

The last really scientific posts that really rigorously scientifically clarify the thread question are SS posts on pages 209, 210 [and all other SS posts in the thread above]. Further again rather vivid strange posting mostly as chatting about rather, if too, strange “theories” of a few of rather stubborn posters, appeared; really hindering reading the posts.

L.D. Edmonds,

The comment to

“...How much quantitative change in the tick rate of an atomic clock does gravitational mass defect make? You say it is the same as any other Force mass defect, so I ask for the equations your theory provides for the exact calculation of the tick rate of an atomic clock subjected to a given Force mass defect”

Firstly note again that everything in Matter [besides fundamental Forces mediators] are particles and systems of particles, which are some cyclic algorithms that run with frequencies ω . Having rest mass particles are created by 4D momentums' $c\tau$ -components, and, if are created so that are at rest in 3DXYZ space, their algorithms tick at maximal rate, ω_0 , particle's energy $E_0 = m_0c^2$, m_0 is the particle's rest mass. If a particle is impacted by some 3D space momentum, p , the algorithms run with larger frequency, since in this case some “de Broglie frequencies” are added, but the **just the particle's own algorithm becomes to be “diluted”** by, in certain sense “blank”, 3D XYZ FLE flipping, so the whole algorithm's length increases, and so it ticks slower.

So, say, moving in 3D space unstable particles [such particles algorithms have some defects, which brake the algorithms running [and particle decays] **with constant probability on every whole algorithm's tick**] live longer comparing with if are at rest in 3D space, by Pythagoras theorem – in Lorentz factor.

In coupled by at least fundamental Gravity, Electric, and Nuclear/Strong Nature forces systems of particles to “kinematical” effect above the Forces effects additionally act: the systems are composed at some attractive force/Force acting on free particles,

- what results in that after kinetic energies of particles, which they had at the motion composing the system [see attached PDF] dissipates from the system, its rest mass $\sum m_i$ is lesser than $\sum m_{0i}$ on the Forces mass defect that is sum of the particles' mass defects. Correspondingly the particles algorithms - and so the system's intrinsic processes - tick slower

In the Gravity case, let a particle [system of particles that has some small mass, say, a clock] that has rest mass, m , is at rest on large distance from some large mass, M , after a small impact start to move toward M , further its speed increases by attraction in M 's Gravity moderators field,

At that the field [and fields of other Forces cases, though] mediators don't contain/carry energy – but carry specific elementary momentums, that cause in m 's particles the transformation of their intrinsic rest mass energy $E_0 = m_0c^2$ into the particles acceleration, so current rest mass m_0c decreases, particles current energies $E = m_0c^2 + E_{kc}$, E_{kc} is current kinetic energy; if $M \gg m$ the current energies are practically equal to E_0 .

If m hits M and stops [“statics case”], E_k is transmitted to M , say, negligibly hits it [or dissipates from the system at all], m is constantly under action of opposite forces – M 's attraction and the support reaction – and so its rest mass m_{0s} is lesser then m_0 , but rather possibly is larger than m_0c , which had before just the hit into M .

The post is long, so now

Cheers

<https://www.researchgate.net/post/Does-a-gravitational-field-have-energy-density-like-an-electric-field/217> ***** 63-08-05-26, page 217

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So let's continue.

The negative mass defects correspondingly slow particles algorithms tick rates – and so internal processes on systems of particles, including clocks, - the lesser the effect the faster clocks showings.

In PSIP model Newton Gravity law is derived and used, so in the static case on Earth surface and near the difference of two clocks' that are on surface and on a height h relative gravitational mass defects ticks rates [more see section 6.2.1 in

<https://www.researchgate.net/publication/395113364> Planck scale informational physical model and fundamental problems in physics], $\delta\omega$, $\delta\omega_1 - \delta\omega_2 = gh/2r^2$, g is free fall acceleration. In GR this difference is gh/rc^2 , i.e. two times larger.

The lesser PSIP model value is because 2 points – the support action above and at assumption that photons lose/gain energy at propagating in Gravity field, while in the GT it is postulated that photons propagate along geodesics having constant energy, what, in principle, can happen – Newton law/PSIP model are true for having rest mass particles, but photons move on 3D space with the same speed as Gravity mediators, when this nuance till now isn't clarified in the model.

That above so should be tested experimentally, but till now at the experiments [say, Pound and Rebak in 1960s; now, say, in GPS systems] **a sims of the two fundamentally different effects were/are measured**, while it is necessary to measure only one. In PSIP model a couple of such experiments are proposed: one when only Gravity acts on clocks- direct comparing elapsed time intervals showings of two clacks that were on different heights, see section 6.2.1. in the link above, experiment that uses Ice Cube infrastructure.

In .the other experiment possible monochromatic photons beam frequency distortion, when photons move down and up along some height [say, reflecting from a mirror on the hole bottom], say, in a hole, more see <https://www.researchgate.net/publication/215526868> The informational model - possible tests, section 2.1.2 “Monochromatic photon beam distortion”.

If photons don't change energy/frequence at the motion, photons that are reflected in bottom on upper hole end must have the same frequency as at their radiation on the upper end was. Though that doesn't completely test the problem aboce – photons can gain energy moving down and lose equally moving up,

- however in this case in PSIP model is assumed that rather possibly light photons have extremely small gravitational mases, and so in time intervals of down and up propagation numbers of photons interactions with Gravity mediators are small, and so detectably random and the reflected beam can have detectable frequency distortion . Besides in this case quantum nature if Gravity would be observed.

Finally point here, that the “gravitational time dilation” effect was introduced in GR in time when for this really there was practically no experimental hints, from what follows, including, that really GR well non-trivially is rationally adequate to the reality, despite that is based on the fundamentally wrong postulate that the Matter' spacetime and material objects interact; and so at development of really scientific theory of the fundamental Nature Gravity force that – as all other

Forces act – acts in Mater’s absolute [5]’4D Cartesian spacetime, some GR points rather possibly will be taken into account.

Cheers

<https://www.researchgate.net/post/Does-a-gravitational-field-have-energy-density-like-an-electric-field/218> ***** 74-08-05-26, page 218

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The last really scientific posts that really rigorously scientifically clarify the thread question are two SS posts on page 218 [and all other SS posts in the thread above]. Further again rather vivid strange posting mostly as chatting about rather, if too, strange “theories” – and also strange physically “refutations” of the “theories”, appeared, first of all of some special spammer that write a few posts in a few minutes; that shifted the SS posts from visible page in 3 hours, really aimed at hindering reading the posts; why? – see SS post January 30, page 348, in

<https://www.researchgate.net/post/Is-it-true-that-physicists-do-not-want-to-understand-quantum-mechanics/348>

@Kurt

“...@Sergey You appear to be attempting to derive an alternative non-Relativistic hypothesis which explains time dilation due to gravity / velocity / acceleration. Have you managed to derive equations, algorithms, constants, parameters which when applied to clocks at lab, terrestrial, orbital scales all explain / predict / correct the measured time anomalies ? Can those also be applied to explain the behaviour of subatomic particles in accelerators and colliders ?...”

- the listed above problems are rigorously scientifically clarified in the Shevchenko-Tokarevsky’s Planck scale informational physical model, two main papers are

<https://www.researchgate.net/publication/391209088> [The Informational Conception and Basic Physics](#), [in the paper section 2.9 “Mediation of the forces in complex systems” can be passed since this is more comprehensively given in section 6. “Mediation of the fundamental forces in complex systems” in other paper below] , and

<https://www.researchgate.net/publication/395113364> [Planck scale informational physical model and fundamental problems in physics](#) .

The model is based on two fundamental points. **First one is the Shevchenko-Tokarevsky’s really philosophical 2007 “The Information as Absolute” conception**, recent version of the basic paper see in

<https://www.researchgate.net/publication/363645560> [The Information as Absolute - 2022 ed](#)

- where **fundamentally completely transcendent/uncertain/irrational in the mainstream philosophy and sciences, including physics**, - while really they all can be scientifically defined only together, and really for humans it is impossible to define scientifically any only one of them having transcendent “knowledge” about others;

- so in every case when the mainstream addresses to any really fundamental problem, the result completely logically inevitably is transcendent/mystic something; as that really in mainstream physics postulates in all theories eventually are, including about what is/are so everything in Matter, i.e. “particles”, “fundamental Nature forces” – and so “fields”, etc.;

- **really fundamental phenomena/notions**, first of all in this case “Matter”, “Consciousness”, “Space”, “Time”, “Energy”, “Information”, are rigorously scientifically defined.

In the conception **first of all** it is **rigorously proven** that there exist nothing else than some informational patterns/systems of the patterns [IPS] that are elements of the absolutely fundamental

and absolutely infinite “Information” Set, the Set exists absolutely objectively, because of it fundamentally – logically - cannot be non-existent and so exists absolutely eternally, having no Beginning and no End;

- while the utmost general scientifically rigorous definition of the so absolutely fundamental phenomenon/notion “Information” is:

“Information [data, signals, evidences, etc.] 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”

Including Matter, and any, including human’s one, Consciousness, are informational systems – the Set’s elements, while “Space”, “Time”, “Energy”, “Logical Rules”, etc. . are “Logos” elements.

The post is long, so now

Cheers

<https://www.researchgate.net/post/Does-a-gravitational-field-have-energy-density-like-an-electric-field/220> ***** 01-09-05-26, page 220

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So let’s continue.

Including, say, the absolutely fundamental – “Logos” set element “Time” really relates to 3 other “Logos” set elements - “Change”, “Energy”, “Inertia”. All these 4 “Logos” set elements are logically interlinked because that that “Change” is logically self-inconsistent. So there logically cannot be some “instant” changes of state of anything – in this case so former, recent and future states are the same, when by “change” definition the states are different.

This logical prohibition of changes is overcome by/at two points: to change something it is necessary to spend some portion of **energy**, but that isn’t enough, and on some level of changing the state is uncertain – “illogical”. In Matter this happens on **QM scale that just because of the above exists**. Thus “Inertia” is logical resistance to changes, Matter is rather simple logical system, and so **energy** and **inertia** can be – and in physics are – measured.

Since changes fundamentally cannot be instant, they happen in fundamentally non-zero interval of something, in everyday practice and physics this something is called “time”, what is actualization of “Logos” set element “Time”, first of all that the all/every changes’ time intervals are **only in absolutely universal unique for all/every changes** of/in all/every of absolutely infinite “number” the “Information” Set’s elements “**time dimension**”; at that at every change the changed element moves only in one – “positive” time dimension axis direction – in other words that is “time arrow”.

Besides – **at that absolutely for sure there cannot be any “time dilations”**.

“Space” is also “Logos” set element, and absolutely for sure is actualized for any/every Set’s element, including the system “Matter” – every IPS can exist absolutely obligatorily in some – but in fundamental contrast to Time – concrete, “space”. The space has concrete nomenclature and number of “space dimensions”; what is completely determined by nomenclatures and number of degrees of freedom of basic elements an IPS is constructed of which[say the space “paper sheet” for creating of IPS “a text” is 2D, since the basic elements “letters” have two degrees of freedom to exist].

The second [see the SS post above] base of the SS&VT PSIP model are two really fundamentally foundational for physics XX century findings – the von Weizsäcker 's 1954-55 “Ur hypothesis”, where he showed that for Matter be organized basing on binary logics - and so concretely on binary fundamental elements - Matte’s space should be 3D – as the space is 3DXYZ really;

- and Fredkin-Toffoli late 1969s finding that if in a system of elements interactions are reversible, at the interactions the system’s energy is constant [say, in contrast to Landauer principle],

Correspondingly in the PSIP model in accordance with the findings above it is postulated that everything in Matter is/are specific disturbances in the Matter’s ultimate base - (at least) [4+4+1]4D dense lattice of primary elementary logical structures – (at least) [4+4+1]4D binary reversible fundamental logical elements [FLE], which is placed in the corresponding Matter’s fundamentally absolute, fundamentally flat, fundamentally continuous, and fundamentally “Cartesian”, (at least) [4+4+1]4D spacetime with metrics (at least) $(c\tau, X, Y, Z, g, w, e, s, ct)$, FLE “size” and “FLE binary flip time” are Planck length, l_P , and Planck time, t_P .

Further basing on again completely scientifically rational assumptions that particles are created in the lattice by 4D $_{c\tau, X, Y, Z}$ momentums $\mathbf{P}=m\mathbf{c}$, m is inertial mass, \mathbf{c} are 4D velocities that have identical modulus $c=l_P/t_P$, and so in the model most of basic fast bodies kinematics and dynamics [that are in SR] equations – Lorentz transformations, $E=mc^2$, etc, are derived; by completely scientifically rational assumption that fundamental Nature at least Gravity, Electric, and Nuclear/Strong forces mediators act by one scheme the values of corresponding the Forces’ strengths, G , fine structure and [strong] g , constants are derived, etc. –really practically all points in the Kurt Klingbeil quote in the previous SS post above are clarified; and a number of directions at real physics development on the way “classical” physics → QM → Planck scale physics are determined. Etc. more see the linked papers.

Cheers

<https://www.researchgate.net/post/Does-a-gravitational-field-have-energy-density-like-an-electric-field/220> ***** 05-09-05-26, page 220