space expansions” existent cosmological data, i.e. the exponential “inflation” at Beginning and moderate “expansion” in further evolution of Matter, which really are some expansions of the FLE lattice, indeed were – and are caused by some energy, however this energy is

completely outside physics, and so it is a rather questionable sense in attempts to incorporate this – again rather possibly Creator’s energy, in the physical theories.

Besides, as that is in the Beginning model above, that would be some rational description of what and how happened in first instant at Beginning, or, for example, when for the expansion after appearance of “ordinary” Matter it seems as would be possible to find some rational reasons as well, for example this expansion would be necessary to prevent Matter’s collapse because of the “gravity paradox” [42], etc.

7 Conclusion

This paper is, in fact, some conclusion for the series of papers, where the “The information as Absolute” conception, the informational physical model, and some concrete physical problems in framework of the conception and the model, are considered, and so a typical conclusion in a paper in this case would be too long.

So here only a few final remarks, that relate to possible development of the model and its application in physics.

It seems what should be done on the first step is the development of versions of traditional physical theories, which now are mostly based on the SRT formalism, first of all, on the postulate that real Matter’s spacetime is the 4D Minkowski space, where the phenomena “Space” and “Time” are actualized in the theories erroneously

Instead physics should be re-formulated in accordance with the fact that real Matter’s spacetime is the absolute [5]4D Euclidian manifold with the metrics (ct, X, Y, Z, ct) , including it is necessary to develop theory of the 4D angular momentum, Hamilton and Lagrange functions, new formulation of the main conservation laws theorems in mechanics,

- and corresponding QM operators, including solving in this case a next fundamental physical problem

“Why time in QM hasn’t corresponding operator?”

- rather probably would be solved as well.

Besides some reformulation of QM, which will take into account really existent [5]4D FLE ether, rather possibly will result in better understanding of the QM phenomena; including of possibly really existent fundamental problem

“what is the Pauli principle, and is or not the force that limits number and spins of fermions in a given state a “fifth Nature force” or that is something else?”

In Standard Model the CPT theorem version allows to obtain rather questionable results, as, for example, the solution of the 5.2. problem above, where at Beginning both – “Matter” and “AntiMatter” appeared, however, in accordance with the CPT theorem, further they immediately turned out to divided in some “spacetime” and “antispacetime” and so Matter doesn’t contain antimatter now [40], [41].

Besides it seems as rather rational to suppose, that rather popular in the mainstream physics problem “development of the “[Grand]Theory of Everything” which will “unite” all existent fundamental Nature forces, really isn’t actual; really the forces are fundamentally different, and some “unifications” can appear mostly at some exotic energies, when at interactions of the particles some problems with sufficiency of numbers of particles’ algorithms FLEs to mark all charges, which the particles have in more tolerant conditions, .can occur.

As well as such problems as “mass spectrum” in SM, “Dark energy” and “space expansions” in cosmology, etc., rather possibly are outside physics as well. Besides, though, that there cannot be some “space expansion” practically for sure, and what is correspondingly observed, if correctly is interpreted is really expansions of the FLE lattice. Etc., more see the main text.

Finally note, that the experiments, which are suggested in the informational model, i.e.

- where the absolute motion of the Sun’s planet system and of Earth will be observed [10], [11], though at that seems with a rather non-zero probability the measured absolute velocity will be the same as which follows from the CMB dipole, because of from the Matter’s creation model in Sec. 5 follows that Earth – as any other object in Matter’s space – is in essentially cold region,
- the observation of the quantum nature of Gravity [8], and
- really non-fundamental, but important, when is rather simple and cheap, experiment [12], where it will be shown that the GR postulate, that photons at motion in gravitational fields between points that have different potentials don’t change their energy, is wrong,
- should be made as soon as possible.

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Appendix

Roland E. Allen and Suzy Lidström
“Life, the universe, and everything – 42 fundamental Questions”

2. Gravitational and cosmological mysteries

2.1. The cosmological constant problem

- seems this problem is outside physics, more see the main text.

2.2. The dark energy problem

- seems this problem is outside physics, more see the main text.

2.3. Regularization of quantum gravity

- this problem is essentially clarified, and corresponding experiments are suggested, see the main text.

2.4. Black hole entropy and thermodynamics

- no comments.

2.5. Black hole information processing

- no comments.

2.6. Cosmic inflation (or an inflation-like scenario)

-..this problem is essentially clarified, see the main text.

2.7. Cosmological survival of matter (and not antimatter)

- this problem seems as rather possibly is principally solved, see the main text.

2.8. Composition of dark matter

- this problem seems as rather possibly is rationally elaborated, see the main text.

3. Understanding and going beyond the Standard Model of particle physics

3.1. Origin of family replication

- seems this problem is outside physics, more see the main text..

3.2. Origin of particle masses

- seems this problem is outside physics, more see the main text..

3.3. Supersymmetry and the hierarchy problems

- seems this problem doesn't exist in physics, though some a small probability here can be some real problem.

3.4. Explanation of the fundamental grand unified gauge group

- with a rather large probability the “grand unification” problem doesn’t exist as a physical problem, and the fundamental Nature forces are practically independent of each other. Though, because of at high energies the running of particles’ algorithms becomes be essentially deformed, in such cases some interference of the forces is possible. , more see the main text.

3.5. Potential violation of Lorentz or CPT invariance

- the Lorentz transformations are valid completely on macro scale, where the transformations link macro objects “inertial reference frames” and the Voigt-Lorentz decrement can be formed, and they are completely valid only if the macro system of frame instruments and studied bodies is rigid. If that isn’t so, application of the transformations is limited, more see the main text.

3.6. Apparent marginality of the Higgs self-coupling, and stability of our universe

- no comment

3.7. Quark confinement and related issues

- no comments

3.8. Phases of quantum chromodynamics and general systems with nonabelian gauge interactions

- no comments

3.9. Additional undiscovered particles

- no comments

3.10. The unlimited future of astrophysics

- see the main text.

4. The exotic behavior of condensed matter and quantum systems

4.1- 4.6 – no comments

5. Deep issues

5.1. Higher dimensions, with geometry and topology of an internal space

- Matter’s utmost fundamental and universal spacetime is the absolute, fundamentally “flat”, [5]4D Euclidian spacetime with the the utmost fundamental and universal metrics $(c\tau, X, Y, Z, ct)$, where the dimensions relate to corresponding degrees of freedom at FLE states changes. Some other “topologies” seems as with a large probability would be some purely artificial theoretical constructions. , more see the main text.

5.2. Validity of the multiverse idea and the anthropic principle

- “Multiverse”, as it seems firstly introduced in physics as a version of quantum mechanics interpretation, seem as rather unphysical phenomenon, at least by the energy reason: even to create the observed one Matter it was necessary to spend an practically unbelievable portion of energy, to create infinite “number” of Matters would be necessary to spend infinitely unbelievable portion. “Anthropic principle” seems as that has no physical applications, even that would be a rational principle.

5.3. Geometry and topology of external spacetime

- Matter, and the Matter’s spacetime, indeed exist as a part of the spacetime of the absolutely fundamental and absolutely infinite “Information” Set, which – the Set’s spacetime – has at least infinite “number” of space dimensions and at least one “true time” dimension. However now humans know practically nothing about the Set’s content and corresponding “external spacetime” besides that this spacetime is composed in accordance with the common definitions of the “Logos” elements “Space” and “Time”, more see the main text.

5.4. Origin and fate of the universe.

5.5. What is the origin of spacetime, why is spacetime four-dimensional, and why is time different from space?

- see the main text

5.6. Origin of Lorentz invariance and Einstein gravity

- see the main text.

5.8. Origin and interpretation of quantum mechanics and quantum fields

- see the main text.

5.9. Mathematical consistency

- Matter is a rather simple informational system that is based on a simple binary reversible logics and rather small set of universal fundamental laws/links/constants, and where exchange by information happens as exchange completely true information. Such system is so can be, and so is, rather effectively described by using mathematics, and mathematics is indeed extremely effective tool. But practically nothing else than a tool.

5.10. Connection between the formalism of physics and the reality of human experience

- see the main text.

6. Potential for breakthroughs in techniques and technology

6.1. –6.2

- no comments.

7. Life

7.1. What is life?

- see the main text.

7.2. How did life on Earth begin – and how did complex life originate?

- see the main text.

7.3. How abundant is life in the universe, and what is the destiny of life?

- to answer on the question now there is no any reliable information; and that seems rather possibly isn't too actual.

7.4. How does life solve problems of seemingly impossible complexity?

- life doesn't solve such problem as some critical fundamental task, more see the main text..

7.5. Can we understand and cure the diseases that afflict life?

- that isn't principally an fundamentally irresolvable problem in most cases.

7.6. What is consciousness?

- see the main text.

8. Who will solve the biggest problems?

- see the main text.