

0.3 Secret of gravity - the mimicry of the obvious¹

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Abstract

Although acceleration is, by its descriptive definition, the expansion of velocity, where *celeritas* /ke'leritas/ or /tʃe'leritas/ is a Latin word translated as "swiftness" or "speed", we prove that gravity is expansion (dilation) of the speed of light (*celeritas* c), i.e. the genesis of space in time. From this evidence, we explain the arrow of time. Implicitly, the foundation of a complex manifestation of nature is deduced to a tautological relationship between space-time variables, with the consequence of a unification of the reference measurement system. By unique relation, we connect the predictions of General and Special relativity. We introduce the scalar principle valid in all space-time dimensions of the universe.

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What do we know if the nature of the phenomenon to which everything is subject to, and why everything is, is unknown?

The secret of the universe. One of the most extensively studied and most incomprehensible phenomena in nature. Inescapable, omnipresent, mysterious and unexplained. Gravity, the key to the mysteries of space and time.

The story of the concept of space-time is long, rugged and rich, but however we try, it is impossible to express it independently of any form of velocity. The fundamental expression of space and time is their relationship to speed:

$$s = vt \quad 0.3.1$$

Speed v in the above relation is the amount of time t while time is the amount of speed. We can say that space s is the amount of velocity and time.

To determine the fundamental units of space-time, whose relationship will be a space-time independent truth, therefore a tautology, we start with the conventional formula for the speed of light, whose maximum value is measured unchanged:

$$c = \lambda f \quad 0.3.2$$

Speed of light c equals the product of wavelength λ and its frequency f , i.e. the wave appearance in one (light) unit of time (second). It is the same if we express it as a ratio of wavelength λ at its wave-time t_λ :

$$c = \frac{\lambda}{t_\lambda} \quad 0.3.3$$

The displayed equation is a rigid tautology in which every wave in its wave-time measures the constant speed of light. It follows that the energies of all waves in their wave-times are equal. Stated is an illustration of the fundamental property of all manifest forces of nature.

As the wave spreads from the source in all directions, which is a consequence of attraction delay that from all directions accelerates towards the source, i.e. abyss, wavelength λ , in described vortex geometry, is a spatial variable s . By implementing the above equation in vector geometry, we conclude that space is a cross product of the vector of time and their scalar speed:

$$\vec{s} = c\vec{t} \quad 0.3.4$$

If scalar is positive, the change of time vector direction \vec{t} implies the direction change of space vector \vec{s} and vice versa. Therefore, to understand the arrow of time, it is necessary to understand the implicit, symmetric-dynamic nature of its vector product - space.

For each wavelength and its wave-time we can write the indisputable tautology:

$$1v = \frac{1s}{1t} \quad 0.3.5$$

Our reference space unit (1s) will be derived from its inevitable and obvious dynamics. The dynamics of the vector from which, as well as from time, we can't hide – gravity.

In place of the reference wavelength we put the wavelength of acceleration a measured at the surface of our planet's radius r . The resulting time is the time in which light passes the spatial amount of acceleration.

$$\vec{a} = c\vec{t} \quad 0.3.6$$

All worlds, including ours, occur inside their accelerating environments. However, although in dynamic systems, time and space are perceived linearly. In other words, the reference meter and second are equal to us now, a second ago, yesterday, last year or fifty billion years ago (whoops,? :). Because of its duration, we are somehow aware of time dynamics, wherein the absolute length of its unit is considered fixed. However, space is perceived as a framework within which "stuff" is placed. Except on a quantum level, we don't think about space as a dynamic entity, i.e. except in a poetic context, we won't say that space propagates (historical meter is guarded under a bell jar). The unchanged meter of unchanged space, and unchanged second of unchanged time measure the unchanged speed of light... However, if we change the system of speed (acceleration), we observe the time change in relation to the system that we've left. The observations are in harmony with predictions of adopted theories, and due to the empirically postulated light speed limit, we introduce the never observed, counterintuitive, inversely proportional variability of space. The created paradigm produces a domino effect of contradicting assumptions about the truth of nature. Due to inherited postulates, whose validity is rarely called into question, physics separates into incompatible, incomplete and mutually conflicting branches describing the world of "small" and the world of "large."

There is of course another possible scenario in which the speed of light is measured as constant, and which explains the above problem of linear perception within the dynamic system of acceleration. A consistent model without unexplained "constants" which unravels the Gordian knot of nature since recorded anomalies are its implications. It is a scenario where in each unit of time *celeritas* expands for the amount of *acceleration*.

In this scenario, the ratio of a new speed, $c+a$, and the one second before, c , is an expression of the new dilated meter m_{da} :

$$m_{da} = \frac{c+a}{c} \quad 0.3.7$$

As mentioned before, the variable a in the statement above represents the length by which the speed of light increases in one second of time (hence m).

For a new wave of dilated meter to measure the speed of light unchanged, its unit of time (second) changes by the same amount:

$$c = \frac{cm_{d_a}}{s_{d_a}} \quad 0.3.8$$

Due to constantly measured scalar c , the described space-time expansion doesn't change our perception. All space-time ratios of changes in our environment retain their proportions. To determine meter-second change, their unit values are subtracted from the new amounts:

$$d_a = m_{d_a} - 1 = s_{d_a} - 1 \quad 0.3.9$$

Inserting the obtained dilation d_a in the equation above (0.3.8), we get the obvious but seemingly useless expression:

$$c = \frac{cd_a}{d_a} \quad 0.3.10$$

The variables are cancelled out, and we derive a statement which is absolutely true, but perhaps not sufficiently promising in its applicability:

$$1 = 1 \quad 0.3.11$$

It is precisely this tautological circularity, the mirroring of absolute irreducibility, that is a fundamental characteristic of the required base upon which we build the system. Because dilatation of the speed of light cd_a in equation (0.3.10) is acceleration a :

$$a = cd_a \quad 0.3.12$$

In time d_a , c passes a . d_a is the amount of speed in space a , the duration of its genesis.

The measured results of the Pound-Rebka¹ and OPERA² experiment are the implications of the described principle. The frequency of speed c in directional space a is manifested as the dynamics of the body that strives to remain in its wave. We read this motion as a free-fall, or acceleration, which we, for the reason described, express in units m/s^2 (c/d).

The speed of light is expressed in seconds while acceleration is measured on one forty-seventh part of that second (r/c) i.e. at one r . Therefore, the equation for gravity g of one light second radius c is equal to the ratio of a radius, surface acceleration and velocity of light:

$$g = \frac{ra}{c} \quad 0.3.13$$

As the measured value of all radiuses therefore depends on the space-time from which we measure, the unit for radius is equivalent to the unit for velocity³ (m/s). Unlike gravitational acceleration a , which is the dilatation of the speed of light at the measured positions falling with the square of distance, gravity g is the geometric mean of velocity expansion in space-time

portion r , n (in our case $n=c$) and it decreases linearly from the centre. Accordingly, the above equation can be written:

$$g = \sqrt{aa_{ls}} \quad 0.3.14$$

where a_{ls} is the acceleration measured at one light second's radius from the centre. We write the time of that gravity wave as:

$$d = \frac{g}{c} \quad 0.3.15$$

The obtained dilated value d is the amount added to the unit in Schwarzschild's formula for gravitational dilation, which according to (0.3.7), we can write:

$$t_d = \frac{c + g}{c} \quad 0.3.16$$

When the value of dilation d is 1, the gravity of the observed body equals our scalar, the speed of light. The monitored entity leaves our perception range and becomes a "black hole" (as according to (0.3.13) $GM = grc$, denominator in Schwarzschild's dilatational equation becomes irrational $\sqrt{-1}$).

It follows that the ratio of Schwarzschild's and celestial radius equals two gravitational dilatations of the observed body:

$$\frac{r_s}{r} = 2d \quad 0.3.17$$

from which follows that the r_s radius equals two accelerations a_{ls} , measured at the reference light unit of time (in our case 1 second) from the celestial body centre:

$$r_s = 2a_{ls} \quad 0.3.18$$

Every second, the body at distance n from the centre speeds up by the amount of corresponding orbital acceleration a_n . After n^2/r^2 seconds, its velocity is equivalent to the surface acceleration of the observed body. From this simple principle we calculate acceleration a_n at any distance n from the centre:

$$a_n = \frac{ar^2}{n^2} \quad 0.3.19$$

The symmetrical principle without squares applies for gravity:

$$g_n = \frac{ar}{n} \quad 0.3.20$$

which is for celestial bodies whose radius is greater than our light second (like the Sun), multiplied by the difference between the radius and the light second. The stated indicates the problem of an arbitrarily unified measurement system.

The geometric mean of velocity c and its expansion g is the orbital velocity of the system:

$$v_o = \sqrt{cg} = c\sqrt{d} \quad 0.3.21$$

Which is according to (0.3.13) symmetrical to known equality $v_o = \sqrt{ra}$.

From the proportional relationship for escape velocity ($c\sqrt{d}$ multiplied by $\sqrt{2}$) we derive the formula for dilatation d_v as a consequence of transverse velocity v :

$$d_v = \frac{v^2}{2c^2} \quad 0.3.22$$

Therefore, the dilatation of light escape velocity $c\sqrt{2}$ is 1 and the system leaves the observer's range of perception.

If in place of velocity v we include orbital velocity, its dilatation is equal to half the gravitational dilatation, which vector is consequently reduced to the same value:

$$\frac{v_o^2}{2c^2} = \frac{d}{2} \quad 0.3.23$$

In the absence of differences between their values, manifested as acceleration, the described system is in a state of equilibrium. When in the same equation, for the value of speed v , escape velocity is included, dilation due to velocity equals to the gravitational dilatation of a system whose vector is therefore cancelled:

$$\frac{v_{esc}^2}{2c^2} = d \quad 0.3.24$$

For this reason, up to escape velocity, dilatation as a consequence of speed is equal to the value added to the unit in Lorentz factor. After that point, the difference in the results of both statements increases, which is a result of the discrepancy between the symmetrical and invert-symmetrical nature of the space-time concept that measures a constant speed of light.

Also, the mentioned contradiction is reflected in the fact that the unexplained slowdown of Pioneer probes⁴ is the implication of the demonstrated principle.

One of the key contradictions, however, is the interpretation of gravitational spectral shifts.

When in the equation of the Special Theory of Relativity (0.3.26), which predicts the Doppler spectral shift for cases when the light signal moves in radial direction with respect to the gravity vector, the speed of light difference g_h of boundary positions in space portion of height h is included:

$$g_h = g \frac{h}{r + h} \quad 0.3.25$$

by unique expression we combine it with predictions for the gravitational spectral shift of the General Theory of Relativity (0.3.27):

$$v = g_h \Rightarrow \sqrt{\frac{1 - v/c}{1 + v/c}} = 1 - d \frac{h}{r + h} \quad 0.3.26$$

$$\sqrt{\frac{1 - \frac{2GM}{(r+h)c^2}}{1 - \frac{2GM}{rc^2}}} = 1 + d \frac{h}{r + h} \quad 0.3.27$$

This concludes the proof of the demonstrated symmetrical-dynamic nature of space-time that measures an unchanged speed of light.

We have shown that there are cases, such as the equation for gravity g_n (0.3.20), which are not entirely universal. The fact is, of course, that the meter and second are agreed units for space and time without a valid physical connection. As our universal reference position is the surface of our planet, equality (0.3.13) indicates the necessity of equalizing the terrestrial and light radius. Implicitly, at the reference position of the Earth's surface, acceleration equals gravity.

In r/c seconds, light passes r and accelerates for g .

We have established a rigid platform for the unification of the system.

The demonstrated scalar principle applies to all systems of speed. The world that we perceive is a scale of infinitely dense and infinitely expanded space-time, where each wave in its wave-time measures the same speed of light. Time and space are dynamic entities, with their directions from lower to higher light velocities. The result of that dynamic, on a scale from zero to infinity, is the constant growth of the dynamic unit, i.e. the accelerating expansion of a system.

In that process of duration and propagation, everything is a change except the physics of that change. In thirteen and a half billion years, our universe won't be twice as old ... Linear physics will always calculate its same "age". Every moment of our duration and propagation is equidistant from the idea of the "beginning" and the idea of the "end". "Big and old" will disappear in red and "small and young" shall appear in purple...

The perceived spectrum of the world is the testimony of the various velocities of its genesis⁵.

¹ <http://www.principiauniversi.com/blogs/5-1-dot-1-pound-rebka-experiment-solution>

² <http://www.principiauniversi.com/blogs/6-1-dot-3-opera-neutrino-anomaly-solution>

³ <http://www.principiauniversi.com/blogs/12-0-dot-1-the-genesis-of-circle>

⁴ <http://www.principiauniversi.com/blogs/2-1-dot-2-pioneer-anomaly-solution>

⁵ <http://www.principiauniversi.com/blogs/7-acceleration>