WHEN SHALL WE STOP DISCUSSING RELATIVITY?

A Comment on W. A. Scott Murray's Article

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Abstract

The kinematic time dilation is an absolute effect and depends on the difference of the absolute velocities of the compared clocks. The gravitational time dilation is also an absolute effect and depends on the difference of the absolute gravitational potentials of the compared clocks. All "clock effects" observed up to now give a firm and unequivocal confirmation of these two absolute phenomena. The gravitational and electromagnetic phenomena depend not on the relative velocities of the bodies but on their absolute velocities. The quantities which determine the gravitational and electromagnetic phenomena are the potentials and not the intensities. The latter are derivatives of the potentials and contain less analytical information. It may seem strange and unbelievable, but the motional-transformer induction, which appears when a wire is at rest and a magnet moves (and which is not reciprocal to the motional induction which appears when a magnet is at rest and a wire moves), was recently discovered by me. This discovery led me shortly to the discovery of the perpetuum mobile, MAMIM COLIU.

All aspects of space-time physics, which must be considered only from an absolute point of view, are analyzed in detail in my numerous papers, in my monograph[1] and in my encyclopedic work.[2] There, I showed that the rate of any clock (i.e., the duration of its period, for example, the time in which a light pulse in a "light clock" goes to a mirror and returns) depends on two factors:

- on the absolute velocity of the clock
- on the absolute gravitational potential of the clock.

If the period of a clock is T when this clock is at rest in absolute space and when it is far from *local* concentrations of matter so that the gravitational potential, Φ, is equal to the gravitational potential of interstellar space, then if the clock is made to move with a velocity $v \geq 0$ and we introduce a concentration of matter such that we have a new gravitational potential, Φ', with $|\Phi'| \geq |\Phi|$ then the new period will be:

$$T' = T\,[1 + (\Phi' - \Phi)/c^2] \,/\, \sqrt{(1 - v^2/c^2)}. \quad (1)$$

I call the interstellar gravitational potential Φ the universal gravitational potential. It is defined by the formula:

$$\Phi = -\,G \int_V r^{-1} dm, \quad (2)$$

where V is the volume of the whole universe (according to Nicolaus Cusanus, a sphere whose center is everywhere and the surface nowhere), G is the gravitational constant, r is the distance from an arbitrarily chosen interstellar reference point to any mass, dm. Solving for the integral in equation (2) yields $|\Phi| \le c^2$.[1,2] It is logical to assume $\Phi = -c^2$. By the same formula (2), one can calculate the local gravitational potential, Φ', for which one must always obtain $|\Phi| > c^2$, as the distances to certain masses are substantially smaller than when one assumes remoteness from masses.

Formula (1) is exact.[1,2] Within an accuracy of second order in v/c, it can be written in the form:

$$T' = T\,(1 + v^2/2c^2 + \Delta\Phi/c^2), \quad (3)$$

where $\Delta\Phi = \Phi - \Phi' \ge 0$.

The experiment by Hafele and Keating[3] gave a splendid confirmation of formula (3), as can be seen from their report, from my analysis,[1,2] and from Murray.[4] Hafele and Keating are relativists. The theoretical explanation of their "clocks-around-the-world" experiment is given by Hafele,[5] where, for predicting the effect, he uses the mathematical apparatus of general relativity. Hafele's analysis is cumbersome—as cumbersome and illegible as are all articles in which that apparatus is used. After the performance of the clocks-around-the-world experiment I tried to convince Dr. Hafele, in a series of letters, that his experiment is to be explained without any conceptual, mathematical and logical difficulties in light of my simple and clear absolute space-time theory; but my endeavors brought no success. Dr. Hafele remained a relativist, and as such he left in the seventies the field of space-time physics and dedicated his time to more earthly matters in the Illinois Caterpillar Company. In 1978 I went to Washington, D.C., and tried to explain the same thing to Dr. Keating personally, but again my voice remained a voice in the desert.

Now Dr. Murray points to the fact that the readings of atomic clocks placed at sea level and moved north-and-south to different latitudes give no differences in their readings. Dr. Murray asserts that "the gravitational potential at sea level is the same everywhere in the world" (p. 31), thus one has to put $\Delta\Phi = 0$ in (3). On the other hand, as the velocities of two such clocks must have different rates—which has not been observed,— Dr. Murray becomes skeptical of the validity of (3).

Dr. Murray is simply wrong. The gravitational potentials at two different latitudes at sea level are not equal. Moreover, the following relation is valid:

$$v^2 = - 2\,\Delta\Phi\,, \quad (4)$$

so that T' = T for two clocks placed at two different latitudes at sea level, where v is the difference in their absolute velocities and $\Delta\Phi$ is the difference in their gravitational potentials. Such is also the opinion of Hafele and Keating, and Dr. Murray cites it on page 31 of his own article.

Now I shall show all this analytically. On page 31, Dr. Murray gives a cross-section of the earth's rotational ellipsoid. The internal gravitational potential at any point (x,y,z) of such a homogeneous, oblate, rotational ellipsoid with major axis a and minor axis b (the axis of rotation) and consisting of an incompressible fluid, is given by the formula:[2]

$$\Phi = -G\,\mu/2\,[I_o - I_a(x^2 + y^2) - I_b z^2], \quad (5)$$

where μ is the mass density and

$$I_o=4\pi/3\, a^2/b^2\, (4b^2 - a^2),\ I_a=4\pi/15\, (6b^2 - a^2)\, b^{-2},\ I_b=4\pi/15\, (3b^2 + 2a^2)\, b^{-2} \quad (6)$$

The potential on the equator ($x^2 + y^2 = a^2$, $z = 0$), is:

$$\Phi_{eq} = -G\,\mu/2\,(I_o - I_a a^2), \quad (7)$$

and the potential at the pole ($x^2 + y^2 = 0$, $z = b$) is:

$$\Phi_{po} = -G\,\mu/2\,(I_o - I_b b^2), \quad (8)$$

so that for their difference we obtain:

$$\Phi_{po} - \Phi_{eq} = G\,\mu/2\,(I_b b^2 - I_a a^2) = 2\pi G\mu/15b^2\,(a^4 - 4a^2b^2 + 3b^4), \quad (9)$$

and substituting a = b + x, where x is a small positive quantity and neglecting terms higher than first order, we obtain:

$$\Phi_{po} - \Phi_{eq} \approx -\,2\pi G\mu bx/15. \quad (10)$$

As this quantity is negative, we conclude that the gravitational potential of an oblate rotational ellipsoid at the pole is stronger (that is, its magnitude is greater) than at the equator. Consequently, for a greater latitude it is always stronger than for a lesser latitude. This conclusion can also be derived by considering a very oblate (with $b/a \to 0$) rotational ellipsoid.

Now I shall show the validity of formula (4). The equation of a rotational ellipsoid is:

$$(x^2 + y^2)/a^2 + z^2/b^2 = 1. \quad (11)$$

Acting on the masses of this rotating fluid ellipsoid, besides the gravitational potential (5), we also have a "centrifugal potential:"

$$\Phi^* = -\ 1/2\ \Omega^2\ (x^2 + y^2), \quad (12)$$

where Ω is the rotational angular velocity. This will behave as the partial derivative with respect to space of (12), which give the components of the centrifugal acceleration $u_x = -\partial\Phi^*/\partial x = \Omega^2 x$, $u_y = -\partial\Phi^*/\partial y = \Omega^2 y$. Thus the resultant potential $\Phi_{net} = \Phi + \Phi^*$, whose space derivatives give the respective components of the net force acting on a unit mass with coordinates x,y,z will be:

$$\Phi_{net} = \Phi + \Phi^* = -\ G\ \mu/2\ I_o + 1/2\ (G\mu I_a - \Omega^2)(x^2 + y^2) + G\mu/2\ I_b z^2. \quad (13)$$

This net potential must be constant over the surface (11), as only in this case will there be no flow of liquid mass from certain latitudes to other latitudes, and for this the coefficients of x^2, y^2 and z^2 in (11) and (13) must be proportional:

$$a^2(G\mu/2I_a - \Omega^2/2) = b^2 G\mu/2\ I_b, \quad (14)$$

or

$$G\ \mu\ (a^2\ I_a - b^2\ I_b) = a^2\Omega^2. \quad (15)$$

Taking into account (9) and that $v^2 = a^2\Omega^2$, we obtain equation (4).

Thus, contrary to the fears of Dr. Murray, the equal rates of clocks put at sea level at different latitudes splendidly confirm formula (3).

It is interesting to note that the gravitational intensity at the earth's equator is stronger than at the pole, but the potential at the pole is stronger than at the equator. The rate of a clock depends not on the gravitational intensity but on the gravitational potential.

Let us now come to electromagnetism. I showed[6, 7] that if there is a wire which moves with a velocity v with respect to a magnet generating a magnetic potential A, the electric intensity induced in the wire, which I (and conventional physics, too) call motional is:

$$E_{mot} = v \times \mathrm{rot}\ A, \quad (16)$$

while if the wire is at rest and the magnet moves with a velocity v, the electric intensity induced in the wire, which I call motional-transformer is:

$$E_{mot-tr} = (v \cdot \text{grad})\, A. \quad (17)$$

If a wire and an electromagnet are at rest and only the current feeding the electromagnet changes, the electric intensity induced in the wire, which I (and conventional physics, too) call transformer is:

$$E_{tr} = - \partial A/\partial t. \quad (18)$$

Conventional physics knows only the intensities (16) and (18) and does not know the intensity (17). For the case which I describe analytically by formula (17), conventional physics writes formula (16) taken with a negative sign, supposing axiomatically that these two intensities are reciprocal, as it must be if the principle of relativity is valid. Unfortunately, the principle of relativity is not valid, and the inductions (16) and (17) are analytically and physically substantially different. The revelation of the character of the motional-transformer induction led me to the discovery of a machine which I called MAMIN COLIU (MArinov's Motional-transformer INductor COuple with a LIghtly rotating Unit) and which produces energy from nothing.[6,7] In this machine the rotor which is a permanent magnet induces a current in a coil at rest but the magnetic field of the induced current does not brake the rotor's rotation.

The scientific community must change as soon as possible its space- time conceptions, otherwise it will continue to roam in the relativistic quagmire and, instead of coming to see how MAMIN COLIU produces energy from nothing, it covers my theory and experiments with silence and disdain.

I came, however, to the conviction that the relativists are unable to change their conceptions. As relativity is already 80 years old, one can say that all living relativists were born blind. And it is impossible to explain to a blind man how beautiful is the world: he simply cannot understand your descriptions as born blind, he has lived his whole life in darkness. Thus I think we have to leave all living relativists to die in peace and to stop discussion with them. As now the whole energetic structure of the world must be transferred to “free energy,” we have to solve many different technical and social problems which will appear. These problems we shall solve with the young people who are born now and whose eyes are still “seeing.” I am addressing these young men and women.

NOTES AND REFERENCES

[1] Stefan Marinov, 1977. Eppur si Muove, C.B.D.S., Brussels. Third Edition, East-West Publishers, Graz, 1987.

[2] Stefan Marinov, 1981. Classical Physics, East-West, Graz.

[3] J. C. Hafele and R. E. Keating, 1972. "Around-the-world atomic clocks," (two papers), Science, 177:166, 168.

[4] W. A. S. Murray, 1986. "If you want to know the time…," Wireless World, p. 28.

[5] J. C. Hafele, 1972. Am. J. Phys., 42:81.

[6] S. Marinov, 1986. The Thorny Way of Truth, Part II, 3rd edition, East-West, Graz.

[7] S. Marinov, 1986. "S. Marinov to the world scientific conscience," New Scientist, 112:48.

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