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Unified Absolute Relativity Theory N1

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Introduction – Everything is relative, including light speed. From a particular and evident property of the Lorentz's equations we have derived a theory that agrees with all known experimental data and works for atomic and sub atomic scales, but it also works for gravity at macroscopic scales.

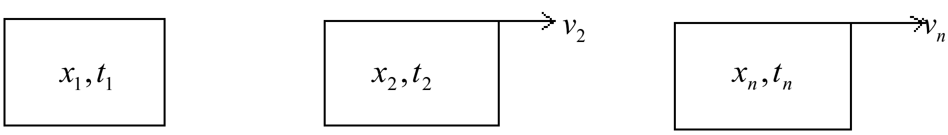
We are going to prove that the spacetime doesn't exist and isn't needed.

Basis of the theory

From the Lorentz's equations:

$$\begin{cases} x = \dfrac{x_0 + vt_0}{\sqrt{1 - v^2/c^2}} \\ t = \dfrac{t_0 + vx_0/c^2}{\sqrt{1 - v^2/c^2}} \end{cases} \Leftrightarrow \quad c^2t^2 - x^2 = c^2t_0{}^2 - x_0{}^2$$

For n relative frames with v_n relative speeds:



$$\begin{cases} x_2 = \dfrac{x_1 + v_2t_1}{\sqrt{1 - v_2{}^2/c^2}} \\ t_2 = \dfrac{t_1 + v_2x_1/c^2}{\sqrt{1 - v_2{}^2/c^2}} \end{cases} \Leftrightarrow \quad c^2t_2{}^2 - x_2{}^2 = c^2t_1{}^2 - x_1{}^2$$

$$\begin{cases} x_n = \dfrac{x_1 + v_n t_1}{\sqrt{1 - v_n{}^2 / c^2}} \\ t_n = \dfrac{t_1 + v_n x_1 / c^2}{\sqrt{1 - v_n{}^2 / c^2}} \end{cases} \Leftrightarrow \quad c^2 t_n{}^2 - x_n{}^2 = c^2 t_1{}^2 - x_1{}^2$$

$$v_x = c^2 \frac{v_n - v_2}{c^2 - v_n v_2}$$

$$\begin{cases} x_n = \dfrac{x_2 + v_x t_2}{\sqrt{1 - v_x{}^2 / c^2}} \\ t_n = \dfrac{t_2 + v_x x_2 / c^2}{\sqrt{1 - v_x{}^2 / c^2}} \end{cases} \Leftrightarrow \quad c^2 t_n{}^2 - x_n{}^2 = c^2 t_2{}^2 - x_2{}^2$$

So:

$$c^2 t_1{}^2 - x_1{}^2 = c^2 t_2{}^2 - x_2{}^2 = \cdots = c^2 t_n{}^2 - x_n{}^2 \quad \Leftrightarrow$$

$$c^2 t_n{}^2 - x_n{}^2 = S \quad \text{(Constant)}$$

So, we have proved that this equation is equal to a constant and not a variable. This is an evident error of relativity theory because, in relativity, this is the squared spacetime interval.

So, spacetime doesn’t exist.

The values x and t are not space and time but wavelength and period of an electromagnetic wave.

The value of S is variable with the local gravitational field.

At the earth surface the value is:

$$S = \frac{\pi . x_e{}^2 \alpha^5}{2} = 1.913547 \times 10^{-34} m^2$$

$x_e = 2.42631 \times 10^{-12} m$ -- Electron Compton wavelength

$\alpha = 1/137.036$ -- Fine structure constant

Far from any local gravitational field we have only the gravitational field of the universe with the value:

$$g_U = \frac{c^2}{R_U} = 6.9\times 10^{-10} m/s^2$$

$R_U = 1.3\times 10^{26} m$ -- Local universe radius; c – Light speed.

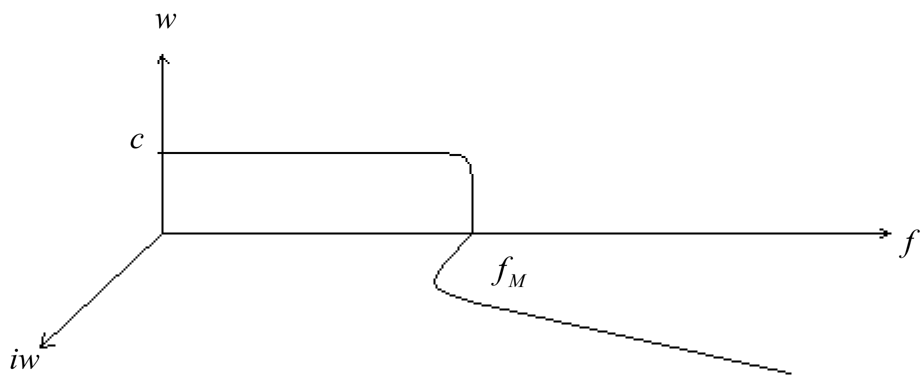
$$S_0 = \frac{{g_U}^2 S}{{g_T}^2} \quad ; \qquad g_T = 9.8 m/s^2$$

$$S_0 = 9.5\times 10^{-55} m^2$$

Speed of the electromagnetic waves -- w

$c^2t^2 - x^2 = S$ and $w = x/t$ and $f = 1/t$

$$w = \sqrt{c^2 - kf^2}$$



For $w = 0$ $\Leftrightarrow$ $f_M = \frac{c}{\sqrt{S}}$ = Compton frequency of the matter

$$f_M = 2.1672\times 10^{25} Hz$$

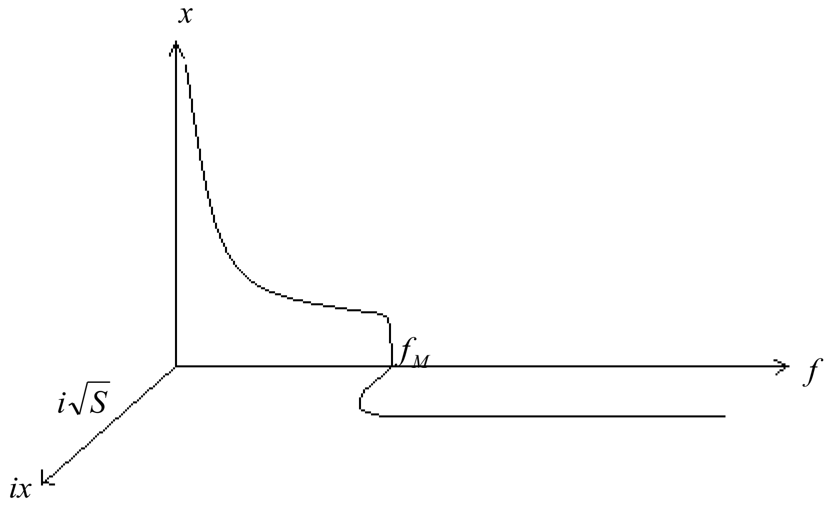
There are transversal waves with an apparent constant speed and longitudinal waves with apparent constant wavelength.

The vacuum for great frequencies behaves like a plasma.

f – Frequency; x – Wavelength; t – Period; c – Light speed.

Wavelength of a wave-particle

$$x = \frac{\sqrt{c^2 - Sf^2}}{f}$$



$$\sqrt{S} = 1.383 \times 10^{-17}\,m$$

Energy of a wave-particle

Einstein's formula:

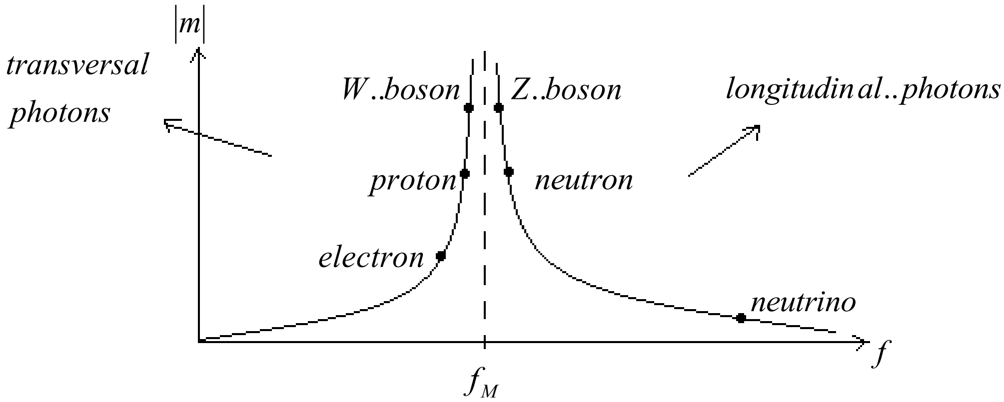
$$E = mc^2\ ;\qquad \text{E – Energy; m – Mass.}$$

New Planck's formula:

$$E = \frac{c^2}{w^2}hf\ ;\qquad \text{h – Planck constant.}$$

Mass of a wave-particle

$$m = \frac{hf}{w^2} = \frac{hf}{c^2 - Sf^2}$$



The photon has mass.

There are positive and negative frequencies and masses.

There are positive and negative energies. The mass has the sign of the charge.

Unified Force

According to our theory the light speed is variable, so around the particles exists a field of speed variation or an acceleration field. The variation of speed with time is equivalent to the variation of the squared speed with the distance.

The forces must be explained by only one mechanism and only one formula.

For example, the protons have only one force not the electric and the strong.

Light speed with period:

$$w = \sqrt{c^2 - Sf^2} \quad \Leftrightarrow \quad w = \frac{\sqrt{c^2 t^2 - S}}{t}$$

Acceleration:

$$g = \frac{dw}{dt} \quad \Leftrightarrow \quad g = \frac{Sf^3}{w}$$

Force:

$$F = mg \quad \text{and} \quad m = \frac{hf}{w^2}$$

Force between two equal particles:

$$\Leftrightarrow \qquad F = \frac{Shf^4}{w^3} \qquad \text{or}$$

$$\Leftrightarrow \qquad F = \frac{Sh(c^2 - v^2)^2 f_0^{\ 4}}{c^2(c^2 + vw_0)(w_0 + v)^3}$$

Unified force between two electrons (Cooper pair)

$$F_{ee} = \frac{hSf^4}{w^3} = \frac{Shc}{x_e^{\ 3}\sqrt{k + x_e^{\ 2}}} \qquad \text{and} \qquad x_e = 2.426 \times 10^{-12}\, m$$

$$F_{ee} = 1.142 \times 10^{-12}\, N$$

Electric force:

$$F_\varepsilon = \frac{q_e^{\ 2}}{4\pi \varepsilon_0 R^2} = \frac{hSf^4}{w^3} \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad R = 1.42 \times 10^{-8}\, m$$

Rydberg constant:

$$R_H = 1.0968 \times 10^7\, m^{-1}$$

Rydberg wavelength:

$$\lambda_H = \frac{1}{R_H} = 9.1174 \times 10^{-8}\, m$$

$$\lambda_H = 2\pi .R$$

This is a proof that the electric force is equal to the unified force for the electron.

Force in hydrogen atom

Rydberg constant: $R_H = 1.096776 \times 10^{7} m^{-1}$

Rydberg wavelength: $\lambda_H = \dfrac{1}{R_H} = 9.11763 \times 10^{-8} m$

Rydberg frequency: $f_H = \dfrac{c}{\lambda_H} = 3.28805 \times 10^{15} Hz$

Orbital frequency: $f_{OR} = 2 f_H$

Orbital speed: $v = 137 x_e f_{OR}$ and $x_e = 2.426 \times 10^{-12} m$

Bohr radius: $R_B = \dfrac{v}{2\pi . f_{OR}} = 5.3 \times 10^{-11} m$

Centript acceleration: $g = \dfrac{v^2}{R} = 9.045 \times 10^{22}$

$x_e = 2.426 \times 10^{-12}$ $m_e = 9.11 \times 10^{-31}$ $g_e = 1.2052 \times 10^{18}$

$x_p = 1.32 \times 10^{-15}$ $m_p = 1.6726 \times 10^{-27}$ $g_p = 7.451 \times 10^{27}$

$$g_H = \sqrt{g_e g_p} = 9.4764 \times 10^{22}$$

$$g_H / g = 1 + 2\pi \ \alpha$$

$$F = m_e g = 8.231 \times 10^{-8} N$$

This is another proof of the validity of the unified force.

Unified force = Strong force

Two protons: $F_{PP} = m_P g_P = +12.973N$

Two neutrons: $F_{NN} = m_N g_N = +13.041N$

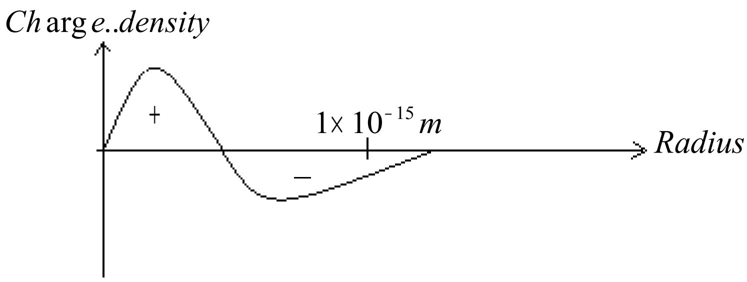
A proton and a neutron: $F_{PN} = m_P g_N = -13.00N$

What about the electric force?

$$13 = \frac{q_e^{\ 2}}{4\pi\ \varepsilon_0 R^2} \quad \Leftrightarrow \quad R = 4.2\times 10^{-15}m$$

This is precisely the distance between the proton and the neutron in a deuteron. The strong force is equal to the electric force, that means that the strong force doesn't exist.
The neutrons behaves as a negatively charged particles, it is only neutral for macroscopic distances.

Electric field of the neutron



The particles values

Neutron:

$$m_N = 1.6749\times 10^{-27}kg$$

Compton frequency:

$$f = \frac{-h \pm \sqrt{h^2 + 4m^2 Sc^2}}{2mS}$$

+ -- Charged particles
- -- Neutral particles

$$f_N = 2.06764 \times 10^{27}\, Hz$$

Wave speed:

$$w_N = \sqrt{c^2 - Sf^2} = i2.86 \times 10^{10}\, m/s$$

Compton wavelength:

$$x_N = \frac{w_N}{f_N} = i1.38322 \times 10^{-17}\, m$$

Proton:

$$E_P = 1.50327736 \times 10^{-10}\, J \quad \Leftrightarrow \quad m_P = 1.67262 \times 10^{-27}\, kg$$

$$f_P = 2.268483 \times 10^{23}\, Hz$$

$$w_P = 2.99776034 \times 10^{8}\, m/s$$

$$x_P = 1.3215 \times 10^{-15}\, m$$

$$g_P = \frac{Sf^3}{w} = 7.45 \times 10^{27}\, m/s^2$$

Electron:

$$m_e = 9.11 \times 10^{-31}\, kg$$

$$f_e = 1.236 \times 10^{20}\, Hz$$

$$w_e = c\,; \qquad \Delta w_e = c - w_e = \frac{Sf_e^{\,2}}{2c} = 4.8756 \times 10^{-3}$$

$$x_e = 2.426 \times 10^{-12}\, m$$

Neutrino:

The mass is the electric dipole moment (we will prove this later)

$$m_\nu = q_e \sqrt{S} = 2.216 \times 10^{-36}\, kg \; ; \qquad q_e \text{ -- Electric charge}$$

Energy:

$$m_\nu c^2 = 1.243 eV$$

$$f_\nu = 1.5626 \times 10^{36} Hz$$

$$w_\nu = \sqrt{S} f_\nu = i2.16156 \times 10^{19} m/s$$

$$x_\nu = i\sqrt{S}$$

Boson Z:

$$E = 91.2 GeV \; ; \qquad f = \frac{-hc^2 \pm \sqrt{h^2c^4 + 4E^2Sc^2}}{2ES}$$

$$f_Z = 3.47964 \times 10^{25} Hz$$

$$w_Z = i3.7658 \times 10^8 m/s$$

$$x_Z = i1.082245 \times 10^{-17} m$$

$$m_Z = 1.6258 \times 10^{-25} kg$$

Boson W:

$$E = 80.4 GeV$$

$$f_W = 1.27316 \times 10^{25} Hz$$

$$w_W = 2.4261 \times 10^8 m/s$$

$$x_W = 1.90556 \times 10^{-17} m$$

Top quark (charged):

$$E = 174.2 GeV$$

$$m_T = 3.1054 \times 10^{-25} kg$$

$$f_T = 1.68025 \times 10^{25} Hz$$

$$w_T = 1.8934 \times 10^8 m/s$$

$$x_T = 1.127 \times 10^{-17} m$$

Mass and speed variation with speed

$$\begin{cases} x = x_0\sqrt{1 - v^2/c^2} \\ t = t_0/\sqrt{1 - v^2/c^2} \end{cases} \Leftrightarrow \quad xt = x_0 t_0 = A \quad \text{(Constant)}$$

$$w = x/t \quad \text{and} \quad f = 1/t \quad \Leftrightarrow \quad w = Af^2$$

And $\quad mw^2 = hf$

$$\Leftrightarrow \quad f^3 = h/mA^2 \quad \text{and} \quad f_0^{\,3} = h/m_0A^2$$

As $\quad f = f_0\sqrt{1 - v^2/c^2} \quad \Leftrightarrow \quad m = m_0/(1 - v^2/c^2)^{3/2}$

$$w = x/t \quad \Leftrightarrow \quad w = \frac{x_0(1 - v^2/c^2)}{t_0} \quad \Leftrightarrow \quad w = w_0(1 - v^2/c^2)$$

The correct formula for mass variation is the Einstein's formula for longitudinal mass.

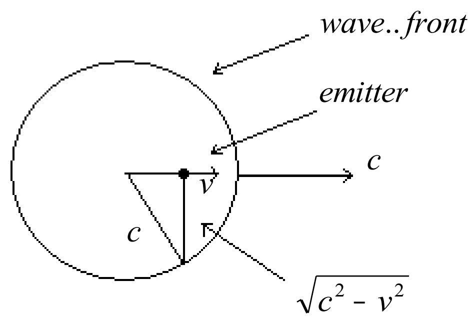
Electric charge variation:

$$\frac{m}{q} = \frac{m_0}{q_0}/\sqrt{1 - v^2/c^2} \quad \text{and} \quad m = m_0/(1 - v^2/c^2)^{3/2}$$

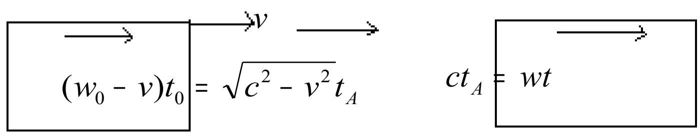
$$\Leftrightarrow \quad q = q_0/(1 - v^2/c^2)$$

Derivation of the Lorentz's equations and their true meaning

Transverse effect propagation speed:



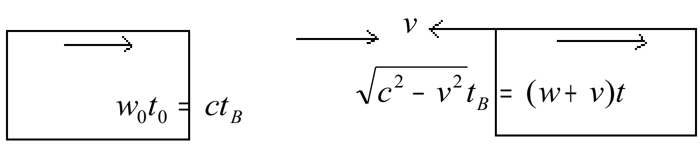
Approximation:



$$\begin{cases} (w_0 - v)t_0 = \sqrt{c^2 - v^2}\, t_A \\ ct_A = wt \end{cases} \Leftrightarrow \qquad (w_0 - v)t_0 = \sqrt{c^2 - v^2}\, \frac{wt}{c}$$

With $w_0 t_0 = x_0$ and $wt = x$ $\Leftrightarrow$

$$\Leftrightarrow \qquad x = \frac{x_0 - vt_0}{\sqrt{1 - v^2/c^2}}$$



$$\begin{cases} w_0 t_0 = ct_B \\ \sqrt{c^2 - v^2}\, t_B = (w + v)t \end{cases} \Leftrightarrow \qquad \sqrt{c^2 - v^2}\, \frac{w_0 t_0}{c} = (w + v)t \qquad \Leftrightarrow$$

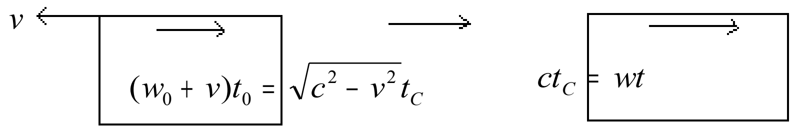
$$\Leftrightarrow \qquad \sqrt{1 - v^2/c^2}\, x_0 = x + vt$$

Substituting the value of x:

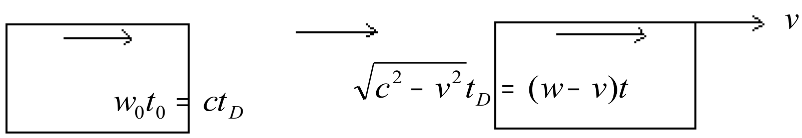
$$\Leftrightarrow \qquad \sqrt{1-v^2/c^2}\,x_0 = \frac{x_0 - vt_0}{\sqrt{1-v^2/c^2}} + vt \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad t = \frac{t_0 - vx_0/c^2}{\sqrt{1-v^2/c^2}}$$

Separation:



$$\Leftrightarrow \qquad x = \frac{x_0 + vt_0}{\sqrt{1-v^2/c^2}}$$



$$\Leftrightarrow \qquad t = \frac{t_0 + vx_0/c^2}{\sqrt{1-v^2/c^2}}$$

General relativity calculations without spacetime

Light deflection by the sun

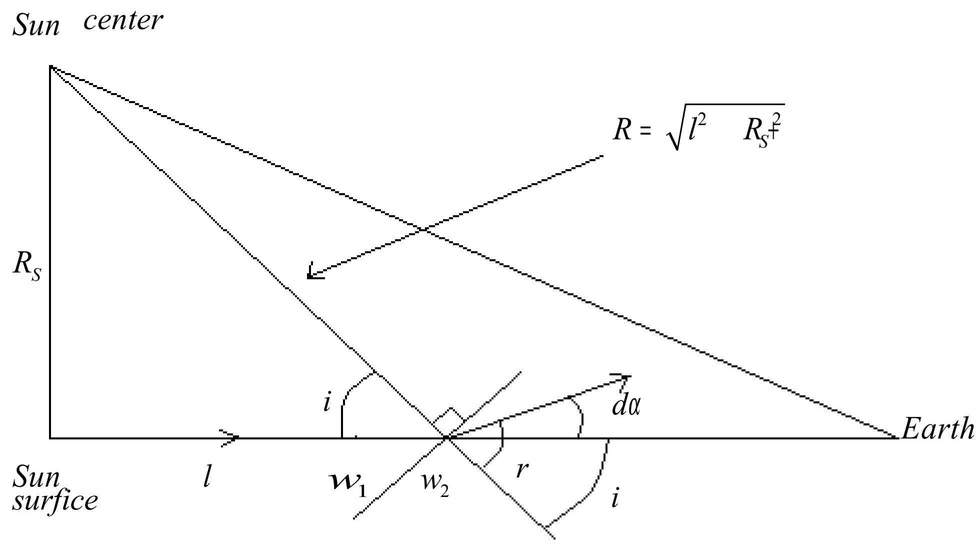
As the space contraction and time dilatation formulas are note equal we conclude that light speed is variable, so we demonstrate that the values of one test of general relativity can be calculated if we consider that the light speed in gravitational fields behaves as in the optical mediums.

This test conceived by Einstein try to calculate the deviation of a light ray from a distant star that passes near the Sun surface and is observed on the Earth.

$$\begin{cases} x = x_0\sqrt{1 - v^2/c^2} \\ t = \dfrac{t_0}{\sqrt{1-v^2/c^2}} \end{cases} \quad \text{and} \quad w = x/t \quad \text{and} \quad w_0 = x_0/t_0 \quad \Leftrightarrow$$

$$\Leftrightarrow \quad w = w_0\frac{c^2 - v^2}{c^2} \quad \text{and} \quad w_0 \approx c \quad \Leftrightarrow$$

$$\Leftrightarrow \quad w = \frac{c^2 - v^2}{c} \quad \Leftrightarrow \quad \Delta w = -\frac{2v}{c}\Delta v \quad (1)$$



On the place defined by the distance l, from the Sun surface, the light ray that passes near the Sun has an incident angle i, a refraction angle r and an angle shift $d\alpha$
The refraction plan divide two zones of the space with propagation speeds w_1 and w_2.
According to the laws of refraction:

$$seni = \frac{w_1}{w_2} senr \quad ; \quad seni = \frac{R_S}{\sqrt{l^2 + R_S^2}} \quad ; \quad senr = \frac{R_S}{\sqrt{l^2 + R_S^2}}\frac{w_2}{w_1}$$

$$\cos i = \frac{l}{\sqrt{l^2 + R_S^2}} \quad ; \quad r = i + d\alpha \quad ; \quad sen(i + d\alpha) = \frac{R_S}{\sqrt{l^2 + R_S^2}}\frac{w_2}{w_1}$$

$$seni.\cos d\alpha + \cos i.send\alpha = \frac{R_S}{\sqrt{l^2 + R_S{}^2}} \frac{w_2}{w_1} \quad \Leftrightarrow \quad R_S + l.d\alpha = R_S \frac{w_2}{w_1} \quad \Leftrightarrow$$

$$\Leftrightarrow \quad d\alpha = \frac{R_S}{l} \frac{w_2 - w_1}{w_1} \quad \Leftrightarrow \quad d\alpha = \frac{R_S}{l.c} \Delta w$$

and $\Delta w = -\frac{2v}{c} \Delta v \quad \Leftrightarrow \quad d\alpha = \frac{-2R_S v}{l.c^2} dv \quad (2)$

If we want to put gravity in the relativity equations we must change the linear velocity v by the escape speed as the gravitational potential:

$$v^2 = \frac{2GM_S}{R} \quad ; \quad M_S \text{ -- Sun mass}$$

$$v = \frac{\sqrt{2GM_S}}{\sqrt[4]{l^2 + R_S{}^2}} \quad \Leftrightarrow \quad dv = -\frac{\sqrt{2GM_S}}{2} \frac{l}{\left(l^2 + R_S{}^2\right)^{5/4}} dl$$

Substituting v and dv in (2) we get:

$$d\alpha = \frac{2GM_S R_S}{c^2} \frac{dl}{\left(l^2 + R_S{}^2\right)^{6/4}} \quad \Leftrightarrow$$

$$\Leftrightarrow \quad \alpha = \frac{2GM_S R_S}{c^2} \int_0^{D_{ES}} \frac{dl}{\left(l^2 + R_S{}^2\right)^{6/4}} \quad ; \quad D_{ES} = \text{Earth Sun distance}$$

We have only consider the angle deviation of the light ray that comes from the Sun. Considering also the light ray that goes to the Sun, the deviation angle will be double:

$$\Leftrightarrow \quad \delta = 2\alpha$$

$$\Leftrightarrow \quad \delta = \frac{4GM_S R_S}{c^2} \frac{1}{R_S{}^2} \quad \Leftrightarrow \quad \delta = \frac{4GM_S}{c^2 R_S}$$

$$\delta = 8.4838561 \times 10^{-6} rad = 1.75''$$

Thus, we have calculated the correct deviation.

Shapiro time delay

This test of general relativity conceived by Irwin Shapiro intends to measure the delay of a radar signal from the Earth to Mars, when the superior conjunction, reflected on Mars and detected on the Earth.

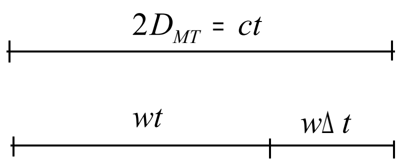
The signal passes near the Sun's surface and due to the space-time bending it suffers a delay.

Our calculations consider the light speed variable.

$D_{MS} = 2.279\times 10^{11}$ -- Mars Sun distance; $D_{TS} = 1.5\times 10^{11}$ --Earth Sun distance;

$D_{MT} = 3.779\times 10^{11}$ --Mars Earth distance; $M_S = 1.989\times 10^{30}$ -- Sun's mass

$R_S = 6.95\times 10^{8}$ -- Sun's radius.



$$\Delta t = 2D_{MT}\frac{c-w}{cw}$$

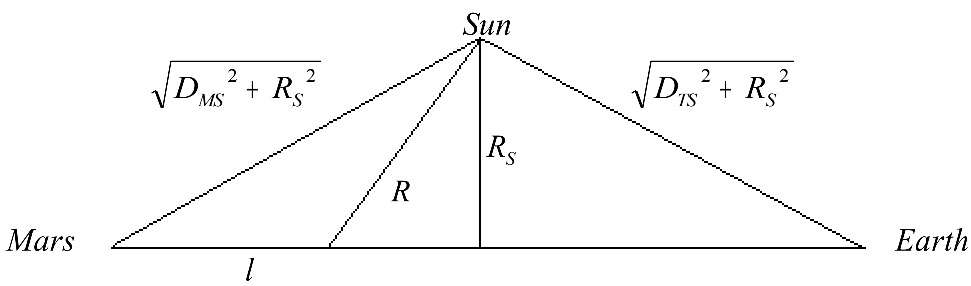
$\Delta t =$ time delay ; $w =$ slower light speed

$$w \approx c \quad \Leftrightarrow \quad \Delta t = 2D_{MT}\frac{c-w}{c^2}$$

$$\begin{cases} x = x_0\sqrt{1-v^2/c^2} \\ t = \dfrac{t_0}{\sqrt{1-v^2/c^2}} \end{cases} \quad \text{and} \quad w = x/t\,; \quad w_0 = x_0/t_0\,; \quad w_0 \approx c \quad \Leftrightarrow$$

$$w = \frac{c^2 - v^2}{c} \quad \Leftrightarrow \quad c - w = \frac{v^2}{c} \quad \Leftrightarrow \quad \Delta t = 2D_{MT}\frac{v^2}{c^3}$$

Escape speed: $v_i^2 = \dfrac{2GM_S}{R}$ and



$$R = \sqrt{(l - D_{MS})^2 + R_S^2} \quad \Leftrightarrow$$

$$\Leftrightarrow \qquad v_i^2 = \frac{2GM_S}{\sqrt{(l - D_{MS})^2 + R_S^2}}$$

Average *v*:

$$v^2 = \frac{\int_0^{D_{MT}} \frac{2GM_S dl}{\sqrt{(l - D_{MS})^2 + R_S^2}}}{D_{MT}} \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad v^2 = \frac{2GM_S}{D_{MT}} \log\left(\frac{4D_{MS}D_{TS}}{R_S^2}\right) \qquad \text{and} \qquad \Delta t = 2D_{MT}\frac{v^2}{c^3} \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad \Delta t = \frac{2GM_S}{c^3} \log\left(\frac{4D_{MS}D_{TS}}{R_S^2}\right)$$

$$\Delta t = 247.2 \mu s$$

The experimental value of Δt is a little lower than $250 \mu s$.

Correction of Mercury's perihelion precession

We do the derivation and the calculation of the general relativity correction of the Mercury's perihelion precession, considering that the light speed is variable in gravitational fields.

Correction of the gravitational force

From the formulas of the space contraction and time dilatation:

$$\begin{cases} x = x_0\sqrt{1 - v^2/c^2} \\ t = \dfrac{t_0}{\sqrt{1 - v^2/c^2}} \end{cases} \qquad \Leftrightarrow \qquad xt = x_0 t_0 = A \qquad (A = \text{constant})$$

Doing $\quad w = x/t \quad$ e $\quad f = 1/t \quad \Leftrightarrow \quad w = Af^2$

The wave energy is given:

$$E = mcw \quad \text{and} \quad E = \frac{hcf}{w} \quad \Leftrightarrow$$

$$\Leftrightarrow \quad f^3 = \frac{h}{mA^2} \quad \text{and} \quad f_0^{\,3} = \frac{h}{m_0 A^2}$$

As $\quad f = f_0\sqrt{1 - v^2/c^2} \quad \Leftrightarrow \quad m = \dfrac{m_0}{\left(1 - v^2/c^2\right)^{3/2}}$

This equation is different from the Einstein's formula. But this one is coherent with the two equations of time dilatation and space contraction.

No one can explain why the Einstein's formula only can be derived from the time equation, denying the space formula.

We think there is an interpretation problem of the experimental data. All the experiments give not the relation between the masses but the relation between the ratio of the mass by the electric charge.

$$\frac{m}{q} = \frac{m_0}{q_0}\frac{1}{\sqrt{1 - v^2/c^2}}$$

If we consider that the charge is also variable:

$$q = \frac{q_0}{1 - v^2/c^2}$$

Thus, $\quad \Delta m = m - m_0 = \dfrac{m_0}{\left(1 - v^2/c^2\right)^{3/2}} - m_0 \quad \Leftrightarrow \quad \Delta m \approx m_0 \dfrac{3v^2}{2c^2}$

with $\quad v^2 = \dfrac{2GM}{r} \quad$ (free fall speed from infinity)

$$\Delta m = m\frac{3GM}{c^2 r}$$

$$F = \frac{GMm}{r^2} \quad \Leftrightarrow \quad \Delta F = \frac{GM}{r^2}\Delta m \quad \Leftrightarrow \quad \Delta F = \frac{3G^2M^2m}{c^2r^3}$$

$$F = -\frac{GMm}{r^2} - \frac{3G^2M^2m}{c^2r^3}$$

Orbital movement equation

Doing $u = \frac{1}{r}$ we have the classical equation of an elliptic orbit

$$\frac{d^2u}{d\theta^2} + u = -\frac{F}{GMma(1-\varepsilon^2)u^2}$$

Substituting the value of F

$$\frac{d^2u}{d\theta^2} + \left(1 - \frac{3GM}{c^2a(1-\varepsilon^2)}\right)u = \frac{1}{a(1-\varepsilon^2)} \qquad (1)$$

As $1 - \frac{3GM}{c^2a(1-\varepsilon^2)} \approx 1$ we can use the classical solution

$$\frac{d^2u}{d\theta^2} + u = \frac{1}{a(1-\varepsilon^2)} \quad \Leftrightarrow \quad u = \frac{1+\varepsilon\cos\theta}{a(1-\varepsilon^2)}$$

Substituting the value of u in (1)

$$a(1-\varepsilon^2)\frac{du}{d\theta} = \frac{3GM}{c^2a(1-\varepsilon^2)}\theta - \theta + \frac{3GM}{c^2a(1-\varepsilon^2)}\varepsilon sen\theta - \varepsilon sen\theta + 1 + C_1 \qquad (2)$$

a = orbit major semi axis ; ε = orbit eccentricity

As we can see the terms of this equation are angles and the term responsible for the correction is:

$$\delta = \frac{3GM}{c^2a(1-\varepsilon^2)}\theta$$

To obtain the value of δ for a complete orbit we do $\theta = 2\pi$, thus

$$\delta = \frac{6\pi .GM}{c^2a(1-\varepsilon^2)}$$

$G = 6.67\times 10^{-11}$; $M = 1.989\times 10^{30}$; $c = 3\times 10^{8}$; $a = 5.787\times 10^{10}$; $\varepsilon = 0.2056$

$$\delta = 5.01317 \times 10^{-7} \quad \text{Radians/revolution}$$

The value of the shift in seconds per one hundred years is:

$$\Delta = \delta \times \frac{180}{\pi} \times 3600 \times \frac{1}{0.2408} \times 100$$

0.2408 = revolution period in years

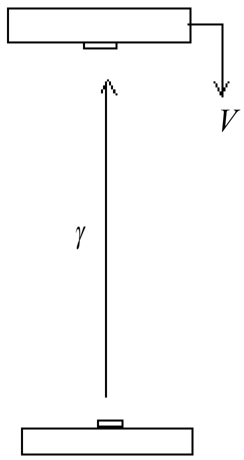
$$\Delta = 42.94''$$

Thus, we have the value of the Mercury's precession.

Saying, after all, that the light speed is constant in the vacuum is false because the vacuum without a gravitational field doesn't exist. All the space is a huge gravitational field.

Pound-Rebka experiment

The real general relativity calculations are very simple.



In this experiment a gamma ray is emitted from the ground to the top of a tower and the gravitational redshift of the ray is cancelled in the detector with a Doppler shift due to the speed V. So, the speed V is a measure of the gravitational redshift when the frequency is the same.

$$x_0 = 8.61 \times 10^{-11} m \quad ; \quad \Delta R = h = 22.6 m$$

$$V = \Delta V = 7.36 \times 10^{-7} m s^{-1}$$

Gravitational redshift:

$$x = x_0 \sqrt{1 - v^2 / c^2} \quad \Leftrightarrow \quad \Delta x = x_0 \frac{v}{c^2} \Delta v$$

And $$v = \sqrt{\frac{2GM}{R}} \quad \Leftrightarrow \quad \Delta v = \sqrt{2GM} \left(-\frac{1}{2} \right) R^{-3/2} \Delta R$$

$$\Leftrightarrow \quad \Delta x = -\frac{x_0}{c^2} \frac{GM}{R^2} \Delta R \quad \Leftrightarrow \quad \Delta x = -x_0 \frac{gh}{c^2}$$

(G – gravitational constant; M – earth mass; R – earth radius; $g = 9.8 m s^{-2}$)

$$\Delta x = -2.12 \times 10^{-25}$$

Doppler effect:

$$x = x_0 \frac{c + V}{c} \quad \Leftrightarrow \quad \Delta x = \frac{x_0}{c} \Delta V \quad \Leftrightarrow$$

$$\Delta x = +2.11 \times 10^{-25}$$

Geodetic effect

We are going to calculate the value for the satellite of the Gravity Probe B:

Distance of the satellite from the centre of the earth:

$$R = 7.05 \times 10^6 m$$

Speed of rotation of the gravitational field:

$$v = \frac{2\pi .R}{24h} = 512.7 m/s$$

The light speed is variable:

$$\frac{\Delta w}{\Delta w_0} = \frac{c + v}{c - v} = 1 + 3.42 \times 10^{-6}$$

$$\alpha = 2\pi + 2\pi .3.42 \times 10^{-6} rad / year$$

$$\Delta \alpha_1 = \frac{4\pi .v}{c} = 2.15 \times 10^{-5} rad / year$$

The wavelength is also variable:

$$\frac{x}{x_0} = \sqrt{\frac{c + v}{c - v}} = 1 + 1.71 \times 10^{-6}$$

$$\Delta \alpha_2 = 1.07 \times 10^{-5}$$

Total shift:

$$\Delta \alpha = \Delta \alpha_1 + \Delta \alpha_2 = 3.22 \times 10^{-5} rad / year$$

Experimental value:

$$\Delta\alpha_{EXP} = 3.2\times 10^{-5}\, rad / year$$

So, it's very easy to calculate the value without spacetime.

Gravitomagnetism and frame dragging don't exist.

Units unification in S. I. system

Everything is made of speed and distance. Time doesn't exist in nature. There are only 3 distance dimensions.

Definition of mass

Wavelength of the electron: $x_e = 2.426\times 10^{-12}\, m$

Light speed = c

Particular electron relations:

Electron charge -- $q_e \approx x_e^3 c^2$

Planck's constant -- $h \approx x_e^5 c^3$

Magnetic flux quantum -- $\Phi_0 \approx x_e^2 c$

Inverse permeability -- $\frac{1}{\mu_0} \approx x_e c^2$

Permittivity -- $\varepsilon_0 \approx x_e$

Electron energy -- $E \approx x_e^4 c^4$

Electron mass -- $m \approx x_e^4 c^2$

Boltzmann constant -- $k_B \approx x_e^{\ 2}$

Using: distance = L and speed = V

So, the mass is equal: $M = L^4 V^2$

List of units

Mass -- $M = L^4 V^2$

Time -- $T = L V^{-1}$

Electric charge -- $q = L^3 V^2$

Electric dipole moment -- $d = qL = M = L^4 V^2$

The electric dipole moment is a mass.

Magnetic charge -- $q_m = \Phi_0 = \dfrac{h}{2q} = L^2 V$

Planck's constant -- $h = L^5 V^3$

Magnetic flux quantum -- $\Phi_0 = q_m = \sqrt{M}$

Inverse permeability = Density = Electric potential = $\dfrac{1}{\mu} = L V^2$

Magnetic current -- $I_m = L V^2$

Magnetic field -- $B = V$ (Magnetic flux density)

Electric field -- $E = V^2$

Electric current = Magnetic voltage -- $I = L^2 V^3$

Permittivity -- $\varepsilon = L$

Force -- $F = L^3 V^4$

Magnetic potential = Inverse resistance -- $A = \frac{1}{\Omega} = LV$

= Circulation

Gravitational constant -- $G = L^{-3}$

Pressure -- LV^4

Farad -- L^2

Henry -- V^{-2}

Energy -- $E = L^4 V^4$

Moment -- $L^4 V^3$

Watt -- $L^3 V^5$

Magnetic field strength -- $H = LV^3$

Electric flux -- $L^2 V^2 = \sqrt{Energy}$

Acceleration = Magnetic current density -- $a = J_M = L^{-1} V^2$

Energy -- $E = \left(\frac{\varepsilon}{\mu}\right)^2$

Electric current density -- $J_E = V^3$

Electric displacement field -- $D = \frac{1}{\mu} = LV^2$

Magnetic current -- $I_m = LV^2$

$$x_G = \frac{1}{\sqrt[3]{G}}$$

Boltzmann constant -- $k_B = L^2$

The temperature is an energy surface density:

$$T_k = \frac{E}{L^2} = L^2V^4$$

Units table

	L-1	L0	L	L2	L3	L4	L5
V-1	Thermal Resistance; Electric Resistance		Time; Inverse Frequency				
V0			Distance; Permittivity	Surface; Capacitance; Boltzmann Constant	Volume; Inverse Gravitational Constant		
V	Frequency; Vorticity	Speed; Magnetic Field	Magnetic Potential; Conductance; Circulation	Magnetic Charge; Magnetic Flux	True Magnetic Dipole Moment		
V2	Acceleration; Current Density	Electric Field; Inverse Inductance	Magnetic Current; Electric Voltage; Inverse Permeability	Electric Flux; Q.M. Probability	Electric Charge	Mass; Electric Dipole Moment	
V3	Sound Resistance	Electric Current Density; Potential Vorticity	Magnetic Field Strength	Magnetic Voltage; Electric Current		Momentum; False Magnetic Moment	Planck Constant; Angular Momentum
V4			Pressure; Energy Density	Temperature; Surface Tension	Force	Energy; Torque	
V5	Luminance	Spectral Irradiance	Intensity; Irradiance		Power		

The existence

There's the nothing.

But, if so, the nothing can't exists.

On the logical limit, if nothing exists the nothing can't exist.

That means the nothing has an intrinsic instability, it can't allows the existence of it self, so the nothing perpetually oscillate between his symmetric components like $0 = (+1) + (-1)$. This oscillation with no initial energy is the existence.

So the sum that all that exists is equal to zero.

Rotating Universe

The universe is not expanding. It's rotating with constant angular speed and locally at light speed.

Our universe is eternal as all the existence, it has no beginning.

Hubble constant: $H_0 = 2.3 \times 10^{-18} Hz$

Local gravitational acceleration:

$$g_U = cH_0 = 6.9 \times 10^{-10}$$

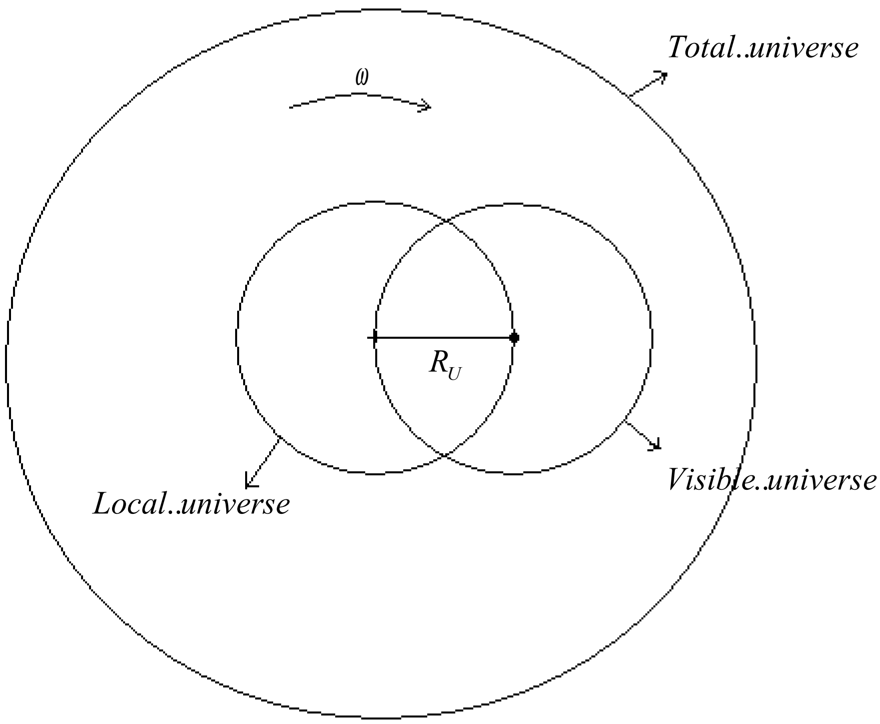
Our universe is rotating with a constant angular speed ω :

$$\omega = 2\pi H_U \; ; \qquad c = \omega R_U = 2\pi H_U R_U$$

$$H_U = \frac{H_0}{2\pi} = 3.66 \times 10^{-19}$$ -- Frequency of the universe

The local orbital speed is equal to light speed.

$R_U =$ Radius of the local universe



Universe period:

$$T_U = \frac{1}{H_U} = 2.73 \times 10^{18} s = 86.51 Gy$$

Radius:

$$R_U = \frac{c}{H_0} = 1.3 \times 10^{26} m$$

The local orbital speed is light speed:

$$c^2 = \frac{GM_U}{R_U} \quad \Leftrightarrow \quad M_U = 1.76 \times 10^{53} kg$$

Some formulas:

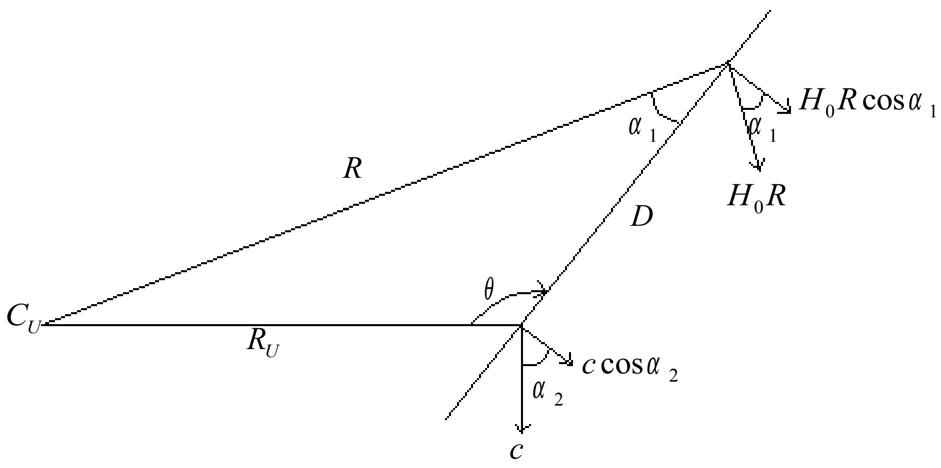
$$T_U = 2\pi \sqrt{\frac{R_U^{\ 3}}{GM_U}}$$

$$g_U = \frac{GM_U}{R_U^{\ 2}}$$

$$2\pi R_U = cT_U$$

Apparent linear expansion

The red shift is due to the relativistic dilatation of the wavelengths by transverse relative speed.



Relative longitudinal speed

$$v = H_0 R \sin\alpha_1 - c\sin\alpha_2$$

$$v = H_0 R \sin\alpha_1 - c\sin\theta \qquad \text{and} \qquad \sin\alpha_1 = \frac{R_U}{R}\sin\theta$$

$$v = H_0 R_U \sin\theta - c\sin\theta \qquad \text{and} \qquad H_0 R_U = c$$

$$\Leftrightarrow \qquad v = 0$$

Relative transverse speed

$$R = \sqrt{R_U{}^2 + D^2 - 2R_U D\cos\theta}$$

$$v = H_0 R\cos\alpha_1 - c\cos\alpha_2$$

$$R_U{}^2 = R^2 + D^2 - 2DR_U\cos\alpha_1 \qquad \Leftrightarrow \qquad \cos\alpha_1 = \frac{R^2 + D^2 - R_U{}^2}{2RD}$$

$$v = H_0\frac{R^2 + D^2 - R_U{}^2}{2D} + c\cos\theta$$

$$v = H_0(D - R_U\cos\theta) + c\cos\theta \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad v = DH_0$$

We found the Hubble law but this speed is transverse.

Transverse red shift

$$x_0 = \frac{cx}{\sqrt{c^2 - v^2}} \qquad \Leftrightarrow \qquad \frac{\Delta x_0}{x} = \frac{cv\Delta v}{(c^2 - v^2)^{3/2}}$$

v is the relative speed; $\Delta v = c - 0 = c$

$$\frac{\Delta x_0}{x} \approx \frac{v}{c}$$

For a local speed equal to c the transverse red shift behaves as a longitudinal red shift:

$$x_0 = x\frac{c+v}{c} \quad \Leftrightarrow \quad \frac{\Delta x_0}{x} = \frac{\Delta v}{c}$$

So, a rotating universe with a constant angular speed appears to be expanding.
In it the Hubble constant is precisely a constant.

Velocimeter of gravitational reference

This paper consists on a description of an experiment, with a special interferometer, to measure the speed of a vehicle, with the device inside, relatively to the Earth gravitational field.

We want to prove that the two basic postulates of the relativity theory are wrong:

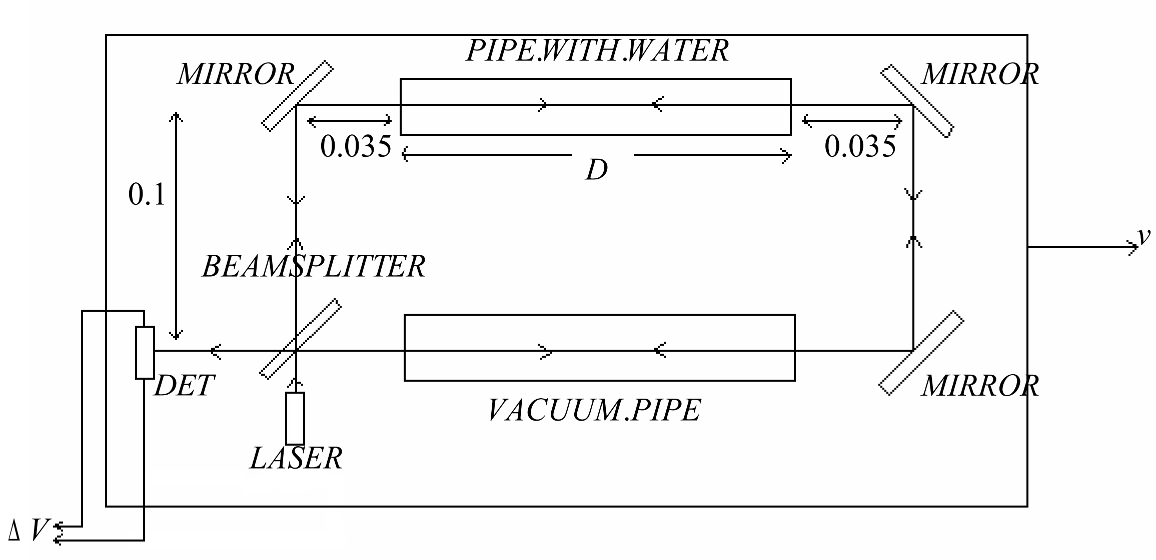
1st postulate – "we can't distinguish the state of uniform movement from the rest in a closed lab with any kind of experiment done inside it"

But there are no closed labs for gravity. If the ether is the Earth gravitational field it's possible to measure the speed relatively to it. This hypothesis is coherent with the results of the Michelson's experiment. Contrary to what is thought the Michelson's experiment gives the same result if the ether exists and is stopped relatively to the Earth, what is the case if it is the gravitational field of the Earth.

2nd postulate -- "the speed of light is constant and doesn't depend of the movement of the emitter or the receptor ".

As proves the phenomenon of astronomic aberration the light has relative speed. Our experiment proves that the light speed is additive as all others.

Experiment description



The device has a laser diode ($\lambda = 6.5 \times 10^{-7} m$, $P = 3.5 mW$), a 50% - 50% beam splitter, three mirrors, a pipe filled of water with two glass windows, another one with vacuum and a light detector DET.

The laser beam is divided on the splitter and travels in two directions in the mirrors circuit. Then they are joined again and went to the detector where the variable interference pattern generates the voltage ΔV.

The entire device is protected from visible light and infrared by a metallic box.

Times of the light rays:

Inside the vacuum tube, if the light propagates in the earth gravitational field, one way the speed will be $c + v$ and the other way $c - v$:

$$\begin{cases} t_1 = k + \dfrac{D}{w} + \dfrac{D}{c - v} \\ t_2 = k + \dfrac{D}{w} + \dfrac{D}{c + v} \end{cases} \quad \text{and} \quad t = t_1 - t_2$$

$$t = \frac{2Dv}{c^2} \quad ; \quad D = 0.33m \quad ; \quad t = 7.34 \times 10^{-18} v$$

Space phase shift:

$$\Delta t = 7.34 \times 10^{-18} \Delta v \quad \text{and} \quad \Delta x = c \Delta t \quad \Leftrightarrow \quad \Delta x = 2.2 \times 10^{-9} \Delta v$$

Voltage variation on the detector:

$$\Delta V = V \frac{\Delta x}{\lambda / 2} \quad \text{with} \quad \lambda = 6.5 \times 10^{-7} m \quad \Leftrightarrow$$

$$\Leftrightarrow \quad \Delta V = V \times 6.8 \times 10^{-3} \Delta v$$

In our device $V = 46mV$, so for a $\Delta v = 100km/h = 27.8m/s$:

$$\Delta V = 8.7mV \quad ; \quad \frac{\Delta V}{V} = 19\%$$