Unifying Gravity and Electromagnetism

APS DPF 2021

Matt Dray

July, 14 2021

Both of these equations equal the number 2.5549×10^{59}. One or both of these equations should be Planck gravity. Most likely both are with, $\frac{G}{p_l^{\,2}}$ describing gravity's quantization with respect to mass & the Higgs field and $\frac{2\pi c^3}{h}$ describing gravity's quantization with respect to energy & the electromagnetic field at the Planck Scale.

$$\frac{2\Pi c^3}{h} = \frac{G}{P_l^2}$$

$$2.554886698\ldots \times 10^{59}$$

Using the value 2.5549x1059, and substituting it for G (the Newtonian gravitational constant) and it's dimensions and magnitudes. You get the following:

Plank Units	Original Value		New Value	Equivalencies
Area (L2)	2.6121×10−70 m2		1	U- All Spatial Dimensions Unified
Volume (L3)	4.2217×10−105 m3		1	U- All Spatial Dimensions Unified
Momentum (LMT−1	6.5249 kg·m/s		1.05457E-34	Equal to H-Bar
Energy (L2MT−2)	1.9561×10-9 J		3.16155E-26	U- Energy and Force Unified and = Momentum (H-Bar) time
Force (LMT−2)	1.2103×10-44 N		3.16155E-26	U- Energy and Force Unified and = Momentum (H-Bar) time
Density (L−3M)	5.1550×10-96 kg/m3		3.51767E-43	U- Mass and Density Unified
Acceleration (LT−2)	5.5608×10-51 m/s2		8.98755E+16	2 x C
Frequency (T−1)	1.8549×10-43 Hz		299792458	C
Length (L)	1.616255(18)×10−35 m		1	U- All Spatial Dimensions Unified
Mass (M)	2.176434(24)×10−8 kg		3.51772E-43	U- Mass and Density Unified
Time (T)	5.391247(60)×10−44 s		3.33559E-09	E- Equal to 1/c
Temperature (Θ)	1.416784(16)×10-32 K		0.002289916	
Gravity		0	2.5549E+59	

Reducing and comparing both equations along with the new dimensions and magnitudes like Planck energy shown here:

$$\sqrt{\frac{js\left(\frac{m^5}{s^5}\right)}{\left(\frac{m^3}{s^4 j}\right)}} = \sqrt{\frac{js\left(\frac{m^5}{s^5}\right)}{\left(\frac{m}{s^2 kg}\right)}}$$

$$J = \frac{m^2 kg}{s^2}$$

Breakdown of Fields, Forces, and Dimensions and the Ratio Quantizing Formulas at the Planck Scale. No matter what measurement scales used, every one of these quantizing equations at Planck Scale, which is the scale at where Gravity and EM are unified, MUST evaluate true, with the exception of TEMP. The Value for Temp (Θ) multiplied by the Value for Pi (∏) will be equal to the value of the Fine Structure Constant (α).

Gp (EM)	Gravity EM
$\frac{2\Pi c^3}{h}$	$G_X=\frac{r^3}{T^4 E}$ $2.5549\text{x}10^{59}$ $m^3\ J^{-1}\ s^{-4}$
Gp(Mass)	**Gravity Mass**
$\frac{G}{P_l^2}$	$G_X=\frac{r}{T^2 M}$ $2.5549\text{x}10^{59}$ $m\ kg^{-1}\ s^{-2}$

1-UNIT Derived Planck Units, Fine Structure Constant and Planck Gravity-mass & Planck Gravity EM

2-Quantizing Equation

Formula obtained from dimensions of both unit value equaling formulas given by solving both sets of dimensions and magnitudes which were derived from replacing the value 2.5549E+59 and the 2 equations which equal that value along with their unique CODATA dimensions, magnitudes, and values.

3-New Derived Planck Unit Value

4-Derived values' dimensions

	MASS
1	$M=\frac{ET^2}{r^2}$
2	$3.5177\text{X}10^{-43}$
3	$J\ S^2\ m^{-2}$
4	

Fine Structure

$$\alpha=\Theta\Pi$$

0.007193983 K

DIMENSIONLESS

MASS	ENERGY	TIME	TEMP
$M=\frac{ET^2}{r^2}$	$E=\frac{r^2 M}{T^2}$	$T=\frac{r\sqrt{M}}{\sqrt{E}}$	$\Theta=0$
$3.5177\text{X}10^{-43}$	$3.1615\text{x}10^{-26}$	$3.3355\text{x}10^{-09}$	**0.002289916**
$J\ S^2\ m^{-2}$	$kg\ m^2\ S^{-2}$	$m\ kg^{1/2}\ J^{-1/2}$	K

LENGTH	AREA	VOLUME
$Length(L)=\frac{T\sqrt{E}}{\sqrt{M}}$	$Area(L^2)=\frac{ET^2}{M}$	$Volume(L^3)=\frac{ET^3\sqrt{ME}}{M^2}$
1	1	1
m	m	m

Momentum EM	Force EM	Acceleration EM	Density EM	Frequency EM
ET	Er	$\frac{r^2}{T^2}$	$\frac{T^2 E}{r}$	$\frac{r}{T}$
$1.05457\text{x}10^{-34}$	$3.1615\text{x}10^{-26}$	$8.9875\text{x}10^{16}$	$3.5177\text{X}10^{-43}$	299792458
JS	Jm	$m^2\ S^{-2}$	$S^2\ J\ m^{-1}$	$m\ s^{-1}$
Momentum Mass	**Force Mass**	**Acceleration Mass**	**Density Mass**	**Frequency Mass**
$r\sqrt{EM}$	$\frac{r^3 M}{T^2}$	$\frac{m^3\sqrt{EM}}{T^3 E}$	$\frac{r^3 M^2}{ET^2}$	$\frac{M^2\sqrt{EM}}{T^2 E}$
$1.05457\text{x}10^{-34}$	$3.1615\text{x}10^{-26}$	$8.9875\text{x}10^{16}$	$3.5177\text{X}10^{-43}$	299792458
$m\ j^{1/2}\ kg^{1/2}$	$m^3\ kg\ S^{-2}$	$m^3\ J^{1/2}\ kg^{1/2}\ S^{-3}\ J^{-1}$	$m3\ kg2\ J^{-1}\ S^{-2}$	$kg^2\ J^{1/2}\ kg^{1/2}\ J^{-1}\ S^{-2}$

Plank Units	Original Value		New Value	Equivalencies
Area (L2)	2.6121×10−70 m2		1	U- All Spatial Dimensions Unified
Volume (L3)	4.2217×10−105 m3		1	U- All Spatial Dimensions Unified
Momentum (LMT−1	6.5249 kg·m/s		1.05457E-34	Equal to H-Bar
Energy (L2MT−2)	1.9561×10-9 J		3.16155E-26	U- Energy and Force Unified and = Momentum (H-Bar) times C
Force (LMT−2)	1.2103×10-44 N		3.16155E-26	U- Energy and Force Unified and = Momentum (H-Bar) times C
Density (L−3M)	5.1550×10-96 kg/m3		3.51767E-43	U- Mass and Density Unified
Acceleration (LT−2)	5.5608×10-51 m/s2		8.98755E+16	2 x C
Frequency (T−1)	1.8549×10-43 Hz		299792458	C
Length (L)	1.616255(18)×10−35 m		1	U- All Spatial Dimensions Unified
Mass (M)	2.176434(24)×10−8 kg		3.51772E-43	U- Mass and Density Unified
Time (T)	5.391247(60)×10−44 s		3.33559E-09	E- Equal to 1/c
Temperature (Θ)	1.416784(16)×10-32 K		0.002289916	
Gravity		0	2.5549E+59	

$$\frac{h\Pi}{\Theta}*(1+\Theta)\approx Electron\ Mass \qquad (T_p+(T_p\ \ 3\alpha))^{\Pi}\times\frac{2}{3}\times(1+\Theta)\approx Proton\ Mass$$

$$(T_p+(T_p\ \ \Pi\alpha))^{\Pi}\times\frac{2}{3}\times(1+\Theta)\approx Neutron\ Mass$$

TEMP

$$\Theta=0$$

0.002289916

K

Fine Structure

$$\alpha=\Theta\,\Pi$$

0 K

DIMENSIONLESS

Particle Equation	Current Accepted Value	Equation Derived Value	Within %
$\frac{h\Pi}{\Theta} * (1+\Theta) \approx Electron\ Mass$	$9.10938356 \times 10^{-31}$	$9.1112856 \times 10^{-31}$	99.98
$(T_p + (T_p\ \ \Pi\alpha))^{\Pi} \times \frac{2}{3} \times (1+\Theta) \approx Neutron\ Mass$	$1.6749274 \times 10^{-27}$	$1.6738337 \times 10^{-27}$	99.93
$(T_p + (T_p\ \ 3\alpha))^{\Pi} \times \frac{2}{3} \times (1+\Theta) \approx Proton\ Mass$	$1.6726219 \times 10^{-27}$	$1.6738336 \times 10^{-27}$	99.92