

Just a Coincidence?

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(SI units)

Planck constant -- $h = 6.6260755 \times 10^{-34}$

Light speed -- $c = 2.99792458 \times 10^8$

Boltzmann constant -- $k_B = 1.380658 \times 10^{-23}$

Elementary charge -- $q_e = 1.60217733 \times 10^{-19}$

Electron mass -- $m_e = 9.1093897 \times 10^{-31}$

Electron Compton wavelength -- $\lambda_e = 2.42631058 \times 10^{-12}$

$$\frac{h}{c} = k_B q_e = m_e \lambda_e$$

$$\frac{c k_B q_e}{h} = 1.00083162$$

If it's not a coincidence:

Kelvin = Meter Ampere per Second

Galaxy rotation and the dark matter



v = orbital speed ; R = radius

The galaxies rotate with constant orbital speed.

$$v = \sqrt{\frac{GM}{R}} ; \quad M = M_0 \frac{R}{R_0}$$

Density:

$$\rho = \frac{M}{R^3} = \frac{M_0}{R_0} \frac{1}{R^2}$$

The density decreases with the radius squared. That means that the dark matter is emitted by the central body and can be neutrinos.

Angular speed:

$$\omega = \frac{\sqrt{GM}}{R^{3/2}} = \sqrt{\frac{GM_0}{R_0}} \frac{1}{R}$$

The angular speed decreases with the radius.

Universe rotation

The universe rotates with constant angular speed.

$$\omega = \frac{\sqrt{GM}}{R^{3/2}} \Leftrightarrow M = M_0 \frac{R^3}{R_0^3} \Leftrightarrow M = M_0 \frac{V}{V_0}$$

$$\rho = \frac{M_0}{V_0} = \frac{M}{V}$$

Orbital speed:

$$v = \sqrt{\frac{GM_0}{R_0^3}} R$$