Units unification

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Abstract – Everything is made of speed and distance.

Compton wavelength of the electron: $\quad x_e = 2.426 \times 10^{-12}\, m$

Light speed: $\quad c = 2.99792458 \times 10^8\, ms^{-1}$

Particular relations:

Electron charge -- $q_e \approx x_e^{\;3} c^2$

Planck constant -- $h \approx x_e^{\;5} c^3$

Magnetic flux quantum -- $\Phi_0 \approx x_e^{\;2} c$

Inverse permeability -- $\dfrac{1}{\mu_0} \approx x_e c^2$

Permittivity -- $\varepsilon_0 \approx x_e$

Electron energy -- $E \approx x_e^{\;4} c^4$

Electron mass -- $m_e \approx x_e^{\;4} c^2$

Boltzmann constant -- $k_B \approx x_e^{\;2}$

Electron magnetic field -- $B \approx c$

Electron electric field -- $E \approx c^2$

Using:

Distance = L $\quad$ and $\quad$ Speed = V

Mass -- $M = L^4 V^2$

The mass is the electric dipole moment of a particle.

Time -- $T = L V^{-1}$

Electric charge -- $q = L^3 V^2$

Magnetic charge -- $q_m = \Phi = L^2 V$

The magnetic charge is equal to the magnetic flux.

Angular momentum -- $h = L^5 V^3$

Inverse permeability = Density = Electric potential = LV^2

Magnetic field -- $B = V$ (Magnetic flux density)

Electric field -- $E = V^2$

Electric current = Magnetic voltage = $L^2 V^3$

Permittivity -- $\varepsilon = L$

Force -- $F = L^3 V^4$

Magnetic potential = Inverse electric resistance -- $A = LV$

Gravitational constant -- $G = L^{-3}$

Pressure -- LV^4

Farad -- L^2

Henry -- V^{-2}

Energy -- $L^4 V^4$ $\Leftrightarrow$ $E_0 = \left(\dfrac{\varepsilon_0}{\mu_0} \right)^2$

Momentum -- $L^4 V^3$

The usual magnetic dipole moment is only a momentum.

True magnetic dipole moment -- $q_m L = L^3 V$

Watt -- $L^3 V^5$

Magnetic field strength -- $H = LV^3$

Electric flux -- $L^2 V^2 = \sqrt{Energy}$

Acceleration = Magnetic current density -- $a = J_M = L^{-1} V^2$

Electric current density -- $J_E = V^3$

Electric displacement field = Magnetic current = LV^2

Boltzmann constant = Entropy = L^2

Temperature -- $T = L^2V^4$ = Surface tension

The temperature is an energy surface density: $T = \dfrac{E}{L^2}$

Table of units

	L -1	L 0	L	L 2	L 3	L 4	L 5
V -1	Thermal Resistance; Electric Resistance	Resistivity	Time; Inverse Frequency				
V 0		1	Distance; Permittivity	Surface; Capacitance; Boltzmann K	Volume; Inverse Gravitational K		
V	Frequency; Vorticity	Speed; Magnetic Field	Magnetic Potential; Conductance; Circulation	Magnetic Charge; Magnetic Flux	True Magnetic Dipole Moment		
V 2	Acceleration; Magnetic Current Density	Electric Field; Inverse Inductance	Magnetic Current; Electric Voltage; Inverse Permeability	Electric Flux	Electric Charge	Mass; Electric Dipole Moment	
V 3	Sound Resistance; Probability Current	Electric Current Density; Potential Vorticity	Magnetic Field Strength; Magnetization	Magnetic Voltage; Electric Current	Magnetic Pole Strength	Momentum; Usual and wrong Magnetic Moment	Planck K; Angular Momentum
V 4			Pressure; Energy Density	Temperature; Surface Tension	Force	Energy; Torque	
V 5	Luminance	Spectral Irradiance	Light Intensity; Irradiance		Power		

One proof:

$$k_B . q_e = h / c$$

The Boltzmann constant times the electric charge of the electron is equal to the Planck constant under light speed.