3 additional points in 2025 paper "Planck scale informational physical model and fundamental problems in physics" comparing with 2024 version of paper "Informational physical model and fundamental problems in physics"

1. Section 5.3. What is the "dark matter", the passage is added:

[after the 2024/2025 text] "…..Thus it looks as rather rational to assume, that in this case the phase of SMBH central object matter state, and any other BH's matter state, though, is the next phase after known now phases "ordinary matter", "white dwarf" and "neutron star" matters' states ….., a bit etc."

> [added passage] "Though note also that with a well first approximation a particle radius is equal to its Compton length $\lambda=\hbar/mc$; so the "particle matter density" is proportional to λ^{-3}; besides, rest mass is proportional to λ^{-1}, so, say, since W and Z bosons have masses W – 80.3 GeV/c^2, Z - 91,2 Gev/c^2 , so there can be real "Big bosons stars", which, if have a neutron star size, in rather first approximation have masses in ~ 10^8 times larger, i.e. more 10^8 Sun masses; and so can be SMBHs in galaxies."

2. Corrected text in the end of section 6.2.1. "Initial model of Gravity Force, statics", which in 2024 and all before versions contains error.

In 2025 paper it is as:

… From above follows that the intrinsic processes in both bodies become be slowed on the half binding energy/gravitational mass defect (divided by $\hbar$, of course). If the mass, M , of one of the bodies is much greater than the other mass, m , the relative decrease of the lesser body's algorithm frequency is

$$\delta\omega = \frac{GMm}{2\hbar r}\frac{\hbar}{mc^2} = \frac{GM}{2rc^2} \qquad (11)$$

> Correspondingly, if the body-2 is a clock, the clock's showing becomes be slowed down on $\dfrac{GM}{2rc^2}$ times, what *is two times lesser* then that is predicted in the general relativity theory.

> If a pair of clocks are placed on different radii from M , r and $r+h; h \ll r$ in a gravity field (Figure 5)
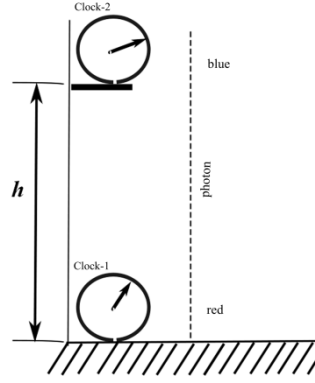
Figure 5. Two clocks are in a [let – Earth] gravity field. Dotted line – a photon beam.

then their relative tick rates differ as

$$\delta\omega_1 - \delta\omega_2 = \frac{GM}{2c^2}(\frac{1}{r} - \frac{1}{r+h}) \approx \frac{GMh}{2r^2c^2} \; . \tag{12}$$

For Earth surface $\delta\omega_1 - \delta\omega_2 = \frac{gh}{2rc^2}$, where g is the free fall acceleration. In the GR

the clocks' rates difference is two times more [45]: $\delta\omega_1 - \delta\omega_2 = \frac{gh}{rc^2}$.

Besides, note here that the photons don't principally differ from T-particles, really every particle in Matter fundamentally obligatorily has both – the gravitational and inertial masses, the gravity force acts on the photons analogously to the T-particles.

Note also, that the difference of intrinsic processes rates in bodies that are in space points with different Gravity potentials is predicted in GRT as "gravitational time dilation", and, whereas this effect is trivial in this informational model, this GRT prediction was completely new in physics in 1916. It was measured yet in 1960-s in well known Pound-Rebka-Snider experiments, where GRT value of the difference $\delta\omega_1 - \delta\omega_2$ was confirmed [46, 47] measuring Mossbauer resonances values at propagating photons that are created at gamma-decay of Fe-57 nuclei. However, in this case two different physical effects are involved – the real difference of intrinsic processes rates of the nuclei on different heights, and possible red/blue shifts of photon frequency. Thus the experimental results can be in accordance with GRT only provided that the GRT postulate that photons don't change their energy at propagating between points with different potentials [37] is valid, what can be incorrect, photons must interact with gravity field, changing energy as that all other particles do.

This problem now can be experimentally solved only in experiments, where if only one of possible impacts on intrinsic processes is measured. Now such rather easy experiment is possible – for that it is enough to measure elapsed time intervals of preliminary synchronized in one point clocks, after the clocks were placed on different heights on Earth, for example in a hole:

- it is necessary to synchronize two clocks, let on the ground;
- to move slowly or with known speed one clock on a the depth, say, 1000m;
- to wait a time;
- to return the lower clock to the other on the ground and to compare the clocks elapsed time showings.

On the tick rates two effects impact: "kinematical" slowing down because Earth rotation that is proportional reverse Lorentz factor $(1 - v^2/c^2)^{1/2}$, v is the speed of the clocks ~400m/s near equator, the difference of the frequencies for different on 1000m depths, is ~6×10^{-17}, while in this case if GRT is correct, the difference because of the gravitational impact is ~10^{-20}.

Thus after 1 day duration the difference of the clocks elapsed time showings because of gravitational impact will be ~8×10^{-16}, if GRT is correct, or two times lesser, if this model is correct.

This value seems can be measured by existent clocks, though this would be rather difficult on the large "kinematical" background. However, the background essentially can be decreased if the experiment is made near an Earth pole, say, if the Ice Cube infrastructure would be used, when the kinematical impact comparing the "equator" case above, can be decreased in ~5×10^{-5}, i.e. Kinematical contribution is ~ 0.3 of gravitational one, and so GRT/this model difference in two times can be measured on sufficient confidence level.

If the difference of the showings will be in accordance with GRT – this result will be more convincing confirmation of GRT validity than Pound-Rebka-Snider results, if not in accordance with GRT, and rather possibly in accordance with this initial Gravity
Model, from such result, including, it would experimentally follow that photons really change energy/frequency in Gravity fields, what contradicts with GRT postulate that photons propagate along geodesics having constant energy [37].

_____ _____

3. New section is added:

6.3.3.3. Bohr atom model S-orbital problem

Really in this case rather evident problem exists [see https://en.wikipedia.org/wiki/Bohr_model]:

- in the Bohr model in ground state orbital angular momentum, in, say, H-atom, is equal **L=-rxP,** , r is Bohr rradius, $L=\hbar$, while experimentally it is equal to zero; wat is possible only if $r=0$.

Now there are a couple solutions of this problem:

- semiclassical one "…an electron in the lowest modern "orbital" with no orbital momentum, may be thought of as not to revolve "around" the nucleus at all, but merely to go tightly around it in an ellipse with zero area (this may be pictured as "back and forth", without striking or interacting with the nucleus)….."

- but this "…model fails to explain the fact that the lowest energy state is spherically symmetric – it doesn't point in any particular direction.….."

- in the conventional QM

"…*In modern quantum mechanics, the electron in hydrogen is a spherical cloud of probability that grows denser near the nucleus. The rate-constant of probability-decay in hydrogen is equal to the inverse of the Bohr radius……*"

- what looks as too strange something. Electron is a particle, which - as any other particle, as that is rigorously shown in this model with well more zero approximation always exists and interacts as "FLE flipping **point**", which has size ~ Planck length, though these points are on the 4D helix, which in 3DXYZ space is observed as "wave";

- what by no means is some transcendent "cloud of probability".

Really proton and electron in H atom exchange by the real mediators above that are radiated by the particles electric charges.

At that in the H-atom [not only, though] ground S-state the radiated by proton circular photons hit in the "electron-point" rather rarely, so after a hit in some space point electron moves before next hit on the space distance more than Bohr radius r, and so the next hit [or a few hits] returns the electron back. I.e. really just the "semiclassical" solution is much more scientific than the "modern quantum mechanics" one. At that it looks as rather scientifically rational to suggest, that really the electron at motion doesn't hit the proton, the "back and forth" motion isn't completely along a straight line, and electron moves really having the "Bohr's" angular momentum $L=\hbar$, but this happens as sequence "…**+L→-L→"+L→-L→**…", where L is angular momentum vector which so is equal to zero, while the centrifugal force depends only on L.

The hits are distributed in the space fundamentally randomly, and so the "electrons-points" are distributed in the space in accordance with the H-atom wave "cloud of probability" function.