

The Inverse Fine Structure Constant: A Redundant Notation

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The fine structure constant and its inverse expression reflect a specific spacetime/movement event in matter-energy. Yet, the formula that is often given to state the manner in which the inverse fine structure constant, 137.03599911 value appears redundant. Its equation is expressed as follows:

$$\frac{e^2}{\hbar \cdot c \cdot 4\pi \cdot \epsilon_0} \quad (1)$$

A version of the fine structure constant, 7.29735257, follows as shown in some computations for electrostatics. The $4\pi\mu_0$ is taken as dimensionless constant 1.

$$\frac{e^2}{\hbar c} \quad (2)$$

Consider the expression of its inverse (1) in its symbolic notation without certain abbreviations:

$$\frac{e^2}{\left[\frac{\hbar}{2\pi} \cdot c \cdot 4\pi \cdot \left[\frac{1}{c^2 \mu_0} \right] \right]} \quad (3)$$

$c \cdot 4\pi$ times $1/c^2 \mu_0$ represents actually $c \cdot 4\pi$ times $1/c^2 4\pi$.
A redundancy appears in repeated terms although distinctly:
 $c \cdot 4\pi$ | times | $1/c^2 4\pi$

After cancellations, these apparently four distinct terms represent in fact *the reciprocal of the speed of light in a vacuum*, since $c \cdot 4\pi$ | times | $1/c^2 4\pi$ equals fractal .333564095 ($1/c$)

$$1 / .333564095 = 2.99792458 \text{ fractal speed of light in vacuum}$$

$$\frac{e^2}{\left[\frac{\hbar}{2\pi} \right] \cdot \left[\frac{1}{c} \right]} \quad (4)$$

2.566969633 divided by 1.05457168 times .333564095 means:

$$.333564095 \times 1.05457168 = .351767248$$

$$2.566969633 / .351767248 = \underline{.13703599911} \text{ inverse fine structure constant}$$

And, if one prefers the use of the *reduced* Planck Constant, then the expression for the *inverse* fine structure constant, 1.3703599911, would be:

$$\frac{e^2}{\hbar \cdot \left[\frac{1}{c} \right]} \quad (5)$$