

# “The Information as Absolute” conception: space and time

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**Abstract.** In this paper a more detailed consideration in framework of the “The Information as Absolute” conception of the Space and Time problems “is presented.

## *A brief introduction*

The ontology of the fundamental notions/phenomena “Space” and “Time” was [and is till now] one of utmost discussed subjects for study in philosophy in a few thousands of years already, however the result of this study evidently isn’t satisfactory. Such situation seems as quite natural, because of these notions/phenomena cannot be properly defined and reasonably understandable in framework of the existent two main mainstream philosophical doctrines “Materialism” and “Idealism” and further in a huge number of corresponding sub-doctrines. Both doctrines, and sub-doctrines as well, are based on opposite postulates, which cannot be principally proved or disproved; moreover, these postulates are, in contrast to other sciences, non-testable, and so all doctrines and sub-doctrines well co-exist simultaneously in the mainstream philosophy [further “philosophy”] in all time of its existence, producing a next and next only partially adequate to the reality versions on the question “what are space and time?”

Both, Space and Time, relate evidently to the other fundamental philosophical notions/phenomena “Matter”, “Consciousness”, and “Being” also, which also aren’t properly defined in the philosophy, besides existent opposite main materialistic and idealistic dogmas, which are nothing more then also non-provable, non-disprovable, and non-testable declarations. Moreover, either Materialism or Idealism hasn’t substantive enough answers – what their these main notions/phenomena are? From what follows a next, which is, in certain sense the first, question: so, since the notions above aren’t defined, then who/what studies of whom/what?

Thus both, Matter and Consciousness remain in the philosophy be some transcendent and so principally non-cognizable notions/phenomena, from what, correspondingly, follow principal problems that appear at attempts to study other fundamental ones, including of the notions/phenomena “Space” and “Time”.

The result of such attempts that are presented in rather probably tens of thousands of publications about the ontology of Space and Time is as it is: now there exist a large number of “answers” on the question “what are Space and Time”, which are different and often opposite, or, by another words, there are, in fact, no any indeed answers.

Though both notions/phenomena are principally non-understandable in the philosophy, the notion/phenomenon “Space” is indeed (see below) lesser complex and paradoxical than the notion/phenomenon “Time”, and so the existent definitions of “Space” [which, and existent definitions of Time, don’t reveal the fundamental essence of the phenomena and so are their “definitions by definitions of properties”] are more concrete, when the number of definitions, conceptions, etc. of “Time” is much more, when the definitions are more different and controversial.

Correspondingly within the both main doctrines both, Space and Time are declared either objectively existent notions/phenomena [mostly materialistic view] or non-existent outside consciousness [mostly idealistic view], usually some variants of I. Kant’s “...As space is the form of outer intuition, so time is the form of inner intuition...” [1]), and [in both doctrines] really either existent or unreal; for example the Kantian forms of intuitions are real, when in number of seems “materialistic” conceptions at least Time is declared as something unreal (for example [2], [3], [4])

Such uncertainty in the ontology of the notions/phenomena “Space”, “Time”, and “Matter” resulted in that these notions/phenomena aren’t properly defined in other sciences as well, first of all in physics, where, for example in the special and general relativity theories [6], [7], rather questionable properties of the space and the time were postulated, first of all the postulated absence [in contrast to Newton [5]] of Matter’s absolute space, time, and spacetime. Moreover, in SR and GR the space, the time and the spacetime are postulated as Minkowski/pseudo Riemannian spaces that have imaginary either space or time; and, besides, these fundamental phenomena in SR and GR are transformed by some unknown ways by reference frames and masses.

Nonetheless, these “relativistic properties of the space and the time”, in spite of that the corresponding postulates in the theories are evidently only bare declarations that principally cannot be tested experimentally, and from which any number of senseless logical and physical consequences directly and unambiguously follow, are recognized in the philosophy as unambiguously true.

Such situation in the philosophy exists because of all the fundamental notions above are Meta-philosophical and Meta-scientific notions/phenomena, which can be properly defined and reasonably understandably in the new philosophical conception “The Information as Absolute” only [8], where it is rigorously proven that all/everything what exists in our Universe and outside is/are some informational patterns/ systems of the patterns that are elements of the absolutely fundamental and absolutely infinite “Information” Set. From the conception a number of fundamental consequences follow, including a few consequences that relate directly to the subject of this paper:

(i) our Universe is some sub-Set, which is some dynamical [i.e. changing] system of some, including dynamical, informational patterns, and which consists of [at least] two main sub-systems [sub-sub-Sets]: “Matter” and “Consciousness”;

(ii) Matter and Consciousness are fundamentally different dynamical systems, that are built and change [operate, develop, evolve] basing on principally different primary informational patterns, logical rules, and links between separate [the primary and more complex that are built from the primary] informational patterns that constitute the systems.

The fundamental difference between Matter and Consciousness [the last in the Universe is at least a system of dynamical informational patterns “humans’ consciousnesses”] is in that **Matter** [all material patterns] **is built and operates using true information exclusively**, when **consciousnesses is rather possibly built, and without any doubts operates, by using also uncertain and false information**. Correspondingly, returning for a moment to introduction, from the conception the unique answer on the question “what studies what”

follows: some self-aware and having ability to analyze obtained information dynamical system [the human's; though we cannot exclude some others] "consciousness" studies how a huge set of automata "Matter" is built and operate; and, since everything in Matter, the patterns and processes, is/are some informational sequences that are controlled by some set of stable and constantly acting in every pattern or process laws, there is nothing fundamental what could principally prohibit cases when this self-aware system adequately to the objective reality decode some real laws and links in Matter.

From that follows, besides, that at cognizing of Nature there is no fundamental "epistemological" problems, the brunch of the philosophy "Epistemology" is superfluous.

(iii) Thus there is nothing, what could be fundamentally transcendent and so non-cognizable by even human's consciousness, including the absolutely fundamental notion/phenomenon "Information", despite of her absolute fundamentality, isn't transcendent.

In every concrete case, every concrete **information** [about any/every informational pattern/system of the patterns] **is something that is built in accordance with the set of absolutely fundamental "grammar" [at least] Rules, Possibilities, Quantities, and Actions "Logos"**. In concrete systems there can be some concrete rules else, but the elements of "Logos" set are in any/every informational system. **The "Logos" set isn't** [at least with a non-zero probability, though this point in the conception should by studied additionally] **transcendent** also, and all absolutely fundamental entities, including the notion/phenomenon "Information", the "Information" Set and "Logos" set are principally cognizable.

More about different philosophical conceptions of "Space" and "Time" see [8], below some points that relate to these notions/phenomena are presented in more details. So:

**Point 1:** including the absolutely fundamental notions/phenomena "**Space**" and "**Time**" are some elements of the "Logos" set, both are "two-functional", i.e., are simultaneously absolutely fundamental **Rules** and absolutely fundamental **Possibilities**; and which thus **absolutely fundamentally objectively exist and act** in all/every informational patterns/systems of the patterns in the Set, including in the systems "Matter" and "Consciousness", since are necessary for any information could exist at all.

*The Rule/Possibility "Space"* acts as the Possibility in order to "to place somewhere", i.e. in some "space" any **fixed** information. For example, to write a text is necessary to have the 2D space, say, a paper sheet [or 1D space if, e.g., the Morse code is used]. As the Rule, Space establishes that two and more different informational patterns cannot be placed in one spatial place, they must have different places and between different patterns must be obligatorily "**spatial intervals**" **which can be infinitesimal, but must not be equal to zero exactly**; and this Rule correspondingly exists, for example, as one of the main grammar rules in every language. Space as the Possibility by no means establishes – what should be the number of spatial possibilities for information be existent; or, by another words, there are infinite number of the spatial possibilities in the Set and every informational pattern/system "uses" any number of necessary possibilities. The set of the possibilities of concrete informational pattern/system is realized as the set of "spatial dimensions", thus just every concrete pattern/system itself determinates what number of spatial dimensions its space has. Changes of position of some pattern in its space are obligatorily accompanied so by some spatial intervals and so this change's process is the pattern's motion in space.

Matter's space is 3D dimensional, with a very non-zero probability that is in accordance with the **von Weizsäcker's "Ur-hypothesis"** [10], [11] which premises that **3D dimensionality is necessary for some informational system was based on a binary logic.**

The number of dimensions of the space where humans' consciousnesses operate isn't known till now; but for sure this space, at least partially, is somewhere in the "Information" Set's absolutely infinite spacetime outside Matter's space.

*The Rule/Possibility "Time"* acts additionally to Space if an object/system is a dynamical [changing] system, including so it acts in the dynamical systems "Matter" and "Consciousness"; and as the Possibility to make some changes of information, Time is similar to the Possibility "Space", it is a "Space for changing states" of changing information.

Nonetheless the Rule/Possibility "Time" fundamentally differs from the Rule/Possibility "Space", since it relates to a next **absolutely fundamental notion/phenomenon "Change"**, which is an absolutely fundamental "Action" element" in the "Logos" set; when this [and so "Time" also] notion/phenomenon is logically self-inconsistent: at any change the given recent state of a changing pattern/system is formally simultaneously the "previous", the "recent", and the "future" states [and so the "previous", "recent", and "future" temporal moments], what is logically impossible since these states and moments are different by definition and by the "Time" Rule. This fact was discovered and formulated by Zeno in his aporias 2500 years ago.

Correspondingly to overcome this self-inconsistence any/every change of any/every informational pattern/system, and so to change something, it is necessary to pay by at least two things: (i) – any/every change of anything is uncertain, and (ii) - for any/every change is necessary to spend some portion of the absolutely fundamental "Logos" set's "Quantity" element" "Energy"; at that, though the corresponding change will be fundamentally uncertain, the uncertainty depends on the spent energy: the more energy the lesser the uncertainty. This uncertainty reveals itself in Matter at very small energies' values, what required developing of corresponding theory that describes adequately processes on the micro-scales, i.e. the quantum mechanics. Thus Zeno, in fact, predicted the QM, Achilles can appear ahead of a turtle only if on some level of changes of the distance between them their momentums [speeds] and spatial positions become be uncertain and so it becomes be senseless to assert who of them is ahead or behind.

However this point doesn't change essentially something in other properties of the Rule/Possibility "Time", it remains be similar to "Space", including, as the "Space for changes" it by no means establishes – what should be the number of temporal possibilities for an information be changing; however, rather possibly the number of the "temporal" possibilities in the Set isn't infinite.

Including, like Space, as the Rule, Time establishes that two and more different states of any/every given informational pattern cannot exist in one temporal moment, between different states of patterns must be obligatorily "**time/temporal intervals**" which can be infinitesimal, **but must not be equal to zero exactly**; and this Rule correspondingly exists, for example, as the main grammar rule at reading [and writing, talking, etc., of course] of texts in every language. Correspondingly every change of anything is obligatorily accompanied by some non-zero time interval, and so the changes' processes are motions in the "time" possibility, which is realized in concrete dynamical objects/systems as "temporal dimension(s)".

The set of rules/possibilities "space" and "time" that act in concrete informational systems constitute the "spacetimes" of these systems.

However, unlike Space, in the Set there exists/acts absolutely **universal rule/possibility for all/every changes in the Set**, which in the informational conception above is named "**the true time rule/possibility**", thus every informational pattern/system in the Set "uses" it

and every dynamic pattern /system changes always in the true time possibility; and has, correspondingly, the “true time” dimension in its spacetime obligatorily.

This universal true time rule/possibility has, in certain sense, “a logical defect”: formally the corresponding temporal intervals, which obligatorily accompany every changes of everything, are always positive, or, by another words, the accompanying a sequence of changes “time flow” [more correct – motion of changing objects/systems in true time dimension] has always only one direction, or unidirectional “arrow of time”. Thus some “travels in past” in the true time are impossible. But in the reality there can be some reversible processes, that can evolve in both, direct and opposite directions; for example a movie can be shown in both directions; and so in this case there can be two opposite “arrows of time”, when, e.g., the reverse movie showing is, in fact, some impossible in true time “travel in the past times”.

Here it is necessary to make a special note, though; since this point often is interpreted in many publications principally erroneously: **the “time flow” by no means is something inherent of the Rule/Possibility “Time” phenomenon**, as that, for example, Newton asserted in his definition of the notion/phenomenon “Time”[5]. Besides the rule that any temporal interval at any change must not be equal to zero exactly, the Rule time is “passive”. Therefore the “observed time flows”, and “arrows of time” are totally passive witnesses that only accompany corresponding changes, which happen and proceed in concrete objects/systems independently on [rules/possibilities] either space or time and which [flows and arrows in time dimension and motion directions in space] change and have directions only in accordance with the laws and conditions in these concrete objects/systems themselves.

Including in Matter there is no a special “time arrows”; material objects, systems and Matter as a whole, indeed constantly change their states [what is accompanied by constantly increasing true time interval] from the Beginning, but **they make that [and the passive true time arrow indeed exists] only** after and because of that a huge portion of energy was pumped at the Beginning into a system “primary Matter”, and that proceeds so long true time interval **because of the energy conservation law**. Including there is no some special “entropy time arrow” in the true time, Matter evolves simply from given stats mostly into a next maximally probable states, and any deterministic process by no means differs in this sense form a stochastic one, simply in this case the probability of a next state is equal to 0.999999....; the true time interval that accompanies Matter evolution from Beginning increases equally at any process; either, for example at Earth rotation around Sun, or at any stochastic process.

**Point 2:** some common properties and the motion.

Thus both Rules/Possibilities above as the Possibilities form together for every informational pattern/system some “empty container”, where the system objectively exists and changes in the objective reality; and some “spacetime” in some scientific theory as well, where humans can adequately describe/analyze the objects/systems and processes that exist and proceed in the patterns/systems. All/every possibilities are realized in these container/spacetime as their [in some cases mutually independent] “dimensions”.

At that:

- changes of some properties of an object/system that fix this object/system in some region of space i.e., which relocate the object/system in space, are, quite naturally, accompanied by some corresponding spatial intervals, the changes of these intervals is the motion of objects/systems in space. The spatial motions of material objects/systems are observable by human’s senses; if humans observe these objects/systems at all, for example, also if they are at rest relating to them, of course, and

- the “spatial” changes above [as every other changes, of course] are obligatorily accompanied by some true time intervals; thus a changing of spatial position of an object/system, quite analogously to spatial motion, at a spatial motion is also its simultaneous motion in the true time, which, though, in contrast to the spatial motion, is unidirectional.

The temporal notion isn't observable by human's senses, however that cannot be, of course, a reason to conclude that it doesn't exist; there exist in Universe very many things that aren't observable by humans directly, but seems nobody, besides, possibly, some believers in some radical doctrines in Idealism, doubts in an objective existence of such things. Again, the motion of changing objects/systems in time is quite equally objectively real as any their spatial motion objectively real is.

**Point 3:** more about the Matter's empty container/spacetime [more see [12]]

As that was pointed above, every informational system has obligatorily all possibilities “to be written” as the spatial dimensions of its spacetime. The informational system “Matter” is based on a number of basic logical rules and links that realize themselves at material objects interactions as mutual exchange by some “coded messages”, where every fundamental interactions [which in the science are called “fundamental Nature forces”] are decoded/coded by corresponding “clues” at receiving and radiating of messages, i.e. by “charges”. These concrete fundamental properties of concrete material objects/systems are “secondary by fundamentality” relating to and independent on the four [3D spatial +1D true time] universal space and time possibilities above, and so formally it is possible to add in Matter's spacetime a number of other spatial dimensions. For example that can be the “electric charge dimension” in which material objects can be placed [and moved if charge is changed] in discrete points correspondingly their charges; there can be “gravitational mass dimension”, etc. However, though all these dimensions objectively really exist in Matter's empty container, and we cannot exclude that an inclusion of such dimensions in Matter's spacetime in physical theories can be useful in some cases, now that is not actual, at least in this essay.

Unlike the possible additional spatial dimensions above, Matter has very important special fundamental property that relates to the Rule/Possibility “Time”: all processes at Matter's constant evolution in depth, i.e. on the level of the fundamental elementary particles and even below, are reversible. The possible reason of this effect is rather evident: as that was shown by a few authors, first of all by Fredkin and Toffoli [13-15], if a dynamical system can change in direct and opposite directions, i.e. is reversible, then its possible evolutions aren't accompanied by energy losses outside the system. Matter is such system, and just because of that the material “primary bricks” are reversible informational systems, the energy conservation law exists and acts in Matter, thus no additional to the portion at the Beginning energy is necessary for Matter's stable and long evolution in the true time.

However, the reversible processes conflict with the true time rule: as that was mentioned above, and **thus, to realize the reversible processes, the system “Matter” has additional temporal possibility/dimension, which in the informational conception [8] and informational physical model [12] is called the “coordinate time dimension”.**

Note, that reverse spatial motion in Matter by some reason doesn't conflict with the true time rule/possibility; and the **coordinate time rule/possibility** relates/acts **only** to/at changes **of only internal states of only** specific [see below] material objects, for example, including if they don't change at that their spatial positions.

These four dimensions that are specific Matter's utmost universal rules/possibilities, i.e. 3D space  $[X,Y,Z]$  and 1D coordinate time dimensions  $[ct]$ , compose specific Matter's 4D

empty container/spacetime; with “automatically existent” absolutely universal true time dimensions [ct] the main Matter’s spacetime is [5]4D spacetime/empty container [in the informational model [12] a point in the spacetime is usually  $(ct, X, Y, Z, ct)$ ], where “c” is the standard speed of light (more see below).

In accordance with the von Weizsäcker’s hypothesis, 3D space is Euclidian, where all spatial dimensions are mutually orthogonal. That follows with a large probability, from that corresponding 3 utmost fundamental in **Matter degrees of freedom** at changes of material objects’ spatial positions **are mutually independent**. The “zero”, i.e. the coordinate time degree of freedom/ dimension, fundamentally differs from spatial dimensions, and so corresponding changes are independent on “spatial” degrees of freedom. Correspondingly the 4D sub-spacetime  $(ct, X, Y, Z)$  is Euclidian, even “Cartesian” manifold, where all spatial dimensions fundamentally can be always chosen as be orthogonal, and the zero dimension is orthogonal to all spatial dimensions and so to any spatial line fundamentally also.

The fifth, i.e. the true time dimension is fundamentally different from all four the 4D sub-spacetime’s dimensions; and so is orthogonal to all of them.

Note finally here that real Matter’s spacetime is absolute and by no means isn’t the 4D Minkowski or pseudo Riemannian [partially imaginary] spaces; besides, **its composition is determined by utmost fundamental Matter’s rules and links** and so the spacetime cannot be transformed by any existent material object or any reference frame as that is postulated in special and general relativities.

**Point 4:** measures and etalons:

As that is pointed above the Rules/Possibilities “Space” and “Time” fundamentally haven’t some inherent measures. As the possibilities for existence and changes in/of concrete informational systems they simply infinite empty dimensions, emptiness hasn’t measure by definition. As the Rules they don’t establish some measures also, all what is established is that sizes of fixed informational patterns and spatial intervals between the patterns, as well as the time intervals where concrete states of changing patterns/systems exist and the time intervals between changing states must not be equal to zero exactly.

Thus if there is only one pattern and if only one change happened, it is senseless to state that the size of pattern or the time interval of the change has some concrete values. However if there are at least two patterns, and /or there are at least two changes [two in one pattern or one in both patterns] then some comparing becomes be possible: the patterns sizes and the temporal intervals can be equal and lesser/larger. In the important case where changes are caused, in the sequence “cause-effect” the effect is always later in [true] time then the cause.

And, again, these comparisons in concrete cases are totally determined by rules, properties, etc. that are realized in corresponding concrete patterns/systems.

The structure of informational system “Matter” with a large probability is based on, and changes in/of material objects and Matter as a whole are governed by, a set of rather simple logical rules; besides, at existence and interactions in Matter exclusively true information is used. Thus Matter exists and evolves as some “computer”, which consists of huge number of some rather independent “automata” that are united in the “computer” practically only by the fundamental Nature Gravity force.

The utmost fundamental primary “logical gates” [in the informational conception [12] “fundamental logical elements”, FLE] in this computer, have 4 universal independent degrees of freedom – 3 at changing spatial position and one in the coordinate time.

It seems as rather probable that all FLEs have identical spatial sizes; besides the changes of FLE's states, i.e. "flips of FLEs" in all 4 dimensions happen in identical temporal intervals. The FLE can also switch the neighbor FLEs; so material informational patterns, i.e. particles, bodies, etc., which are built as some chains of FLEs, are some "cellular automata" ("cellular automata" see, for example, [16]), that uninterruptedly run because of the energy conservation law, changing at that their spatial positions and/or internal states and so moving constantly in the 4D sub-spacetime and simultaneously in 5-th [true time] dimension of Matter's spacetime with identical by the absolute values speeds. It seems as rather plausible to presume that this absolute value is equal to the speed of light, when the size and flip time of FLE are equal to Planck length and Planck time.

Since these [Planck] "natural unities" of spatial and temporal intervals are fundamental and universal in whole Matter, the computer "Matter" operates with, rather possibly, highly stable operation rate [though we cannot exclude a case when the changes on the fundamental depth are stochastic, but since every real process in Matter proceeds in rather long space and time intervals that are larger/longer in few tens of orders then the corresponding Planck unities; and so in the processes some averaging with very small relative standard deviations happens].

Just this universality in fundamental depth of sizes [and so steps at relocations] and temporal intervals at changing of internal states in all material objects and processes that are specific for the system "Matter" allows to establish in the system "Matter" the etalons of these intervals and to measure [only relatively to the etalons, of course] main physical parameters of changes in objects and systems, i.e., spatial distances, temporal intervals, [in reference frames] coordinates, speeds, further – momentums and energies, etc.

Note, again, that the etalons are some fixed spatial and temporal intervals that can be used at principally relative comparing temporal intervals and distances in the system "Matter" only, and, for example, they aren't applicable in the systems "humans' consciousnesses "; nobody till now measured, say, a length of a human's thought.

#### ***Point 5:*** etalons and measurements

However in Matter there exist another specific problem at measurements of distances and time intervals. It appears because of all material objects, including rules/[etalons] and clocks, as that was pointed above, constantly change their states, both, the internal states and [usually] spatial positions. These changes are obligatorily accompanied by the objects' corresponding spatial and temporal intervals, i.e. all the objects constantly move in the 4D sub-spacetime with 4D speeds if light.

Besides it seems as rater probably that the Matter's 4D sub-spacetime is filled by the dense lattice of the FLEs, "FLE aether"; and Matter is built so, that in it there exist two types of fundamental elementary particles [which are some close-loop algorithms that uninterruptedly run on the "FLE hardware"], which are some disturbances of the aether:

T-particles, that are created by impacts on the aether's FLEs with transmissions to the FLEs 4D momentums that have non-zero coordinate time components [and T-particles are created just by these components]; so at the 3D spatial rest such particles move with the speed of light only in the zero dimension;

and S-particles, that are created by purely spatial 3D momentums or by spatial components of 4D momentums; correspondingly S-particles move only in 3D space with the speed of light, being at rest in the coordinate time.

All fundamental particles that are fermions are T-particles and their algorithms contain parts of "charged" FLE that radiate the mediators of fundamental Nature forces [EM,



Gravity, weak and strong]. It seems as rather probable that mediators are the S-particles, for example photons for EM force.

Mediators are purely specific particles and so cannot mutually interact with creating of some stable systems of particles, i.e. of nuclei, atoms, molecules, bodies, etc.; all such systems are made from T-particles.

When a T-body is at absolute 3D rest, it changes its internal states only; thus the changes proceed with maximal rate and, correspondingly, the body moves in the coordinate time dimension with maximal speed, i.e., with the speed of light. If a body moves also with a non-zero 3D spatial speed, its speed in the coordinate time becomes be lesser, in accordance with the Pythagoras theorem in the Lorentz factor, because of the changes rate decreases [the body's algorithms, from particles to forces that make the body as a whole, "become be diluted by spatial steps"] in this factor. Thus if a body is a clock, i.e. a special body, which indicates how its internal state changes, the clock's tick rate becomes be slowed down; if a body is, say, some living being, the being ages slower, unstable particles, which are "defective" algorithms that have a probability of a break on every their run cycle, live longer, etc., in the Lorentz factor.

Thus clocks don't measure "time that is what clocks show", they show/measure always only their motion's positions and intervals in the coordinate time dimension [and so in the reality show the "coordinate time flow"], and so their showings are identical to changes of the true time intervals only when clocks are at the 3D rest; and the knowing how a real clock's tick rate relates to the clock's true time flow is possible only if the clock's absolute spatial speed is known.

Since till now the absolute Earth [and known observers] speed is unknown, the existent observers don't know the real clocks' tick rate also.

Besides, since the particles are some close-loop algorithms, they are some 4D "gyroscopes", which have the 4D rotation rates be always oriented relating to their 4D speeds. Thus if a body is at the absolute 3D spatial rest, its spatial sizes are identical to the body's "own" sizes, but if the body moves in the space with a speed  $V$  along, say, X-axis, this "gyroscope" turns in the  $(X, ct_{\text{coor}})$  plain so, that its "X-size" spatial projection becomes be lesser then the "own" one, again by the Pythagoras theorem in the Lorentz factor. Because of in Matter all interactions happen only in the 3D space and in the one true time moments, the **moving body interacts as really contracted**. Analogously to coordinate time, these real "bodies' contractions" can be known only if the bodies' absolute speed is known.

However this effect is, in certain sense, inessential, since the rigid measuring rules [etalons] turn in the  $(X, ct_{\text{coor}})$  plain also, thus measured by using the etalons spatial sizes of every body are equal to the "own" ones. Nonetheless that isn't at any interactions [a measurement is some interaction, of course], and the contraction reveals itself, the most known example is the Michelson and Morley experiment aimed at the detection of the absolute Earth speed, where measured own the interferometer's arms' lengths values are equal [known], however photons, which move in the space only, really move in the directed along the Earth speed arm the way that is lesser then measured length; and to explain the famous negative experimental result it was necessary to put forward the FitzGerald and Lorentz hypotheses [17], [18].

Besides this effect, from the rotation of spatially bodies in the  $(X, ct_{\text{coor}})$  plain quite naturally another effect occurs: the points of the moving with a speed  $V$  body turn out to be in different coordinate time points on the Voigt-Lorentz decrement [19], [20] [if the X-axis direction is the same as the motion direction]  $-\frac{Vx}{c^2}$ . Thus if some clocks that are placed

along X-axis on the body and which were synchronized at the spatial rest, after acceleration to the speed  $V$  show different time values, the near the clocks to the front body's end, the "younger" they are. So some events, which happen simultaneously according to some clocks at rest, aren't simultaneous according to the clocks on moving body.

Further the Lorentz theory [21] was developed, in which both – spatial and temporal effects that are significant at interactions of fast moving bodies were taken into account; and the kinematics in accordance with the transformations turned out to be quite adequate to the reality when used at analysis of interactions of bodies in different inertial reference frames. With developed by Einstein dynamics, these two main branches of mechanics are successfully applied in practically all physics now as the "special relativity theory".

The application of SR, however, is in the reality evidently limited; it is applicable totally only at interactions in rigid enough systems of bodies. If there is a system of free bodies, the Lorentz transformations aren't applicable; when SR is claimed them as true in any cases. Besides, the lengths contractions and slowing down of processes rates occur only in concrete moving bodies after concrete material impacts on these bodies. That by no means are the "relativistic effects", which are caused, as that is postulated in the SR, by the "space contraction" and the "time dilation"; when the "contracted space" contracts, by using some unknown magic forces, of, and "dilated time", using some unknown magic forces, slows down the processes in, all/every bodies in whole [practically infinite] Matter's spacetime.

Nonetheless the basic Matter's law are very highly 4D symmetrical relating to direct and reverse motions and processes, and if some system of bodies, including the instruments of inertial reference frames, is rigid [for example to support the rigidity of system "Earth and satellites" it is sufficient of Earth's gravity], enough, the Lorentz transformations and the relativity principle work well.

That is indeed so, in spite of that the **Lorentz transformations are totally correct, if they are applied in an absolute reference frame only, where the transformations are simply equations of motion in the absolute 4D sub-spacetime of rigid bodies points.**

As well as **any parameters of motion, i.e., coordinates, intervals, speeds, etc. are real and completely objectively adequate to the reality only if are measured by rules and clocks in the absolute frames.**

These parameters, **if are measured in any non-absolute frame, aren't real**, but, because of the symmetry of the Nature laws, including of the Lorentz transformations, the result of an analysis of physical effects with using the transformations remains be adequate to the reality. This situation is quite the same as that is in a simple example in classical mechanics, when, say, a moving car strikes with, say, a wall. The results of the collision are identical independently on what moved, the car or the wall, and if somebody at an analyze of the collision will consider it in the reference frame where the car is at rest and the wall moves, he will obtain quite adequate to the reality estimations, for example, of how the car and the wall were "physically" damaged; though he used evidently unreal parameter "the speed". However if he further, obtaining the perfect agreement of his analysis and real damage, will claim that he proved that in the reality just the car was at rest, when the wall moved with a speed, say, 100 mph, such proof will be rather strange for any normal human [more relating to this point see [21]].

**Point 6:** a little more about the times

Thus all [practically all, besides, possibly, some exotic particles] particles' algorithms are reversible, and this fact is realized in Matter as that particles are "direct" algorithms and antiparticles are reverse algorithms; and so T-particles move in the zero Matter's spacetime

coordinate time dimension in the positive, by convention, direction, when such T-antiparticles move in the coordinate time “in past time”, i.e. in negative temporal direction. Such premise was made yet in early 1940-th by Stueckelberg [22] and later was used in Feynman’s QED [23]. However in both cases the temporal reverse motion of particles was only some mathematical trick, which turned out to be adequate to the reality and so very useful in the physical theory; since practically all physics now is based on the relativity theories, where there is no reverse temporal motion of anything. In the SR indeed, there are two times – the “simply time”, which is the coordinate in the 4D Minkowski space, and “proper time” that has any body that moves in concrete inertial reference frame, but both these times are some mixes of the coordinate and true times that really act in Matter. In the informational model this trick becomes be quite adequate to the reality.

**Point 7:** an possibly non-superfluous here nuance

As that is shown in the “The Information as Absolute” conception, one of specific properties of the absolutely fundamental phenomenon “Information” is that every element [and every system of elements; here and further in text below], including dynamical elements in every concrete state, exists in the absolutely infinite “Information” Set as a bit “I/not I”, where the part “not I” contains all complete and exact information about every other the Set’s element, including about given element in every other states [and about all states of all other the Set’s dynamical elements], totally. Or, by another words, every element in the Set contains the whole Set completely. This information exists as the negation: [in given element] “I am not this, this, this... element of the Set”, but is evidently true and evidently exact.

An example: a month ago in every point of Matter’s spacetime, every particle, system of particles, as, say, humans, Earth, a star or a galaxy, etc. there was evidently true information “on Earth there is no paper “The Information as Absolute” conception: space and time””.

This information was evidently true: the paper indeed didn’t exist. And was completely exact, since related just to this paper. And it existed as true and exact all time of existence of our Universe and even before the Beginning as the information “there is no some Universe where the paper [above] will appear in November 2017”.

It is evident that this short statement contained whole and absolutely exact information about our Universe, including about the Universe’s Beginning and evolution, about every particle, body, human, including, e.g., about every human’s thought.

Thus every element/process in the Set, including in the sub-Set “our Universe” in fact existed/had happened before it/he/she appeared/happened/evolved/developed in observed now Universe; however, because of the next important property of the phenomenon “Information” that any information cannot be non-existent, all/every the Set’s elements simultaneously existed, exist and will exist always, or “in the absolutely infinite [true] time interval”, which fundamentally hasn’t a beginning and an end.

Correspondingly every dynamical element or system of elements, even that exists in an infinite, but lesser then absolutely infinite long time, interval, executed its “living cycle” absolutely infinite “number of times already”; and will repeat that infinite “number of times in future”. [Thus living now humans live in this concrete running copy of the movie “evolution of some Universe”].

This movie so indeed always exists as simultaneously existent set of sequential “movie pictures”, that are separated in time in concrete Universe’s elements and systems of elements by “QM uncertainty temporal intervals”, however every collapse of every  $\psi$ -function in every process in every element and in every system of elements happens with total accordance with always existent scenario of this movie.

Formally this fact seems as some analogue of a few existent spacetime conceptions, for example “block Universe” and Barbor’s “End of Time” [3], which assert that the time doesn’t exist.

In the “block Universe” such implication [24] is based on Minkowski claim:

“...in his paper "Space and Time" Hermann Minkowski demonstrated the profound meaning of the relativity postulate - the experimental fact that physical phenomena are the same in all inertial reference frames implies that the Universe is an absolute four-dimensional world in which all moments of time have equal existence due to their belonging to the fourth (time) dimension ...[Minkowski] stressed that the idea of many spaces is inevitable in special relativity: “We should then have in the world no longer *space*, but an infinite number of spaces, analogously as there are in three-dimensional space an infinite number of planes”;

and so

“...Minkowski four-dimensional world is a block Universe, a frozen world in which nothing happens since all moments of time are given ‘at once’, which means that physical bodies are four-dimensional worldtubes containing the whole histories in time of the three-dimensional bodies of our everyday experience...”

Or, as that is given in [25] “...Massachusetts Institute of Technology physicist Max Tegmark, told space.com: “We can portray our reality as either a three-dimensional place where stuff happens over time, or as a four-dimensional place where nothing happens [‘block universe’] — and if it really is the second picture, then change really is an illusion, because there’s nothing that’s changing; it’s all just there — past, present, future...”

Analogical inference exists in the Barbor’s “End of Time” conception [3], [26], where the authors shows [rather questionably, though] that Newton’s definition of Time, which states that “...Absolute, true, and mathematical time, of itself, and from its own nature, flows equably without relation to anything external...” is wrong; when in the reality the time “is emerged”:

“...The ‘time’ ... truly emerges from observed positions of objects. Time can be read off the heavens...”. At that

“...to the timeless law that explains how billions upon billions of natural clocks scattered through the vast reaches of space can all tick in step....The configuration space of the universe  $U$  is the key concept...You choose in  $U$  two points – two configurations of the universe. These are to remain fixed. You consider all possible trial curves that join them continuously in  $U$ ... For this extremal [by the principle of least action] curve, and in general for no other joining the fixed end points, the particles obey Newton’s laws with the emergent time...”,etc.

Further from the fact that material objects and systems move in space along unique curves in this concept it is claimed that in the “timeless” Universe all exists simultaneously, when what humans observe as chains of events in the time is [25] nothing else that

“...”As we live, we seem to move through a succession of Nows, and the question is, what are they?” He explains, adding to the spacetime theory where everything has its own place: “You can think of it as a landscape or country. Each point in this country is a Now because it is timeless and created by perfect mathematical rules...”

Both the conceptions above have rather evident flaws.

The “block Universe” assertion that it is confirmed by “experimental fact” that the relativity principle is hold in all experiments is essentially incorrect principally, any

experiment cannot to confirm any theory, experiments can only prove that a theory isn't correct, at least in some cases. Besides, just because of the relativity principle indeed works practically without exclusions in rigid material objects and systems, practically from any experiment follow two opposite implications, and for a conclusion – what implication is real - is necessary to have some information outside the experiment and, sometime, outside the theory; see above the example with collision a car and a wall, if there is no information what are the car, highway, and the wall indeed after the collision it is impossible to assert – what was moving. However if an outer information exists, then the inference is certain, as in this case it is clear for any normal human – what moved.

As well as the Minkowski inferences above, which are postulates in the mainstream special relativity theory that the Matter's spacetime can be and is transformed really by moving reference frames and even moving particles and some claims that these postulates are confirmed experimentally as well, aren't correct interpretations of existent experimental data.

The implication in the “End of Time” conception that Newton wasn't correct, and that there is no some inherent for time its “own” “time flow” is, of course, true, but from that by no means follow that Universe is “timeless”; that seems is clear even outside the “The Information as Absolute” conception. The assertion that all in the Universe “is static” since every events in it are determined by some “mathematical rules”, including, e.g., by the principle of least action, when the rules don't contain the time explicitly, and so humans only observe some series of “timeless Nows” [that seems as some replication of Kantian assertion that time doesn't exist outside the consciousness, where it is real as a consciousness's labelling of sequences of events] isn't correct, if one understands – what is “Time”.

Either authors of “timeless Universes” conceptions, or Kant [in the mainstream philosophy not only Kant, though] which, nonetheless, don't reject the fact of some observable chains of events, seems don't take attention on the important in this case another facts that: (i) - all the chains of all events are, independently on – what and how changes - always some changes, and (ii) – all the events [changes] are always equal or different relating to a same for all changes parameter, which is independent on what and how changes also.

Correspondingly there exist independently on anything two ultimately universal objectively existent phenomena: “Change”, which hasn't an universal measure; and something that is different in many cases at changes, and, at that, in Matter it is universally different. What allows to compare quantitatively all changes in Matter by using this something; and at an ignoring of the something rather large part of information about the processes in Matter becomes be lost; this something are just always and objectively existent time intervals.

Besides indeed, in every element in the “Information” Set the all complete information about all other elements of the Set “is frozen” in the “not-I” section, and so all/everything, at least implicitly in this case, had happened in the Set always.

However at that all, what isn't a fixed informational pattern/system, simultaneously is happening always also. Every dynamical system always, i.e. in absolutely long time interval, reiterates absolutely infinite “number of times” its “living cycle”

[and so “living cycle” had happened **really explicitly**; besides, in contrast to the changes of information in the “not-I” sections of every element in the Set, which happen (absolutely?) instantly when something in the Set changes, to change

something really, for example to open a can “There is no some Universe”, which contains all absolutely true, exact and complete information about the Universe, is necessary really to spend some energy. Rather possibly that is necessary just to change, albeit implicit but real also, the information in all elements in the Set, tough],

**but this point isn't essential for everything what plays its/her/his role in an actual movie.**

**In every actual movie nothing “is frozen” and there cannot be some “timeless” processes;** in all dynamical systems, including in the systems Matter and Consciousness, and in the system “our Universe” as a whole as well, both Rules/Possibilities “Space” and “Time” in every movies’ running copy absolutely necessary and objectively really exist and act; in Matter they exist and act as the objectively existent absolute [5]4D Euclidian empty container/[spacetime], where all/every material objects, i.e., particles, bodies, galaxies, etc. move objectively really and constantly with identical by the absolute values 4D speeds in the Matter’s 4D sub-spacetime and, simultaneously, in the 5-th, true time dimension; having at that no any possibility to impact by some way on the spacetime..

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