

Degeneracy Pressures

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See Unified Absolute Relativity Theory at:

www.wbabin.net/saraiva/saraiva305.pdf
www.wbabin.net/saraiva/saraiva306.pdf
www.wbabin.net/saraiva/saraiva307.pdf

Approximation for the electron:

$$P_e = x_e c^4 = 2 \times 10^{22} Pa$$

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

(Electron temperature: $T_e = x_e^2 c^4 = 4.75 \times 10^{10} K$)

Electron degeneracy pressure, exact formula:

$$P = E/V \quad \Leftrightarrow \quad P_e = \frac{6\pi^2 m_e c^2}{x_e^3} = 3.4 \times 10^{23} Pa$$

m_e -- Electron mass.

Neutron degeneracy pressure:

$$P_N = \frac{6\pi^2 m_N c^2}{x_P^3} = 3.9 \times 10^{36} Pa$$

m_N -- Neutron mass; x_P -- Proton Compton wavelength.

The neutron is a false neutral particle.

Planck degeneracy pressure:

$$P_{PL} = \frac{6\pi^2 hc}{x_{PL}^4} = 7.3 \times 10^{106} Pa$$

Gravitational pressure at the center of a star or a planet:

$$P = \frac{GM^2}{4\pi R^4} ; \quad \text{For earth: } P_E = 1.14 \times 10^{11} Pa$$

$$\text{For the sun: } P_S = 8.84 \times 10^{13} Pa \quad (1 \text{Atm} = 10^5 Pa)$$

Gravitational pressure at the center of a black hole:

$$P = \frac{GM^2}{4\pi R^4} \quad \text{and} \quad R = \frac{GM}{c^2}$$

$$\Leftrightarrow P = \frac{c^8}{4\pi G^3 M^2}$$

Super massive black hole:

$$M = 8.2 \times 10^{36} kg \quad \Leftrightarrow \quad P = 2.6 \times 10^{23} Pa$$

Mass for the neutron pressure:

$$P_N = 3.9 \times 10^{36} = \frac{c^8}{4\pi G^3 M^2} \quad \Leftrightarrow \quad M = 2.12 \times 10^{30} kg$$

The local universe is a black hole and we live at its surface:

$$\text{Universe mass: } M_U = 1 \times 10^{53} kg \quad \Leftrightarrow \quad P = 1.75 \times 10^{-9} Pa$$

Vacuum pressure:

$$P_V = \frac{M_U c^2}{\frac{4}{3} \pi R_U^3} = 9.77 \times 10^{-10} Pa$$

There are no singularities in black holes.

General relativity equations are wrong.

Natural equation for black holes:

$$P = \frac{c^8 M^2}{4\pi \cdot G^3 (M^4 + 4.27 \times 10^{13})}$$

Quantum LC circuit

Quantum LC circuits have two Schrodinger equations that have wrong units:

$$\frac{ih}{2\pi} \frac{d\phi}{dt} = -\frac{h^2}{8\pi^2 L} \frac{d^2\phi}{dx^2} + \frac{Q^2\phi}{2C}$$

$$\frac{ih}{2\pi} \frac{d\phi}{dt} = -\frac{h^2}{8\pi^2 C} \frac{d^2\phi}{dx^2} + \frac{\phi^2\phi}{2L}$$

Those formulas are wrong.

Correct formulas:

$$\frac{ih}{2\pi} \frac{d\phi}{dt} = -\left(\frac{h^2}{8\pi^2 L} \frac{d^2\phi}{dx^2}\right)^{1/2} + \frac{Q^2\phi}{2C}$$

$$\frac{ih}{2\pi} \frac{d\phi}{dt} = -\left(\frac{h^2}{8\pi^2 C} \frac{d^2\phi}{dx^2}\right)^{2/3} + \frac{\phi^2\phi}{2L}$$

Entropy

The entropy is an area or a surface like in black holes.
It is also an electric capacitance.

Entropy or capacitance of a sphere:

$$S = 4\pi \varepsilon_0 R$$

For the electron: $R = \frac{x_e}{2\pi}$

$$2\varepsilon_0 x_e \approx k_B ; \quad k_B \text{ -- Boltzmann constant; } \varepsilon_0 \text{ -- Vacuum permittivity.}$$

Ice melting entropy per particle:

$$\Delta S = 3.7 \times 10^{-23} m^2 = 2.7 k_B$$

Entropy is quantized, fundamental relation:

$$c^2 t^2 - x^2 = S = 1.9 \times 10^{-34} m^2$$

Flying saucers accelerations

Magnetic field: $B = 10^6 T$

$$B = \frac{\mu_0 I l}{4\pi D^2} ; \quad \frac{dB}{dD} = \frac{B}{2\pi D}$$

Acceleration:

$$g = B \frac{dB}{dD} = \frac{B^2}{2\pi D} = 3.2 \times 10^{10} m/s^2$$

Human beings inside a flying saucer don't feel accelerations at this value, because the field transmits the force to each atom of the body.