Mathematical Physics ≡ Empirical Physics :

IF FACTORING OF VARIABLES IS COMPLETE

Empirically derived formulas depict reality

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By convention electron volt eV and elementary charge squared volt eVe both depict energy. Electron volt eV of mathematical physics is not energy. The second elementary charge e in eVe cancels out on both sides of the Ohm's law equation in mathematical physics. This is a classic example of mathematical physics derailing understanding and yet providing scientists with correct outcomes. Why so is explained in terms of empirical physics. A second formula is reconstructed by input of photon mass into the GRT equation for time dilation. Mathematical physics ignores the need for photon mass and misconstrues photons as mass less entities.

INTRODUCTION

Formulas constructed out of experimental data that pass the dimensional test for homogeneity always depict reality. The challenge is to convert the formulas to text. In this paper two examples are considered namely electron volt energy and time dilation.

FORMULA 1 : Consider Ohm's law $V = I \cdot R$

Convention	The Error
$V = I \cdot R$	$J = Q^2 \cdot \frac{\Omega}{t}$
$\frac{J}{Q} = \frac{Q}{t} \cdot \Omega$	$QVQ = Q^2 \cdot \frac{\Omega}{t}$
$J = Q^2 \cdot \frac{\Omega}{t}$	$V = \frac{\Omega}{t} False$
$J = I^2 \cdot t^2 \cdot \frac{\Omega}{t}$	**New Paradigm**
$J = I^2 \cdot t \cdot \Omega$	$V = I \cdot R$
$J = H$ $Energy = Heat$	$\frac{J}{Q^2} = \frac{Q}{t} \cdot \frac{velocity, v}{Q}$
	$\frac{J}{Q^2} = \frac{velocity, v}{t}$
	$J = Q^2 \cdot acceleration, a$
	$J = m \cdot r \cdot a = J$

FORMULA 2

By GRT convention, $\frac{\Delta f}{f} = \frac{g \Delta h}{c^2}$

And now modified, $\frac{\Delta f}{f} = \frac{m \cdot g \Delta h}{m \cdot c^2}$

Consideration of photon mass, m is the **reason** for the **tick** from a **photon pulse** measured as **frequency, *f*.** The ***input photon mass, m is the reason for frequency, f and energy.*** Mathematical physics cuts off mass, m from the numerator and denominator. Now by doing so the meaning changes from energy to velocity squared. Velocity is an attribute of mass.

CONCLUSION

Two formulas have been interpreted with input of a single variable. In the GRT equation I have input photon mass. Similarly in the electron volt formula I have input charge Q in the denominator on both sides of the equation. In-fact, the input variables of photon mass and charge respectively, were always there. I have done nothing new; merely revealing the need of ***factoring in variables to explain reality***. The reality is that photons have mass and inherent frequency. That elementary charge squared defines voltage as acceleration. Heat is energy of one coulomb charge. This changes the whole concept of heat, current, resistance, conductance, field and flux, permittivity and permeability. It causes a paradigm shift in every aspect of physics and naturally causes unification of forces. The search for unification ends here. More important is to refrain from interpretation of formulas after mathematical operations are performed.