the general science journal

Unified Absolute Relativity Theory - III

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See Unified Absolute Relativity Theory I and II at:

www.wbabin.net/saraiva/saraiva105.pdf
www.wbabin.net/saraiva/saraiva223.pdf

The mass is the electric dipole moment

Only the dipoles with electrons, positrons and neutrinos generate mass.

$$m = \frac{q.k}{d} \quad \text{-- Electric dipole}$$

m – mass; q – Electric charge; k – Boltzmann constant;
d – Distance between the charges.

Neutral and positive dipoles generate positive mass.
Negative dipoles generate negative mass.

$$m = q_m{}^2 = 4.276 \times 10^{-30} kg \quad \text{-- Neutrinos dipole}$$

q_m -- Magnetic charge

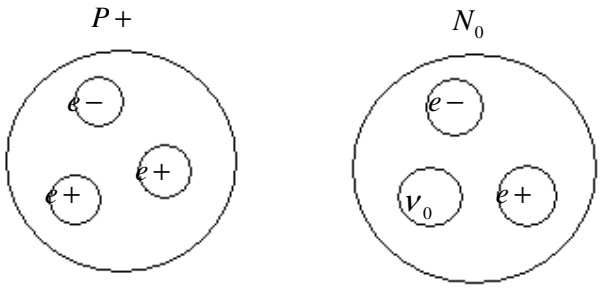
$$m = \frac{2.q.q_m}{c.d} \quad \text{-- Electron neutrino dipole}$$

$$q_m = \frac{h}{2.q}$$

The dipoles between protons, neutrons or proton-neutron don't generate mass.
In nature there are no negative dipoles, only the electron negative mass.

Proton, neutron structures

The mass of the proton and the neutron is generated by the interior electrons, positrons and neutrinos:



The proton and the neutron are made of electrons, positrons and neutrinos.

True magnetic dipole moment of the electron:

$$d_{me} = q_m x_e = 4.852\times10^{-27}$$

Proton mag. dipole moment: $d_{mp} = 1.4106\times10^{-26}$

Neutron mag. dipole moment: $d_{mn} = 9.66236\times10^{-27}$

Neutrino mag. dipole moment: $d_m = q_m\sqrt{S} = 2.8^{-32}$

$$\frac{d_{mp}}{d_{me}} = 3\ ; \qquad \frac{d_{mn}}{d_{me}} = 2$$

Mass of the proton:

$$m = 3\frac{q.k}{4.3\times10^{-15}}$$

Cooper pair of the particles inside the proton:

$$Force = \frac{q^2}{4\pi\varepsilon_0 R^2} = \frac{Shf^4}{w^3} \qquad \Leftrightarrow \qquad R = 4.3\times10^{-15} m$$

f – Compton frequency of the proton; w – Speed of the proton wave < c

Inverse fine structure constant of the proton:

$$N^2 = \frac{R.\pi}{x_p} \qquad \Leftrightarrow \qquad N = 3.2$$

$x_p =$ Compton proton wavelength

$$\frac{m_p}{5.14\times10^{-28}} = 3.253 \;;\quad 5.14\times10^{-28} \text{ -- Mass of one dipole in the proton}$$

Vacuum energy:

$$E_0 = \left(\frac{\varepsilon_0}{\mu_0}\right)^2$$

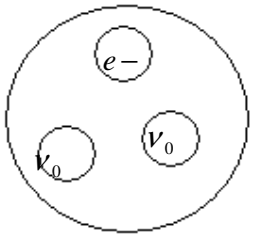
Energy of the proton:

$$E = 3E_0$$

Muon mass

$$m = 1.8843\times10^{-28}\,kg \qquad \text{(E = 105.7 MeV)}$$

$$x = 1.173\times10^{-14}\,m$$



$$m = 2\frac{q.k}{d} + q_m{}^2 \qquad \Leftrightarrow \qquad d = 2.4\times10^{-14}\,m$$

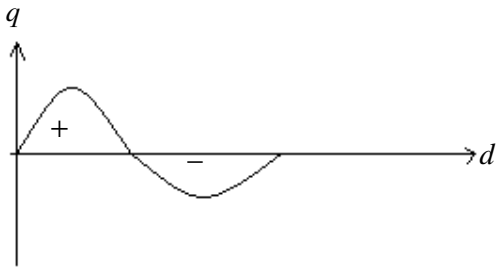
The Shroedinger equation has only one dimension, so there's no wavefunction collapse.

The wave-particle has always a precise state.

There are only four fundamental particles: electron, positron and two neutrinos.

$$q.E = m.a \qquad \Leftrightarrow \qquad m \propto q$$

In the nucleus the neutron has negative charge:



Experimental mass of the neutrino: m = 1.5 eV

Electric dipole moment of the neutrino:

$$d_e = m = q\sqrt{S} = 2.216\times10^{-36}\,kg$$

$$mc^2 = 1.24eV$$

$$f = 1.5626\times10^{36}\,Hz; \qquad w = 2.16\times10^{19}\,ms^{-1}$$

Rest energy of the neutrino:

$$E = \frac{hc}{\sqrt{S}} = i89.63GeV$$ -- The energy is imaginary

It's possible to violate locally the principle of the linear momentum conservation.
It's possible to move the universe.

Unified Force III

The unified force is that of the Cooper pair for several particles.

$$E = mcw = \frac{hcf}{w} \qquad \Leftrightarrow \qquad m = \frac{hf}{w^2}$$

$$g = \frac{dw}{dt}\ ; \qquad c^2t^2 - x^2 = S \qquad \Leftrightarrow \qquad w = \frac{\sqrt{c^2t^2 - S}}{t}$$

$$g = \frac{Sf^3}{w}$$

$$F = mg = \frac{hSf^4}{w^3}$$

$$w = c^2 \frac{w_0 - v}{c^2 - v w_0} \; ; \qquad f = \frac{c f_0 \sqrt{c^2 - v^2}}{c^2 - v w_0}$$

$$F = \frac{S h f_0{}^4 (c^2 - v^2)^2}{c^2 (c^2 - v w_0)(w_0 - v)^3}$$

Natural formula:

$$F = \frac{S h f_0{}^4 (c^2 - v^2)^2 (c^2 - v w_0)(w_0 - v)}{c^2 \left[(c^2 - v w_0)^2 + a \right] \left[(w_0 - v)^4 + b \right]}$$

Magnetic potential equation:

$$A = A_0 e^{i(kx - wt)}$$

Electromagnetic equations:

The electric and magnetic fields are in quadrature, not in phase.

Four possible equations:

$$B = B_0 \sin(kx - wt) \; ; \qquad E = E_0 \cos(kx - wt)$$

$$c^2 w \frac{dB}{dx} = -\frac{d^2 E}{dt^2}$$

$$-c^2 \frac{d^2 B}{dx^2} = k \frac{dE}{dt}$$

$$w \frac{dE}{dx} = \frac{d^2 B}{dt^2}$$

$$\frac{d^2 E}{dx^2} = k \frac{dB}{dt}$$

Magnetic vector potential can't be shielded as gravity.

The electric charge is not an invariant

Its possible that the mass deficit of the deuterium is an error of measurement, because we ignore the variation of the electric charge with speed.

Proton mass: $m_P = 1.6727 \times 10^{-27}$

Neutron mass: $m_N = 1.6750 \times 10^{-27}$

Deuterium mass: $m_D = 3.3445 \times 10^{-27}$

$$\Delta m = 3.2 \times 10^{-30}$$

Wrong mass formula:

$$m_W = \frac{m_0}{\sqrt{1 - v^2 / c^2}}$$

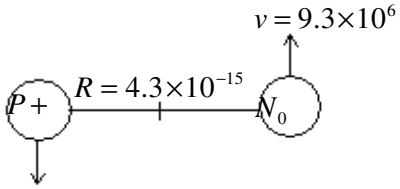
Correct mass formula:

$$m_C = \frac{m_0}{(1 - v^2 / c^2)^{3/2}}$$

$$\Delta m = m_C - m_W = m_0 \frac{v^2}{c^2}$$

$$v^2 = c^2 \frac{\Delta m}{m_0} \qquad \Leftrightarrow \qquad v = 9.3 \times 10^6$$

Calculation of the same speed of the deuterium particles:



Electric and unified forces:

$$\frac{q^2}{4\pi\varepsilon_0 (R/2)^2} = \frac{khf^4}{c^3} \qquad \Leftrightarrow \qquad f = 3.2 \times 10^{23}$$

Acceleration:

$$\frac{v^2}{R} = \frac{kf^3}{c} \qquad \Leftrightarrow \qquad v = 9.5\times10^6$$

So, there's no mass deficit. The measurement in a mass spectrometer is done as the charge is an invariant, but that is wrong.

Charge variation with speed:

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

True mass variation (Einstein's formula):

$$m = \frac{m_0}{(1 - v^2 / c^2)^{3/2}}$$

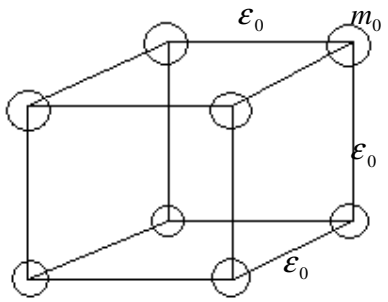
Mass to charge ratio:

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

Vacuum structure and energy density

The vacuum is a superfluid and a superconductor. It's the gravitational field of the universe and behaves like a plasma.

Vacuum structure:



The vacuum is a cubic lattice of particles with mass m0.

Energy:

$$E_0 = \left(\frac{\varepsilon_0}{\mu_0} \right)^2 = 4.96 \times 10^{-11} J = 309.84 MeV$$

ε_0 -- Vacuum permittivity; μ_0 -- Vacuum permeability.

Mass of the vacuon:

$$m_0 = 5.52 \times 10^{-28} kg \quad ; \qquad m_0 = \frac{{\varepsilon_0}^3}{\mu_0}$$

This mass don't produce gravitational effects because it's a black hole.

Energy density:

$$\rho_0 = \frac{m_0}{{\varepsilon_0}^3} = \frac{1}{\mu_0} = 7.96 \times 10^5$$

Vacuum gravitational constant:

$$G_0 = \frac{1}{{\varepsilon_0}^3} = 1.44 \times 10^{33}$$

It is a superconductor:

$$c^2 = \frac{G_0 m_0}{\varepsilon_0}$$

Magnetic field of the universe:

$$B_U = c \; ; \qquad \frac{dB}{dx} = 2.3 \times 10^{-18}$$

Total mass of in the universe:

$$\rho_0 = \frac{M_T}{V_U} \; ; \qquad V_U = \frac{4}{3} \pi {R_U}^3 = 9.2 \times 10^{78} m^3$$

$$M_T = 7.3 \times 10^{84} kg \quad \text{(This is not the mass of the universe)}$$

Total energy:

$$E_T = M_T c^2 = 6.6 \times 10^{101} J = 3.6 \times 10^{120} eV$$

Locally the bodies are rotating at light speed but the vacuum is at rest relative to the center of our universe. The rotations at our level are quantized.

The cosmological constant doesn't exist. Dark energy doesn't exist also.

Dark matter is made of neutrinos.

The age of the universe is infinite.

Our universe is a black hole and we are living at its surface.

Each vacuon is also a black hole, like a Cooper pair.

Mass or energy density of the universe is a very different thing:

$$\rho_M = \frac{3M_U}{4\pi R_U{}^3} \; ; \qquad M_U = 10^{53} kg \; ; \qquad R_U = 1.3\times 10^{26} m$$

$$\rho_M = 10^{-26} \qquad \Leftrightarrow \qquad \rho_E = \rho_M c^2 = 5.6\times 10^{131} eV$$

There is no vacuum catastrophe.

Variation of the light speed with frequency

There's a big problem with my theory: according to it light speed varies with the frequency.

$$w = \sqrt{c^2 - kf^2} \; ; \qquad k = 1.9\times 10^{-34} m^2$$

But there are two observations of the light speed at great distances in space that seams to prove that light speed is invariant.

We also know that radio waves from pulsars suffer dispersion due to the free electrons in space.

According my theory higher frequencies travel slowly, according to pulsar dispersion higher frequencies travel faster. It's possible that for great distances the two effects cancel.

The two observations:

$$f_1 = 7.3\times 10^{18} Hz \quad \text{and} \qquad f_2 = 4.8\times 10^{19} \quad \Leftrightarrow \qquad \Delta c / c = 6.3\times 10^{-21}$$

$$f_1 = 2.4\times 10^{18} \qquad \text{and} \qquad f^2 = 7.1\times 10^{24} \quad \Leftrightarrow \qquad \Delta c / c = 4.2\times 10^{-18}$$

New pulsar dispersion formula (semi empirical, SI units):

$$\Delta t = 10^{-23} D.n_e \frac{f_2{}^2 - f_1{}^2}{f_1 f_2}$$

UART formula:

$$\Delta t = \frac{D.k}{2c^3}(f_1{}^2 - f_2{}^2)$$

Δt -- Time delay; D – distance; n_e -- number of electrons per cubic meter;

Pulsars:

$$\Delta c / c = 10^{-23} c.n_e \frac{f_2{}^2 - f_1{}^2}{f_1 f_2}$$

UART:

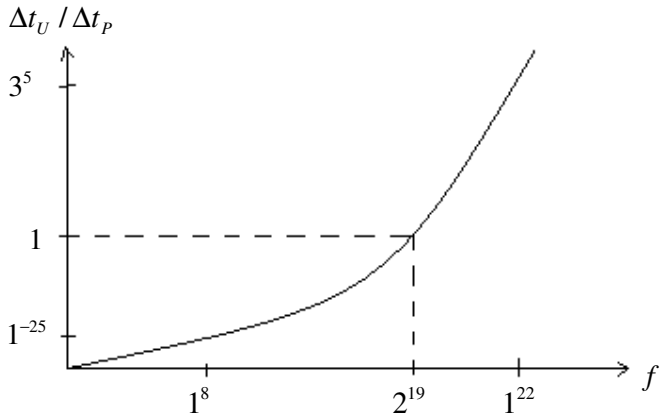
$$\Delta c / c = \frac{k}{2c^2}(f_1{}^2 - f_2{}^2)$$

$$\Delta t_{pulsar} + \Delta t_{uart} = 0 \quad \Leftrightarrow \quad f = 2\times 10^{19}\, Hz$$

$$\frac{\Delta t_{uart}}{\Delta t_{pulsar}} = \frac{kf^2}{2c^3 10^{-23} n_e}$$

For pulsars: $n_e \approx 3.2\times 10^4\, m^{-3}$

For interstellar distances: $n_e \approx 1.3\times 10^2\, m^{-3}$



This explains the first observation. For the second we think that the frequency $f_2 = 7.1^{24}\, Hz$ is not a wave but a particle at high speed, so it gets the same speed as the waves that accelerate it.

There's a way of testing my opinion, making an observation for a frequency near $f = 10^{22}$. Note that I don't trust the pulsar formula, it can be different.

One thing is certain: from the pulsar effect light speed from great distances must have delays. So, is necessary to explain why we don't see any or very small delays.

Macroscopic gravity wavelength

Gravity wavelength:

$$G = 6.67\times10^{-11} = \frac{1}{L^3} \qquad \Leftrightarrow \qquad L = 2.466\times10^{3}\,m$$

All forces are only one – the electromagnetic force. As the mu-metal can shield electric and magnetic forces, it's possible to shield the gravitational force with a peace of this metal.

Mass variation:

$$m = m_0 e^{-l/L} \;;\; l - \text{Mu-metal shielding length}$$

$$l = 0.01m \qquad \Leftrightarrow \qquad m = m_0\,0.999996$$

$$m = m_0(1-4\times10^{-6})$$

Gravitational shielding violates no laws and a gravitational perpetuum mobile it's not possible.

Temperature of the Cooper pair

Energy of the Cooper pair:

$$E = \frac{q^2}{4\pi\varepsilon_0 R} = 0.1eV \;\;;\;\; R = 1.45\times10^{-8}\,m$$

$$E = k_B T \qquad \Leftrightarrow \qquad T < 1.16\times10^{3}\,K = 887^{o}\,C$$

According quantum mechanics $T < 30K = -243^{o}C$ because the calculated binding energy is too small. Superconductivity is possible at 887ºC.

Neutrino mass II

The mass is the electric dipole moment:

$$m_\nu = q\sqrt{k} = 2.2\times10^{-36}\,kg$$

$$\frac{m_e}{m_\nu} = \frac{\alpha^{-3}}{2\pi}$$

m_e -- Electron mass; α -- Fine structure constant

Muon neutrino:

$$m_{\nu\mu} = 4.61\times10^{-34}$$

Tau neutrino:

$$m_{\nu\tau} = 7.75\times10^{-33}$$

My constant in intergalactic vacuum
(Variation of light speed with frequency-correction)

Light speed in the vacuum at the gravitational field of the earth surface:

$w = \sqrt{c^2 - k_T f^2}$; $k_T = 1.9\times10^{-34}\,m^2$; f = frequency

Earth surface gravitational acceleration:

$$g_T = 9.8ms^{-1}$$

Gravitational acceleration of the universe:

$$g_U = \frac{c^2}{R_U} = 6.9\times10^{-10}$$

My constant in intergalactic vacuum:

$$\frac{k_V}{k_T} = \left(\frac{g_U}{g_T}\right)^2 \quad \Leftrightarrow \quad k_V = 9.5\times10^{-55}\,m^2$$

My constant is variable with the gravitational acceleration.

Light speed variation:

$$w = \sqrt{c^2 - k_V f^2} \quad \Leftrightarrow \quad \frac{\Delta w}{c} = \frac{k_V}{2c^2}\left(f_1^{\,2} - f_2^{\,2}\right)$$

A) $f_1 = 7.1\times10^{24}\,Hz$; $f_2 = 2.4\times10^{18}$ $\Leftrightarrow$ $\Delta w / c = 2.7\times10^{-22}$

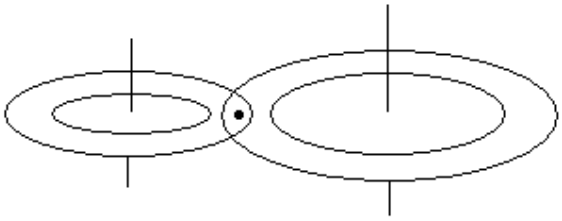
B) $f_1 = 4.8\times10^{19}$; $f_2 = 7.3\times10^{18}$ $\Leftrightarrow$ $\Delta w / c = 1.2\times10^{-32}$

Experimental values:

A) $\Delta w / c < 6.3\times10^{-21}$; B) $\Delta w / c < 4.2\times10^{-18}$

Forces speeds

The interaction of the forces happens at half distance between the two particles, so there's no aberration. There are equal delays for both particles:



The field of each particle transmits the forces with virtual photons or longitudinal photons:

For the electron

$f = \frac{f_M^{\,2}}{f_e}$; $f_M = \frac{c}{\sqrt{k}}$; f_e -- Electron Compton wavelength

Frequency and speed:

$f = 3.8\times10^{30}\,Hz$; $w = f\sqrt{k} = 5.3\times10^{13}\,ms^{-1}$

For a visible photon, frequency and speed:

$f = 9.4\times10^{35}$; $w = 1.3\times10^{19}$

For the proton:

$$w = 3.3\times10^{10}$$

Wien's displacement law

The Wien's law gives the wavelength or the frequency for the maximum intensity of a blackbody radiator with the temperature.

But some thing is wrong because the wavelength and the frequency don't obey the relation:

$$xf = c \quad ; \quad \text{c – Light speed in vacuum}$$

$$x_{MAX} = \frac{F}{T} \qquad \text{and} \qquad F = 2.898\times10^{-3} \qquad \text{(SI units)}$$

$$f_{MAX} = \frac{ukT}{h} \qquad \text{and} \qquad \text{u} = 2.82144$$

x - Wavelength; T – Temperature; f – Frequency; k – Boltzmann constant; h – Planck constant.

F is a force:

$$F = \frac{q^2}{4\pi\varepsilon_0 R^2} \qquad \text{and} \qquad R = \frac{x_e}{2\pi}$$

q – Electron charge; ε_0 -- Vacuum permittivity; x_e -- Electron Compton wavelength;

True value of F:

$$F = 1.5485\times10^{-3} N$$

$$x_{MAX} = \frac{F}{T} \quad ; \quad f_{MAX} = \frac{cT}{F}$$

$$\frac{c}{F} = \frac{uk}{h} \quad \Leftrightarrow \quad \text{u} = 9.2958$$

Units:

I_S = Spectral irradiance = V^5

$I =$ Intensity $= LV^5$

The square root of an intensity doesn't exist.

True Planck formulas:

$$I_S = \frac{2ckT}{x^4}\frac{1}{e^{hc/xkT}-1}$$

$$I = \frac{2ckT}{x^3}\frac{1}{e^{hc/xkT}-1}$$

Gravitational Potential

The gravitational potential is a squared orbital speed and is the same as an electric field.

Electric field = Gravitational potential = V^2

Electric field at the earth surface:

$$E = -\frac{GM}{R} = -6.67\times10^7$$

We don't feel the field because: $\frac{dE}{dx} \approx 0$

Schrodinger Equation

The wave function is a magnetic vector potential.
The waves of magnetic potential oscillate between two orthogonal fields of magnetic potential.

$$A = A_0 e^{-i(kx-wt)} \quad ; \qquad A_0 = \frac{x_e c}{2} = 3.6365\times10^{-4}$$

The reference magnetic potential is the quantum of circulation.

x_e -- Electron Compton wavelength; c – Light speed.

Magnetic field:

$$B = \frac{dA}{dx}$$

Electric field:

$$E = -\frac{dA}{dt} \quad ; \qquad E = -\frac{dV_e}{dx}$$

V_e -- Electric potential

Static magnetic potential of an electric current:

$$A = \frac{\mu_0}{4\pi}\frac{I.l}{R}$$

l – length; R – Distance; μ_0 -- Magnetic permeability; I – Electric current.

The magnetic potential has the direction of the electric current.

Dark Matter are Death Stars

Mass of the local universe:

$$M_U = 1.75\times10^{53}\,kg$$

Period of rotation of the universe:

$$T_U = 4.3\times10^{17}\,s$$

Lifetime of a star:

$$t = 3.2\times10^{17}\,s$$

Total number of stars:

$$N_T = 8.8\times10^{22}$$

Live stars -- 16.7% -- $N_L = 1.5\times10^{22}$

Death stars -- 83.3% -- $N_D = 7.3\times10^{22}$

True age of the local universe:

$$T_0 = \frac{t.N_D}{2} = 1.2 \times 10^{40}\, s$$

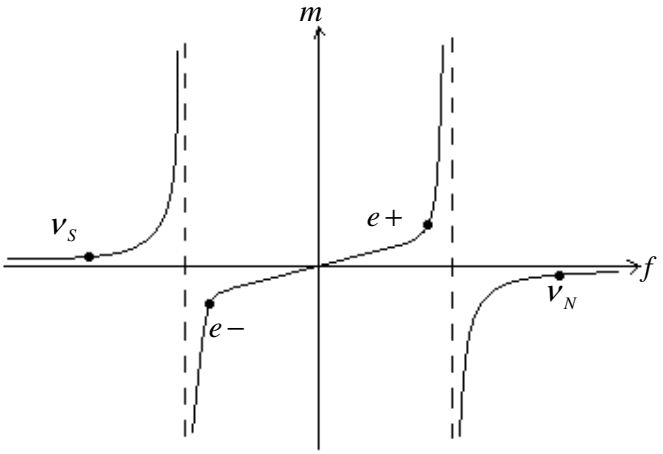
The universe is much older than we suspected.

Its why there are galaxies with almost zero dark matter and some has almost only dark matter.

Fundamental particles II

There are only four fundamental particles: the electron, the positron, the north neutrino and the south neutrino.

Mass of the waveparticles:



The electron has negative mass.

$$m = \frac{h.f}{c^2 - kf^2} \;\; ; \qquad k = 1.9 \times 10^{-34}\, m^2$$

All other particles are made of this four particles.

A particle is a wave rotating on his own magnetic field.

The electron is the electric monopole. The neutrino is the magnetic monopole.

Electron-neutrino energy source

Force between two electric charges:

F – force; R – distance; q_e - electric charge; q_m - magnetic charge
ε_0 - vacuum permittivity; μ_0 - vacuum permeability.

$$F_1 R_1^{\,2} = \frac{q_e^{\,2}}{4\pi\varepsilon_0} = 2.31\times10^{-28}$$

Force between an electric and a magnetic charges:

$$F_2 R_2^{\,2} = \frac{q_e q_m}{\pi\sqrt{\varepsilon_0\mu_0}} = 3.161\times10^{-26}$$

Force between two magnetic charges:

$$F_3 R_3^{\,2} = \frac{q_m^{\,2}}{\mu_0} = 3.4\times10^{-24}\ ; \qquad q_m = \frac{h}{2q_e}$$

α - Fine structure constant

$$F_3 R_3^{\,2} / F_2 R_2^{\,2} = \alpha^{-1}\pi/4$$

$$F_2 R_2^{\,2} / F_1 R_1^{\,2} = \alpha^{-1}$$

$$F_3 R_3^{\,2} / F_1 R_1^{\,2} = \alpha^{-2}\pi/4$$

Force between a neutrino and an electron

There is always a neutrino orbiting an electron. Their binding energy can be a new source of energy.

Acceleration electron-neutrino:

$$g_\nu = 3.38\times10^{55}\ ; \qquad g_e = 1.205\times10^{18}\, ms^{-2}$$

$$g_{ve} = \sqrt{g_e g_\nu} = 6.38\times10^{36} = \frac{w^2}{R} \;; \qquad R = \frac{N\sqrt{k}}{2\pi}$$

Speed of the neutrino:

$$v = \frac{w}{N} \;; \qquad w = 2.16\times10^{19}$$

$$6.38\times10^{36} = \frac{w^2 2\pi}{N^3\sqrt{k}} \qquad \Leftrightarrow \qquad \mathrm{N} = 3.2145\times10^{6}$$

Perimeter of the orbit:

$$P = N\sqrt{k} \;; \qquad k = 1.9\times10^{-34}\,m^2$$

$$R = \frac{N\sqrt{k}}{2\pi} = 7.077\times10^{-12}\,m \;; \qquad v = \frac{w}{N} = 6.72\times10^{12}\,ms^{-1}$$

Force neutrino-electron:

$$F = m_\nu\sqrt{g_e g_\nu} = 14.036 Newton \;; \quad m_\nu = 2.2\times10^{-36}\,kg$$

Force neutrino-electron, verification:

$$F = \frac{q_e q_m v}{\pi R^2} = 14.036 \qquad \Leftrightarrow \qquad v = 6.72\times10^{12}$$

1/N = Fine structure constant of the neutrino. N is the number of wavelengths ($\sqrt{k}$) that compose the orbit perimeter.

Binding Energy:

$$E = FR = 620 MeV$$

Proton-proton force

The strong force is just an electric force.
At short distances the neutron has negative charge.
Between two protons the force is repulsive.

Proton rest energy: $E = 1.50327736\times10^{-10}\,J$

Mass: $m = \frac{E}{hc^3}\sqrt{kE^2 + h^2c^2} = 1.6727\times10^{-27}\,kg$

Wave speed: $w = \frac{E}{mc} = 2.99776\times10^{8}\,ms^{-1}$

Compton frequency: $f = \frac{Ew}{hc} = 2.26861\times10^{23}\,Hz$

Compton wavelength: $x = \frac{w}{f} = 1.32\times10^{-15}\,m$

Acceleration field: $g = \frac{kf^3}{w} = 7.453\times10^{27}\,ms^{-2}$

But the proton is relativistic,

$$\sqrt{g_p g_e} = 9.0453725\times10^{22} \quad ; \qquad g_e = \frac{kf_e^{\,3}}{c} \quad ; \quad k = 1.9\times10^{-34}\,m^2$$

True acceleration field: $g_p = 6.8\times10^{27}$

$$g_p = g\left(1-\frac{v^2}{c^2}\right)^{3/2} \qquad \text{and} \qquad v = \frac{w}{N} \approx \frac{c}{N}$$

⇔ N = 4.1 ; 1/N = Proton fine structure constant

True frequency: $f_p = 2.2\times10^{23}$; $f_p = f\sqrt{1-1/N^2}$

$$w_p = w(1-1/N^2) = 2.82\times10^{8}$$

$$x_p = \frac{w_p}{f_p} = 1.2815\times10^{-15}$$

Radius of the orbit: $R = \frac{Nx_p}{2\pi} = 8.362\times10^{-16}$

Electric charge: $q_p = \frac{q}{1-1/N^2} = 1.7\times10^{-19}C$

Binding energy:

$$E_B = \frac{q_p}{4\pi\varepsilon_0 R} = 1.94MeV$$

Value for deuteron -- E = 2.22MeV

Force: $E_B = FR$ ⇔ F = 371.7 N

Shifted mass:

$$m_p = \frac{m}{(1-1/N^2)^{3/2}} = 1.834\times10^{-27}$$

Proton Cooper pair force:

$$F_C = m_p g_p = 12.472N$$

Cooper pair radius:

$$R_C = \frac{N^2 x_p}{\pi} = 6.86\times10^{-15}$$

Cooper pair energy:

$$E_C = F_C R_C = 0.534MeV$$

Neutrino Cooper pair

Force between two neutrinos:

$$F = \frac{q_m^{\ 2}}{\mu_0 R^2} = g_\nu m_\nu$$

$$m_\nu = 2.2\times10^{-36}\,kg\ ; \qquad g_\nu = 3.43\times10^{55}\,ms^{-2}$$

$$f_\nu = \frac{h}{km_\nu} = 1.574\times10^{36}\,Hz$$

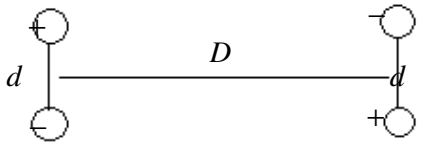
$$w_\nu = \sqrt{k}\,f_\nu = 2.18\times10^{19}\,ms^{-1}$$

$$F = 7.54\times10^{19}\,N\ ; \qquad R = 2.124\times10^{-22}\,m$$

$$E = FR = 10^{17}\,eV$$

Gravitational Force Unification

SI units.
All forces are electric forces.
The gravitational force is the electric force between electric dipoles.



Force between two dipoles:

$$F = \frac{q^2 d^2}{2\pi\varepsilon_0 D^4} \qquad \text{and} \qquad d^2 = n^2\Delta D^2$$

$$\Delta F = \frac{q^2 n^2 \Delta D^2}{2\pi\varepsilon_0 D^4}$$

$$F = \frac{q^2 n^2}{2\pi\varepsilon_0}\iint\frac{\Delta D^2}{D^4} = \frac{q^2 n^2}{12\pi\varepsilon_0 D^2}$$

q – Electric charge; d – Distance between poles;
n – Number of dipoles in one direction; ε_0 -- Vacuum permittivity;
D – Distance between dipoles; k – Boltzmann constant

$$F = \frac{q^2 n^2}{12\pi\varepsilon_0 D^2} = G\frac{M^2}{D^2} \; ; \qquad M = n^3 m = n^3 \frac{qk}{d}$$

$$n = M\frac{\sqrt{12\pi\varepsilon_0 G}}{q} \; ; \text{ Total number of dipoles = N = } n^3$$

$$n_{MINIMUM} = 1 \; ; \qquad M_{MAXIMUM} = 1kg$$

$$F = G\frac{M^2}{D^2} = \frac{G}{D^2}\frac{n^6 q^2 k^2}{d^2} = \frac{q^2 n^2}{12\pi\varepsilon_0 D^2}$$

$$m = \frac{qk}{d} \text{ -- Mass of one dipole } \; (m \approx qd)$$

The mass is the electric dipole moment.

$$d = M^2 k\frac{(12\pi\varepsilon_0 G)^{3/2}}{q^2}$$

Values for one dipole:

$$\text{N} = 1 \qquad \Leftrightarrow \qquad M = 1.07\times10^{-9} kg = M_P / 20$$

M_P -- Planck mass ; $\qquad M_P = \sqrt{\frac{hc}{2\pi G}}$

$$d = k\sqrt{12\pi\varepsilon_0 G} = 2.06\times10^{-33} = 40\pi L_P$$

L_P -- Planck length ; $\qquad L_P = \sqrt{\frac{hG}{2\pi.c^3}}$

Values for $M = 1kg$

$$N = n^3 = 8.1\times10^{26} \; ; \qquad d = 1.8\times10^{-15}$$

Loschmidt constant: $\qquad n_0 = 2.7\times10^{25}$

$$N / n_0 = 30$$

The values are almost the number and the length of the proton.

The formulas don't work for masses greater than 1kg and we don't know why, maybe is necessary another scale of quantization.

$$M = M_P / 20 \qquad \Leftrightarrow \qquad 20.q \approx \sqrt{6hc\varepsilon_0}$$

$$d = 40.\pi.L_P \qquad \Leftrightarrow \qquad k\sqrt{24\varepsilon_0 c^3} \approx 40\sqrt{h}$$

$$\frac{k\sqrt{24\varepsilon_0 c^3}}{40\sqrt{h}} = \frac{\sqrt{6hc\varepsilon_0}}{20.q} = 1 + 2\alpha \quad ; \qquad \alpha \text{ -- Fine structure constant}$$

$$\Leftrightarrow \qquad qkc = h$$

Casimir force II

The Casimir force is the electric force between neutral electric dipoles, so it is gravity:

$$F = \frac{\pi.h.cA}{480D^4}$$

Electric force between two dipoles:

$$F = \frac{q^2 d^2}{2\pi\varepsilon_0 D^4} \qquad ; \qquad d^2 = \pi A$$

d – Distance between the poles; A – Area

$$\frac{q^2}{2\pi\varepsilon_0} \approx \frac{h.c}{480}$$

True equation of the force:

$$F = \frac{h.c.\alpha.A}{D^4} \; ; \qquad \alpha \text{ -- Fine structure constant}$$

True Gravitational Potential

The true gravitational potential is an electric field, the electric field of the electric dipoles.

This potential must vary with the distance squared.

The usual gravitational potential is a squared orbital speed, so it's wrong.

$$P_G = E = V^2$$

The gravitational potential is an electric field and a squared speed.

Electric field of one dipole:

$$E = \frac{q.d}{4\pi\varepsilon_0 D^3} \;\; ; \qquad d = n\Delta D \;\; ; \;\; \text{d – distance between poles;} \quad \text{d <<D}$$

Electric field of n dipoles:

$$E = \frac{q.n}{4\pi\varepsilon_0}\int\frac{\Delta D}{D^3} = \frac{q.n}{8\pi\varepsilon_0 D^2}$$

Gravitational potential:

$$\frac{GMa}{D^2} = \frac{q.n}{8\pi\varepsilon_0 D^2} \qquad \Leftrightarrow \qquad a = \frac{q.n}{8\pi\varepsilon_0 GM}$$

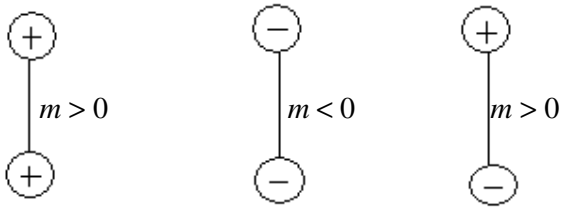
And $\quad n = M\,\frac{\sqrt{12\pi\varepsilon_0 G}}{q} \;\; ; \qquad d = M^2 k\,\frac{(12\pi\varepsilon_0 G)^{3/2}}{q^2} \;\; ; \qquad \text{d << D}$

$$P_G = \frac{\sqrt{12G}M}{8\sqrt{\pi\varepsilon_0}D^2} \qquad \Leftrightarrow \qquad P_G = 0.67\frac{M}{D^2}$$

MASS II

The mass is the electric dipole moment.
Coulomb x meter = kilogram

There are three types of mass or dipoles: positive, negative and neutral.



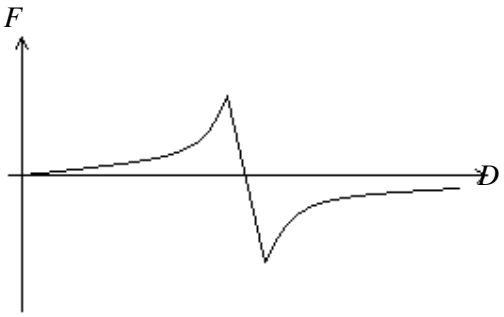
The mass of the electron is negative and its Compton frequency.

$$m_e = \frac{qk}{x} < 0 \;\; ; \;\; (m_e \cong qx) \;\; ; \qquad m_e = \frac{hf}{c^2}$$

m_e - electron mass; q – electron charge; k – Boltzmann constant;
x – electron Compton wavelength; f – electron Compton frequency;
h – Planck constant; c – light speed.

The neutral mass attracts all other masses, but that force can be also repulsive, function of the gravitational potential or distance.

At a black hole or a superconductor:



The negative and positive masses behave as the charge.

Weight: the force is generated by the acceleration

$$P = |m|g \qquad \text{and} \qquad g < 0$$

The acceleration is generated by the force:

$$g = \frac{Fm}{m^2 + a}$$

Macrogravity

For planets and stars there is a constant distance of the dipole with variable charge.

$$M = Qd \qquad \text{and} \qquad d = \frac{1}{\sqrt[3]{G}} = 2.466 \times 10^3 m$$

For the Earth:

$$M = 6 \times 10^{24} kg \qquad \Leftrightarrow \qquad Q = 2.43 \times 10^{21} C$$