

# Deducing the relationship between physical constants from the numerical values of physical constants

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**Abstract:** Other basic physical constants can be derived as long as the speed of light, the value of the basic charge, and the value of one of the two vacuum permeability and vacuum permittivity are known.

**Key words:** Physical constant, universal gravitational constant formula.

Epidemic situation found at home boring, gravitation constant = Planck constant / electron rest mass / Rydberg constant.

Maybe it is wrong, there is no theoretical basis, but the value is similar, maybe it is right, but the theoretical basis has not been found yet.

But this is also a reference, isn't it? the reason for this guess is that I believe that physical constants are related to each other.

For reference only, the physical theory should not be delved into, because according to the current units, some of them will be very strange.

$$(E_m) = \frac{(q_m)(c)^2(e_o)^2}{4(\epsilon_o)} = \frac{(q_m)[\alpha_o](e_o)}{2(\epsilon_o)} = \frac{(q_m)[\alpha_o](c)2\pi(e_o)}{4\pi(\epsilon_o)(c)(r)^2} ,$$

$$(E_m) = \frac{(q_m)[\alpha_o](c)2\pi(e_o)}{4\pi(\epsilon_o)(c)(r)^2} = \frac{(q_m)[\alpha_o](c)2\pi(e_o)(a_o)(R_\infty)}{(\epsilon_o)(c)[\alpha_o](r)^2} = \frac{(q_m)(m_e)[\alpha_o](c)2\pi(a_o)}{(m_e)(R_\infty)(r)^2} ,$$

$$(E_m) = \frac{(q_m)(h)}{(m_e)(R_\infty)(r)^2} = \frac{(q_m)(m_{atom})(c)^4(a_o)}{(R_\infty)(r)^2} = \frac{(q_m)(G_N)}{(r)^2} ,$$

$$(E_e) = \frac{(q_e)}{4\pi(\epsilon_o)(r)^2} = \frac{(q_e)(c)(a_o)}{(\epsilon_o)(R_\infty)(r)^2} = \frac{(q_e)(k)}{(r)^2} ,$$

$$(\epsilon_o)(\mu_o)(c)^2 = 1, [\alpha_o] = \frac{(\epsilon_o)(c)^2}{2}, (R_\infty)(a_o) = \frac{(\epsilon_o)(c)^2}{8\pi}, \frac{(a_o)(c)}{(R_\infty)(\mu_o)} = \frac{(\epsilon_o)(c)^2}{4\pi} ,$$

$$\frac{(m_{atom})(c)^2}{(e_o)(c)} = \pi, (m_{atom})(c)^2(m_e)(c)^2 = \frac{(\mu_o)(e_o)}{(a_o)(c)} ,$$

$$(m_e)(a_o) = \frac{(\mu_o)(e_o)}{(m_{atom})(c)^5} = \frac{(\mu_o)}{(c)^4\pi}, \frac{(\epsilon_o)(R_\infty)^2}{(c)(\epsilon_o)[\alpha_o]} = 1 ,$$

$$(m_e)[\alpha_o](c)2\pi(a_o) = (\hbar)2\pi = (h) = \frac{(\epsilon_o)(\mu_o)}{(c)} = (k_B)(e_o)(c) ,$$

$$\frac{(G_N)}{(k)} = \frac{2\pi[\alpha_o](c)(e_o)}{(c)}, (k) = \frac{1}{4\pi(\epsilon_o)}, (G_N) = \frac{(c)^2(e_o)^2}{4(\epsilon_o)}, (k_{ideal\ gas}) = \frac{4}{(e_o)(c)^2}, \frac{(k_{vacuum})}{(k_{ideal\ gas})} = \frac{(k_B)[\alpha_o]}{(m_e)(R_\infty)} .$$

Where  $(\epsilon_o)$  is the vacuum permittivity,  $(\mu_o)$  is the vacuum permeability,  $(c)$  is the speed of light,  $(e_o)$  is the basic charge,  $[\alpha_o]$  is the fine structure constant,  $(R_\infty)$  is the Rydberg constant,  $(a_o)$  is the Bohr radius,  $(m_{atom})$  is the basic atomic mass,  $(m_e)$  is the electron rest mass,  $(\hbar)$  is the reduced Planck constant,  $(h)$  is the Planck constant.  $(k_B)$  is the Boltzmann constant,  $(k)$  is the electrostatic constant,  $(G_N)$  is the gravitational constant,  $(k_{ideal\ gas})$  is the ideal gas temperature constant,  $(k_{vacuum})$  is the vacuum background radiation temperature constant, Other physical constants can be deduced from these basic constants, so I won't write them.

**Reference:** none.