Cosmic microwave background radiation

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Energy and temperature of the cosmic microwave radiation:

$$E_Y = \frac{k_B' T_S}{2} = 2.34864 \times 10^{-4} eV \ldots\ldots \Leftrightarrow \ldots\ldots T_S = 5.455464 S$$

True temperature of the cosmic microwave radiation or temperature of the universe:

$$T_S = 5.455464\ S = 99.04 K \ldots\ldots .;\ldots\ldots (\approx 2 \times 2.73)$$

The energy is measured with bolometers and they have used a wrong formula that gives half the temperature.

Mass of the oscillator blueshifted:

$$m_0 = \frac{2h^2}{k_B'^2 T_S} = 8.458 \times 10^{-22} kg \ldots\ldots ;\ldots\ldots \begin{cases} k_B' T_S = hf \\ T_S = \frac{1}{2} m_0 f^2 \end{cases}$$

Speed of rotation of our local universe:

$$w_U = c - \Delta w_U \ldots\ldots\ldots ;\ldots\ldots\ldots E_Y = \frac{h f_{CMR}}{2}$$

$$f_{CMR} = 1.1358 \times 10^{11} Hz \ldots\ldots and \ldots\ldots f_0 = f_M = \frac{c}{\sqrt{S}}$$

$$f_{PEAK} = 1.602 \times 10^{11} Hz = \sqrt{2} f_{CMR}$$

Relativistic Doppler effect due to the rotation:

$$f_{CMR} = f_M \sqrt{1 - w_U{}^2 / c^2} = \frac{c}{\sqrt{S}} \sqrt{\frac{2\Delta w_U}{c}}$$

$$\Delta w_U = 4.114 \times 10^{-21} m/s$$

$$m_0 = \frac{m}{\sqrt{1 - w_U{}^2 / c^2}} = \frac{m}{\sqrt{2\Delta w_U / c}}$$

$\Leftrightarrow$ ..... $m = 4.43 \times 10^{-36} kg = 2 \times 2.215 \times 10^{-36} kg$

The neutrinos exist as Cooper-pairs; mass of the neutrino:

$$m_\nu = q_e \sqrt{S} = 2.21547 \times 10^{-36} kg$$

$$k_B' = k_B \left(1 - \frac{\pi^3 \alpha^2}{2}\right) \ldots\ldots\ldots; \ldots\ldots\ldots \sqrt{S} = \frac{q_e \mu_0 \alpha}{12 \varepsilon_0}$$

The cosmic microwave radiation is the Cooper-pair neutrino oscillation at the matter frequency from the distance equal to the radius of our local universe. The local universe is a black hole made of neutrinos and we live at it surface, rotating at light speed.

Data of our local universe

Temperature and frequency:

$$T_U = 5.455464\ S \ldots\ldots; \ldots\ldots f_{CMR} = 1.1358 \times 10^{11} Hz \ldots\ldots; \ldots\ldots x_{CMR} = 2.64 \times 10^{-3} m$$

Speed of rotation:

$$w_U = c - \Delta w_U \ldots\ldots\ldots; \ldots\ldots\ldots \Delta w_U = \frac{f_{CMR}^{\ 2} S}{2c} = 4.114 \times 10^{-21} m/s$$

Period of rotation:

$$t_U = x / \Delta w_U = 6.417 \times 10^{17} s \ldots\ldots\ldots; \ldots\ldots\ldots f_U = 1.56 \times 10^{-18} Hz$$

$$\frac{dw}{dx} = \frac{S f_{CMR}^{\ 3}}{c^2} = 3.12 \times 10^{-18} Hz \ldots\ldots; \ldots\ldots f_U = \frac{1}{2} \frac{dw}{dx} = 1.56 \times 10^{-18} Hz$$

Radius of the local universe. Distance between us and the center of our universe:

$$R_U = \frac{c}{2\pi . f_U} = 3.062 \times 10^{25} m$$

Mass of the universe:

$$G = 8.02 \times 10^{-11} m^{-3} \text{.....;.. .....} M_U = \frac{c^2 R_U}{G} = 3.43 \times 10^{52} kg$$

Acceleration:

$$g_U = \frac{GM_U}{R_U{}^2} = 2.934 \times 10^{-9} ms^{-2}$$

$$R_U = \frac{c^3 h^3}{\pi . S . k_B{}^3 T_U{}^3} = 3.06 \times 10^{25} m$$

Mean density:

$$\rho_U = \frac{3M_U}{4\pi . R_U{}^3} = 2.852 \times 10^{-25} kg/m^3$$

Apparent Hubble constant:

$$H_0 = \sqrt{2} f_U = 2.2 \times 10^{-18} Hz = 67.9 km/s/Mpc$$

Planck mission 2013:

$$H_0 = 67.8 km/s/Mpc$$

The sun data:

$$T = 5778\,K = 6.32 \times 10^7\,S \text{..... } \Leftrightarrow \text{..... } f = 1.3 \times 10^{18} Hz$$

The sun radiation frequency is in the x-rays but inside a medium like a glass of electrons. The x-rays turn to visible frequency when the light leaves the glass.

$$m_0 = \frac{2h^2}{k_B{}^2 T_S} = 7.3 \times 10^{-29} kg$$

$$f_0 = f\sqrt{1 - v^2/c^2} = f\sqrt{2\Delta v/c} \text{.....} \Leftrightarrow \text{.....} \Delta v = \frac{cf_0{}^2}{2f^2}$$

$$\Delta v = \frac{S . f_X{}^2}{2c} \text{.....; .....} mc^2 = hf_X$$

Hypothesis:

$$m = m_0 \qquad \Leftrightarrow .....f_0 = \frac{2c\sqrt{S}}{k_B} = 6\times10^{14}\,Hz$$

$$f_{PEAK} \approx 7.5\times10^{14}\,Hz$$

The mass of the medium is equal to the mass of the oscillator. The medium is like a glass of electrons. The x-rays frequency is inside the medium.

$$n = \frac{c}{w} = 1 + \frac{\Delta w}{c}.....;.....\Delta w = \frac{2c\Delta w_0}{\Delta v} = 2.16\times10^{-6}\,m/s$$

$$\Delta w_0 = \frac{S.f_0^{\,2}}{2c} = 1.15\times10^{-13}\,m/s....;..... \Delta v = \frac{S.f_X^{\,2}}{2c} = 31.93 m/s$$

$$n = 1 + 7.2\times10^{-15}$$

Room-temperature superconductor

$$MgB^2 ... \Leftrightarrow ....m = 7.6\times10^{-26}\,kg...;.... \rho = 2570\,kg/m^3 ...;.... T_C = 39K = 0.13S$$

$$YBCO.... \Leftrightarrow .....m = 1.1\times10^{-24}\,kg....;..... \rho = 6300\,kg/m^3 ....;.... T_C = 93K = 4.24S$$

$$\frac{m^2\rho}{T_S^{\,2}} = \frac{3c^6}{G_e^{\,3} 4\pi.T^2}$$

Gravitational constant of the electron:

$$G_e = \frac{q_e^{\,2}}{4\pi.\alpha.\varepsilon_0 m_e^{\,2}} = \frac{c^2 x_e}{2\pi.m_e} = 3.81\times10^{34}\,m^{-3} \quad \Leftrightarrow ....T = 6K = 6.97\times10^{-5}\,S$$

Superconductor condition:

$$\frac{m^2\rho}{T_S^{\,2}} = 6.45\times10^{-46}$$

m – Mass of the molecule; ρ - Density; T_S – Critical temperature.

A superconductor to exist, is squared mass of the molecule times the density over the squared critical temperature is equal to a constant or higher.

$T_S = 5.67 \times 10^{-8} {T_K}^4$ -- Relation Saraiva-Kelvin temperatures

Room-temperature superconductor:

$$T = 300K = 459.3S$$

$$m^2 \rho = 1.36 \times 10^{-40} ..... \Leftrightarrow ..... \rho = 10^4 .....; .... .m = 1.2 \times 10^{-22}$$

Any material can be a superconductor. To be a superconductor the orbital speed of the molecule must be higher than light speed. The molecule must be a black hole.

Joking with the Lorentz equations:

Orbital speed of the molecules of the glass. The molecules of the glass are black holes for visible light:

$$v = c - \Delta v .....; .... .. f_0 = 5 \times 10^{14} Hz .....; .. ..n = 1.5$$

$$\Delta v = \frac{n+1}{n-1} \Delta w_0 = 5 \Delta w_0 .....; .. .. \Delta w_0 = \frac{S {f_0}^2}{2c} = 8 \times 10^{-14} m/s$$

$$\Delta v = 4 \times 10^{-13} m/s .....; . ..... w_0 = c - \Delta w_0$$

$$w = c \frac{\Delta v - \Delta w_0}{\Delta v + \Delta w_0} = \frac{2}{3} c$$

Wavelength inside the glass:

$$x = x_0 \sqrt{\frac{\Delta v}{2c}} = 1.55 \times 10^{-17} m ..... ; .... x_0 = \frac{c}{f_0} = 6 \times 10^{-7} m$$

$$x \approx \sqrt{S}$$

Frequency inside the glass:

$$f = f_0 \sqrt{\frac{2c}{\Delta v}} = 1.936 \times 10^{25} Hz ..... ; ..... f_M = \frac{c}{\sqrt{S}} = 2.168 \times 10^{25} Hz$$

$$w = xf = c ... - .. Wrong, this.is.only.an.approximation$$

Exact values:

$$w = \frac{c}{n} = \sqrt{c^2 - Sf^2} \ldots\ldots \Leftrightarrow \ldots\ldots f = \frac{c}{\sqrt{S}} \frac{\sqrt{n^2 - 1}}{n} = 1.616 \times 10^{25}\, Hz$$

$$x = \frac{w}{f} = \frac{c}{nf} = 1.237 \times 10^{-17}\, m$$

The visible light in the air has almost the matter frequency inside the glass.

We can make very sensible devices to movement by using this very short wavelengths inside the glass. A very small movement changes the phase of the light by changing the distance of the light inside the glass. It's very simple to prove experimentally this. The usual way of thinking is wrong.

Displacement and velocity are vectors. Time is a scalar:

Everything is made of displacement and velocity.

There's always a preferred frame, where the laws of physics are simpler.

What happens if we charge a superconductor with electrons?

Inside a superconductor the electrons has no voltage so, there's no repulsion between them. They behave as having no charge.

Electron Cooper-pairs:

Electron gravitational constant: $G_e = \frac{c^2 x_e}{2\pi . m_e} = 3.81 \times 10^{34}\, m^{-3}$

Cooper-pair force:

$$F_C = \frac{m_e g_e}{\alpha} = \frac{m_e}{\alpha} \frac{S.c^2}{x_e^3} = 1.5 \times 10^{-10}\, N$$

$$F_C = \frac{G_e m_e^2}{R_C^2} = 1.5 \times 10^{-10}\, N \ldots\ldots \Leftrightarrow \ldots\ldots R_C = 1.45 \times 10^{-8}\, m$$

The bound force between the electrons is the gravitational force.

Equivalent electric force:

$$F_C = \frac{q_e^2}{4\pi . \varepsilon_0 R_C^2} = 1.5 \times 10^{-10}\, N \ldots\ldots\ldots; \ldots\ldots\ldots R_C = \frac{x_e}{\pi . \alpha^2}$$

Binding energy of the Cooper-pair:

$$E_{YC} = F_C R_C = \frac{G_e m_e{}^2}{R_C} = 13.6eV$$

The same energy as the electron in the hydrogen atom.

Saraiva's constant and exact constants

$$E_{YX} = \frac{1}{2} m_0 B_0{}^2 \ldots\ldots\ldots;\ldots\ldots E_{YV} = \frac{1}{2} m_V w_V{}^2$$

$$\frac{q_e h^4 \mu_0{}^7}{2\sqrt{2}\pi^2 \varepsilon_0{}^{13} S^{3/2}} = (1+\alpha)(1-\alpha^{5/2}/10)$$

$$S = \frac{\pi}{2} x_e{}^2 \alpha^5 \left(1 - \frac{\pi^3 \alpha^2}{2}\right)\left(1 + \frac{4\alpha^2}{3}\right)$$

$$S = 1.91210115 \times 10^{-34} m^2$$

$$\sqrt{S} = \frac{q_e \mu_0 \alpha}{12\varepsilon_0} \ldots\ldots;\ldots\ldots \sqrt{S} = \frac{h^2 \alpha^3}{3 q_e{}^3}$$

$$S = \frac{h\alpha^3}{72\varepsilon_0{}^3 c^3} = \frac{q_e{}^2 \alpha^2}{144\varepsilon_0{}^4 c^4}$$

Fine structure constant and true light speed constant:

$$\alpha = 1/\sqrt{137^2 + \pi^2} \ldots\ldots\ldots;\ldots\ldots c = 2.99792416 \times 10^8 m/s$$

Corrected Boltzmann constant:

$$k_B = k_{B0}\left(1 - \frac{\pi^3 \alpha^2}{2}\right) = 1.37951033 \times 10^{-23} m^2$$

Electron Compton wavelength:

$$x_e = 2.42630965 \times 10^{-12} m$$

Vacuum permittivity and permeability:

$$\varepsilon_0 = 8.85418987 \times 10^{-12} m \ldots\ldots;\ldots\ldots \mu_0 = 4\pi.10^{-7}(1 + 4.549 \times 10^{-8}) m^3/kg$$

Electron charge and Planck constant:

$$q_e = 1.60217646 \times 10^{-19} C \ldots\ldots; \ldots \ldots h = 6.62606891 \times 10^{-34} Js$$

$$\mu_0 q_e = 2\alpha . k_B \ldots\ldots\ldots; \ldots\ldots\ldots q_e c k_B = h$$

$$h = 2\alpha . c^3 \varepsilon_0 {k_B}^2 \ldots\ldots\ldots; \ldots\ldots\ldots q_e = 2\alpha . c^2 \varepsilon_0 k_B$$

$$2 q_e q_m = h \ldots\ldots\ldots; \ldots\ldots\ldots 2 q_m = c k_B$$

$$S = \frac{h^3 \alpha^5}{18 {q_e}^4 \varepsilon_0 c}$$

$$\mu_0 = 4\pi . 10^{-7} (1 + \alpha^{5/2} / 100)$$

$$\frac{1}{c} \approx \alpha^{7/2} / 10 \ldots\ldots\ldots; \ldots\ldots x_e \approx \alpha^{9/2} / 100 \quad ????????????$$

$$\sqrt{S} = \frac{\alpha^2 k_B}{6\varepsilon_0} \ldots\ldots; \ldots\ldots T_S = {V_E}^2 \frac{C_E}{k_B} \ldots\ldots; \ldots\ldots C_{Ee} = \frac{k_B}{4}$$

$$S^2 = \frac{\pi^3 h \alpha^{10} \mu_0}{c} \left(1 - \sqrt{\alpha} / 10\right)\left(1 + 15\alpha^3 / 100\right)$$

$$G = \left(\frac{h^2}{3 c {k_B}^3} \right)^{3/2} = 8.01849173 \times 10^{-11} m^{-3}$$

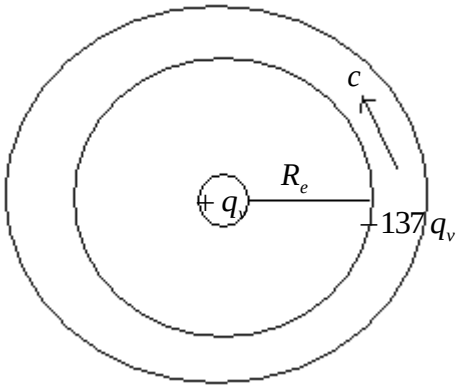
$$F = \frac{G M^2}{R^2} = \frac{G_0 M^2}{4\pi . R^2} \ldots\ldots \Leftrightarrow \ldots\ldots G_0 = 4\pi . G = 1.00763339 \times 10^{-9} m^{-3}$$

$$G_0^{-1/3} = 997.46841 m$$

$$T_S = {V_E}^2 \frac{C_E}{k_B} \ldots\ldots; \ldots\ldots \ldots C_{Ee} = \frac{\varepsilon_0 x_e}{2\pi} \ldots\ldots\ldots; \ldots\ldots \frac{C_{Ee}}{k_B} = \frac{1}{4}$$

The vacuon charge is not $q_e \quad \rightarrow .....q_v = \frac{q_e}{136}$

Electron charge structure:



$$q_v = 1.17776 \times 10^{-21} C$$

$$q_e = c^2 \frac{x_e^{\ 3}}{8}\left(1-\frac{3\alpha}{14}\right)\left(1+\frac{\alpha^3}{\pi^2}\right)$$

$$h = c^2 \frac{x_e^{\ 3}}{8} c k_B \left(1-\frac{3\alpha}{14}\right)\left(1+\frac{\alpha^3}{\pi^2}\right)$$

$$q_v = \frac{\alpha^9}{50} = 1.17359294 \times 10^{-21} C \ ; \qquad \frac{q_e}{q_v} = 136.518925$$

$$\frac{1}{c} = \frac{\alpha^{7/2}}{10}\left(1+\frac{2\alpha}{3}\right)\left(1-\frac{10\alpha^2}{34}\right)\left(1+\frac{\alpha^3}{4\pi}\right)\left(1-\frac{\alpha^4}{15}\right)$$

$$x_e = \frac{\alpha^{9/2}}{100}\left(1+\frac{2\alpha}{9}\right)\left(1-\frac{\alpha^2}{19}\right)\left(1+\alpha^4\right)\left(1-\frac{\alpha^4}{2\pi}\right)$$

My constants:

$$q_e = 1.6021764620 \ \ 0 \times 10^{-19} C$$

$$h = 6.626068910\,49 \times 10^{-34} Js$$

$$k_B = 1.3795103346 \ \ 3 \times 10^{-23} m^2$$

$$k_{B0} = 1.3806501481\ \ 9\times10^{-23}\,m^2$$

$$c = 2.99792416442\times10^{8}\,m/s$$

$$S = 1.91210114615\times10^{-34}\,m^2$$

$$x_e = 2.4263096513\ \ 7\times10^{-12}\,m$$

$$\mu_0 = 4\pi.10^{-7}(1+4.549\times10^{-8})m^3/kg$$

$$\varepsilon_0 = 8.8541898696\ \ 4\times10^{-12}\,m$$

$$\alpha = 1/\sqrt{137^2+\pi^2}$$

$$2\alpha.h = c^3\varepsilon_0{\mu_0}^2{q_e}^2 \quad ; \quad \mu_0 q_e = 2\alpha.k_B$$

$$q_e c k_B = h$$

Avogadro constant:

$$N_A = 6.02214199\ \times10^{23}$$

Gas constant:

$$R = k_{B0}N_A = 8.31447123\ \ m^2..or..Farad$$

Specific heat capacity and specific gas constant degrees of freedom:

$$n = \frac{C_V}{R_S}$$; For metals n = 3

The true Higgs is a massive graviton

The mass is a kind of electric dipole moment.
The Higgs gives mass to nothing.

Wavelength, wave speed and frequency:

$$x_G = \frac{S^{3/2}}{k_B} = 1.92\times10^{-28}\,m...;...w_G = \frac{cx_G}{\sqrt{S}} = 4.16\times10^{-3}\,m/s$$

$$f_G = \frac{c}{\sqrt{S}} = 2.168\times10^{25}\,Hz$$

Graviton mass:

$$m_G = \frac{h\sqrt{S}}{cx_G{}^2} = 0.83g$$

Energy:

$$E_{YG} = m_G w_G{}^2 = \frac{hc}{\sqrt{S}} = 89.6625\,GeV$$

Higgs energy:

$$E_{YH} = \sqrt{2}E_{YG} = 126.8GeV$$

How the Higgs give mass to itself?

Atlas LHC detector Higgs exact mass in the $h \to 2\gamma$ mode:

$$m_H = 126.8GeV \pm 0.2(stat) \pm 0.7(syst)$$

The spin is zero or 2.

Speed of the gravity??????:

$$V_G = \frac{c^2}{w_G} = 2.163\times10^{19}\,m/s = w_\nu = \frac{h}{q_e S}$$

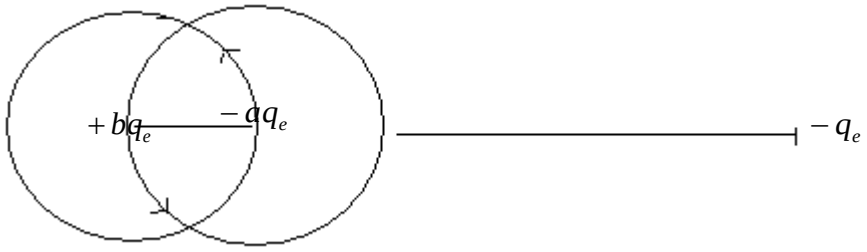
It's equal to the wave speed of the electron neutrino.

$$w_G = \frac{cS}{k_B} \text{.....} \Leftrightarrow \text{.....} V_G = \frac{k_B c}{S} = \frac{h}{q_e S}$$

$$\Leftrightarrow \text{.....} q_e k_B c = h \qquad ; \qquad k_B = k_{B0}\left(1 - \frac{\pi^3\alpha^2}{2}\right)$$

Electron charge structure

The electron is a dipole that rotates at almost light speed and at a great distance has the charge qe:



$$w_e = \sqrt{c^2 - Sf_e{}^2} = c - 4.87 \times 10^{-3} m/s$$

Inside force:

$$F = \frac{(-aq_e)(bq_e)}{\varepsilon_0 4\pi . R_e{}^2} = \frac{-q_e{}^2}{\alpha \varepsilon_0 4\pi . R_e{}^2}$$

$$\begin{cases} ab = 1/\alpha \\ a - b = 1 \end{cases} \ldots\ldots\ldots \Leftrightarrow$$

a = 12.2169115 ; b = 11.2169115

$$bq_e = \frac{q_e}{\left(1 - \frac{w_e{}^2}{c^2}\right)^n} \ldots\ldots\ldots \Leftrightarrow \ldots\ldots\ldots b = \frac{1}{(S/x_e{}^2)^n}$$

$$n_b = 0.100098693 \approx \frac{1}{10} \ldots\ldots; \ldots\ldots n_a = 0.103634810 \approx \frac{1}{10}$$

Electric charge variation with the speed:

$$Q_e = \frac{Q_{e0}}{\sqrt[10]{1 - v^2/c^2}}$$

Charges of the vacuons:

$$+1.606 \times 10^{-19} C \ldots\ldots and \ldots\ldots -1.75 \times 10^{-19} C$$

Speed of the gravity:

$$V_G = \frac{h}{q_e S} = 2.16\times 10^{19} m/s\ldots\ldots;\ldots\ldots w = \sqrt{\frac{hc}{m\sqrt{S}}}$$

$$V_{G2} = \frac{c^2}{w} = c^2\sqrt{\frac{m\sqrt{S}}{hc}}$$

$$V_{G2} = 7.5\times 10^{20}\sqrt{m}\ldots\ldots;\ldots\ldots V_{G2} = V_G\ldots\ldots \Leftrightarrow \ldots\ldots m = 0.83g$$

The speed of the gravity is variable with the square root of the mass of the body.

Earth and Sun speed:

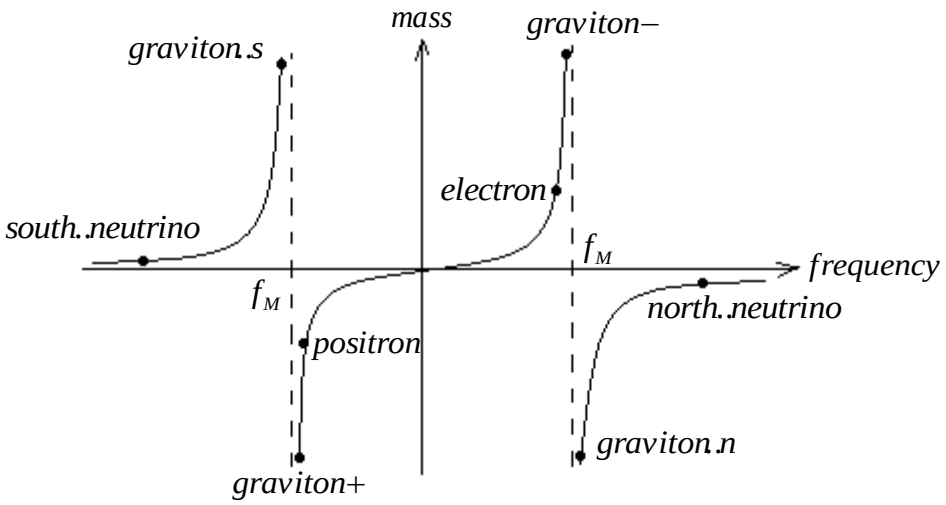
$$V_{GE} = 1.837\times 10^{33} m/s\ldots\ldots\ldots;\ldots\ldots\ldots V_{GS} = 1.061\times 10^{36} m/s$$

The forces or the electric force, like gravity, has no aberration because the interaction of the bodies happens at half way the distance between the two bodies, so relatively to this point both bodies are equally delayed.

With light is different because the light must travel all the way between the bodies.

So, the existence of no aberration doesn't prove that the gravity speed is very fast. But it is very fast and variable. Our graviton is not the carrier of the gravitational force, photons are the carriers of all forces or the unique electric force.

Mass of the particles:



$$f_M = \frac{c}{\sqrt{S}} = 2.168\times 10^{25} Hz --matter..frequency \quad ; \qquad m = \frac{hf}{c^2 - Sf^2}$$

There are four gravitons, two electric and two neutral or magnetic.

Electron – Constant wave speed (apparent)
Neutrino – Constant wavelength ‘’
Graviton – Constant frequency ‘’

The universe is also a particle of the graphic.

The top quark is not a quark and is neutral:

$$E_Y = mw^2 = hf = 173.07GeV$$

$$f = 4.1848 \times 10^{25} Hz.....;.. ..... m = 1.132 \times 10^{-25} kg$$

$$w = 4.95 \times 10^8 m/s$$

$$E_0 = \frac{\varepsilon_0^{\ 2}}{\mu_0^{\ 2}} \approx 310MeV$$

$$\frac{m_H}{E_0} = \frac{2\sqrt{2}}{\alpha}.....;.....\frac{m_{TOP}}{E_0} = \frac{4}{\alpha}$$

Photons in the matter (glass)

$$f_0 = 5 \times 10^{14} Hz..... \Leftrightarrow .... x_0 = 6 \times 10^{-7} m..... \Leftrightarrow .... w = \frac{c}{n} = \frac{c}{1.5}$$

$$m_0 c x_0 = h..... \Leftrightarrow ..... m_0 = 3.7 \times 10^{-36} kg$$

$$mwx = h.....;..... x = \frac{w\sqrt{S}}{\sqrt{c^2 - w^2}} = \frac{\sqrt{S}}{\sqrt{n^2 - 1}} = 1.24 \times 10^{-17} m$$

$$m = \frac{h\sqrt{c^2 - w^2}}{w^2\sqrt{S}} = \frac{nh\sqrt{n^2 - 1}}{c\sqrt{S}} = 2.68 \times 10^{-25} kg$$

$$f = \frac{w}{x} = \frac{c}{\sqrt{S}} \frac{\sqrt{n^2 - 1}}{n} = 1.62 \times 10^{25} Hz$$

$$p_0 = m_0 c = \frac{h}{x_0} = 1.1 \times 10^{-27} kg.m/s$$

$$p = mw = \frac{h}{\sqrt{S}}\sqrt{n^2 - 1} = 5.36 \times 10^{-17}\, kg.m/s$$

The glass is a black hole for visible photons, the orbital speed of the molecules is almost equal to light speed:

$$v = c - \Delta v$$

$$w_0 = \sqrt{c^2 - {Sf_0}^2} = c - \Delta w_0 \text{.....;.. .....} \Delta w_0 = \frac{{Sf_0}^2}{2c} = 7.97 \times 10^{-14}\, m/s$$

$$w = c\frac{\Delta v - \Delta w_0}{\Delta v + \Delta w_0} \text{.....} \Leftrightarrow \text{.....} \Delta v = \Delta w_0 \frac{n+1}{n-1} = 4.0 \times 10^{-13}\, m/s$$

$$v = c - 4.0 \times 10^{-13}\, m/s$$

v^2 is the gravitational potential = c^2

Mass of the muon neutrino from speed measurements

Kinetic energy:

$$E_Y = \frac{1}{2}\frac{mv^2}{\sqrt{v^2/c^2 - 1}} = \frac{mv^2 c}{2\sqrt{v^2 - c^2}} = \frac{mc^3}{2\sqrt{v^2 - c^2}}$$

$$v = c + \Delta v$$

$$E_Y = \frac{mc^3}{\sqrt{2c\Delta v}} \text{.....} \Leftrightarrow \text{.....} m = \sqrt{\frac{8{E_Y}^2 \Delta v}{c^5}}$$

$$E_Y = 115\, GeV \text{.....;} : \text{.....} \Delta v = 1.2 \times 10^4\, m/s$$

$$m = 3.7 \times 10^{-27}\, kg$$

$$E_Y = 120\, GeV \text{.....;.. .....} \Delta v = 3.8 \times 10^4\, m/s$$

$$m = 6.8 \times 10^{-27}\, kg$$

$$E_Y = 17\, GeV \text{.....;.. .....} \Delta v = 809.44\, m/s$$

$$m = 1.4 \times 10^{-28}\, kg$$

$$E_Y = 17GeV \text{.....;. .....} \Delta v = 930.0m/s$$

$$m = 1.5 \times 10^{-28} kg$$

$$\Leftrightarrow \text{.....} m = 2.7 \times 10^{-27} kg$$

Longitudinal or virtual particles and waves

$$E_{YL} = hf_M = \frac{hc}{\sqrt{S}} = 89.66GeV \text{.....;... .....} f_M = 2.168 \times 10^{25} Hz$$

The particles with energies greater than this value are neutral or magnetic.

W and Z bosons:

$$E_{YW} = 80.4GeV = hf_W \text{.....} \Leftrightarrow \text{.....} f_W = 1.9441 \times 10^{25} Hz$$

Mass of W: $m_W = 7.315 \times 10^{-25} kg$

$$E_{YZ} = 91.2GeV = hf_Z \text{.....} \Leftrightarrow \text{.....} f_Z = 2.2052 \times 10^{25} Hz$$

Mass of Z: $m_Z = 4.7 \times 10^{-24} kg$

$$E_Y = hf = m(c^2 - Sf^2)$$

The particles and waves have two frequencies: the Compton frequency and the longitudinal frequency. The longitudinal frequency is due to the precession of the spin of the particle.

Torque-induced precession:

$$\omega_P = \frac{mgR}{I_S \omega_S} \text{.....} \Leftrightarrow \text{.....} f_P f_S = \frac{g}{2\pi^2 R} = f_M{}^2$$

$$\frac{g}{2\pi^2 R} = \frac{c^2}{S} \text{.....} \Leftrightarrow \text{.....} \frac{g}{R} = 9.278 \times 10^{51}$$

$$g = \frac{S.c^2}{x^3} \text{.....;... ....} R = \frac{x}{2\pi} \text{.....} \Leftrightarrow \text{.....} \frac{S.c^2}{x^4} = 1.477 \times 10^{51}$$

$$\Leftrightarrow \text{.....} x = 1.037 \times 10^{-17} m = \frac{3}{4}\sqrt{S}$$

$$w = \frac{c.x}{\sqrt{S + x^2}} = 1.8 \times 10^8 \, m/s.....;.. .....m = \frac{h}{w.x} = 3.552 \times 10^{-25} \, kg$$

$$E_Y = m.w^2 = hf = 71.83 GeV$$

Drift velocity

$$v_e = \frac{lI_E}{Q_e} = \frac{E}{B} = \frac{V_E R_E}{2} = \frac{1}{\varepsilon . R_E} = 1.1 \times 10^4 \, m/s$$

Particles and waves measures each other all the time.

There's no need an human intervention to happens a measurement. Cats also make measurements. There are no cats or particles death and alive at the same time.

Particles and waves have a precise state all the time.

All quantum mysteries are errors and ignorance. Small things behave as big things.

The small things quantization is classical. Stellar black holes are also quantized.

Quantum mechanics is only an approximation to reality.

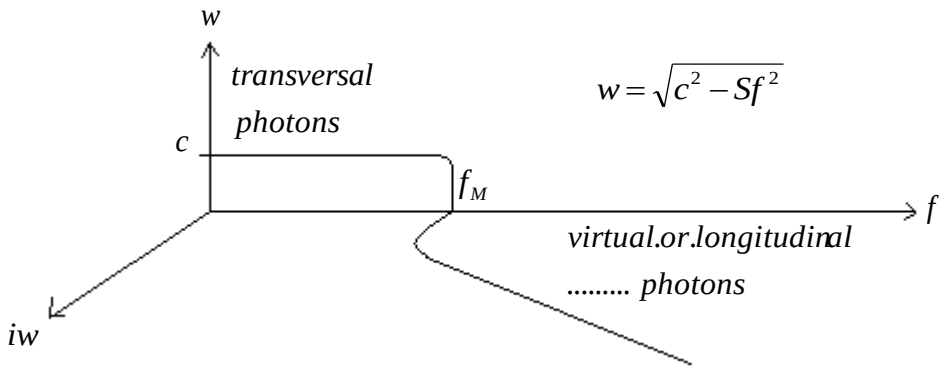
There's only one physics neither quantic neither classical.

Small things are also rational and simple. There are no mysteries and paradoxes in our universe. The double-slit experiment is classical.

Light is a wave not a particle but it can be transformed to a particle. A particle is a rotating wave on itself magnetic field.

There are no dark matter and energy.

Speed of the waves and particles:



Virtual photon of a visible photon:

$$f_0 = 5 \times 10^{14} \, Hz.....;.....f = \frac{{f_M}^2}{f_0} = \frac{c^2}{Sf_0} = 9.4 \times 10^{35} \, Hz$$

$$w = \sqrt{S}\, f = 1.3 \times 10^{19}\, m/s$$

Radius and mass of our local universe:

$$R_U = 3.06 \times 10^{25}\, m \text{.....;. .....} M_U = 2.43 \times 10^{52}\, kg$$

About quantum measurements: quantum measurements that set the state are not true measurements but interactions.

$$T = 300K = 459.27S$$

$$I_E = \frac{k_B T_S}{q_m} = 3.06\,\mu A \text{.....;... ...} V_E = \frac{k_B T_S}{q_e} = 39.54\,mV$$

Energy: $$E_Y = \frac{1}{2} q_m I_E$$

Everything is entangled with everything.

Delay time of our position and the center of our universe:

$$V_U = 7.5 \times 10^{20} \sqrt{M_U} = 1.17 \times 10^{47}\, m/s$$

$$t = \frac{R_U}{V_U} = 2.62 \times 10^{-22}\, s$$

Pilot wave theory:

Nonlocal means that the particles and the waves communicate at speeds much more great than light speed. Causality is never violated because causality speed limit is infinite. Causality has nothing to do with light speed.

The quantum entanglement is an error.

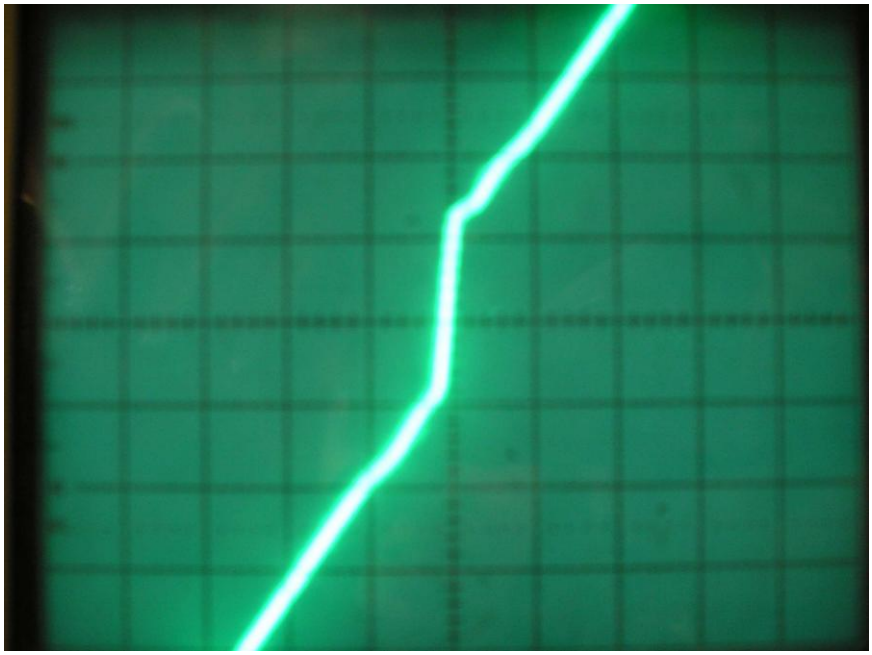
Josephson junctions effect

Josephson junctions are neutrino detectors. They brake the neutrino Cooper-pairs from the sun and generate electricity.

The Josephson current is not a Supercurrent, because it has voltage ~0.1mV.

How is it possible to measure a Supercurrent with an oscilloscope if it has no voltage?

Why the Supercurrent changes the polarity if the voltage is always zero?



Inside a superconductor the electrons can't generate any voltage so they behave as having no charge: they don't repeal each other.

Inside a superconductor the neutrinos have magnetic charge:

$$q_m = \frac{h}{2q_e} = 2.068 \times 10^{-15} Weber$$ -- The flux quantum

The Josephson current has voltage and power. The energy come from the break of the neutrino Cooper-pairs.

Electron Cooper-pair:

$$F = m_e g_e = m_e \frac{S.c^2}{x_e^3} = 1.1 \times 10^{-12} N = \frac{q_e^2}{4\pi.\varepsilon_0 R^2}$$

$$\Leftrightarrow .....R = 1.451 \times 10^{-8} m$$

Binding energy:

$$E_Y = FR = 0.1eV....;.....E_Y = \frac{k_B T_S}{2}.....\Leftrightarrow .....T_S = 2323S$$

$$\Leftrightarrow ..... T_K = 450\,K$$

The electron Cooper-pairs binding force is gravitational:

$$F = \frac{G_e m_e^{\ 2}}{R^2} = 1.1\times 10^{-12} ..... \Leftrightarrow .....G_e = 2.8\times 10^{32}\, m^{-3}$$

$$v = \sqrt{\frac{Gm}{R}} .....\Leftrightarrow .....\alpha.c^2 = \frac{G_e m_e}{R_e} ....;.....R_e = \frac{x_e}{2\pi}$$

$$\Leftrightarrow .....G_e = \frac{\alpha.c^2 x_e}{2\pi.m_e} = 2.8\times 10^{32}\, m^{-3}$$

Neutrino Cooper-pairs:

$$F = m_\nu g_\nu = \frac{q_m^{\ 2}}{\pi\mu_{0\nu} R^2} .....;.....\mu_{0\nu} = \mu_0 \frac{c}{w_\nu}$$

$$m_\nu = q_e\sqrt{S} .....;.....g_\nu = \frac{c^2}{\sqrt{S}} .....;.....w_\nu = \frac{h}{q_e S}$$

$$F = q_e c^2 = 1.44\times 10^{-2}\, N$$

$$R^2 = \frac{h^3}{4\pi.q_e^{\ 4} c^3 \mu_0 S} .....\Leftrightarrow .....R = 2.33\times 10^{-6}\, m$$

$$\frac{\sqrt{S}}{2\pi.R} = 2\pi.\alpha^6$$

$$E_Y = FR = 209.3 GeV \quad ; \quad R^2 = \frac{S}{16\pi^4\alpha^{12}}$$

$$S^2 = \frac{\pi^3\alpha^{10}\mu_0 h}{c}\left(1-\frac{\sqrt{\alpha}}{10}\right)\left(1+\frac{15\alpha^3}{100}\right)$$

Energy gap:

$$\Delta E_Y = 3.06 k_B \sqrt{T_C (T_C - T_S)}$$

Barrier width:

$$l = 10^{-9}\, m$$

Critical current:

$$I_C = \frac{\pi.\Delta E_Y}{2q_e R_N}$$

Critical voltage:

$$V_C = \frac{\Delta Q_m}{\Delta t} = \frac{\Delta Q_m}{l}\frac{V_C R_C}{2}$$

$$\Leftrightarrow \text{.....} \Delta Q_m R_C = 2l$$

Frequency:

$$f = \frac{V}{q_m}$$

Data from the image of the oscilloscope:

$$V_C = 2\times 10^{-4} Volt\text{.....;.... ..} I_C = 150\,\mu A\text{.....;... ...} R_C = 1.3\Omega$$

$$R_N = 10\Omega$$

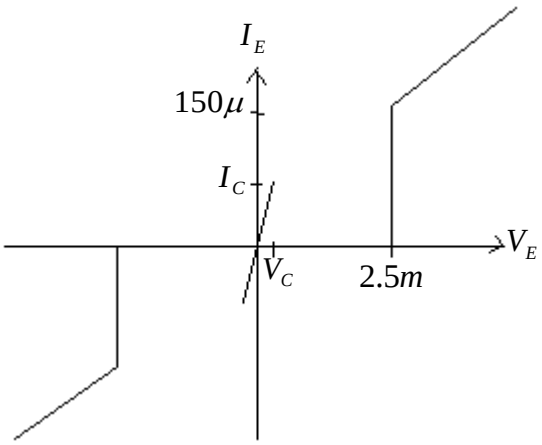
Power:

$$P_W = 150\,\mu \times 0.2m = 3\times 10^{-8} W$$

$$E_Y = 209.3GeV = 3.35\times 10^{-8} J$$

$$P_W = \frac{E_Y}{t \approx 1s}$$

Another junction:



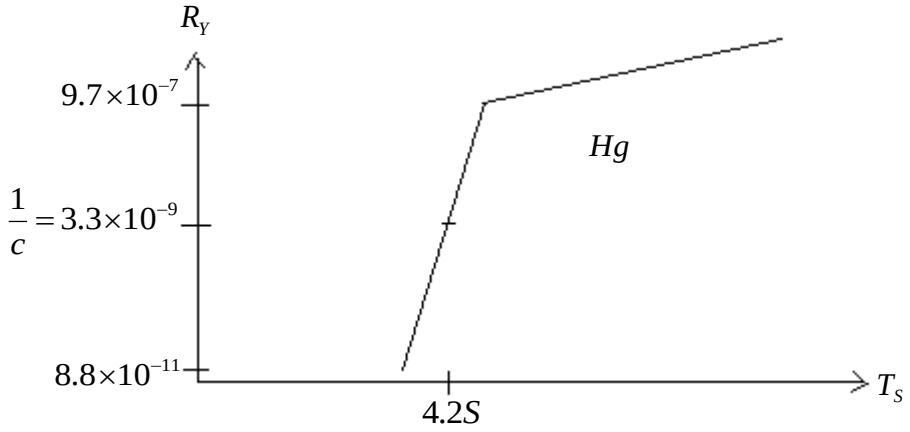
$$I_C = 75\,\mu A\text{.....;... .....} V_C = 0.1mV$$

$$2.5mV = \frac{2\Delta E_Y}{q_e} ..... \Leftrightarrow .....\Delta E_Y = 1.25m.eV$$

$$R_N = 17\Omega ..... \Leftrightarrow ..... R_Y = 170\,\Omega m$$

$$R_C = \frac{V_C}{I_C} = 1.3\Omega$$

Mercury resistivity at low temperatures:



$$0.11\Omega = 9.7\times10^{-7} K ..... \Leftrightarrow ..... K = \frac{l}{A} = 10^5 = \frac{10^{-2}}{10^{-7}}$$

The resistivity is an inverse speed:

$$R_Y = \frac{1}{v}$$

So, the minimum possible resistivity, in our world, is equal to the inverse of the light speed constant:

$$R_{YMIN} = \frac{1}{c} = 3.3\times10^{-9}\,\Omega m$$

$$w = \frac{1}{8.8\times10^{-11}} = 1.14\times10^{10}\, m/s = nc ..... \Leftrightarrow .....n = 38$$

The active part of a Josephson junction is the insulator barrier. We don't need two superconductors but only one and a normal metal. The field of the superconductor

turn the barrier also a superconductor but with a high resistivity – the resistivity of a semiconductor.

The barrier is a superconductor with v = c.

The electric resistance is equal to the magnetic resistance and equal to one:

$$R_E = \frac{1}{R_M} \ldots\ldots \Leftrightarrow \ldots\ldots R_E = R_M = 1 \ldots\ldots; \ldots \ldots R_E = R_C$$

At the barrier there are electric and magnetic charges, electrons and neutrinos.

	$R_C = 1.3\Omega$	
S	I	S
$R_Y = 8.8 \times 10^{-11}$	$R_Y = 21.2$	$R_Y = 8.8 \times 10^{-11}$

The barrier is a superconductor with resistance.

$$l = 10^{-9} m \ldots\ldots\ldots ; \ldots\ldots\ldots . I_C = 75 \mu A$$

$$R_Y = \frac{1}{B} = \frac{2l}{\mu_0 I_C} = 21.2 \Omega m \ldots\ldots\ldots; \ldots\ldots\ldots B = 4.7 \times 10^{-2} T$$

$$R_C = 1.3\Omega = R_Y \frac{l}{A} \ldots\ldots\ldots \Leftrightarrow \ldots\ldots\ldots A = 1.63 \times 10^{-8} m^2$$

$$Q_m = BA = 7.66 \times 10^{-10} Weber = n_\nu q_m \ldots\ldots \Leftrightarrow \ldots\ldots n_\nu = 3.7 \times 10^5$$

$$R_C = 1.3 = \frac{Q_m}{Q_e} \ldots\ldots\ldots \Leftrightarrow \ldots\ldots\ldots Q_e = n_e q_e = 5.9 \times 10^{-10} C$$

$$n_e = 3.68 \times 10^9$$

$$V_C = 10^{-4} Volt \ldots\ldots\ldots; \ldots\ldots I_C = \frac{n_e q_e}{l} V_C R_C = 75 \mu A$$

$$n_e = \frac{I_{C.} l}{q_e V_C R_C} = 3.6 \times 10^9$$

$$V_C = \frac{Q_m}{t} = \frac{Q_m}{l} V_C R_C \ldots\ldots\ldots \Leftrightarrow \ldots\ldots\ldots Q_m R_C = l$$

$$T_C = 4.2S..and..T_S \lesssim 4.2..... \Leftrightarrow ..... \Delta E_Y = 3.06 k_B T_C = 1.1 \times 10^{-3} eV$$

$$I_C R_N = \frac{\pi.\Delta E_Y}{2q_e}..... \Leftrightarrow ..... R_N = 23.2\Omega$$

$$v_e = V_C R_C = 1.3 \times 10^{-4} m/s$$

$$V_C = I_M = \frac{n_v q_m}{2\pi.R} v_v ..... \Leftrightarrow ..... v_v = \frac{V_C 2\pi.R}{n_v q_m} = 59.1 m/s$$

$$A = 1.63 \times 10^{-8} m^2 = \pi.R^2 .....\Leftrightarrow .....R = 7.2 \times 10^{-5} m$$

$$E = Bv_e = 6.11 \times 10^{-6} V/m$$

Electric and magnetic resistances:

$$R_E = \frac{1}{R_M}$$

Electric superconductor: $R_E \lesssim R_M$

Magnetic superconductor: $R_E \gtrsim R_M$

Josephson junction: $R_E = R_M = 1$

Neutrino and electron gravitational constants:

$$\alpha.c^2 = \frac{G_v m_v 2\pi}{\sqrt{S}} = G_v q_e 2\pi$$

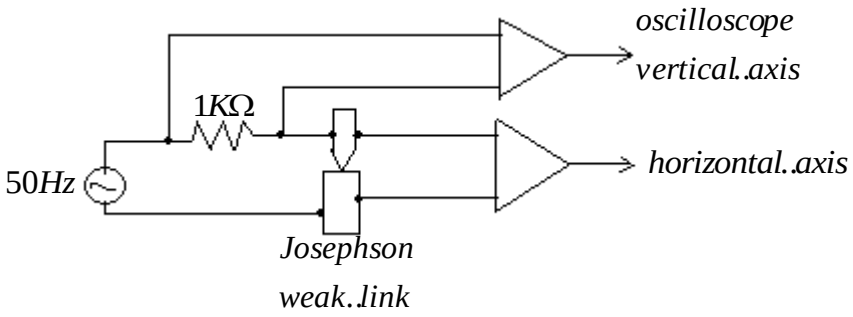
$$G_v = \frac{\alpha.c^2}{2\pi.q_e} = 6.5 \times 10^{32} m^{-3}$$

$$\alpha.c^2 = \frac{G_e m_e 2\pi}{x_e} .....\Leftrightarrow .....G_e = \frac{\alpha.c^2 x_e}{2\pi.m_e} = 2.78 \times 10^{32} m^{-3}$$

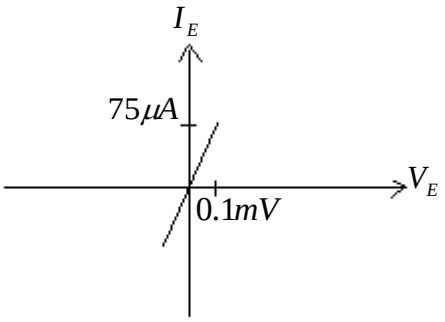
$$\frac{G_v}{G_e} = \frac{k_B}{x_e^2}$$

Measurement circuit of the Josephson effect

Is it everybody crazy?
How can a Supercurrent, with no voltage, pass by a resistance of 1kΩ?



Josephson DC effect: How did the Supercurrent change of polarity?



The DC effect is AC:

$$f = \frac{0.1mV}{q_m} = 4.836 \times 10^{10}\, Hz$$

There's a relation of this frequency and the frequency of the cosmic microwave radiation:

$$f_{CMR} = 1.1358 \times 10^{11}\, Hz$$

The Josephson current is AC and has voltage and power. They detect the sun neutrinos and generate electric power. Josephson junction are a new source of clean energy. Why no one see that?

$$\frac{f_{CMR}}{f} \approx \frac{k_B}{x_e^{\,2}} \approx \frac{1}{5\sqrt{\alpha}}$$