

Massic Current

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Massic current:

$$I_{MS} = \frac{m}{t} = L^3 V^3 = \text{Magnetic.pole.strength}$$

Power and massic resistance:

$$P = R_{MS} I_{MS}^2 \Leftrightarrow R_{MS} = L^{-3} V^{-1} = \text{Inverse.true.magnetic.dipole.moment}$$

The massic voltage is an electric field:

$$V_{MS} = R_{MS} I_{MS} = V^2 = \overset{\mu}{E}$$

Energy:

Electric -- $E = q_e V_e$ (Electric charge and electric voltage)

Magnetic -- $E = q_m V_m$ (Magnetic charge and magnetic voltage)

Massic -- $E = m V_{MS} = m \overset{\mu}{E} = mc^2$ (Massic charge and massic voltage)

Massic resistance of the vacuum:

$$R_{MS0} = \frac{1}{\epsilon_0^3 c} = 4.8 \times 10^{24}$$

$\epsilon_0^3 c = \text{Magnetic dipole moment of the vacuum}$

Massic capacity of the electron:

$$C_{MS} = \frac{m_e}{c^2} = 1 \times 10^{-47} = L^4$$

Massic permittivity:

$$\epsilon_{0MS} = L^3 = \frac{1}{G}$$

Wavelength-frequency

For an electromagnetic wave on a medium transition when the wavelength varies also varies the frequency:

$$\frac{c^2}{f^2} - x^2 = k \quad \Leftrightarrow \quad f = \frac{c}{\sqrt{k + x^2}}$$

$$\Delta f = -\frac{cx}{(k + x^2)^{3/2}} \Delta x$$

For visible light -- $x = 6 \times 10^{-7} m \quad \Leftrightarrow \quad \Delta f = -8.34 \times 10^{20} \Delta x$

In Shrodinger equations x and t are not space and time but wavelength and period of a wave-particle.

Vacuum energy of the cosmic background radiation

$$f = 5.6 \times 10^{10} Hz \text{ -- frequency}$$

$$E = hf = 2.3 \times 10^{-4} eV \text{ -- energy}$$

Number of background photons in the universe:

$$n = \frac{2 \times 10^{88}}{\frac{4}{3} \pi R_U^3} = 2.2 \times 10^9 / m^3 ; \quad R_U = \text{radius of the universe}$$

Total energy:

$$E_T = En / m^3 = 0.5 MeV / m^3$$

Number of electrons in the universe:

$$n_e = \frac{1 \times 10^{79}}{\frac{4}{3} \pi R_U^3} = 1 / m^3$$

The total energy of the background photons per cubic meter is equal to the energy of one electron.

Electric field from a rotating magnetic charge

$$\frac{\rho}{E} = \frac{q_m v}{R^2}$$

Neutrino

The frequency of the electron neutrino is equal to the frequency of the visible light.