DIMENSIONS AND DIMENSIONALS

GRIDS GRAPHS TABLES EXTENSION w SEPARATION MATRICES

DIMENINT. WPD December 9, 2009

SOME DEFINITIONS:

SPACE:

A space is a numerical infrastructure (or container) used to assign positions and show relations between measured quantities. . The most conventional spaces are Cartesian spaces whose coordinates are 2, 3, or more linear orthogonal parameters.

DIMENSION:?

(A dimension ~~is a parameter~~ may be either continuous or discrete, ~~that can be used as a coordinate in a Cartesian space~~.) The usual notion of dimension is that of the physicist in which the parameters used to describe the physical world are the dimensions Mass, Length, and Time. A space using M, L, and T as coordinates is called a dimensional space.

DIMENSIONALITY:?

A dimensionality is a function of the dimensions M, L, and T. For example, Energy = ML^2/T^2 . Velocity = L/T, Force = ML/T^2 , Action = ML^2/T , etc. Dimensionalities ~~are dimensional~~ grid vectors ~~with~~ not measurements.

It is currently assumed that in the M, L, T dimensional ~~space~~ grid the coordinates are linear and orthogonal. However general relativity has shown that if M =0, then L-T = 0 . Thus mass and space interact, hence either orthogonality or linearity or both are out. Relativity says mass curves space-time, so linearity is out, but it may be that non-orthogonality is also involved. The basic problem remains: what is the real relation between mass and space-time?

Or "Why is there something instead of nothing ?

$\lambda_c m_e = \frac{h}{c}$

$\alpha = r_e m_e \frac{c}{\hbar}$ $a_0 m_e \frac{c}{\hbar} = \frac{1}{\alpha}$ $\alpha = \left(\frac{r_e}{a_0}\right)^{1/2}$

FUNDAMENTAL CONSTANTS: also α S and μ

Physicists have found that three dimensionalities have certain values that can be generally constant. These are $L^3/MT^2 = G$, $ML^2/T = \hbar$, and $L/T = c$

Why are these dimensionalities special?

Every point in dimensionality space represents a dimensionality e.g. $\frac{ML}{T^2}$

The units of mass, length and time are all taken to be =1

Only a subset of dimensionalities are "scalar measured"

each scalar measurement has its own unit: e.g. dynes volts ergs

dimensionalities are the exponent or vector component

scalar dimensionality

∃ 3 invariant dimensionalities G, $\hbar$, c

(not these scalars, however)

DIMENSIONAL MATRICES: INTRODUCTION

Dimensional matrices are an alternate approach to the relations that exist between the magnitudes of the fundamental constants of physics [initially c, G, and ħ] and the masses, sizes, and frequencies of material bodies ranging from sub-atomic particles to the universe itself. Traditionally the relations or linkages between physical bodies are organized around such concepts as force, action, energy, power, etc. Dimensional matrices show that in many cases relations may be viewed in different but equivalent ways. For example, equivalences between frequency resonance, energy conservation, and balance of forces. The matrices also show that the richness of relations exceeds those commonly recognized or utilized.

The construction of a matrix starts with equation 1).

1)
$$M^a R^b T^e c^x G^y \hbar^z = M^u R^v T^w$$

There are three sets of three exponents. The exponents u, v, w, in the right member are pre-assigned <u>input</u> exponents. These exponents determine the dimensionality of the matrix. For example, if we wished a force-matrix, we would assign u=1, v=1, and w= –2; or if we wished a frequency matrix, we would assign u=0, v=0, and w= –1. The exponents a, b, and e in the left member are <u>coordinate</u> exponents that give the coordinates of the elements of the matrix. The third set of exponents, x, y, and z are those of the fundamental constants. This set is to be determined as a function of the input and coordinate exponents. To determine the values of x, y, and z we write equation 1) in the dimensional form,

2)
$$\mathbf{M^a R^b T^e \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^z R^{2z}}{T^z} = M^u R^v T^w}$$

Choose MR e=0

Arranging the exponents according to dimension, ~~we obtain~~ after:

But this is a 3 dim matrix

T = T(L, M)

choice $T = \frac{L}{c}$

$\frac{L^3}{GM}$

$\frac{GM}{c^3}$

$$\mathbf{M:}\quad \mathbf{a - y + z = u}$$
$$\mathbf{R:}\quad \mathbf{b + x + 3y + 2z = v}$$
$$\mathbf{T:}\quad \mathbf{e - x - 2y - z = w}$$

Solving for x, y, and z, gives:

3)
$$\mathbf{2x = u - 3v - 5w - a + 3b + 5e}$$
$$\mathbf{2y = -u + v + w + a - b - e}$$
$$\mathbf{2z = u + v + w - a - b - e}$$

$M^a L^b \frac{L}{T}$ $y \to x+1$

may be required to cover the all possibilities. For example, a separate matrix, each covering the numerical ranges of **a** and **b,** for different assigned value of **e**. In general, there can be six input arrangements:

a fixed, b and e variable	a and b fixed, e variable
b fixed, a and e variable	a and e fixed, b variable
e fixed, a and b variable	b and e fixed, a variable

Selecting one of these six options, three "pre-matrices" are to be generated: a matrix for x in terms of, (for example), a and b with fixed e, and similar matrices for y and for z. From these three matrices the basic matrix is constructed, whose elements each have the assigned dimensionality (eg force, MR/T^2) with specified ranges for a and b, (the exponents of M and R respectively), and for a specified value of e. Finally, from a basic matrix, several numerical matrices can be developed using specific values for M and R. For example, In a floating M,R matrix with input T^{-1}, inserting m_p for M and r_e for R to obtain all frequencies related to a proton. In addition, several types of "restricted" basic matrices may be constructed. For example, matrices in which constraints are placed on c, G or ħ, such as a matrix that displays all forces in which planck's constant plays no role [z=0].

Examples: CREATION OF A PRE-MATRIX

1: A Force Matrix

Rewriting equation 2) in logarithmic form,

4) $$\mathbf{aM + bR + eT + A(a,b,e) = uM + vR + wT}$$

where the function **A(a,b,e)** is given by,

$$B_{a,b} = \mathbf{A(a,b,e) = 0.5[c(u - 3v - 5w - a + 3b + 5e) + + G(-u + v + w + a - b - e) + + \hbar(u + v + w - a - b - e)]}$$

For force, we set u = 1, v = 1, and w = -2., and initially setting e = 0, we have,

$$aM + bR + 0.5[c(8 - a + 3b) + G(-2 + a - b) + \hbar(-a - b)] = Force$$

The x matrix from $(8 - a + 3b)/2$ ✓

y $(-2 + a - b)/2$ ✓

z $(-a - b)/2$ ✓

Since the values of u, v, and w have been pre-assigned [eg, for force, u = 1, v = 1, w = -2], the exponents of the fundamental constants become functions of only the coordinate variables a, b, and e. However, since our matrices are only two dimensional in order to display the third coordinate a set of two parameter matrices is required. For example, a separate matrix, each covering the significant numerical ranges of **a** and **b**, would be needed for each value of the coordinate **e**. In general, the three dimensional "cube matrix" can be sliced in three ways.

1) A set of matrices having b and e as variables for specified values of a.
2) A set of matrices having a and e as variables for specified values of b.
3) A set of matrices having a and b as variables for specified values of e.

EXAMPLE

Option 3), ~~with e = -1 gives~~ set e=0 ; → a matrix of frequencies with powers of M and R (a,b) as coordinates.

$$M^a R^b T^e c^x G^y \hbar^z = M^u R^v T^w$$

$$e = 0, \quad u = 0, \quad v = 0, \quad w = -1$$

M: $a - y + z = 0$

R: $b + x + 3y + 2z = 0$

T: $-x - 2y - z = -1$

$$2x = 5 - a - 3b$$
$$2y = a - b - 1$$
$$2z = -a - b - 1$$

$$f(a,b) = a \cdot M + b \cdot R + x \cdot c + y \cdot G + z \cdot \hbar \quad \text{[log form]}$$

$$= a \cdot M + b \cdot R + c\left[\frac{5 - a + 3b}{2}\right] + G\left[\frac{a - b - 1}{2}\right] + \hbar\left[\frac{-a - b - 1}{2}\right]$$

$$= a \cdot \left[M - \frac{c}{2} + \frac{G}{2} - \frac{\hbar}{2}\right] + b \cdot \left[R + \frac{3c}{2} - \frac{G}{2} - \frac{\hbar}{2}\right] + \left[\frac{5c}{2} - \frac{G}{2} - \frac{\hbar}{2}\right]$$

$$= a \cdot \left[M + \sqrt{\frac{G}{c\hbar}}\right] + b \cdot \left[R + \sqrt{\frac{c^3}{G\hbar}}\right] + \sqrt{\frac{c^5}{G\hbar}}$$

$$= a \cdot [M - m_0] + b \cdot [R - l_0] - t_0 \quad \text{log form}$$

$$f(a,b) = \left(\frac{M}{m_0}\right)^a \cdot \left(\frac{R}{l_0}\right)^b \Big/ t_0 \quad \text{[anti-log form]}$$

for P $\quad M = m_0, \; R = l_0$

$f(a,b) = -t_0$

Pre-assigned

General Case

$\frac{M^s R^u}{T^v}$

Force is the Messenger
Frequency is the Messenger
or v.v.

$M^a R^b T^e c^x G^y h^w$

$M^a R^b T^e \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^w R^{2w}}{T^w}$

$a - y + w = s$

$b + x + 3y + 2w = u$

$x + 2y + w = v$ if $e = 0$

$-e + x + 2y + w = v$ if $e \neq 0$

Case $e = 0$

i.e.
Import M, R

$a - y + w = s$
$b + x + 3y + 2w = u$
$x + 2y + w = v$

$w = \frac{s + u - v - a - b}{2} = \frac{u - v + s - a - b}{2}$

$y = \frac{u - v - s + a - b}{2}$

$w = \frac{u - v - b + (s - a)}{2}$

$y = \frac{u - v - b - (s - a)}{2}$

$x = \frac{5v - 3u + s + 3b - a}{2}$

Force $s = 1$, $u = 1$, $v = 2$

$\frac{-b-a}{2}$

$\frac{a-b-2}{2}$

$\frac{3b-a+8}{2}$

Case $e \neq 0$ [3 dimensional]

$a - y + w = s$
$b + x + 3y + 2w = u$
$x + 2y + w - e = v$

$w = \frac{u - v - b + (s - a) - e}{2}$

$y = \frac{u - v - b - (s - a) - e}{2}$

$x = \frac{5v - 3u + s + 3b - a + 5e}{2}$

Example I a TIME MATRIX

$w = 1$, M, R, Float i.e. a, b $a\lfloor_b$

Output to be T

$T = M^a L^b c$

$w = 1$
$u, v = 0$
~~e=0~~

C^x ~~$x = a - y + z - 3b$~~ -5

$x - \frac{5 + a + 3b}{2}$

G^y $y = \frac{1 + a - b}{2}$

k^z $z = \frac{1 - a - b}{2}$

Select M w R $e = 0$

Force:

$\frac{MR}{T^2}$ $M^a R^b c^x G^y \hbar^w$

F

$2x = 1 - 3 + 10 - a + 3b$

$M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^w R^{2w}}{T^w}$

$a - y + w = 1$

$b + x + 3y + 2w = 1$

$x + 2y + w = 2$

$y = \frac{a-b-2}{2}$

$x = \frac{3b - a + 8}{2}$

$w = \frac{-a-b}{2}$

$s = 1$
$u = 1$
$v = 2$

~~$F = M^a R^b c^{\frac{3b-a+8}{2}} G^{\frac{a-b-2}{2}} \hbar^{\frac{-a-b}{2}}$~~

correct

$F = M^{1-2a} L^{1-2b} c^{-3b+a+5} G^{b-a-1} \hbar^{a+b-1}$

Special case $\hbar = 0$ $F = M^a R^{-a} c^{4-2a} G^{a-1}$

$G = 0$ $F = M^a R^{a-2} c^{a+1} \hbar^{1-a}$

TIME:

$s = 0$
$u = 0$
$v = -1$

T $M^a R^b c^x G^y \hbar^w$

$M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^w R^{2w}}{T^w}$

ignore Te

$a - y + w = 0$

$b + x + 3y + 2w = 0$

$x + 2y + w = -1$

~~$x = \frac{1 - 7a - 3b}{2}$~~

~~$y = \frac{3a + b - 1}{2}$~~

~~$w = \frac{a + b + 1}{2}$~~

$x = \frac{3b - a - 5}{2}$

~~$x = \frac{3a + 3b - 5}{2}$~~

$y = \frac{1 + a - b}{2}$

$w = \frac{1 - a - b}{2}$

~~OK for a=0~~

$T = M^a R^b c^{\frac{3b-a-5}{2}} G^{\frac{a-b+1}{2}} \hbar^{\frac{1-a-b}{2}}$ ✓

$T = T(M, R, a, b)$

$cf(M, R, \alpha^u, \mu^r)$

$2x = 3b - a - 5$
$2y = a - b + 1$
$2z = -a - b + 1$

$F = T c^{\frac{13}{2}} G^{-3/2} \hbar^{-1/2}$

e.g. $\sqrt{\frac{G\hbar}{c^5}} \rightarrow \frac{c^4}{G}$

ENERGY

$\frac{MR^2}{T^2}$ $\qquad M^a R^b c^x G^y \hbar^w$

$$M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^w R^{2w}}{T^w}$$

$a - y + w = 1$

$b + x + 3y + 2w = 2$

$x + 2y + w = 2$

~~$x = \frac{1-a-b}{2}$~~ $\qquad x = \frac{5+3b-a}{2}$

$y = \frac{a-b-1}{2}$

$w = \frac{1-a-b}{2}$

$$\boxed{E = M^a R^b c^{\frac{5+3b-a}{2}} G^{\frac{a-b-1}{2}} \hbar^{\frac{1-a-b}{2}}}$$

POWER

$\frac{MR^2}{T^3}$ $\qquad M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^w R^{2w}}{T^w}$

$a - y + w = 1$

$b + x + 3y + 2w = 2$

$x + 2y + w = 3$

$x = \frac{10+3b-a}{2}$

$y = \frac{a-b-2}{2}$

$w = \frac{-b-a}{2} = -\frac{(a+b)}{2}$

$$\boxed{P = M^a R^b c^{\frac{10+3b-a}{2}} G^{\frac{a-b-2}{2}} \hbar^{\frac{-a-b}{2}}}$$

FREQUENCY

$a - y + w = 0$

$b + x + 3y + 2w = 0$

$x + 2y + w = 1$

for ν

$c \qquad x = \frac{3b-a+5}{2}$

$G \qquad y = \frac{a-b-1}{2}$

$\hbar \qquad w = -\frac{1+a+b}{2}$

~~In General~~

~~$\frac{M^s R^u}{T^v}$~~

~~$a - y + w = s$~~

~~$b + x + 3y + 2w = u$~~

~~$x + 2y + w = v$~~

OK ✓

? → F change sign of number [eg 5, −1, −1] in numerator

$x^{5/2} \quad y^{-1/2} \quad w^{-1/2}$

$\sqrt{\frac{c^5}{G\hbar}}$

$$2x = u - 3v - 5w - a + 3b + 5e$$
$$2y = -u + v + w + a - b - e$$
$$2z = u + v + w - a - b - e$$

$$a\cdot M + b\cdot R + e\cdot T + c\cdot x + G y + \hbar z = u\cdot M + v\cdot R + w\cdot T$$

$$(a-u)M + (b-v)R + (e-w)T + \frac{c}{2}[u - 3v - 5w - a + 3b + 5e] +$$
$$+ \frac{G}{2}[-u + v + w + a - b - e] + \frac{\hbar}{2}[u + v + w - a - b - e] = (w - e)T$$

to get T^{-1}
set $e=0$, $w=-1$

To remove T, get configurations - outside of time set $w = e$

$$(a-u)M + (b-v)R + \frac{c}{2}[u - 3v - a + 3b] + \frac{G}{2}[-u + v + a - b] +$$
$$+ \frac{\hbar}{2}[u + v - a - b] = 0$$

set $a - u = \alpha$
$b - v = \beta$

$$\alpha \frac{M}{m_0} + \beta \frac{R}{\ell_0} = 0$$

$$\alpha M + \beta R + \frac{c}{2}[-\alpha + 3\beta] + \frac{G}{2}[\alpha - \beta] + \frac{\hbar}{2}[-\alpha - \beta] = 0$$

$$\alpha M + \beta R + \frac{1}{2}\{[-\alpha c + \alpha G - \alpha\hbar] + [3\beta c - \beta G - \beta\hbar]\} = 0$$

$-\alpha\,\frac{c\hbar}{G}$ $\qquad$ $\beta\,\frac{c^3}{G\hbar}$

$\pm\alpha/m_0^2$ $\qquad$ β/ℓ_0^2

$$\alpha M + \beta R + \frac{\alpha}{m_0} + \frac{\beta}{\ell_0} = 0$$

CODELIST.WPD February 20, 2006

TOPIC	CODE
BRAHMA-THEOLOGY	BRM
CHRONOS-KAIROS	TM1
COSMOLOGY	PYTH
CURIOSITIES	CRS
DIACHRONIC-SYNCHRONIC	TM2
DIALECTICS	DIA
DOWNLOADS	DWN
DYADS	DYA
EPIONTOLOGY	EPO
FOURTHINK	COG4
HISTORY	HST
IN SCRAPS	05#12
INTRODUCTIONS	INT
LAWS OF CHANGE	LCH
MATH	MATH
MESSENGER - MESSAGE	MES
MYTH, MATH, METAPHOR	MMM
NATURE	NAT
ODDBALLS	ODB
ORGANIZING EXPERIENCE	ORX
POLITICAL	POL
QUOTES-APHORISMS	QUT
SOCIETAL	SOC
SPIN	COG3
STYLES OF THINKING	COG1
TIME	TM0
TOOLS OF THINKING	COG2
RANDOM	RND
PSYCHOLOGY	PSY
PHILOSOPHY	PHL
~~COGNT~~ APHORISMS	~~APH~~
TOPICS	TPS
LAWTHINK	LWT
PERSONAL	PRS
WAR	WRT
SCIENCE	SCI

FORCE a, b, float

$$M^a R^b T^e c^x G^y \hbar^z = M^u R^v T^{w-e}$$

set ~~...~~ $u=1$, $v=1$, $(w-e)=-2$

e.g. $e=0$, $w=-2$
or $e=1$, $w=-1$
etc.

M: $a - y + z = 1$
R: $b + x + 3y + 2z = 1$
T: $-x - 2y - z = -2$

$a - x - 3y = -1$
$b + x + 3y + 2z = 1$
$a + b + 2z = 0$
$z = -\frac{a+b}{2}$

$y = a + z - 1 = a - 1 - \frac{a+b}{2} = \frac{a-b-2}{2}$

$x = a - 3y + 1 = a + 1 - \frac{3(a-b-2)}{2}$

$= \frac{2a+2-3a+3b+6}{2} = \frac{-a+3b+8}{2}$

$2x = -a + 3b + 8$
$2y = a - b - 2$
$2z = -a - b$

CODELIST.WPD

February 15, 2006

TOPIC	CODE
BRAHMA-THEOLOGY	BRM
CHRONOS-KAIROS	TM1
COSMOLOGY	PYTH
CURIOSITIES	CRS
DIACHRONIC-SYNCHRONIC	TM2
DIALECTICS	DIA
DOWNLOADS	DWN
DYADS	DYA
EPIONTOLOGY	EPO
FOURTHINK	COG4
IN SCRAPS	05#12
INTRODUCTIONS	INT
LAWS OF CHANGE	LCH
MYTH, MATH, METAPHOR	MMM
QUOTES-APHORISMS	QUT
SPIN	COG3
STYLES OF THINKING	COG1
TIME	TM0
TOOLS OF THINKING	COG2

FORCE:

$$M^a R^b T^e c^x G^y \hbar^z = M^u R^v T^w$$

$e=0, \quad u=1, \quad v=1, \quad w=-2$

$$M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{M^z R^{2z}}{T^z} = \frac{M R}{T^2}$$

M $\quad a - y + z = 1$

R $\quad b + x + 3y + 2z = 1$

T $\quad -x - 2y - z = -2$

$a - x - 3y = -1$

$b + x + 3y + 2z = 1$

$a + b + 2z = 0$

$z = -\frac{a+b}{2}$

$y = a + z - 1 = a - \frac{a+b}{2} - 1 = \frac{a-b-2}{2}$

$x = 1 - 2z - 3y - b$

$= 1 + a + b - b - \frac{3}{2}(a - b - 2)$

$= \frac{2a + 2 - 3a + 3b + 6}{2} = \frac{-a + 3b + 8}{2}$

$2x = 8 - a + 3b$

$2y = a - b - 2$

$2z = -a - b$

PLANCKUN.WPD January 13, 2000 Rev March 28, 2006

PLANCK UNITS

NAME	DIMENSIONS	SYMB	FORMULA	$\log_{10}$ cgs	electronvolts	$\log_{10}$ Gev *
ENERGY	$[ML^2/T^2]$	ϵ_o	$(\hbar c^5/G)^{1/2}$	16.291442	ϵ_o	+19.086732
MASS	[M]	m_o	$(c\hbar/G)^{1/2}$	- 4.662199	ϵ_o/c^2	-23.748931
LENGTH	[L]	l_o	$(\hbar G/c^3)^{1/2}$	-32.791545	$\hbar c/\epsilon_o$	-13.704812
TIME	[T]	t_o	$(\hbar G/c^5)^{1/2}$	- 43.268366	$\hbar/\epsilon_o$	-24.181634
FREQUENCY	$[T^{-1}]$	ν_o	$(c^5/\hbar G)^{1/2}$	+43.268366	$\epsilon_o/\hbar$	+24.181634
MOMENTUM	[ML/T]	p_o	$(\hbar c^3/G)^{1/2}$	5.81462	ϵ_o/c	-13.272111
FORCE	$[ML/T^2]$	k_o	c^4/G	49.082989	$\epsilon_o^2/\hbar c$	+10.909525
POWER	$[ML^2/T^3]$	w_o	c^5/G	59.559810	$\epsilon_o^2/\hbar$	+21.386344
DENSITY	$[M/L^3]$	ρ_o	$c^5/G^2\hbar$	93.712439	$\epsilon_o^4/\hbar^3c^5$	+17.365507
PRESSURE	$[M/LT^2]$	y_o	$c^7/G^2\hbar$	114.666081	$\epsilon_o c^3/G^3\hbar^3$	+95.579345
TEMPERATURE		θ_o		32.15080	ϵ_o/β **	+13.064068
CHARGE^2	$[ML^3/T^2]$	q_o^2	$\hbar c = e_o^2/\alpha$	- 16.500103	ϵ_o^2G/c^4	-54.673569
VOLTAGE	$[ML/T^2]^{1/2}$	v_o	$c^2/G^{1/2}$	24.541496	$\epsilon_o/c^{1/2}\hbar^{1/2}$	+5.454762
CURRENT	$[ML^3/T^4]^{1/2}$	i_o	$c^3/G^{1/2}$	35.018315	$\epsilon_o c^{1/2}/\hbar^{1/2}$	+15.931583
RESISTANCE	T^2/L	Ω_o	$(\hbar G/c^7)^{1/2}$	-53.745187	$\epsilon_o G/c^6$	-72.831921
VELOCITY	[L/T]	c	c	10.47682	ϵ_o	
ACTION	$[ML^2/T]$	$\hbar$	$\hbar$	- 26.976924	ϵ_o	
G	$[L^3/MT^2]$	G	G	-7.175705	ϵ_o	

* The value in the shaded cell is the Gev for the Planck particle:

$$\epsilon_o = 2.795290 + 16.291442 = 19.086732$$

The other values in this column can to be added to or subtracted from ϵo^N where N = –1, 1. 2. 4, to give the values in the $\log_{10}$ cgs column. These $\log_{10}$ Gev values are valid not only for the Planck constant but in general for other ϵ_o's.

** The Boltzman constant $\beta = 1.380658 \times 10^{-16}$ ergs/K° ; $\log_{10}$ value = –15.859914

TIMATRX2.WPD 3 2000 | 2003-01-18

TIME TABLE: T=T(G,M,R,ħ,c)

[T] = 1

	M \ R	0	0.5	+1	1.5	+2	+2.5	+3
	R^2 -	0	1	2	3	4	5	6
6	+3	G^2M^3/hc^4		$\sqrt{G^3M^6R^2/h^3c^5}$		GM^3R^2/h^2c		$\sqrt{GM^6R^6c/h^5}$
5	+2.5		$\sqrt{G^3M^5R/h^2c^6}$		$\sqrt{G^2M^5R^3/h^3c^3}$		$\sqrt{GM^5R^5/h^4}$	
4	+2	$\sqrt{G^3M^4/hc^7}$		GM^2R/hc^2 13		$\sqrt{GM^4R^4/h^3c}$		M^2R^3c/h^2 14
3	+1.5		$\sqrt{G^2M^3R/hc^5}$		$\sqrt{GM^3R^3/h^2c^2}$		$\sqrt{M^3R^5c/h^3}$	
2	+1	GM/c^3 2		$\sqrt{GM^2R^2/hc^3}$		MR^2/h 7		$\sqrt{M^2R^6c^3/Gh^3}$
M = 1	+1/2	25	$\sqrt{GMR/c^4}$ 26		$\sqrt{MR^3/hc}$ 6		$\sqrt{MR^5c^2/Gh^2}$	
	0	$\sqrt{Gh/c^5}$ 0	$\sqrt[4]{G\hbar R^2/c^7}$ 23	R/c 1	21	$\sqrt{R^4c/Gh}$ 16	22	R^3c^2/Gh 12
-1	-1/2		$\sqrt{Rh/Mc^3}$		$\sqrt{R^3/GM}$ 3		$\sqrt{R^5c^3/G^2Mh}$	
-2	-1	h/Mc^2 4	15	$\sqrt{R^2h/GM^2c}$		R^2c/GM 10		$\sqrt{R^6c^5/G^3M^2h}$
-3	-3/2		$\sqrt{Rh^2/GM^3c^2}$		$\sqrt{R^3hc/G^2M^3}$		$\sqrt{R^5c^4/G^3M^3}$ 28	
-4	-2	$\sqrt{h^3/GM^4c^3}$ 20		Rh/GM^2 5		$\sqrt{R^4hc^3/G^3M^4}$		R^3c^3/G^2M^2 18
-5	-5/2		$\sqrt{Rh^3/G^2M^5c}$		$\sqrt{R^3h^2c^2/G^3M^5}$		$\sqrt{R^5hc^5/G^4M^5}$	$\sqrt[4]{R^{12}\hbar c^{13}/G^9M^{10}}$ 29
-6	-3	h^2/GM^3c		$\sqrt{R^2h^3c/G^3M^6}$		R^2hc^2/G^2M^3		$\sqrt{R^6hc^7/G^5M^6}$

(-8) $19 = \hbar^2 Rc/G^2M^4$

$30 = \sqrt[4]{\frac{R^{14}\hbar c^{17}}{G^{11}M^{12}}}$ → 30

Notation: In the above table h is used for ħ, the Planck constant / 2π .

As frequencies, ∃ EXISTENCE 19 ⟷ THIS MATRIX

A "particle" is a matrix of frequencies

Certain symmetries are required for existence

2 = Compton = $\frac{\hbar}{Mc^2}$ 4, T = Schwarzschild = $\frac{GM}{c^3}$ 2, τ = Kepler = $\sqrt{\frac{R^3}{GM}}$ 3

NETS

DIMENSIONAL MATRICES

$\alpha^n \mu^n$ Tables

T - TABLES B, E, D, R, U... [β(B, E, D, R, U)]
common frequencies

$\gamma^n = \left(\frac{T}{t_0}\right)^m$ tables

OTHER I's and organization of Parameter

$A_{n+2} = 10(A_{n+1} - A_n)$ w α, μ, S

MEASUREMENTS:
DIMENSIONALITY
UNITS
VALUE - Intra-dimensional relation

Fractals? to Archimedes' Tub

DIMENSIONALITY: SYSTEMS

Inter-Dimensional relations

I L, M, T 3 fold with powers Verbal System NEWTON

II c, G, ħ 3 fold with power - Planck System

IV e_0^n with c, G, ħ - Electron-Volt System

V α^n, μ^m 2 fold with given exponents - Used for dimensionality and magnitude

VI "1-fold" systems - ARCHIMEDES' TUB

VII BEYOND PHYSICS' L, M, T

UNIT SYSTEMS: SI, cgs, Planck, electron-volt

Angular Dimensionalities

Angular velocity : $H = r \times mv$ vector product

$H = \omega M r^2$ $|r| \cdot |Mv| \cdot \sin\theta$ ~~$\cos\theta$~~

Angular ~~momentum~~ velocity $\omega = \frac{v}{R}$ $[\frac{1}{T}]$

degrees/sec rad/sec $\frac{\text{cycles}}{\text{sec}}$ $\nu = \frac{1}{T}$ $v = \frac{R}{T}$

$1 \text{ cycle/sec} = \frac{2\pi R}{\text{sec}} = 2\pi\nu$

alpha mu table #3

n horizontal , m vertical

m and ~~n~~ of same sign [actualy of opposite sign since α is − and μ is +]

α^{n}, μ^{m}

Meas { $a := -2.136835$ $m := 0, 1 .. 17$

$b := 3.263909$ $n := 0, 1 .. ~~16~~\ 25$

$K_{m,n} := n \cdot a + m \cdot b$

α

μ

K =

	0	+ 1	+ 2	+ 3	+ 4	+ 5
0	0	-2.136835	-4.27367	-6.410505	-8.54734	-10.684175
+ 1	3.263909	1.127074	-1.009761	-3.146596	-5.283431	-7.420266
+ 2	6.527818	4.390983	2.254148	0.117313	-2.019522	-4.156357
3	9.791727	7.654892	5.518057	3.381222	1.244387	-0.892448
4	13.055636	10.918801	8.781966	6.645131	4.508296	2.371461
5	16.319545	14.18271	12.045875	9.90904	7.772205	5.63537
6	19.583454	17.446619	15.309784	13.172949	11.036114	8.899279
7	22.847363	20.710528	18.573693	16.436858	14.300023	12.163188
8	26.111272	23.974437	21.837602	19.700767	17.563932	15.427097
9	29.375181	27.238346	25.101511	22.964676	20.827841	18.691006
10	32.63909	30.502255	28.36542	26.228585	24.09175	21.954915
11	35.902999	33.766164	31.629329	29.492494	27.355659	25.218824
12	39.166908	37.030073	34.893238	32.756403	30.619568	28.482733
13	42.430817	40.293982	38.157147	36.020312	33.883477	31.746642
14	45.694726	43.557891	41.421056	39.284221	37.147386	35.010551
15	48.958635	46.8218	44.684965	42.54813	40.411295	38.27446
16	52.222544	50.085709	47.948874	45.812039	43.675204	41.538369
+ 17	55.486453	53.349618	51.212783	49.075948	46.939113	44.802278

alpha mu table #3

n horizontal , m vertical

$a := -2.136835$ $m := 0, 1 .. 18$

$\alpha^n \mu^m$

$b := 3.263909$ $n := 0, 1 ..$ ~~16~~ 25

$K_{m,n} := n \cdot a + m \cdot b$

α

μ

K =

	+5	+6	+7	+8	+9	+10
0	-10.684175	-12.82101	-14.957845	-17.09468	-19.231515	-21.36835
+ 1	-7.420266	-9.557101	-11.693936	-13.830771	-15.967606	-18.104441
+ 2	-4.156357	-6.293192	-8.430027	-10.566862	-12.703697	-14.840532
3	-0.892448	-3.029283	-5.166118	-7.302953	-9.439788	-11.576623
4	2.371461	0.234626	-1.902209	-4.039044	-6.175879	-8.312714
5	5.63537	3.498535	1.3617	-0.775135	-2.91197	-5.048805
6	8.899279	6.762444	4.625609	2.488774	0.351939	-1.784896
7	12.163188	10.026353	7.889518	5.752683	3.615848	1.479013
8	15.427097	13.290262	11.153427	9.016592	6.879757	4.742922
9	18.691006	16.554171	14.417336	12.280501	10.143666	8.006831
10	21.954915	19.81808	17.681245	15.54441	13.407575	11.27074
11	25.218824	23.081989	20.945154	18.808319	16.671484	14.534649
12	28.482733	26.345898	24.209063	22.072228	19.935393	17.798558
13	31.746642	29.609807	27.472972	25.336137	23.199302	21.062467
14	35.010551	32.873716	30.736881	28.600046	26.463211	24.326376
15	38.27446	36.137625	34.00079	31.863955	29.72712	27.590285
16	41.538369	39.401534	37.264699	35.127864	32.991029	30.854194
17	44.802278	42.665443	40.528608	38.391773	36.254938	34.118103
+ 18	48.066187	45.929352	43.792517	41.655682	39.518847	37.382012

alpha mu table #3

n horizontal , m vertical

a := -2.136835 m := 0, 1 .. 18

b := 3.263909 n := 0, 1 .. ~~16~~ 25 $\alpha^{n} \cdot \mu^{m}$

$K_{m,n} := n \cdot a + m \cdot b$

α

μ

K =

	+10	+ 11	+ 12	+ 13	+ 14	+ 15
0	-21.36835	-23.505185	-25.64202	-27.778855	-29.91569	-32.052525
+ 1	-18.104441	-20.241276	-22.378111	-24.514946	-26.651781	-28.788616
+ 2	-14.840532	-16.977367	-19.114202	-21.251037	-23.387872	-25.524707
3	-11.576623	-13.713458	-15.850293	-17.987128	-20.123963	-22.260798
4	-8.312714	-10.449549	-12.586384	-14.723219	-16.860054	-18.996889
5	-5.048805	-7.18564	-9.322475	-11.45931	-13.596145	-15.73298
6	-1.784896	-3.921731	-6.058566	-8.195401	-10.332236	-12.469071
7	1.479013	-0.657822	-2.794657	-4.931492	-7.068327	-9.205162
8	4.742922	2.606087	0.469252	-1.667583	-3.804418	-5.941253
9	8.006831	5.869996	3.733161	1.596326	-0.540509	-2.677344
10	11.27074	9.133905	6.99707	4.860235	2.7234	0.586565
11	14.534649	12.397814	10.260979	8.124144	5.987309	3.850474
12	17.798558	15.661723	13.524888	11.388053	9.251218	7.114383
13	21.062467	18.925632	16.788797	14.651962	12.515127	10.378292
14	24.326376	22.189541	20.052706	17.915871	15.779036	13.642201
15	27.590285	25.45345	23.316615	21.17978	19.042945	16.90611
16	30.854194	28.717359	26.580524	24.443689	22.306854	20.170019
17	34.118103	31.981268	29.844433	27.707598	25.570763	23.433928
18	37.382012	35.245177	33.108342	30.971507	28.834672	26.697837

$(\alpha \mu 5)^{1/2} = \alpha^{-11} \mu^{-1}$

$\left(\frac{\alpha \mu}{5}\right)^{1/2} = \alpha^{12} \mu^{2}$

alpha mu table #3

n horizontal , m vertical

$a := -2.136835$ $m := 0, 1 .. 18$

$b := 3.263909$ $n := 0, 1 .. 25$

$\alpha^n \mu^m$

$K_{m,n} := n \cdot a + m \cdot b$

α

μ

K =

	+ 15	+ 16	+ 17	+ 18	+ 19	+ 20
0	-32.052525	-34.18936	-36.326195	-38.46303	-40.599865	-42.7367
+ 1	-28.788616	-30.925451	-33.062286	-35.199121	-37.335956	-39.472791
+ 2	-25.524707	-27.661542	-29.798377	-31.935212	-34.072047	-36.208882
3	-22.260798	-24.397633	-26.534468	-28.671303	-30.808138	-32.944973
4	-18.996889	-21.133724	-23.270559	-25.407394	-27.544229	-29.681064
5	-15.73298	-17.869815	-20.00665	-22.143485	-24.28032	-26.417155
6	-12.469071	-14.605906	-16.742741	-18.879576	-21.016411	-23.153246
7	-9.205162	-11.341997	-13.478832	-15.615667	-17.752502	-19.889337
8	-5.941253	-8.078088	-10.214923	-12.351758	-14.488593	-16.625428
9	-2.677344	-4.814179	-6.951014	-9.087849	-11.224684	-13.361519
10	0.586565	-1.55027	-3.687105	-5.82394	-7.960775	-10.09761
11	3.850474	1.713639	-0.423196	-2.560031	-4.696866	-6.833701
12	7.114383	4.977548	2.840713	0.703878	-1.432957	-3.569792
13	10.378292	8.241457	6.104622	3.967787	1.830952	-0.305883
14	13.642201	11.505366	9.368531	7.231696	5.094861	2.958026
15	16.90611	14.769275	12.63244	10.495605	8.35877	6.221935
16	20.170019	18.033184	15.896349	13.759514	11.622679	9.485844
17	23.433928	21.297093	19.160258	17.023423	14.886588	12.749753
18	26.697837	24.561002	22.424167	20.287332	18.150497	16.013662

alpha mu table #3

n horizontal , m vertical

$a := -2.136835$ $m := 0, 1 .. 18$

$b := 3.263909$ $n := 0, 1 .. 25$

$\alpha^n \mu^m$

$K_{m,n} := n \cdot a + m \cdot b$

α

K =

μ

	+ 20	+ 21	+ 22	+ 23	+ 24	+ 25
0	-42.7367	-44.873535	-47.01037	-49.147205	-51.28404	-53.420875
+ 1	-39.472791	-41.609626	-43.746461	-45.883296	-48.020131	-50.156966
+ 2	-36.208882	-38.345717	-40.482552	-42.619387	-44.756222	-46.893057
3	-32.944973	-35.081808	-37.218643	-39.355478	-41.492313	-43.629148
4	-29.681064	-31.817899	-33.954734	-36.091569	-38.228404	-40.365239
5	-26.417155	-28.55399	-30.690825	-32.82766	-34.964495	-37.10133
6	-23.153246	-25.290081	-27.426916	-29.563751	-31.700586	-33.837421
7	-19.889337	-22.026172	-24.163007	-26.299842	-28.436677	-30.573512
8	-16.625428	-18.762263	-20.899098	-23.035933	-25.172768	-27.309603
9	-13.361519	-15.498354	-17.635189	-19.772024	-21.908859	-24.045694
10	-10.09761	-12.234445	-14.37128	-16.508115	-18.64495	-20.781785
11	-6.833701	-8.970536	-11.107371	-13.244206	-15.381041	-17.517876
12	-3.569792	-5.706627	-7.843462	-9.980297	-12.117132	-14.253967
13	-0.305883	-2.442718	-4.579553	-6.716388	-8.853223	-10.990058
14	2.958026	0.821191	-1.315644	-3.452479	-5.589314	-7.726149
15	6.221935	4.0851	1.948265	-0.18857	-2.325405	-4.46224
16	9.485844	7.349009	5.212174	3.075339	0.938504	-1.198331
17	12.749753	10.612918	8.476083	6.339248	4.202413	2.065578
18	16.013662	13.876827	11.739992	9.603157	7.466322	5.329487

$\alpha^{-23} \mu^{-3} = S$

$\alpha^{-22} \mu^{-2} = \alpha \mu S$

$\alpha^{-24} \mu^{-4} = \frac{S}{\alpha \mu}$

alpha mu table #3

n horizontal , m vertical

$a := -2.136835$ $n := 0, 1 .. 35$

$b := 3.263909$ $m := 0, 1 .. 17$

$K_{m,n} := n \cdot a + m \cdot b$

K =

	25	26	27	28	29	30
0	-53.420875	-55.55771	-57.694545	-59.83138	-61.968215	-64.10505
1	-50.156966	-52.293801	-54.430636	-56.567471	-58.704306	-60.841141
2	-46.893057	-49.029892	-51.166727	-53.303562	-55.440397	-57.577232
3	-43.629148	-45.765983	-47.902818	-50.039653	-52.176488	-54.313323
4	-40.365239	-42.502074	-44.638909	-46.775744	-48.912579	-51.049414
5	-37.10133	-39.238165	-41.375	-43.511835	-45.64867	-47.785505
6	-33.837421	-35.974256	-38.111091	-40.247926	-42.384761	-44.521596
7	-30.573512	-32.710347	-34.847182	-36.984017	-39.120852	-41.257687
8	-27.309603	-29.446438	-31.583273	-33.720108	-35.856943	-37.993778
9	-24.045694	-26.182529	-28.319364	-30.456199	-32.593034	-34.729869
10	-20.781785	-22.91862	-25.055455	-27.19229	-29.329125	-31.46596
11	-17.517876	-19.654711	-21.791546	-23.928381	-26.065216	-28.202051
12	-14.253967	-16.390802	-18.527637	-20.664472	-22.801307	-24.938142
13	-10.990058	-13.126893	-15.263728	-17.400563	-19.537398	-21.674233
14	-7.726149	-9.862984	-11.999819	-14.136654	-16.273489	-18.410324
15	-4.46224	-6.599075	-8.73591	-10.872745	-13.00958	-15.146415
16	-1.198331	-3.335166	-5.472001	-7.608836	-9.745671	-11.882506
17	2.065578	-0.071257	-2.208092	-4.344927	-6.481762	-8.618597

alpha mu table #3

n horizontal , m vertical

$a := -2.136835$ $n := 0, 1 .. 35$

$b := 3.263909$ $m := 0, 1 .. 17$

$K_{m,n} := n \cdot a + m \cdot b$

K =

	30	31	32	33	34	35
0	-64.10505	-66.241885	-68.37872	-70.515555	-72.65239	-74.789225
1	-60.841141	-62.977976	-65.114811	-67.251646	-69.388481	-71.525316
2	-57.577232	-59.714067	-61.850902	-63.987737	-66.124572	-68.261407
3	-54.313323	-56.450158	-58.586993	-60.723828	-62.860663	-64.997498
4	-51.049414	-53.186249	-55.323084	-57.459919	-59.596754	-61.733589
5	-47.785505	-49.92234	-52.059175	-54.19601	-56.332845	-58.46968
6	-44.521596	-46.658431	-48.795266	-50.932101	-53.068936	-55.205771
7	-41.257687	-43.394522	-45.531357	-47.668192	-49.805027	-51.941862
8	-37.993778	-40.130613	-42.267448	-44.404283	-46.541118	-48.677953
9	-34.729869	-36.866704	-39.003539	-41.140374	-43.277209	-45.414044
10	-31.46596	-33.602795	-35.73963	-37.876465	-40.0133	-42.150135
11	-28.202051	-30.338886	-32.475721	-34.612556	-36.749391	-38.886226
12	-24.938142	-27.074977	-29.211812	-31.348647	-33.485482	-35.622317
13	-21.674233	-23.811068	-25.947903	-28.084738	-30.221573	-32.358408
14	-18.410324	-20.547159	-22.683994	-24.820829	-26.957664	-29.094499
15	-15.146415	-17.28325	-19.420085	-21.55692	-23.693755	-25.83059
16	-11.882506	-14.019341	-16.156176	-18.293011	-20.429846	-22.566681
17	-8.618597	-10.755432	-12.892267	-15.029102	-17.165937	-19.302772

$\alpha^{-33} \mu^{-3} = (\alpha \mu S)^{3/2}$

Powers of

α

finestru

n := 1, 2.. 19

a := -2.13683467

A(n) := n·a

n =	A(n) =		A(n + 18) =		A(n + 36) =
1	-2.13683467	19	-40.59985873	37	-79.06288279
2	-4.27366934		-42.7366934		-81.19971746
3	-6.41050401		-44.87352807		-83.33655213
4	-8.54733868		-47.01036274		-85.4733868
5	-10.68417335	23	-49.14719741		-87.61022147
6	-12.82100802		-51.28403208		-89.74705614
7	-14.95784269		-53.42086675		-91.88389081
8	-17.09467736		-55.55770142		-94.02072548
9	-19.23151203		-57.69453609		-96.15756015
10	-21.3683467		-59.83137076		-98.29439482
11	-23.50518137		-61.96820543		-100.43122949
12	-25.64201604		-64.1050401		-102.56806416
13	-27.77885071		-66.24187477		-104.70489883
14	-29.91568538		-68.37870944		-106.8417335
15	-32.05252005		-70.51554411		-108.97856817
16	-34.18935472		-72.65237878		-111.11540284
17	-36.32618939		-74.78921345		-113.25223751
18	-38.46302406		-76.92604812		-115.38907218
19	-40.59985873	37	-79.06288279		-117.52590685

powers of

$\alpha\mu$

length mass

$n := 1, 2 .. 19$

$b := 1.12707412$

$B(n) := n \cdot b$

n =	B(n) =		B(n + 18) =		B(n + 36) =
1	1.12707412		21.41440828	37	41.70174244
2	2.25414824	20	22.5414824		42.82881656
3	3.38122236		23.66855652		43.95589068
4	4.50829648		24.79563064		45.0829648
5	5.6353706		25.92270476		46.21003892
6	6.76244472		27.04977888		47.33711304
7	7.88951884		28.176853		48.46418716
8	9.01659296		29.30392712		49.59126128
9	10.14366708		30.43100124		50.7183354
10	11.2707412		31.55807536		51.84540952
11	12.39781532		32.68514948		52.97248364
12	13.52488944		33.8122236		54.09955776
13	14.65196356		34.93929772		55.22663188
14	15.77903768		36.06637184		56.353706
15	16.9061118		37.19344596		57.48078012
16	18.03318592		38.32052008		58.60785424
17	19.16026004	35	39.4475942		59.73492836
18	20.28733416		40.57466832		60.86200248
19	21.41440828		41.70174244		61.9890766

powers of

M

profelec

n := 1,2 .. 19

m := 3.26390879

M(n) := n·m

n =	M(n) =	M(n + 18) =	M(n + 36) =
1	3.26390879	62.01426701	120.76462523
2	6.52781758	65.2781758	124.02853402
3	9.79172637	68.54208459	127.29244281
4	13.05563516	71.80599338	130.5563516
5	16.31954395	75.06990217	133.82026039
6	19.58345274	78.33381096	137.08416918
7	22.84736153	81.59771975	140.34807797
8	26.11127032	84.86162854	143.61198676
9	29.37517911	88.12553733	146.87589555
10	32.6390879	91.38944612	150.13980434
11	35.90299669	94.65335491	153.40371313
12	39.16690548	97.9172637	156.66762192
13	42.43081427	101.18117249	159.93153071
14	45.69472306	104.44508128	163.1954395
15	48.95863185	107.70899007	166.45934829
16	52.22254064	110.97289886	169.72325708
17	55.48644943	114.23680765	172.98716587
18	58.75035822	117.50071644	176.25107466
19	62.01426701	120.76462523	179.51498345

alpha mu table #1

n horizontal , m vertical

$a := -1.068418$ $n := 0, 1 .. 25$ $\sqrt{\alpha}$ ~~w~~ μ

$b := 3.263909$ $m := 0, 1 .. 17$ μ

$K_{m,n} := n \cdot a + m \cdot b$

1/2 α=1 2

K =

	0	1	2	3	4	5	6
0	0	-1.068418	-2.136836	-3.205254	-4.273672	-5.34209	-6.410508
1	3.263909	2.195491	1.127073	0.058655	-1.009763	-2.078181	-3.146599
2	6.527818	5.4594	4.390982	3.322564	2.254146	1.185728	0.11731
3	9.791727	8.723309	7.654891	6.586473	5.518055	4.449637	3.381219
4	13.055636	11.987218	10.9188	9.850382	8.781964	7.713546	6.645128
5	16.319545	15.251127	14.182709	13.114291	12.045873	10.977455	9.909037
6	19.583454	18.515036	17.446618	16.3782	15.309782	14.241364	13.172946
7	22.847363	21.778945	20.710527	19.642109	18.573691	17.505273	16.436855
8	26.111272	25.042854	23.974436	22.906018	21.8376	20.769182	19.700764
9	29.375181	28.306763	27.238345	26.169927	25.101509	24.033091	22.964673
10	32.63909	31.570672	30.502254	29.433836	28.365418	27.297	26.228582
11	35.902999	34.834581	33.766163	32.697745	31.629327	30.560909	29.492491
12	39.166908	38.09849	37.030072	35.961654	34.893236	33.824818	32.7564
13	42.430817	41.362399	40.293981	39.225563	38.157145	37.088727	36.020309
14	45.694726	44.626308	43.55789	42.489472	41.421054	40.352636	39.284218
15	48.958635	47.890217	46.821799	45.753381	44.684963	43.616545	42.548127
16	52.222544	51.154126	50.085708	49.01729	47.948872	46.880454	45.812036
17	55.486453	54.418035	53.349617	52.281199	51.212781	50.144363	49.075945

alpha mu table #1

n horizontal , m vertical

$a := -1.068418$ $n := 0, 1 .. 25$

$\sqrt{\alpha}$ w μ

$b := 3.263909$ $m := 0, 1 .. 17$

$K_{m,n} := n \cdot a + m \cdot b$

K =

	6	7	8	9	10	11	12
0	-6.410508	-7.478926	-8.547344	-9.615762	-10.68418	-11.752598	-12.821016
1	-3.146599	-4.215017	-5.283435	-6.351853	-7.420271	-8.488689	-9.557107
2	0.11731	-0.951108	-2.019526	-3.087944	-4.156362	-5.22478	-6.293198
3	3.381219	2.312801	1.244383	0.175965	-0.892453	-1.960871	-3.029289
4	6.645128	5.57671	4.508292	3.439874	2.371456	1.303038	0.23462
5	9.909037	8.840619	7.772201	6.703783	5.635365	4.566947	3.498529
6	13.172946	12.104528	11.03611	9.967692	8.899274	7.830856	6.762438
7	16.436855	15.368437	14.300019	13.231601	12.163183	11.094765	10.026347
8	19.700764	18.632346	17.563928	16.49551	15.427092	14.358674	13.290256
9	22.964673	21.896255	20.827837	19.759419	18.691001	17.622583	16.554165
10	26.228582	25.160164	24.091746	23.023328	21.95491	20.886492	19.818074
11	29.492491	28.424073	27.355655	26.287237	25.218819	24.150401	23.081983
12	32.7564	31.687982	30.619564	29.551146	28.482728	27.41431	26.345892
13	36.020309	34.951891	33.883473	32.815055	31.746637	30.678219	29.609801
14	39.284218	38.2158	37.147382	36.078964	35.010546	33.942128	32.87371
15	42.548127	41.479709	40.411291	39.342873	38.274455	37.206037	36.137619
16	45.812036	44.743618	43.6752	42.606782	41.538364	40.469946	39.401528
17	49.075945	48.007527	46.939109	45.870691	44.802273	43.733855	42.665437

alpha mu table #1

n horizontal , m vertical

$a := -1.068418$ $n := 0, 1 .. 25$

$b := 3.263909$ $m := 0, 1 .. 17$

$K_{m,n} := n \cdot a + m \cdot b$

n = 6 7 8

K =

	12	13	14	15	16	17	18
0	-12.821016	-13.889434	-14.957852	-16.02627	-17.094688	-18.163106	-19.231524
1	-9.557107	-10.625525	-11.693943	-12.762361	-13.830779	-14.899197	-15.967615
2	-6.293198	-7.361616	-8.430034	-9.498452	-10.56687	-11.635288	-12.703706
3	-3.029289	-4.097707	-5.166125	-6.234543	-7.302961	-8.371379	-9.439797
4	0.23462	-0.833798	-1.902216	-2.970634	-4.039052	-5.10747	-6.175888
5	3.498529	2.430111	1.361693	0.293275	-0.775143	-1.843561	-2.911979
6	6.762438	5.69402	4.625602	3.557184	2.488766	1.420348	0.35193
7	10.026347	8.957929	7.889511	6.821093	5.752675	4.684257	3.615839
8	13.290256	12.221838	11.15342	10.085002	9.016584	7.948166	6.879748
9	16.554165	15.485747	14.417329	13.348911	12.280493	11.212075	10.143657
10	19.818074	18.749656	17.681238	16.61282	15.544402	14.475984	13.407566
11	23.081983	22.013565	20.945147	19.876729	18.808311	17.739893	16.671475
12	26.345892	25.277474	24.209056	23.140638	22.07222	21.003802	19.935384
13	29.609801	28.541383	27.472965	26.404547	25.336129	24.267711	23.199293
14	32.87371	31.805292	30.736874	29.668456	28.600038	27.53162	26.463202
15	36.137619	35.069201	34.000783	32.932365	31.863947	30.795529	29.727111
16	39.401528	38.33311	37.264692	36.196274	35.127856	34.059438	32.99102
17	42.665437	41.597019	40.528601	39.460183	38.391765	37.323347	36.254929

alpha mu table #1

n horizontal , m vertical

$a := -1.068418$ $n := 0, 1 .. 25$

$b := 3.263909$ $m := 0, 1 .. 17$

$K_{m,n} := n \cdot a + m \cdot b$

α = 12

K =

	18	19	20	21	22	23	24
0	-19.231524	-20.299942	-21.36836	-22.436778	-23.505196	-24.573614	-25.642032
1	-15.967615	-17.036033	-18.104451	-19.172869	-20.241287	-21.309705	-22.378123
2	-12.703706	-13.772124	-14.840542	-15.90896	-16.977378	-18.045796	-19.114214
3	-9.439797	-10.508215	-11.576633	-12.645051	-13.713469	-14.781887	-15.850305
4	-6.175888	-7.244306	-8.312724	-9.381142	-10.44956	-11.517978	-12.586396
5	-2.911979	-3.980397	-5.048815	-6.117233	-7.185651	-8.254069	-9.322487
6	0.35193	-0.716488	-1.784906	-2.853324	-3.921742	-4.99016	-6.058578
7	3.615839	2.547421	1.479003	0.410585	-0.657833	-1.726251	-2.794669
8	6.879748	5.81133	4.742912	3.674494	2.606076	1.537658	0.46924
9	10.143657	9.075239	8.006821	6.938403	5.869985	4.801567	3.733149
10	13.407566	12.339148	11.27073	10.202312	9.133894	8.065476	6.997058
11	16.671475	15.603057	14.534639	13.466221	12.397803	11.329385	10.260967
12	19.935384	18.866966	17.798548	16.73013	15.661712	14.593294	13.524876
13	23.199293	22.130875	21.062457	19.994039	18.925621	17.857203	16.788785
14	26.463202	25.394784	24.326366	23.257948	22.18953	21.121112	20.052694
15	29.727111	28.658693	27.590275	26.521857	25.453439	24.385021	23.316603
16	32.99102	31.922602	30.854184	29.785766	28.717348	27.64893	26.580512
17	36.254929	35.186511	34.118093	33.049675	31.981257	30.912839	29.844421

S = Φ, dμ = Ψ

Values of Φ = 39.355880 and Ψ = 1.127074

redo with new S = 39.355471

√5 ≐ a := 19.677940 b := 0.563537 ≐ √dμ

n := 1, 2.. 16

n =	n·a =	n·a + b =	n·a + 2·b =	n·a + 3·b =	n·a − b =
1	19.67794	20.241477	20.805014	21.368551	19.114403
2	39.35588	39.919417	40.482954	41.046491	38.792343
3	59.03382	59.597357	60.160894	60.724431	58.470283
4	78.71176	79.275297	79.838834	80.402371	78.148223
5	98.3897	98.953237	99.516774	100.080311	97.826163
6	118.06764	118.631177	119.194714	119.758251	117.504103
7	137.74558	138.309117	138.872654	139.436191	137.182043
8	157.42352	157.987057	158.550594	159.114131	156.859983
9	177.10146	177.664997	178.228534	178.792071	176.537923
10	196.7794	197.342937	197.906474	198.470011	196.215863
11	216.45734	217.020877	217.584414	218.147951	215.893803
12	236.13528	236.698817	237.262354	237.825891	235.571743
13	255.81322	256.376757	256.940294	257.503831	255.249683
14	275.49116	276.054697	276.618234	277.181771	274.927623
15	295.1691	295.732637	296.296174	296.859711	294.605563
16	314.84704	315.410577	315.974114	316.537651	314.283503

Values of Φ = 39.355880 and Ψ = 1.127074

$a := 19.677940 \qquad b := 0.563537$

$n := -1, -2 .. -16$

n =	n·a =	n·a + b =	n·a + 2·b =	n·a + 3·b =	n·a − b =
-1	-19.67794	-19.114403	-18.550866	-17.987329	-20.241477
-2	-39.35588	-38.792343	-38.228806	-37.665269	-39.919417
-3	-59.03382	-58.470283	-57.906746	-57.343209	-59.597357
-4	-78.71176	-78.148223	-77.584686	-77.021149	-79.275297
-5	-98.3897	-97.826163	-97.262626	-96.699089	-98.953237
-6	-118.06764	-117.504103	-116.940566	-116.377029	-118.631177
-7	-137.74558	-137.182043	-136.618506	-136.054969	-138.309117
-8	-157.42352	-156.859983	-156.296446	-155.732909	-157.987057
-9	-177.10146	-176.537923	-175.974386	-175.410849	-177.664997
-10	-196.7794	-196.215863	-195.652326	-195.088789	-197.342937
-11	-216.45734	-215.893803	-215.330266	-214.766729	-217.020877
-12	-236.13528	-235.571743	-235.008206	-234.444669	-236.698817
-13	-255.81322	-255.249683	-254.686146	-254.122609	-256.376757
-14	-275.49116	-274.927623	-274.364086	-273.800549	-276.054697
-15	-295.1691	-294.605563	-294.042026	-293.478489	-295.732637
-16	-314.84704	-314.283503	-313.719966	-313.156429	-315.410577

Values of Φ = 39.364917 and Ψ = 1.1270167

$a := 19.682458$ $\quad b := 0.5635084$

$n := 1, 2 .. 16$

$n =$	$n \cdot a =$	$n \cdot a + b =$	$n \cdot a + 2 \cdot b =$	$n \cdot a + 3 \cdot b =$	$n \cdot a - b =$
1	19.682458	20.2459664	20.8094748	21.3729832	19.1189496
2	39.364916	39.9284244	40.4919328	41.0554412	38.8014076
3	59.047374	59.6108824	60.1743908	60.7378992	58.4838656
4	78.729832	79.2933404	79.8568488	80.4203572	78.1663236
5	98.41229	98.9757984	99.5393068	100.1028152	97.8487816
6	118.094748	118.6582564	119.2217648	119.7852732	117.5312396
7	137.777206	138.3407144	138.9042228	139.4677312	137.2136976
8	157.459664	158.0231724	158.5866808	159.1501892	156.8961556
9	177.142122	177.7056304	178.2691388	178.8326472	176.5786136
10	196.82458	197.3880884	197.9515968	198.5151052	196.2610716
11	216.507038	217.0705464	217.6340548	218.1975632	215.9435296
12	236.189496	236.7530044	237.3165128	237.8800212	235.6259876
13	255.871954	256.4354624	256.9989708	257.5624792	255.3084456
14	275.554412	276.1179204	276.6814288	277.2449372	274.9909036
15	295.23687	295.8003784	296.3638868	296.9273952	294.6733616
16	314.919328	315.4828364	316.0463448	316.6098532	314.3558196

Values of Φ = 39.364917 and Ψ = 1.1270167

$a := 19.682458 \qquad b := 0.5635084$

$n := -1, -2 .. -16$

n =	n·a =	n·a + b =	n·a + 2·b =	n·a + 3·b =	n·a − b =
-1	-19.682458	-19.1189496	-18.5554412	-17.9919328	-20.2459664
-2	-39.364916	-38.8014076	-38.2378992	-37.6743908	-39.9284244
-3	-59.047374	-58.4838656	-57.9203572	-57.3568488	-59.6108824
-4	-78.729832	-78.1663236	-77.6028152	-77.0393068	-79.2933404
-5	-98.41229	-97.8487816	-97.2852732	-96.7217648	-98.9757984
-6	-118.094748	-117.5312396	-116.9677312	-116.4042228	-118.6582564
-7	-137.777206	-137.2136976	-136.6501892	-136.0866808	-138.3407144
-8	-157.459664	-156.8961556	-156.3326472	-155.7691388	-158.0231724
-9	-177.142122	-176.5786136	-176.0151052	-175.4515968	-177.7056304
-10	-196.82458	-196.2610716	-195.6975632	-195.1340548	-197.3880884
-11	-216.507038	-215.9435296	-215.3800212	-214.8165128	-217.0705464
-12	-236.189496	-235.6259876	-235.0624792	-234.4989708	-236.7530044
-13	-255.871954	-255.3084456	-254.7449372	-254.1814288	-256.4354624
-14	-275.554412	-274.9909036	-274.4273952	-273.8638868	-276.1179204
-15	-295.23687	-294.6733616	-294.1098532	-293.5463448	-295.8003784
-16	-314.919328	-314.3558196	-313.7923112	-313.2288028	-315.4828364

G–c table GCTABLE.MCD 07/08/01

~~alpha-mu~~ G-c table #1

n horizontal , m vertical

a := 10.476821 n := 0, 1 .. 7

b := −3.587651 m := 0, 1 .. 8

c vs G/2 $\log_{10}$ (cgs)

$K_{m,n} := n \cdot a + m \cdot b$

$c^n \sqrt{G}^m$

K =

		c	c²	c³	c⁴	c⁵	c⁶	c⁷
	0	10.476821	20.953642	31.430463	41.907284	52.384105	62.860926	73.33774
$\sqrt{G}$	-3.587651	6.88917	17.365991	27.842812	38.319633	48.796454	59.273275	69.75009
G	-7.175302	3.301519	13.77834	24.255161	34.731982	45.208803	55.685624	66.16244
	-10.762953	-0.286132	10.190689	20.66751	31.144331	41.621152	52.097973	62.57479
G^2	-14.350604	-3.873783	6.603038	17.079859	27.55668	38.033501	48.510322	58.98714
	-17.938255	-7.461434	3.015387	13.492208	23.969029	34.44585	44.922671	55.39949
G^3	-21.525906	-11.049085	-0.572264	9.904557	20.381378	30.858199	41.33502	51.81184
	-25.113557	-14.636736	-4.159915	6.316906	16.793727	27.270548	37.747369	48.2241
G^4	-28.701208	-18.224387	-7.747566	2.729255	13.206076	23.682897	34.159718	44.63653

$c^n / \sqrt{G}^m$

$J_{m,n} := n \cdot a - m \cdot b$

J =

		c	c²	c³	c⁴	c⁵	c⁶	c⁷
	0	10.476821	20.953642	31.430463	41.907284	52.384105	62.860926	73.337747
$G^{-\frac{1}{2}}$	3.587651	14.064472	24.541293	35.018114	45.494935	55.971756	66.448577	76.925398
G^{-1}	7.175302	17.652123	28.128944	38.605765	49.082586	59.559407	70.036228	80.51304
	10.762953	21.239774	31.716595	42.193416	52.670237	63.147058	73.623879	84.1007
G^{-2}	14.350604	24.827425	35.304246	45.781067	56.257888	66.734709	77.21153	87.688351
	17.938255	28.415076	38.891897	49.368718	59.845539	70.32236	80.799181	91.276002
G^{-3}	21.525906	32.002727	42.479548	52.956369	63.43319	73.910011	84.386832	94.863653
	25.113557	35.590378	46.067199	56.54402	67.020841	77.497662	87.974483	98.451304
G^{-4}	28.701208	39.178029	49.65485	60.131671	70.608492	81.085313	91.562134	102.03895

$$\frac{c^n}{\sqrt{G}^m}$$

$-3.587651 \cdot 2$

G − 7.175302

G--c table GCTABLE2.MCD 07/08/01 -7.175302

G-c table #2

n horizontal , m vertical

$c \approx$ $a := 10.476821$ $n := 0, 1 .. 15$

$\sqrt{G} \approx$ $b := -3.587651$ $m := 0, 1 .. 16$

c vs G/2

$K_{m,n} := n \cdot a - m \cdot b$

		0	1 (c)	2 (c^2)	3 (c^3)	4	5
	0	0	10.476821	20.953642	31.430463	41.907284	52.384105
	1	3.587651	14.064472	24.541293	35.018114	45.494935	55.971756
G^{-1}	2	7.175302	17.652123	28.128944	38.605765	49.082586	59.559407
	3	10.762953	21.239774	31.716595	42.193416	52.670237	63.147058
G^{-3}	4	14.350604	24.827425	35.304246	45.781067	56.257888	66.734709
	5	17.938255	28.415076	38.891897	49.368718	59.845539	70.32236
G^{-3}	6	21.525906	32.002727	42.479548	52.956369	63.43319	73.910011
K =	7	25.113557	35.590378	46.067199	56.54402	67.020841	77.497662
	8	28.701208	39.178029	49.65485	60.131671	70.608492	81.085313
	9	32.288859	42.76568	53.242501	63.719322	74.196143	84.672964
	10	35.87651	46.353331	56.830152	67.306973	77.783794	88.260615
	11	39.464161	49.940982	60.417803	70.894624	81.371445	91.848266
	12	43.051812	53.528633	64.005454	74.482275	84.959096	95.435917
	13	46.639463	57.116284	67.593105	78.069926	88.546747	99.023568
	14	50.227114	60.703935	71.180756	81.657577	92.134398	102.611219
	15	53.814765	64.291586	74.768407	85.245228	95.722049	106.19887
	16	57.402416	67.879237	78.356058	88.832879	99.3097	109.786521

G--c table GCTABLE2.MCD 07/08/01

G-c table #2

n horizontal , m vertical

$a := 10.476821$ $n := 0, 1 .. 15$

$b := -3.587651$ $m := 0, 1 .. 16$

c vs G/2.

$K_{m,n} := n \cdot a - m \cdot b$

c^6 c^7

K =

	5	6	7	8	9	10
0	52.384105	62.860926	73.337747	83.814568	94.291389	104.76821
1	55.971756	66.448577	76.925398	87.402219	97.87904	108.355861
2	59.559407	70.036228	80.513049	90.98987	101.466691	111.943512
3	63.147058	73.623879	84.1007	94.577521	105.054342	115.531163
4	66.734709	77.21153	87.688351	98.165172	108.641993	119.118814
5	70.32236	80.799181	91.276002	101.752823	112.229644	122.706465
6	73.910011	84.386832	94.863653	105.340474	115.817295	126.294116
7	77.497662	87.974483	98.451304	108.928125	119.404946	129.881767
8	81.085313	91.562134	102.038955	112.515776	122.992597	133.469418
9	84.672964	95.149785	105.626606	116.103427	126.580248	137.057069
10	88.260615	98.737436	109.214257	119.691078	130.167899	140.64472
11	91.848266	102.325087	112.801908	123.278729	133.75555	144.232371
12	95.435917	105.912738	116.389559	126.86638	137.343201	147.820022
13	99.023568	109.500389	119.97721	130.454031	140.930852	151.407673
14	102.611219	113.08804	123.564861	134.041682	144.518503	154.995324
15	106.19887	116.675691	127.152512	137.629333	148.106154	158.582975
16	109.786521	120.263342	130.740163	141.216984	151.693805	162.170626

Handwritten beside rows 1, 2, 4, 6: $G^{-1/2}$, G^{-1}, G^{-2}, G^{-3}

G–c table GCTABLE2.MCD 07/08/01

G-c table #2

n horizontal , m vertical

$a := 10.476821$ $n := 0, 1 .. 15$

c vs G/2

$b := -3.587651$ $m := 0, 1 .. 16$

$K_{m,n} := n \cdot a - m \cdot b$

K =

	10	11	12	13	14	15
0	104.76821	115.245031	125.721852	136.198673	146.675494	157.152315
1	108.355861	118.832682	129.309503	139.786324	150.263145	160.739966
2	111.943512	122.420333	132.897154	143.373975	153.850796	164.327617
3	115.531163	126.007984	136.484805	146.961626	157.438447	167.915268
4	119.118814	129.595635	140.072456	150.549277	161.026098	171.502919
5	122.706465	133.183286	143.660107	154.136928	164.613749	175.09057
6	126.294116	136.770937	147.247758	157.724579	168.2014	178.678221
7	129.881767	140.358588	150.835409	161.31223	171.789051	182.265872
8	133.469418	143.946239	154.42306	164.899881	175.376702	185.853523
9	137.057069	147.53389	158.010711	168.487532	178.964353	189.441174
10	140.64472	151.121541	161.598362	172.075183	182.552004	193.028825
11	144.232371	154.709192	165.186013	175.662834	186.139655	196.616476
12	147.820022	158.296843	168.773664	179.250485	189.727306	200.204127
13	151.407673	161.884494	172.361315	182.838136	193.314957	203.791778
14	154.995324	165.472145	175.948966	186.425787	196.902608	207.379429
15	158.582975	169.059796	179.536617	190.013438	200.490259	210.96708
16	162.170626	172.647447	183.124268	193.601089	204.07791	214.554731

Alpha - Mu's ~ beat frequencies

Galaxies -33 -3 $M \neq 0$?

Put -33, -3 at $M=0, R=2$

DIRECTION OF ↑ INCREASE

	B	D	☆	U
V |	6,1 ↑		12,2 ↓	18,3 ↓
H —	$\frac{11}{2}, \frac{1}{2}$ ←		11,1 ←	$\frac{33}{2}, \frac{3}{2}$ ←
/	$\frac{1}{2}, \frac{1}{2}$ ↗		233 ↙	$\frac{59}{2}, \frac{9}{2}$ ↙
\	$\frac{13}{2}, \frac{3}{2}$ ↖		1,1 ↘	$\frac{3}{2}, \frac{3}{2}$ ↘

Find all cases of

$$A \cdot B = t_0^3 = \frac{G\hbar}{c^5}$$

$$\frac{A}{B} = (\alpha\mu S)^n \qquad n = \frac{1}{2} \cdots \frac{1}{4} ?$$

for $n = 3/2$ U A = 17.455662
B = −103.991944

$n = 1$ A
A −2.785614
B −83.750718

17.455662
− 2.785614
20.241276
141.670048

FREQUENCIES TABLE

$T = T(c, G, \hbar, M, R)$

									3
8 G^2M^2/c^5R				13 $GRM^2/c^2\hbar$				14 $cM^2R^3/\hbar^2$	2
	27 $(G^3M^3/Rc^8)^{1/2}$								
		2 GM/c^3				7 $MR^2/\hbar$			1
		25 $(M^2G^3\hbar/c^{11})^{1/4}$	26 $(RMG/c^4)^{1/2}$		6 $(MR^3/\hbar c)^{1/2}$				
9 $\hbar G/c^4R$	24 $(\hbar^3G^3/R^2c^{13})^{1/4}$	~~$(\hbar G/c^5)^{1/3}$~~	23 $(R^2\hbar G/c^7)^{1/4}$	1 R/c 1	21 $(R^6/\hbar Gc)^{1/4}$	16 $(cR^4/G\hbar)^{1/2}$	22 $(R^{10}c^5/\hbar^3G^3)^{1/4}$	12 $c^2R^3/G\hbar$	0 M
			15 $(\hbar R/c^3M)^{1/2}$		3 $(R^3/GM)^{1/2}$				
17 $(\hbar^3G/c^7M^2R^3)^{1/2}$		4 $\hbar/c^2M$				10 cR^2/GM			-1
							28 $(R^5c^4/G^3M^3)^{1/2}$		
11 $\hbar^2/c^3RM^2$		20 $(\hbar^3/c^3GM^4)^{1/2}$		5 $\hbar^2R/GM^3$				18 c^3R^3/G^2M^2	-2
								29 $(R^{12}\hbar B^{13}/M^{10}G^9)^{1/4}$	
									-3 30 A
				19 $\hbar^2Rc/G^2M^4$					-4
-1		0		1		2		3	

R 1

29 $B = (R^{12}\hbar c^{13}/M^{10}G^{9})^{1/4}$ 30 $A = \left(\dfrac{R^{14}\hbar c^{17}}{G^{11}M^{12}}\right)^{1/4}$

WILL-O-THE-WISPS

23 3 S
33 3 H_0 VN
22 2 ☆

Symmetries of ☆ and V about S

23 3 × 33 3

759 9 69 99

750 30

÷ 25

768 168
Δ 600
÷ 24

÷ 4.5714286

23 3 × 22 2

506 6 46 66

500 20

= 25

512 112
8^3
Δ 400
÷ 16

= ÷ 4.5714286 = $\frac{32}{7}$

4.5714286 × 7 = 32,000..
~~× 8~~

~~= 36.5714286~~

$\frac{32}{25}$ = 1.28

$\frac{1.128}{7}$ = 0.1828571
e 2.7182818

5.46875

COMMON FREQUENCIES

α^u, μ^v

M = +14.451802 (→ HUBBLE)

COORDINATES

	cgs	Planck	α μ	u − v	u + v	M H R (x y)	M B R (x y)	M ☆ R (x y)	M U R (x y)
A ☆	17.455662	$(\alpha\mu)^{3/2}S^{3/2}$	−33 −3	−30 $^{-1}$	−36 ^{3}	0 ~~2~~ +3	0 +3	0 +3/2	0 +1 (✓)
	20.836884	$(\alpha\mu)^{9/2}S^{3/2}$	−30 0	−30 $^{-1}$	−30 $\frac{5}{2}$	~~03~~	+3 +6	$-\frac{3}{2}$ +3	~~0~~ 1 +2
	74.798268	S^3	−69 −9	−60 $^{-2}$	−78 $\frac{13}{2}$		−3 +3	$+\frac{3}{2}$ +3/2	+1 +1
	78.179490	$(\alpha\mu)^3S^3$	−66 −6	−60 $^{-2}$	−72 ^{6}		0 +6	0 +3	0 +2 (✓)
	138.903318	$(\alpha\mu)^{9/2}S^{9/2}$	−99 −9	−90 $^{-3}$	−108 ^{9}		0 +9	0 +9/2	0 +3 (✓)
	57.342606	$(\alpha\mu)^{-3/2}S^{3/2}$	−36 −6	−30	−42		−3 0	1,5 0	1 0
	−57.342606	$(\alpha\mu)^{3/2}S^{-3/2}$	+36 +6	+30	+42		+3 0	−1,5 0	−1 0
B ☆	−1Ø3.991994	$(\alpha\mu)^{-3/2}S^{-3/2}$	+33 +3	+30	+36		0 −3	0 $-\frac{3}{2}$	0 −1
	−83.750718	$(\alpha\mu)^{-1}S^{-1}$	22 2	20	24				
	103.469571	$(\alpha\mu)^{-3/4}S^{15/4}$	−87, −12	−75	−99		$-\frac{9}{2}$ +3		$\frac{3}{2}$ 1
	46.126965	$(\alpha\mu)^{3/4}S^{9/4}$	−51, −6	−45	−57	$+\frac{3}{2}$ +3	$-\frac{3}{2}$ +3		$\frac{1}{2}$ 1
	−2.785614	$(\alpha\mu)S$	−22, −2	−22	−20	0 +2	0 +2	0 +1	
						$+\frac{1}{2}$	$-\frac{1}{2}$	+1	$+\frac{3}{2}$

Common to B ☆ U $(u-v) = n \cdot 30$
B U $(u-v) = n \cdot 15$
B ☆ $(u+v) = n \cdot 20$?

$A + B = (\alpha\mu S)^3$

$A - B = t_0^2$

BA[illegible]YON
Tim Planck Units

#14

→ B MATRIX1.WPD

2003 #7

					S^{-1}		$S^{-\frac{1}{2}}$	$S^{-\frac{1}{4}}$	
				S^{-1}		$S^{-\frac{1}{2}}$		$(\alpha\mu)^3$	(3)
			S^{-1}		$S^{-\frac{1}{2}}$		$(\alpha\mu)^{5/2}$	$S^{1/4}$	
$(\alpha\mu)^{1/2} S^{-3/2}$		$(\alpha\mu)\ S^{-1}$		$(\alpha\mu)^{3/2} S^{-\frac{1}{2}}$		$(\alpha\mu)^2$		$S^{1/2}(\alpha\mu)^{5/2}$	(2) $^{1/2}$ #14^2 OK
$(\alpha\mu)^{1/4} S^{-5/4}$	$(\alpha\mu)^{1/2} S^{-1}$		$(\alpha\mu)\ S^{-\frac{1}{2}}$		$(\alpha\mu)^{3/2}$		$(\alpha\mu)^2\ S^{1/2}$	$S^{3/4}$	
S^{-1}	~~$(\alpha\mu)^{1/4} S^{-3/4}$~~	$(\alpha\mu)^{1/2} S)^{-1/2}$	$(\alpha\mu)^{3/4} S^{-\frac{1}{4}}$	$(\alpha\mu)$		$\alpha^{-10} = (\alpha\mu)^{3/2} S^{\frac{1}{2}}$		S	(1)
	$S^{-\frac{1}{2}}$	$(\alpha\mu)^{1/4} S^{-\frac{1}{4}}$	$(\alpha\mu)^{1/2}$		$(\alpha\mu)\ S^{1/2}$	$S^{3/4}$	S		
$(\alpha\mu S)^{-\frac{1}{2}}$	$(\alpha\mu S)^{-1/4}$	//////////	$(\alpha\mu S)^{1/4}$	$(\alpha\mu S)^{1/2}$	$(\alpha\mu S)^{3/4}$	$(\alpha\mu)S$	$(\alpha\mu S)^{5/4}$	$(\alpha\mu S)^{3/2}$	(0) M
$S^{-\frac{1}{4}}$	$(\alpha\mu)^{-\frac{1}{2}}$	$(\alpha\mu)^{-1/4} S^{\frac{1}{4}}$	$S^{1/2}$	$(\alpha\mu)^{\frac{1}{4}} S^{3/4}$	$(\alpha\mu)^{1/2} S$		$(\alpha\mu)\ S^{3/2}$		
$(\alpha\mu)^{-1}$		$(\alpha\mu)^{-1/2} S^{1/2}$	$(\alpha\mu)^{-\frac{1}{4}} S^{3/4}$	S		$(\alpha\mu)^{1/2} S^{3/2}$		$(\alpha\mu)\ S^2$	(−1)
	$S^{\frac{1}{2}}$		$(\alpha\mu)^{-\frac{1}{2}}\ S$		$S^{3/2}$		$S^2\ (\alpha\mu)^{1/2}$		
$(\alpha\mu)^{-3/2} S^{\frac{1}{2}}$		$(\alpha\mu)^{-1}\ S$		$(\alpha\mu)^{-\frac{1}{2}}\ S^{3/2}$		S^2		$S^{5/2}\ (\alpha\mu)^{\frac{1}{2}}$	(−2)
	S		$S^{3/2}$		$(\alpha\mu)^{-\frac{1}{2}}\ S^2$		$S^{\frac{5}{2}}$	$S^{11/4}(\alpha\mu)^{1/4}$	
S		$S^{3/2}$		S^2		$S^{\frac{5}{2}}$		S^3	(−3) $S^{13/4}(\alpha\mu)^{1/4}$
	$S^{3/2}$		S^2		$S^{\frac{5}{2}}$		S^3		
$S^{\frac{3}{2}}$		S^2		$(\alpha\mu)^{-3/2} S^{5/2}$		S^3		$S^{7/2}$	(−4)
−1		0		1		2		3	

R

S^x constant /
$(\alpha\mu)^x$ constant \

2003 #7

BMATRIX1.WPD

THE BARYON MATRIX

This matrix is derived from the TIME MATRIX, [T] = 1, by substituting the value of the proton mass, m_p = -23.776602 for M, and the value of the electron radius, r_e = -12.550068, for R. The table gives the values in Planck units. All entries are dimensionless quantities. To convert to time in seconds multiply entries by the Planck time, t_o = –43.268366. S is the ratio of coulomb force to gravitation at the baryon level, = 39.355880. α is the fine structure constant = –2.136835. μ is the ratio of proton mass to electron mass = 3.263909 All quantities are given as $\log_{10}$ values.

M

	-0.5	0	0.5	1	1.5	2	2.5	3
3		$(\alpha\mu/ S)^{3/2}$		$(\alpha\mu)^2 / S$		$(\alpha\mu)^{5/2} / S^{1/2}$		$(\alpha\mu)^3$
2.5	$\alpha\mu / S^{3/2}$		$(\alpha\mu)^{3/2} / S$		$(\alpha\mu)^2 / S^{1/2}$		$(\alpha\mu)^{5/2}$	
2		$\alpha\mu/ S$		$(\alpha\mu)^{3/2} / S^{1/2}$		$(\alpha\mu)^2$		$S^{1/2} (\alpha\mu)^{5/2}$
1.5	$(\alpha\mu)^{3/2} / S$		$\alpha\mu / S^{1/2}$		$(\alpha\mu)^{3/2}$		$S^{1/2} (\alpha\mu)^2$	
1		$(\alpha\mu/ S)^{1/2}$		$\alpha\mu$		$S^{1/2} (\alpha\mu)^{3/2}$		$S (\alpha\mu)^2$
0.5	$1/ S^{1/2}$		$(\alpha\mu)^{1/2}$		$S^{1/2} \alpha\mu$		$S (\alpha\mu)^{3/2}$	
0		1	$(S \alpha\mu)^{1/4}$	$(S \alpha\mu)^{1/2}$	$(S \alpha\mu)^{3/4}$	$S \alpha\mu$	$(S \alpha\mu)^{5/4}$	$(S \alpha\mu)^{3/2}$
-0.5	$1/ (\alpha\mu)^{1/2}$		$S^{1/2}$		$S (\alpha\mu)^{1/2}$		$S^{3/2} \alpha\mu$	
-1		$(S / \alpha\mu)^{1/2}$		S		$S^{3/2} (\alpha\mu)^{1/2}$		$S^2 \alpha\mu$
-1/5	$S^{1/2} / \alpha\mu$		$S / (\alpha\mu)^{1/2}$		$S^{3/2}$		$S^2 (\alpha\mu)^{1/2}$	
-2		$S / \alpha\mu$		$S^{3/2} / (\alpha\mu)^{1/2}$		S^2		$S^{5/2} (\alpha\mu)^{1/2}$
-2.5	$S / (\alpha\mu)^{3/2}$		$S^{3/2} / \alpha\mu$		$S^2 / (\alpha\mu)^{1/2}$		$S^{5/2}$	
-3		$(S / \alpha\mu)^{3/2}$		$S^2 / \alpha\mu$		$S^{5/2} / (\alpha\mu)^{1/2}$		S^3

R

$\left(\frac{S}{\alpha\mu}\right)^{1/4}$ $\sqrt{\alpha\mu}$ $\sqrt{S}$ $(S\alpha\mu)^{1/4}$

$M^x \quad R^y$

$\alpha^u \quad \mu^v$

BARYONS

$T = \alpha^{-} \mu^{-} t_0$

$10(x-y) = u - v$

$14x - 12y = u + v$

$u = 12x - 11y$

$v = 2x - y$

$10x = 11v - u$

$5y = 6v - u$

-1			R=0			1			2			3		
~~+53~~	+8		+42	+7		+31	+6		+20	+5		+9	+4	
~~+47~~	+7		+36	+6		+25	+5		+14	+4		+3	+3	+3
~~+41~~	+6		+30	+5		+19	+4		+8	+3		-3	+2	
+35	+5		+24	+4		+13	+3		+2	+2		-9	+1	+2
+29	+4		+18	+3		+7	+2		-4	+1		-15	0	
+23	+3		+12	+2		+1	+1		-10	0		-21	-1	+1
+17	+2		+6	+1		-5	0		-16	-1		-27	-2	
+11	+1	+5.5	0 ■	0	-5.5	-11	-1	-16.5	-22 ☆	-2	-28.5	-33 ■ ☆	-3	0 M
+5	0		-6	-1	-11.5	-17	-2		-28	-3		-39	-4	
-1	-1		-12	-2		-23	-3		-34	-4		-45	-5	-1
-7	-2		-18	-3		-29	-4		-40	-5		-51 ■	-6	
-13	-3		-24	-4		-35	-5		-46	-6		-57	-7	-2
-19	-4		-30	-5		-41	-6		-52	-7		-63	-8	
-25	-5		-36	-6		-47	-7		-58	-8		-69 ■ ☆	-9	-3
-31	-6		-42	-7		-53	-8		-64	-9		-75	-10	
-37	-7		-48	-8		-59	-9		-70	-10		-81	-11	-4

-1   0 R   +1   +2   +3 ■

-87   -12

M

R +4   +2

-20   0

0.5   11.5 $\frac{23}{2}$ 6   1   0.5   1.5   ☆ ☆   ■ U

$\frac{5.5}{\frac{11}{2}}$ $\frac{1}{2}$

$5 / (u - v)$

BARYON 10 x 14

$\alpha^x \mu^y$

	-1		K=0		+1		+2		+3	
+2	35, 5 8		24, 4		13, 3 13		+2, 2		-9, 1 14	
	29, 4	$\frac{47}{2}, \frac{7}{2}$ 27	18, 3		7, 2		-4, 1		-15, 0	
+1	23, 3		12, 2 2		1, 1		-10, 0 7		-21, -1	
	17, 2		6, 1 25	$\frac{1}{2}, \frac{1}{2}$ 26	-5, 0	$-\frac{21}{2}, -\frac{1}{2}$ 6	-16, -1		-27, -2	
M=0	11, 1 9	$\frac{11}{2}, \frac{1}{2}$ 24	0, 0 0	$-\frac{11}{2}, -\frac{1}{2}$ 23	-11, -1 1	$-\frac{33}{2}, -\frac{3}{2}$ 21	-22, -2 16	$-\frac{55}{2}, -\frac{5}{2}$ 22	-33, -3 12	$-\frac{77}{2}, -\frac{7}{2}$
	5, 0		-6, -1	$-\frac{23}{2}, -\frac{3}{2}$ 15	-17, -2	$-\frac{45}{2}, -\frac{5}{2}$ 3	-28, -3		-39, -4	
-1	-1, -1 17		-12, -2 4		-23, -3		-34, -4 10		-45, -5	
	-7, -2		-18, -3		-29, -4		-40, -5	$-\frac{91}{2}, -\frac{11}{2}$ 28	-51, -6	
-2	-13, -3 11		-24, -4 20		-35, -5 5		-46, -6		-57, -7 18	
	-19, -4		-30, -5		-41, -6		-52, -7		-63, -8 29	
-3	-25, -5		-36, -6		-47, -7		-58, -8		-69, -9	$-\frac{149}{2}, -\frac{19}{2}$ 30
	-31, -6		-42, -7		-53, -8		-64, -9		-75, -10	
	-37, -7		-48, -8		-59, -9 19		-70, -10		-81, -11	
	-43, -8		-54, -9							

$\rightarrow$ $\frac{11}{2}, \frac{1}{2}$

$\uparrow$ 6, 1

/ $\frac{1}{2}, \frac{1}{2}$

\ $\frac{23}{2}, \frac{3}{2}$ $= 5\frac{1}{2}$

BASFREQB.MCD

BARYON

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := .5$ $y := .5$ $z := -0.5$ $u := .5$ $v := .5$ $w := .5$

$M := m + x\cdot\alpha + y\cdot\mu + z\cdot S$ $R := l + u\cdot\alpha + v\cdot\mu + w\cdot S$

$M = -23.776602$ $R = -12.550069$

$t_0 := 0.5\cdot(G + h - 5\cdot c)$ $t_0 = -43.268166$

$t_1 := R - c$	$t_1 = -23.02689$	$p_1 := t_1 - t_0$	$p_1 = 20.241276$	$\alpha^{-11}, \mu^{-1} = (\alpha\mu)^{1/2} S^{1/2}$
$t_2 := G + M - 3\cdot c$	$t_2 = -62.382368$	$p_2 := t_2 - t_0$	$p_2 = -19.114202$	$\alpha^{12}, \mu^{2} = (\alpha\mu)^{1/2} S^{-1/2}$
$t_3 := 0.5\cdot(3\cdot R - G - M)$	$t_3 = -3.349151$	$p_3 := t_3 - t_0$	$p_3 = 39.919015$	$\alpha^{-\frac{45}{2}}, \mu^{-5/2} = (\alpha\mu)^{1/2} S$
$t_4 := h - (M + 2\cdot c)$	$t_4 = -24.153964$	$p_4 := t_4 - t_0$	$p_4 = 19.114202$	$\alpha^{-12}, \mu^{-2} = (\alpha\mu)^{-1/2} S^{1/2}$
$t_5 := (h + R) - (G + 2\cdot M)$	$t_5 = 15.201514$	$p_5 := t_5 - t_0$	$p_5 = 58.46968$	$\alpha^{-35}, \mu^{-5} = (\alpha\mu)^{-1/2} S^{3/2}$
$t_6 := 0.5\cdot(M + 3\cdot R - h - c)$	$t_6 = -22.463353$	$p_6 := t_6 - t_0$	$p_6 = 20.804813$	$\alpha^{-\frac{21}{2}} \mu^{-\frac{1}{2}} = (\alpha\mu) S^{1/2}$
$t_7 := M + 2\cdot R - h$	$t_7 = -21.899816$	$p_7 := t_7 - t_0$	$p_7 = 21.36835$	$\alpha^{-10} = (\alpha\mu)^{3/2} S^{1/2}$
$t_8 := 2\cdot G + 2\cdot M - R - 5\cdot c$	$t_8 = -101.737846$	$p_8 := t_8 - t_0$	$p_8 = -58.46968$	$\alpha^{35}, \mu^{5} = (\alpha\mu)^{1/2} S^{-3/2}$

$t_9 := G + h - R - 4 \cdot c$	$t_9 = -63.509442$	$p_9 := t_9 - t_0$	$p_9 = -20.241276$	$\alpha^{11}, \mu^{1} = (\alpha\mu)^{-1/2} S^{-1/2}$
$t_{10} := 2 \cdot R + c - G - M$	$t_{10} = 16.328588$	$p_{10} := t_{10} - t_0$	$p_{10} = 59.596754$	$\alpha^{-34} \mu^{-4} = (\alpha\mu)^{1/2} S^{3/2}$
$t_{11} := 2 \cdot h - R - 2 \cdot M - 3 \cdot c$	$t_{11} = -25.281038$	$p_{11} := t_{11} - t_0$	$p_{11} = 17.987128$	$\alpha^{-13} \mu^{-3} = (\alpha\mu)^{-3/2} S^{1/2}$
$t_{12} := 3 \cdot R + 2 \cdot c - G - h$	$t_{12} = 17.455662$	$p_{12} := t_{12} - t_0$	$p_{12} = 60.723828$	$\alpha^{-33} \mu^{-3} = (\alpha\mu)^{3/2} S^{3/2}$
$t_{13} := G + 2 \cdot M + R - 2 \cdot c - h$	$t_{13} = -61.255294$	$p_{13} := t_{13} - t_0$	$p_{13} = -17.987128$	$\alpha^{13} \mu^{3} = (\alpha\mu)^{3/2} S^{-1/2}$
$t_{14} := c + 2 \cdot M + 3 \cdot R - 2 \cdot h$	$t_{14} = -20.772742$	$p_{14} := t_{14} - t_0$	$p_{14} = 22.495424$	$\alpha^{-9} \mu^{1} = (\alpha\mu)^{5/2} S^{1/2}$
$t_{15} := 0.5 \cdot (h + R - 3 \cdot c - M)$	$t_{15} = -23.590427$	$p_{15} := t_{15} - t_0$	$p_{15} = 19.677739$	$\alpha^{-\frac{23}{2}} \mu^{-\frac{3}{2}} = S^{1/2}$
$t_{16} := 0.5 \cdot (c + 4 \cdot R - G - h)$	$t_{16} = -2.785614$	$p_{16} := t_{16} - t_0$	$p_{16} = 40.482552$	$\alpha^{-22} \mu^{-2} = (\alpha\mu) S$
$t_{17} := 0.5 \cdot (3 \cdot h + G - 7 \cdot c - 2 \cdot M - 2 \cdot R)$	$t_{17} = -44.39524$	$p_{17} := t_{17} - t_0$	$p_{17} = -1.127074$	$\alpha^{-1} \mu^{-1} = (\alpha\mu)^{-1}$
$t_{18} := 3 \cdot c + 3 \cdot R - 2 \cdot G - 2 \cdot M$	$t_{18} = 55.684066$	$p_{18} := t_{18} - t_0$	$p_{18} = 98.952232$	$\alpha^{-57} \mu^{-7} = (\alpha\mu)^{1/2} S^{5/2}$
$t_{19} := 2 \cdot h + R + c - 2 \cdot G - 4 \cdot M$	$t_{19} = 53.429918$	$p_{19} := t_{19} - t_0$	$p_{19} = 96.698084$	$\alpha^{-59} \mu^{-9} = (\alpha\mu)^{-3/2} S^{5/2}$
$t_{20} := 0.5 \cdot (3 \cdot h - 3 \cdot c - G - 4 \cdot M)$	$t_{20} = -5.039762$	$p_{20} := t_{20} - t_0$	$p_{20} = 38.228404$	$\alpha^{-24} \mu^{-4} = (\alpha\mu)^{-1} S$
$t_{21} := 0.25 \cdot (6 \cdot R - h - G - c)$	$t_{21} = -12.906252$	$p_{21} := t_{21} - t_0$	$p_{21} = 30.361914$	$\alpha^{-\frac{33}{2}} \mu^{-\frac{3}{2}} = (\alpha\mu)^{3/4} S^{3/4}$

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$	$t_{22} = 7.335024$	$p_{22} := t_{22} - t_0$	$p_{22} = 50.60319$	$\alpha^{-\frac{55}{2}}\mu^{-\frac{5}{2}} = (\alpha\mu)^{5/4} S^{5/4}$
$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$	$t_{23} = -33.147528$	$p_{23} := t_{23} - t_0$	$p_{23} = 10.120638$	$\alpha^{-\frac{11}{2}}\mu^{-\frac{1}{2}} = (\alpha\mu)^{1/4} S^{1/4}$
$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$	$t_{24} = -53.388804$	$p_{24} := t_{24} - t_0$	$p_{24} = -10.120638$	$\alpha^{\frac{11}{2}}\mu^{\frac{1}{2}} = (\alpha\mu)^{-\frac{1}{4}} S^{-1/4}$
$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$	$t_{25} = -52.825267$	$p_{25} := t_{25} - t_0$	$p_{25} = -9.557101$	$\alpha^{+6}\mu^{+1} = (\alpha\mu)^{\frac{1}{4}} S^{-\frac{1}{4}}$
$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$	$t_{26} = -42.704629$	$p_{26} := t_{26} - t_0$	$p_{26} = 0.563537$	$\alpha^{1/2}\mu^{1/2} = (\alpha\mu)^{1/2}$
$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$	$t_{27} = -82.060107$	$p_{27} := t_{27} - t_0$	$p_{27} = -38.791941$	$\alpha^{\frac{47}{2}}\mu^{\frac{7}{2}} = (\alpha\mu)^{1/2} S^{-1}$
$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$	$t_{28} = 36.006327$	$p_{28} := t_{28} - t_0$	$p_{28} = 79.274493$	$\alpha^{-\frac{91}{2}}\mu^{-\frac{11}{2}} = (\alpha\mu)^{\frac{1}{2}} S^{2}$
$t_{29} := 0.25\cdot(12\cdot R + h + 13\cdot c - 10\cdot M - 9\cdot G)$	$t_{29} = 65.241167$	$p_{29} := t_{29} - t_0$	$p_{29} = 108.509333$	$\alpha^{-63}\mu^{-8} = (\alpha\mu)^{1/4} S^{11/4}$
$t_{30} := 0.25\cdot(14\cdot R + h + 17\cdot c - 12\cdot M - 11\cdot G)$	$t_{30} = 84.918906$	$p_{30} := t_{30} - t_0$	$p_{30} = 128.187072$	$\alpha^{-\frac{149}{2}}\mu^{-\frac{19}{2}} = (\alpha\mu)^{1/4} S^{13/4}$

FREQUENCY TABLE
DARK MATTER
PLANCK UNITS

$M = 14.451802$

									M
								S^3	3
							$S^{5/2}$		
$(\alpha\mu)^{-3/2} S^{1/2}$		$(\alpha\mu)^{-1} S$				S^2			2
	$(\alpha\mu)^{-1} S^{1/2}$		S		$S^{3/2}$				
		$(\alpha\mu)^{-1/2} S^{1/2}$		S		$S^{3/2}$			1
			$S^{1/2}$	$(\alpha\mu)^{1/4} S^{3/4}$	$(\alpha\mu)^{1/2} S$	$(\alpha\mu)^{3/4} S^{5/4}$			
$(\alpha\mu S)^{-1/2}$	$(\alpha\mu S)^{-1/4}$		$(\alpha\mu S)^{1/4}$	$(\alpha\mu S)^{1/2}$	$(\alpha\mu S)^{3/4}$	$\alpha\mu S$	$(\alpha\mu S)^{5/4}$	$(\alpha\mu S)^{3/2}$	0
	$S^{-1/2}$		$(\alpha\mu)^{1/2}$	$(\alpha\mu)^{3/4} S^{1/4}$	$\alpha\mu\ S^{1/2}$		$(\alpha\mu)^{3/2} S$		
S^{-1}		$(\alpha\mu)^{1/2} S^{-1/2}$	$(\alpha\mu)^{3/4} S^{-1/4}$	$(\alpha\mu)$	$(\alpha\mu)^{5/4} S^{1/4}$	$(\alpha\mu)^{3/2} S^{1/2}$		$(\alpha\mu)^2 S$	−1
			$(\alpha\mu) S^{-1/2}$		$(\alpha\mu)^{3/2}$		$(\alpha\mu)^2 S^{1/2}$		
		$(\alpha\mu) S^{-1}$				$(\alpha\mu)^2$		$(\alpha\mu)^{5/2} S^{1/2}$	−2
							$(\alpha\mu)^{5/2}$		
								$(\alpha\mu)^3$	−3
									−4
−1		0		1		2		3	

R

$\left(\frac{S}{\alpha\mu}\right)^{1/4}$ $\sqrt{S}$ /   \ $\sqrt{\alpha\mu}$ $\overline{(\alpha\mu S)^{1/4}}$

DARK MATTER

$M = 14.451802$ $T = \alpha^{-} \mu^{-} t_0$

-25 -5									+3
	$-\frac{49}{2}$ $-\frac{9}{2}$								
		-24 -4							+2
			$-\frac{47}{2}$ $-\frac{7}{2}$						
				-23 -3					+1
				-17 -2	$-\frac{45}{2}$ $-\frac{5}{2}$				
+11 +1				-11 -1	$-\frac{33}{2}$ $-\frac{3}{2}$	-22 -2		-33 -3	0 M
				-5 0			$-\frac{43}{2}$ $-\frac{3}{2}$		
								-21 -1	-1
		+24 +4							-2
									-3
									-4
-1		0		1		2		3	

R

The D Table

is = the B Table symmetric about M=0

52EM3

freq01 Dark

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := -.5$ $y := -.5$ $z := 0.5$ $u := .5$ $v := .5$ $w := .5$

$M := m + x\cdot\alpha + y\cdot\mu + z\cdot S$ $R := l + u\cdot\alpha + v\cdot\mu + w\cdot S$

$\left(\frac{S}{\alpha\mu}\right)^{1/2} m_G =$ $M = 14.451802$ $R = -12.550069$

$t_1 := R - c$ $t_1 = -23.02689$

$t_2 := G + M - 3\cdot c$ $t_2 = -24.153964$

$t_3 := 0.5\cdot(3\cdot R - G - M)$ $t_3 = -22.463353$

$t_4 := h - (M + 2\cdot c)$ $t_4 = -62.382368$

$t_5 := (h + R) - (G + 2\cdot M)$ $t_5 = -61.255294$

$t_6 := 0.5\cdot(M + 3\cdot R - h - c)$ $t_6 = -3.349151$

$t_7 := M + 2\cdot R - h$ $t_7 = 16.328588$

$t_8 := 2\cdot G + 2\cdot M - R - 5\cdot c$ $t_8 = -25.281038$

$t_9 := G + h - R - 4\cdot c$ $t_9 = -63.509442$

$t_{10} := 2\cdot R + c - G - M$ $t_{10} = -21.899816$

$t_{11} := 2\cdot h - R - 2\cdot M - 3\cdot c$ $t_{11} = -101.737846$

$t_{12} := 3\cdot R + 2\cdot c - G - h$ $t_{12} = 17.455662$

$t_{13} := G + 2\cdot M + R - 2\cdot c - h$ $\quad t_{13} = 15.201514$

$t_{14} := c + 2\cdot M + 3\cdot R - 2\cdot h$ $\quad t_{14} = 55.684066$

$t_{15} := 0.5\cdot(h + R - 3\cdot c - M)$ $\quad t_{15} = -42.704629$

$t_{16} := 0.5\cdot(c + 4\cdot R - G - h)$ $\quad t_{16} = -2.785614$

$t_{17} := 0.5\cdot(3\cdot h + G - 7\cdot c - 2\cdot M - 2\cdot R)$ $\quad t_{17} = -82.623644$

$t_{18} := 3\cdot c + 3\cdot R - 2\cdot G - 2\cdot M$ $\quad t_{18} = -20.772742$

$t_{19} := 2\cdot h + R + c - 2\cdot G - 4\cdot M$ $\quad t_{19} = -99.483698$

$t_{20} := 0.5\cdot(3\cdot h - 3\cdot c - G - 4\cdot M)$ $\quad t_{20} = -81.49657$

$t_{21} := 0.25\cdot(6\cdot R - h - G - c)$ $\quad t_{21} = -12.906252$

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$ $\quad t_{22} = 7.335024$

$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$ $\quad t_{23} = -33.147528$

$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$ $\quad t_{24} = -53.388804$

$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$ $\quad t_{25} = -33.711065$

$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$ $\quad t_{26} = -23.590427$

$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$ $\quad t_{27} = -24.717501$

$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$ $\quad t_{28} = -21.336279$

freq01dart   Dark matter

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := -.5$ $y := -.5$ $z := 0.5$ $u := .5$ $v := .5$ $w := .5$

$M := m + x\cdot\alpha + y\cdot\mu + z\cdot S$ $R := l + u\cdot\alpha + v\cdot\mu + w\cdot S$

$M = 14.451802$ $p := -43.268166$ $R = -12.550069$

$t_1 := R - c - p$ $t_1 = 20.241276$

$t_2 := (G + M) - 3\cdot c - p$ $t_2 = 19.114202$

$t_3 := 0.5\cdot(3\cdot R - G - M) - p$ $t_3 = 20.804813$

$t_4 := h - (M + 2\cdot c) - p$ $t_4 = -19.114202$

$t_5 := (h + R) - (G + 2\cdot M) - p$ $t_5 = -17.987128$

$t_6 := 0.5\cdot(M + 3\cdot R - h - c) - p$ $t_6 = 39.919015$

$t_7 := M + 2\cdot R - h - p$ $t_7 = 59.596754$

$t_8 := 2\cdot G + 2\cdot M - R - 5\cdot c - p$ $t_8 = 17.987128$

$t_9 := G + h - R - 4\cdot c - p$ $t_9 = -20.241276$

$t_{10} := 2\cdot R + c - G - M - p$ $t_{10} = 21.36835$

$t_{11} := 2\cdot h - R - 2\cdot M - 3\cdot c - p$ $t_{11} = -58.46968$

$t_{12} := 3\cdot R + 2\cdot c - G - h - p$ $t_{12} = 60.723828$

freqdart page 2

$t_{13} := G + 2 \cdot M + R - 2 \cdot c - h - p$ $\quad t_{13} = 58.46968$

$t_{14} := c + 2 \cdot M + 3 \cdot R - 2 \cdot h - p$ $\quad t_{14} = 98.952232$

$t_{15} := 0.5 \cdot (h + R - 3 \cdot c - M) - p$ $\quad t_{15} = 0.563537$

$t_{16} := 0.5 \cdot (c + 4 \cdot R - G - h) - p$ $\quad t_{16} = 40.482552$

$t_{17} := 0.5 \cdot (3 \cdot h + G - 7 \cdot c - 2 \cdot M - 2 \cdot R) - p$ $\quad t_{17} = -39.355478$

$t_{18} := 3 \cdot c + 3 \cdot R - 2 \cdot G - 2 \cdot M - p$ $\quad t_{18} = 22.495424$

$t_{19} := 2 \cdot h + R + c - 2 \cdot G - 4 \cdot M - p$ $\quad t_{19} = -56.215532$

$t_{20} := 0.5 \cdot (3 \cdot h - 3 \cdot c - G - 4 \cdot M) - p$ $\quad t_{20} = -38.228404$

$t_{21} := 0.25 \cdot (6 \cdot R - h - G - c) - p$ $\quad t_{21} = 30.361914$

$t_{22} := 0.25 \cdot (10 \cdot R + 5 \cdot c - 3 \cdot h - 3 \cdot G) - p$ $\quad t_{22} = 50.60319$

$t_{23} := 0.25 \cdot (2 \cdot R + h + G - 7 \cdot c) - p$ $\quad t_{23} = 10.120638$

$t_{24} := 0.25 \cdot (3 \cdot h + 3 \cdot G - 2 \cdot R - 13 \cdot c) - p$ $\quad t_{24} = -10.120638$

$t_{25} := 0.25 \cdot (2 \cdot M + 3 \cdot G + h - 11 \cdot c) - p$ $\quad t_{25} = 9.557101$

$t_{26} := 0.5 \cdot (R + M + G - 4 \cdot c) - p$ $\quad t_{26} = 19.677739$

$t_{27} := 0.5 \cdot (3 \cdot M + 3 \cdot G - R - 8 \cdot c) - p$ $\quad t_{27} = 18.550665$

$t_{28} := 0.5 \cdot (5 \cdot R + 4 \cdot c - 3 \cdot G - 3 \cdot M) - p$ $\quad t_{28} = 21.931887$

$t_{29} := 0.25 \cdot (12 \cdot R + h + 13 \cdot c - 10 \cdot M - 9 \cdot G) - p$ $\quad t_{29} = 12.938323$

$t_{30} := 0.25 \cdot (14 \cdot R + h + 17 \cdot c - 12 \cdot M - 11 \cdot G) - p$ $\quad t_{30} = 13.50186$

"DARK MATTER"

For $M = (\alpha \mu S)^{1/2} m_0 = 15.578876$

	-1		R=0		+1		+2		+3	
+2	α^{-11}, μ^{-1} 8				α^{-33}, μ^{-3} 13				α^{-55}, μ^{-5} 14	
		α^{-11}, μ^{-1} 27								
+1			α^{-11}, μ^{-1} 2				α^{-33}, μ^{-3} 7			
			$\alpha^{-\frac{11}{2}}, \mu^{-\frac{1}{2}}$ 25	α^{-11}, μ^{-1} 26		α^{-22}, μ^{-3} 6				
m=0	α^{11}, μ^{1} 9	$\alpha^{\frac{11}{2}}, \mu^{\frac{1}{2}}$ 24	10	$\alpha^{-\frac{11}{2}}, \mu^{-\frac{1}{2}}$ 23	α^{-11}, μ^{-1} 1	$\alpha^{-\frac{33}{2}}, \mu^{-\frac{3}{2}}$ 21	α^{-22}, μ^{-2} 16	$\alpha^{-\frac{55}{2}}, \mu^{-\frac{5}{2}}$ 22	α^{-33}, μ^{-3} 12	
				α^{0}, μ^{0} 15		$\alpha^{-11} \mu^{-1}$ 3				
-1	α^{22}, μ^{2} 17		α^{11}, μ^{1} 4				α^{-11}, μ^{-1} 10			
								α^{-11}, μ^{-1} 28		
-2	α^{33}, μ^{3} 11		α^{+22}, μ^{+2} 20		α^{11}, μ^{1} 5				α^{-11}, μ^{-1} 18	
									$\alpha^{-\frac{11}{2}}, \mu^{-\frac{1}{2}}$ 29	
										$\alpha^{-\frac{11}{2}}, \mu^{-\frac{1}{2}}$ 30
					α^{+33}, μ^{3} 19					

| $\frac{11}{2}, \frac{1}{2}$ $\frac{11}{2}, \frac{1}{2}$ 11, 1   no chang

BASFREQD.MCD DARK MATTER

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := .5$ $y := .5$ $z := 0.5$ $u := .5$ $v := .5$ $w := .5$

$M := m + x \cdot \alpha + y \cdot \mu + z \cdot S$ $R := l + u \cdot \alpha + v \cdot \mu + w \cdot S$

$(\alpha \mu S)^{1/2} m_0 =$ $M = 15.578876$ $R = -12.550069$

$t_0 := 0.5 \cdot (G + h - 5 \cdot c)$ $t_0 = -43.268166$

$t_1 := R - c$	$t_1 = -23.02689$	$p_1 := t_1 - t_0$	$p_1 = 20.241276$	α^{-11}, μ^{-1}
$t_2 := G + M - 3 \cdot c$	$t_2 = -23.02689$	$p_2 := t_2 - t_0$	$p_2 = 20.241276$	
$t_3 := 0.5 \cdot (3 \cdot R - G - M)$	$t_3 = -23.02689$	$p_3 := t_3 - t_0$	$p_3 = 20.241276$	
$t_4 := h - (M + 2 \cdot c)$	$t_4 = -63.509442$	$p_4 := t_4 - t_0$	$p_4 = -20.241276$	α^{11}, μ^{1}
$t_5 := (h + R) - (G + 2 \cdot M)$	$t_5 = -63.509442$	$p_5 := t_5 - t_0$	$p_5 = -20.241276$	
$t_6 := 0.5 \cdot (M + 3 \cdot R - h - c)$	$t_6 = -2.785614$	$p_6 := t_6 - t_0$	$p_6 = 40.482552$	α^{-22}, μ^{-3}
$t_7 := M + 2 \cdot R - h$	$t_7 = 17.455662$	$p_7 := t_7 - t_0$	$p_7 = 60.723828$	α^{-33}, μ^{-3}
$t_8 := 2 \cdot G + 2 \cdot M - R - 5 \cdot c$	$t_8 = -23.02689$	$p_8 := t_8 - t_0$	$p_8 = 20.241276$	

$t_9 := G + h - R - 4 \cdot c$	$t_9 = -63.509442$	$p_9 := t_9 - t_0$	$p_9 = -20.241276$	
$t_{10} := 2 \cdot R + c - G - M$	$t_{10} = -23.02689$	$p_{10} := t_{10} - t_0$	$p_{10} = 20.241276$	
$t_{11} := 2 \cdot h - R - 2 \cdot M - 3 \cdot c$	$t_{11} = -103.991994$	$p_{11} := t_{11} - t_0$	$p_{11} = -60.723828$	
$t_{12} := 3 \cdot R + 2 \cdot c - G - h$	$t_{12} = 17.455662$	$p_{12} := t_{12} - t_0$	$p_{12} = 60.723828$	
$t_{13} := G + 2 \cdot M + R - 2 \cdot c - h$	$t_{13} = 17.455662$	$p_{13} := t_{13} - t_0$	$p_{13} = 60.723828$	
$t_{14} := c + 2 \cdot M + 3 \cdot R - 2 \cdot h$	$t_{14} = 57.938214$	$p_{14} := t_{14} - t_0$	$p_{14} = 101.20638$	α^{-55}, μ^{-8}
$t_{15} := 0.5 \cdot (h + R - 3 \cdot c - M)$	$t_{15} = -43.268166$	$p_{15} := t_{15} - t_0$	$p_{15} = 0$	
$t_{16} := 0.5 \cdot (c + 4 \cdot R - G - h)$	$t_{16} = -2.785614$	$p_{16} := t_{16} - t_0$	$p_{16} = 40.482552$	
$t_{17} := 0.5 \cdot (3 \cdot h + G - 7 \cdot c - 2 \cdot M - 2 \cdot R)$	$t_{17} = -83.750718$	$p_{17} := t_{17} - t_0$	$p_{17} = -40.482552$	α^{23}, μ^{23}
$t_{18} := 3 \cdot c + 3 \cdot R - 2 \cdot G - 2 \cdot M$	$t_{18} = -23.02689$	$p_{18} := t_{18} - t_0$	$p_{18} = 20.241276$	
$t_{19} := 2 \cdot h + R + c - 2 \cdot G - 4 \cdot M$	$t_{19} = -103.991994$	$p_{19} := t_{19} - t_0$	$p_{19} = -60.723828$	
$t_{20} := 0.5 \cdot (3 \cdot h - 3 \cdot c - G - 4 \cdot M)$	$t_{20} = -83.750718$	$p_{20} := t_{20} - t_0$	$p_{20} = -40.482552$	
$t_{21} := 0.25 \cdot (6 \cdot R - h - G - c)$	$t_{21} = -12.906252$	$p_{21} := t_{21} - t_0$	$p_{21} = 30.361914$	$\alpha^{-\frac{33}{2}}, \mu^{-3/2}$

BASFREQD PAGE 3

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$	$t_{22} = 7.335024$	$p_{22} := t_{22} - t_0$	$p_{22} = 50.60319$	$\alpha^{-\frac{55}{2}} \mu^{-\frac{5}{2}}$
$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$	$t_{23} = -33.147528$	$p_{23} := t_{23} - t_0$	$p_{23} = 10.120638$	$\alpha^{-\frac{11}{2}}, \mu^{-\frac{1}{2}}$
$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$	$t_{24} = -53.388804$	$p_{24} := t_{24} - t_0$	$p_{24} = -10.120638$	$\alpha^{\frac{11}{2}}, \mu^{1/2}$
$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$	$t_{25} = -33.147528$	$p_{25} := t_{25} - t_0$	$p_{25} = 10.120638$	
$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$	$t_{26} = -23.02689$	$p_{26} := t_{26} - t_0$	$p_{26} = 20.241276$	
$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$	$t_{27} = -23.02689$	$p_{27} := t_{27} - t_0$	$p_{27} = 20.241276$	
$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$	$t_{28} = -23.02689$	$p_{28} := t_{28} - t_0$	$p_{28} = 20.241276$	
$t_{29} := 0.25\cdot(12\cdot R + h + 13\cdot c - 10\cdot M - 9\cdot G)$	$t_{29} = -33.147528$	$p_{29} := t_{29} - t_0$	$p_{29} = 10.120638$	
$t_{30} := 0.25\cdot(14\cdot R + h + 17\cdot c - 12\cdot M - 11\cdot G)$	$t_{30} = -33.147528$	$p_{30} := t_{30} - t_0$	$p_{30} = 10.120638$	

FREQUENY TABLE

STAR
Planck Unts

-1	-0.5	0	0.5	1	1.5	2	2.5	3	
									+3
$(\alpha\mu)^{-3} S$				$(\alpha\mu)^{-1} S^3$				$\alpha\mu S^5$	+2
	$(\alpha\mu)^{-2} S$				S^3		$\alpha\mu S^4$		
		$(\alpha\mu)^{-1} S$				$\alpha\mu S^3$		$(\alpha\mu)^2 S^4$	+1
		$(\alpha\mu)^{-\frac{1}{2}} S^{1/2}$	S		$\alpha\mu S^2$		$(\alpha\mu)^2 S^3$		
$(\alpha\mu S)^{-1}$	$(\alpha\mu S)^{-\frac{1}{2}}$	[illegible]	$(\alpha\mu S)^{1/2}$	$\alpha\mu S$	$(\alpha\mu S)^{3/2}$	$(\alpha\mu S)^2$	$(\alpha\mu S)^{5/2}$	$(\alpha\mu)^3 S^3$	0 M
			$\alpha\mu$		$(\alpha\mu)^2 S$		$(\alpha\mu)^3 S^2$		
		$(\alpha\mu) S^{-1}$		$(\alpha\mu)^2$		$(\alpha\mu)^3 S$			-1
S^{-2}	$\alpha\mu S^{-2}$		$(\alpha\mu)^2 S^{-1}$		$(\alpha\mu)^3$		$(\alpha\mu)^4 S$		
$(\alpha\mu) S^{-3}$		$(\alpha\mu)^2 S^{-2}$		$(\alpha\mu)^3 S^{-1}$		$(\alpha\mu)^4$		$(\alpha\mu)^5 S$	-2
									-3
				$(\alpha\mu)^5 S^{-3}$					-4

-1 0 +1 +2 +3

R

NEUTRON STAR

α μ

	-1		R=0		+1		+2		+3	
+2	8				13				14	
		27								
+1			α^{-24}, μ^{-4} 2				7			
			α^{-12}, μ^{-2} 25	α^{-23}, μ^{-3} 26	α^{-34}, μ^{-4}	α^{-45}, μ^{-5} 6				
M=0	α^{22}, μ^{2} 9	α^{11}, μ^{1} 24	0, 0 0	α^{-11}, μ^{-1} 23	α^{-22}, μ^{-2} 1	α^{-33}, μ^{-3} 21	α^{-44}, μ^{-4} 16	22	12	
			α^{12}, μ^{2}	α^{1}, μ^{1} 15	α^{-10}, μ^{0}	$\alpha^{-21}, \alpha^{-1}$ 3				
-1	17		α^{24}, μ^{4} 4	α^{13}, μ^{3} 35	α^{2}, μ^{2}		10			
			α^{36}, μ^{6} [illegible]	α^{25}, μ^{5}				28		
-2	11		α^{48}, μ^{8} 20		5				18	
									29	
										30
					19					

12,2

11 1

5

23,3

$\alpha\mu$

1,1

M^x R^y

α^u μ^v

STAR

$T = \alpha^{\cdot} \mu^{\cdot} t_0$

$u - v$

$-20(x+y) = u - v$ $u = -24x - 22y$

$-(28x + 24y) = u + v$ $v = -4x - 2y$

−51 −11	−62 −12	−73 −13	−84 −14	−95 −15	−106 −16	−117 −17	−128 −18	−139 −19	−150 −20	
−39 −9	−50 −10	−61 −11	−72 −12	−83 −13	−94 −14	−105 −15	−116 −16	−127 −17	−138 −18	+3
−27 −7	−38 −8	−49 −9	−60 −10	−71 −11	−82 −12	−93 −13	−104 −14	−115 −15	−126 −16	
	−26 −6	−37 −7	−48 −8	−59 −9	−70 −10	−81 −11	−92 −12	−103 −13	−114 +14	+2
	−14 −4	−25 −5	−36 −6	−47 −7	−58 −8	−69 −9	−80 −10	−91 −11	−102 −12	
	−2 −2	−13 −3	−24 −4	−35 −5	−46 −6	−57 −7	−68 −8	−79 −9	−90 −10	+1
	+10 0	−1 −1	−12 −2	−23 −3	−34 −4	−45 −5	−56 −6	−67 −7	−78 −8	
	+22 +2	+11 +1	0 0	−11 −1	−22 −2	−33 −3	−44 −4	−55 −5	−66 −6	0 M
	+34 +4	+23 +3	+12 +2	1 +1	−10 0	−21 −1	−32 −2	−43 −3	−54 −4	
	+46 +6	+35 +5	+24 +4	+13 +3	+2 +2	−9 +1	−20 0	−31 −1	−42 −2	−1
	+58 +8	+47 +7	+36 +6	+25 +5	+14 +4	+3 +3	−8 +2	−19 +1	−30 0	
	+70 +10	+59 +9	+48 +8	+37 +7	+26 +6	+15 +5	+4 +4	−7 +3	−18 +2	−2
	+82 +12	+71 +11	+60 +10	+49 +9	+38 +8	+27 +7	+16 +6	+5 +5	−6 +4	
	+94 +14	+83 +13	+72 +12	+61 +11	+50 +10	+39 +9	+28 +8	+17 +7	+6 +6	−3
	+106 +16	+95 +15	+84 +14	+73 +13	+62 +12	+51 +11	+40 +10	+29 +9	+18 +8	
	+118 +18	+107 +17	+96 +16	+85 +15	+74 +14	63 +13	+52 +12	+41 +11	+30 +10	−4

−1   0   +1   +2   +3

R

23 / 1 \ 12 | 11 2 | 1 3 / 1 \

BASFREQS.MCD NEUTRON STAR

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := -1$ $y := -1$ $z := 1$ $u := 1$ $v := 1$ $w := 1$

$\star_M = \alpha^{-1}\mu^{-1}S = \alpha^{-24}\mu^{-4}$

$\star_R = \alpha\mu S = \alpha^{-22}\mu^{-2}$

$M := m + x\cdot\alpha + y\cdot\mu + z\cdot S$ $R := l + u\cdot\alpha + v\cdot\mu + w\cdot S$

$M = 33.566004$ $R = 7.691207$

$t_0 := 0.5\cdot(G + h - 5\cdot c)$ $t_0 = -43.268166$

$t_1 := R - c$	$t_1 = -2.785614$	$p_1 := t_1 - t_0$	$p_1 = 40.482552$	$\alpha^{-22}\mu^{-2} = (\alpha\mu)S$
$t_2 := G + M - 3\cdot c$	$t_2 = -5.039762$	$p_2 := t_2 - t_0$	$p_2 = 38.228404$	$\alpha^{-24}\mu^{-4} = (\alpha\mu)^{-1}S$
$t_3 := 0.5\cdot(3\cdot R - G - M)$	$t_3 = -1.65854$	$p_3 := t_3 - t_0$	$p_3 = 41.609626$	
$t_4 := h - (M + 2\cdot c)$	$t_4 = -81.49657$	$p_4 := t_4 - t_0$	$p_4 = -38.228404$	$\alpha^{24}\mu^{4} = (\alpha\mu)^{1}S^{-1}$
$t_5 := (h + R) - (G + 2\cdot M)$	$t_5 = -79.242422$	$p_5 := t_5 - t_0$	$p_5 = -35.974256$	
$t_6 := 0.5\cdot(M + 3\cdot R - h - c)$	$t_6 = 36.569864$	$p_6 := t_6 - t_0$	$p_6 = 79.83803$	
$t_7 := M + 2\cdot R - h$	$t_7 = 75.925342$	$p_7 := t_7 - t_0$	$p_7 = 119.193508$	
$t_8 := 2\cdot G + 2\cdot M - R - 5\cdot c$	$t_8 = -7.29391$	$p_8 := t_8 - t_0$	$p_8 = 35.974256$	

BASFREQ5 PAGE 2

$t_9 := G + h - R - 4 \cdot c$	$t_9 = -83.750718$	$p_9 := t_9 - t_0$	$p_9 = -40.482552$	$\alpha^{22} \mu^2 = (\alpha\mu)^{-1} S^{-1}$
$t_{10} := 2 \cdot R + c - G - M$	$t_{10} = -0.531466$	$p_{10} := t_{10} - t_0$	$p_{10} = 42.7367$	
$t_{11} := 2 \cdot h - R - 2 \cdot M - 3 \cdot c$	$t_{11} = -160.207526$	$p_{11} := t_{11} - t_0$	$p_{11} = -116.93936$	
$t_{12} := 3 \cdot R + 2 \cdot c - G - h$	$t_{12} = 78.17949$	$p_{12} := t_{12} - t_0$	$p_{12} = 121.447656$	
$t_{13} := G + 2 \cdot M + R - 2 \cdot c - h$	$t_{13} = 73.671194$	$p_{13} := t_{13} - t_0$	$p_{13} = 116.93936$	
$t_{14} := c + 2 \cdot M + 3 \cdot R - 2 \cdot h$	$t_{14} = 154.636298$	$p_{14} := t_{14} - t_0$	$p_{14} = 197.904464$	
$t_{15} := 0.5 \cdot (h + R - 3 \cdot c - M)$	$t_{15} = -42.141092$	$p_{15} := t_{15} - t_0$	$p_{15} = 1.127074$	$\alpha^1 \mu^1 = (\alpha\mu)^1$
$t_{16} := 0.5 \cdot (c + 4 \cdot R - G - h)$	$t_{16} = 37.696938$	$p_{16} := t_{16} - t_0$	$p_{16} = 80.965104$	
$t_{17} := 0.5 \cdot (3 \cdot h + G - 7 \cdot c - 2 \cdot M - 2 \cdot R)$	$t_{17} = -121.979122$	$p_{17} := t_{17} - t_0$	$p_{17} = -78.710956$	
$t_{18} := 3 \cdot c + 3 \cdot R - 2 \cdot G - 2 \cdot M$	$t_{18} = 1.722682$	$p_{18} := t_{18} - t_0$	$p_{18} = 44.990848$	
$t_{19} := 2 \cdot h + R + c - 2 \cdot G - 4 \cdot M$	$t_{19} = -155.69923$	$p_{19} := t_{19} - t_0$	$p_{19} = -112.431064$	
$t_{20} := 0.5 \cdot (3 \cdot h - 3 \cdot c - G - 4 \cdot M)$	$t_{20} = -119.724974$	$p_{20} := t_{20} - t_0$	$p_{20} = -76.456808$	$\alpha^{48} \mu^8 = (\alpha\mu)^2 S^{-2}$
$t_{21} := 0.25 \cdot (6 \cdot R - h - G - c)$	$t_{21} = 17.455662$	$p_{21} := t_{21} - t_0$	$p_{21} = 60.723828$	$\alpha^{-33} \mu^{-3} = (\alpha\mu)^{3/2} S^{3/2}$

BASFREQS PAGE 3

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$	$t_{22} = 57.938214$	$p_{22} := t_{22} - t_0$	$p_{22} = 101.20638$	
$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$	$t_{23} = -23.02689$	$p_{23} := t_{23} - t_0$	$p_{23} = 20.241276$	$\alpha^{-11}, \mu^{-1} = (\alpha\mu)^{1/2} S^{1/2}$
$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$	$t_{24} = -63.509442$	$p_{24} := t_{24} - t_0$	$p_{24} = -20.241276$	$\alpha^{11}, \mu^{1} = (\alpha\mu)^{-1/2} S^{-1/2}$
$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$	$t_{25} = -24.153964$	$p_{25} := t_{25} - t_0$	$p_{25} = 19.114202$	$\alpha^{-12}, \mu^{-2} = (\alpha\mu)^{-1/2} S^{3/2}$
$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$	$t_{26} = -3.912688$	$p_{26} := t_{26} - t_0$	$p_{26} = 39.355478$	$\alpha^{-23}, \mu^{-3} = S$
$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$	$t_{27} = -6.166836$	$p_{27} := t_{27} - t_0$	$p_{27} = 37.10133$	
$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$	$t_{28} = 0.595608$	$p_{28} := t_{28} - t_0$	$p_{28} = 43.863774$	
$t_{29} := 0.25\cdot(12\cdot R + h + 13\cdot c - 10\cdot M - 9\cdot G)$	$t_{29} = -17.39152$	$p_{29} := t_{29} - t_0$	$p_{29} = 25.876646$	
$t_{30} := 0.25\cdot(14\cdot R + h + 17\cdot c - 12\cdot M - 11\cdot G)$	$t_{30} = -16.264446$	$p_{30} := t_{30} - t_0$	$p_{30} = 27.00372$	

FREQUENCY TABLE
UNIVERSE
Planck Units

#14?

						S^9		$\frac{21}{2}$	~~4~~ 4
							S^9		3
								S^9	[illegible]
								~~$(\alpha\mu)^{3/2}$~~	2 ~~$S^{15/2}$~~
$(\alpha\mu)^{-9/2} S^{3/2}$				$(\alpha\mu)^{-3/2} S^{9/2}$				$(\alpha\mu)^{3/2} S^{15/2}$	15/2 2
				$(\alpha\mu)^{-3/4} \times S^{15/4}$			$(\alpha\mu)^{3/2} S^{6}$	$\frac{27}{4}$	[illegible]
		Sch $(\alpha\mu)^{-3/2} S^{3/2}$		S^3		$(\alpha\mu)^{3/2} S^{9/2}$		S^6	1
~~S^{3}~~		$(\alpha\mu)^{-3/4} S^{3/4}$	$(\alpha\mu)^0 \; S^{3/2}$	$(\alpha\mu)^{3/4} S^{9/4}$	$(\alpha\mu)^{3/2} S^3$			$\frac{21}{4}$	[illegible] M
$(\alpha\mu)^{-3/2} S^{-3/2}$	$(\alpha\mu)^{-3/4} S^{-3/4}$	(hatched)	$(\alpha\mu)^{3/4} S^{3/4}$	A $(\alpha\mu)^{3/2} S^{3/2}$	$(\alpha\mu)^{9/4} S^{9/4}$	$(\alpha\mu)^3 \; S^3$	$(\alpha\mu)^{15/4} S^{15/4}$	$(\alpha\mu)^{9/2} S^{9/2}$	0
	$S^{-3/2}$		$(\alpha\mu)^{3/2}$		K $(\alpha\mu)^3 \; S^{3/2}$				[illegible]
S^{-3}		$(\alpha\mu)^{3/2} S^{-3/2}$				$(\alpha\mu)^{9/2} S^{3/2}$			-1
							$(\alpha\mu)^6$		[illegible]
									-2
									[illegible]
									-3
									[illegible]

0 (left of the row marked 0)

R axis: -1, 0, +1, 2, 3 (bottom); -4 (bottom right)

R

S^x constant \

$(\alpha\mu)^x$ constant /

UNIVERSE

α μ

	-1		R=0		+1		+2		+3	
+2			α^{-72}, μ^{-12}							
			α^{-54}, μ^{-9}							
+1	α^{-3}, μ^{-3}		α^{-36}, μ^{-6} 2	$\alpha^{-\frac{105}{2}}, \mu^{-\frac{15}{2}}$	α^{-69}, μ^{-9}					
	α^{15}, μ^{0}		α^{-18}, μ^{-3}		α^{-51}, μ^{-6}		α^{-84}, μ^{-9}			
M=0	α^{33}, μ^{3} 9	$\alpha^{\frac{33}{2}}, \mu^{3/2}$ 24	0, 0	$\alpha^{-\frac{33}{2}}, \mu^{-\frac{3}{2}}$ 23	α^{-33}, μ^{-3} 1	$\alpha^{-\frac{99}{3}}, \mu^{-\frac{9}{2}}$	α^{-66}, μ^{-6}		α^{-99}, μ^{-9}	
			α^{18}, μ^{3}	$\alpha^{3/2}, \mu^{3/2}$ 15	α^{-15}, μ^{0}	3	α^{-48}, μ^{-3}		α^{-81}, μ^{-6}	
-1			α^{36}, μ^{6} 4		α^{+3}, μ^{3}		α^{-30}, μ^{0}	$\alpha^{-\frac{93}{2}}, \mu^{-3/2}$	α^{-63}, μ^{-3}	
					α^{21}, μ^{6}		α^{-13}, μ^{3}		α^{-45}, μ^{0}	
							α^{+6}, μ^{6}		α^{-27}, μ^{3}	
							α^{+24}, μ^{9}		α^{-9}, μ^{6}	
									α^{9}, μ^{9}	
									α^{27}, μ^{12}	

v | 18, 3

$\frac{33}{2}, \frac{3}{2}$ / H

$\frac{69}{2}, \frac{9}{2}$ / sup

3/2, 3/2 \ sdm

-22, -2 where

Sup = 3 H

M^x R^y α^u μ^v UNIVE…E

$T = \alpha^{-} \mu^{-} t_0$

$-30(x+y) = u - v$

$-(42x+36y) = u + v$

$u = -36x - 33y$

$v = -6x - 3y$

$-30x = 11v - u$

$15y = 6v - u$

-93 -18		-126 -21		-159 -24		-192 -27		-225 -30	
-75 -15		-108 -18		-141 -21		-174 -24		-207 -27	+3
-57 -12		-90 -15		-123 -18		-156 -21		-189 -24	
-39 -9		-72 -12		-105 -15		-138 -18		-171 -21	+2
-21 -6	-7.5	-54 -9		-87 -12		-120 -15		-153 -18	
-3 -3		-36 -6		-69 -9		-102 -12		-135 -15	+1
+15 0		-18 -3	-34.5 -4.5	-57 -6		-84 -9		-117 -12	
+33 3		0 0		-33 -3		-66 -6		-99 -9	0 M
+51 6		+18 3		-15 0	-1.5	-48 -3		-81 -6	
+69 9		+36 6		+3 +3		-30 0		-63 -3	-1
+87 12		+54 9		+21 +6		-12 +3	+1.5	-45 0	
+105 15		+72 12		+39 +9		+6 +6		-27 +3	-2
+123 18		+90 15		+57 +12		+24 +9		-9 +6	
+141 21		+108 18		+75 +15		+42 +12		+9 +9	-3
+159 24		+126 21		+93 +18		+60 +15		+27 +12	
+177 27		+144 24		+1ø1 +21		+78 +18		+45 +15	-4
-1		0		+1		+2		+3	

R

at $x=0$, $y=\frac{2}{3}$

-22 -2

34.5 / $\frac{69}{2}$ 1.5 / $\frac{3}{2}$ 18 / $\frac{33}{2}$ 3 / $\frac{3}{2}$ $\frac{9}{2}$ $\frac{3}{2}$

15/(u-v)

BASFREQU.MCD UNIVERSE

$c := 10.476821$ $h := -26.976924$ $G := -7.175303$ $S := 39.355478$

$m := -4.662400$ $l := -32.791345$ $\alpha := -2.136835$ $\mu := 3.263909$

$x := -1.5$ $y := -1.5$ $z := 1.5$ $u := 1.5$ $v := 1.5$ $w := 1.5$

$M := m + x\cdot\alpha + y\cdot\mu + z\cdot S$ $R := l + u\cdot\alpha + v\cdot\mu + w\cdot S$

$M = 52.680206$ $R = 27.932483$

$t_0 := 0.5\cdot(G + h - 5\cdot c)$ $t_0 = -43.268166$

$t_1 := R - c$	$t_1 = 17.455662$	$p_1 := t_1 - t_0$	$p_1 = 60.723828$
$t_2 := G + M - 3\cdot c$	$t_2 = 14.07444$	$p_2 := t_2 - t_0$	$p_2 = 57.342606$
$t_3 := 0.5\cdot(3\cdot R - G - M)$	$t_3 = 19.146273$	$p_3 := t_3 - t_0$	$p_3 = 62.414439$
$t_4 := h - (M + 2\cdot c)$	$t_4 = -100.610772$	$p_4 := t_4 - t_0$	$p_4 = -57.342606$
$t_5 := (h + R) - (G + 2\cdot M)$	$t_5 = -97.22955$	$p_5 := t_5 - t_0$	$p_5 = -53.961384$
$t_6 := 0.5\cdot(M + 3\cdot R - h - c)$	$t_6 = 76.488879$	$p_6 := t_6 - t_0$	$p_6 = 119.757045$
$t_7 := M + 2\cdot R - h$	$t_7 = 135.522096$	$p_7 := t_7 - t_0$	$p_7 = 178.790262$
$t_8 := 2\cdot G + 2\cdot M - R - 5\cdot c$	$t_8 = 10.693218$	$p_8 := t_8 - t_0$	$p_8 = 53.961384$

$\alpha^{-33}, \mu^{-3} = (\alpha\mu)^{3/2} S^{3/2}$

α^{-36}, μ^{-6}

$\alpha^{36}, \mu^{6} =$

$t_9 := G + h - R - 4 \cdot c$	$t_9 = -103.991994$	$p_9 := t_9 - t_0$	$p_9 = -60.723828$ $\alpha^{33}, \mu^3 = (\alpha\mu)^{-3/2} s^{-3/2}$
$t_{10} := 2 \cdot R + c - G - M$	$t_{10} = 20.836884$	$p_{10} := t_{10} - t_0$	$p_{10} = 64.10505$
$t_{11} := 2 \cdot h - R - 2 \cdot M - 3 \cdot c$	$t_{11} = -218.677206$	$p_{11} := t_{11} - t_0$	$p_{11} = -175.40904$
$t_{12} := 3 \cdot R + 2 \cdot c - G - h$	$t_{12} = 138.903318$	$p_{12} := t_{12} - t_0$	$p_{12} = 182.171484$
$t_{13} := G + 2 \cdot M + R - 2 \cdot c - h$	$t_{13} = 132.140874$	$p_{13} := t_{13} - t_0$	$p_{13} = 175.40904$
$t_{14} := c + 2 \cdot M + 3 \cdot R - 2 \cdot h$	$t_{14} = 253.58853$	$p_{14} := t_{14} - t_0$	$p_{14} = 296.856696$
$t_{15} := 0.5 \cdot (h + R - 3 \cdot c - M)$	$t_{15} = -41.577555$	$p_{15} := t_{15} - t_0$	$p_{15} = 1.690611$ $\alpha^{3/2}, \mu^{3/2}$
$t_{16} := 0.5 \cdot (c + 4 \cdot R - G - h)$	$t_{16} = 78.17949$	$p_{16} := t_{16} - t_0$	$p_{16} = 121.447656$
$t_{17} := 0.5 \cdot (3 \cdot h + G - 7 \cdot c - 2 \cdot M - 2 \cdot R)$	$t_{17} = -161.3346$	$p_{17} := t_{17} - t_0$	$p_{17} = -118.066434$
$t_{18} := 3 \cdot c + 3 \cdot R - 2 \cdot G - 2 \cdot M$	$t_{18} = 24.218106$	$p_{18} := t_{18} - t_0$	$p_{18} = 67.486272$
$t_{19} := 2 \cdot h + R + c - 2 \cdot G - 4 \cdot M$	$t_{19} = -211.914762$	$p_{19} := t_{19} - t_0$	$p_{19} = -168.646596$
$t_{20} := 0.5 \cdot (3 \cdot h - 3 \cdot c - G - 4 \cdot M)$	$t_{20} = -157.953378$	$p_{20} := t_{20} - t_0$	$p_{20} = -114.685212$
$t_{21} := 0.25 \cdot (6 \cdot R - h - G - c)$	$t_{21} = 47.817576$	$p_{21} := t_{21} - t_0$	$p_{21} = 91.085742$

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$ $t_{22} = 108.541404$ $p_{22} := t_{22} - t_0$ $p_{22} = 151.80957$

$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$ $t_{23} = -12.906252$ $p_{23} := t_{23} - t_0$ $p_{23} = 30.361914$ $\alpha^{-\frac{33}{2}}, \mu^{-3/2}$

$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$ $t_{24} = -73.63008$ $p_{24} := t_{24} - t_0$ $p_{24} = -30.361914$ $\alpha^{\frac{33}{2}}, \mu^{3/2} = (\alpha\mu)^{-3/4} S^{-3/4}$

$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$ $t_{25} = -14.596863$ $p_{25} := t_{25} - t_0$ $p_{25} = 28.671303$

$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$ $t_{26} = 15.765051$ $p_{26} := t_{26} - t_0$ $p_{26} = 59.033217$

$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$ $t_{27} = 12.383829$ $p_{27} := t_{27} - t_0$ $p_{27} = 55.651995$

$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$ $t_{28} = 22.527495$ $p_{28} := t_{28} - t_0$ $p_{28} = 65.795661$

$t_{29} := 0.25\cdot(12\cdot R + h + 13\cdot c - 10\cdot M - 9\cdot G)$ $t_{29} = -4.453197$ $p_{29} := t_{29} - t_0$ $p_{29} = 38.814969$

$t_{30} := 0.25\cdot(14\cdot R + h + 17\cdot c - 12\cdot M - 11\cdot G)$ $t_{30} = -2.762586$ $p_{30} := t_{30} - t_0$ $p_{30} = 40.50558$

$t_{13} := G + 2\cdot M + R - 2\cdot c - h$ $\qquad t_{13} = 76.348538$

$t_{14} := c + 2\cdot M + 3\cdot R - 2\cdot h$ $\qquad t_{14} = 163.606834$

$t_{15} := 0.5\cdot(h + R - 3\cdot c - M)$ $\qquad t_{15} = -40.450481$

$t_{16} := 0.5\cdot(c + 4\cdot R - G - h)$ $\qquad t_{16} = 43.99013$

$t_{17} := 0.5\cdot(3\cdot h + G - 7\cdot c - 2\cdot M - 2\cdot R)$ $\qquad t_{17} = -124.891092$

$t_{18} := 3\cdot c + 3\cdot R - 2\cdot G - 2\cdot M$ $\qquad t_{18} = 11.631722$

$t_{19} := 2\cdot h + R + c - 2\cdot G - 4\cdot M$ $\qquad t_{19} = -151.61413$

$t_{20} := 0.5\cdot(3\cdot h - 3\cdot c - G - 4\cdot M)$ $\qquad t_{20} = -119.255722$

$t_{21} := 0.25\cdot(6\cdot R - h - G - c)$ $\qquad t_{21} = 22.175556$

$t_{22} := 0.25\cdot(10\cdot R + 5\cdot c - 3\cdot h - 3\cdot G)$ $\qquad t_{22} = 65.804704$

$t_{23} := 0.25\cdot(2\cdot R + h + G - 7\cdot c)$ $\qquad t_{23} = -21.453592$

$t_{24} := 0.25\cdot(3\cdot h + 3\cdot G - 2\cdot R - 13\cdot c)$ $\qquad t_{24} = -65.08274$

$t_{25} := 0.25\cdot(2\cdot M + 3\cdot G + h - 11\cdot c)$ $\qquad t_{25} = -24.271277$

$t_{26} := 0.5\cdot(R + M + G - 4\cdot c)$ $\qquad t_{26} = -2.456703$

$t_{27} := 0.5\cdot(3\cdot M + 3\cdot G - R - 8\cdot c)$ $\qquad t_{27} = -8.092073$

$t_{28} := 0.5\cdot(5\cdot R + 4\cdot c - 3\cdot G - 3\cdot M)$ $\qquad t_{28} = 8.814037$

$\psi = ?$

	NAME	[M, R, T]	a	b	$\sqrt{a \times b}$	
φ	ψ'	Ψ'	$\times U = \frac{M^2 R}{T^3}$	$\times U^{-1} = \frac{T^3}{M^2 R}$		
16						
15						
14						
13						
12						
11						
10						
9						
8						
7	energy	MR^2/T^2	M^3R^3/T^5	T/RM	MR^2/T^2	
6	charge	$M^{1/2}R^{3/2}/T$	$M^{3/2}R^{5/2}/T^4$	$M^{-3/2}R^{1/2}T^2$	MR^3/T^6	
5	length	R	M^2R^2/T^3	T^3/M^2	R	
4						
3	momentum	MR/T	M^3R^2/T^4	T^2/M	MR/T	
2						
1	time	T	M^2R/T^2	T^4/M^2R	T	
0						
-1	mass	M	M^3R/T^3	T^3/MR	M	
-2						
-3	resistance	T^2/R	M^2/T	T^5/M^2R^2	T^2/R	
-4						
-5						
-6						
-7						
-8						
-9						

$M \cdot vel^2 = energy$

$R = M \times Power$

Force × momentum = length

× ψ' up 1
i.e. $\varphi^n \to \varphi^{n+1}$
can × T

$\psi' = \varphi' T$

$\Psi^{-1} = \frac{\varphi'}{M}$

I^2

$\frac{M^5R^5}{T^{10}} \frac{T^5}{M^2R^2} = \frac{M^3R^3}{T^5}$
" × U^{-1} energy ✓

$I^2 R$

I^2

$\frac{MR^3}{T^4} \cdot \frac{T^2}{R} = \frac{MR^3}{T^2}$ = energy

$\frac{R^3 T^2}{M^3} \cdot \frac{T^2}{R} = \frac{T^4}{M^3}$ = energy ✓
× U^2

	NAME	[M,R,T]	a	b	$\sqrt{a \times b}$	a =
Φ	ψ^0	ψ^6	$\times M^2R/T^3$	$\times T^3/M^2R$		
16						
15						
14	G	R^3/MT^2	R^4M/T^5	R^2T/M^3	R^3/T^2M	[illegible]
13						
12	velocity^3	R^3/T^3	M^2R^4/T^6	R^2/M^2	R^3/T^3	a =
11						
10						
9						
8	Velocity^2	R^2/T^2	M^2R^3/T^5	RT/M^2	R^2/T^2	$a \times U = \left(\frac{MR}{T^2}\right)^4$
7						
6	POWER	MR^2/T^3	M^3R^3/T^6	R/M	M^2R^2/T^3	~~Power~~ a =
5	CURRENT	$M^{1/2}R^{3/2}/T^2$	$M^{3/2}R^{5/2}/T^5$	$M^{-3/2}R^{1/2}T$	R^3/T^4	a =
4	VELOCITY	R/T	M^2R^2/T^4	T^2/M^2	R/T	a = Force^2
3						
2	FORCE	MR/T^2	M^3R^2/T^5	T/M	MR/T^2	
1	VOLATAGE	$M^{1/2}R^{1/2}/T$	$M^{5/2}R^{3/2}/T^4$	$M^{-3/2}R^{-1/2}T^2$	MR/T^2	$(\text{voltage})^2 =$
0	T^3/M^2R	M^2R/T^3	$1 = U^{-1}$	$U = 1$		
−1						
−2						
−3						
−4						
−5						
−6						
−7						
−8						
−9						

$\text{vel}^3 \times \text{Force} = G$

$\frac{G}{\text{vel}^3} = \frac{T}{M}$

Power^2, a^3 = ~~Force~~ ^{6}

$a \times U^2 = \left(\frac{MR}{T^2}\right)^6$

$= \text{Force}^6$

$= \text{Force}^4$

Force^3

$(\text{voltage})^5$

voltage × current = power

force

$(\text{volt})^8 \times U^{-2} = \text{vel}^2$

$(\text{volt})^6 = \text{Force}^3$

$F^3 \cdot U^{-1} = \text{Power}$

$\text{Power} \times \text{force} = \text{vel}^2$

Planks values ~~$\varphi = 2$ $\psi = 1$~~ — work as well for φ ψ as others

	-2	-1	0	1	2	3
16						
15						Vol
14			-7.175705			
13						
12						
11						-65.583090
10		70.036631	-17.652524	=87.689155	$= \frac{M^2L}{T^3}$ Amp	
9						
8					-26.976924	
7				16.291442	~~-37.453743~~	
6	$\frac{c^2}{G}$ =	=28.129345 =	59.559810	~~[illegible]~~	-76.059911	
5	curr	4.662199 →	~~49.082989~~	-32.298545	~~17.443968~~	
4			10.476821	~~60.712334~~	-37.453745	$= \frac{\hbar}{c}$
3			~~103.980700~~	5.814621		
2		=38.606166 =	49.082989	-49.083068 ~~11.629345~~		
1			-5.814722	-43.268366		
0			D 1	~~=37.453644~~		
-1				-4.662199		
-2		= -49.082989	= 38.606168			
-3						
-4						
-5						
-6						
-7						
-8						
-9						

OK
$\Delta = 43.268366 = t_0$

OK
$\Delta 4 =$ 10.476821
(4)

54.897711 (1)
$\Delta = 54.897711$
?
$4 \times \Delta = 219.590844$

44.212534
~~43.476621~~
43.476621
voltage^4 =

Originals
$\psi^2 = \frac{ML}{T^2}$

↘ M

$\frac{M^2L}{T^3} = 87.689155 = \frac{C^7}{G^2}$

$C^7 = G^2 = \varphi^{28}$

NAMES

Φ	ψ^{-2}	$\psi^{-1/2}$	ψ^{0}	$\psi^{1/2}$	ψ^{2}	$\psi^{3/2}$
18						
15/2						VOLUME
14			NEWTON'S (G) CONSTANT			~~VOLUME~~
13/2						
12			R^3/T^3		e^2	
11/2						
10					AREA	
9/2						
8					ACTION	
7/2				ENERGY		
6			POWER	CHARGE	space-time	
5/2			CURRENT	extension (LENGTH)		
4			VELOCITY (c)			
3/2				MOMENTUM		
2			FORCE			
1/2			VOLTAGE	TIME		
0			1			
-1/2		frequency		MASS		
-2						
-3/2		~~energy~~		RESISTANCE		
-4						
-5						
-6						
-7/2			2			
-8	Pressure		? η information	?		
-9/2				form		

-12

-16 -13 DENSITY

$\eta \cdot E = M$

$\varphi^{-8} \cdot \varphi^{7} \cdot \psi = \varphi^{-1} \psi$

$\frac{G^2}{c^3} = \frac{L^3}{M^2 T} = J\,[16,0]$ $\quad \frac{ML^2}{T^3} : I = \frac{c^4}{G}$

$I = \frac{c^7}{G} = \frac{ML^4}{T^5}$

	ψ^{-2}	ψ^{-1}	ψ^{0}	ψ^{1}	ψ^{2}	ψ^{3}
14			G $\frac{L^3}{MT^2}$			
13			$\frac{d}{dt}$	$\int dt$		
12						
11						
10						
9						
8						
7						
6		acceleration L/T^2	power $\frac{c^5}{G}$ $\frac{ML^2}{T^3}$		e^2 $\frac{ML^3}{T^2}$	VOLUME
5			current $\frac{M^{1/2}L^{3/2}}{T^2}$			
4			velocity c $\frac{L}{T}$	Energy $\frac{ML^2}{T^2}$	AREA	
3				Charge $\frac{M^{1/2}L^{3/2}}{T}$		
2		frequency $\frac{1}{T}$	force c^4/G $\frac{ML}{T^2}$	Length L	ACTION $\hbar$ $\frac{ML^2}{T}$	
1			voltage $\frac{M^{1/2}L^{1/2}}{T}$			
0			$\frac{c^7}{G^2}$ 1 $\frac{M^2L}{T^3}$	MOMENTUM ML/T	LT	
-1						
-2	Pressure M/T^2L	curvature $\frac{1}{L}$	$\frac{M}{T}$ $\frac{c^3}{G}$	time T	ML	
-3						
-4			$\frac{I}{L}$ c^{-1}	Mass M		
-5						
-6			M/L $\frac{c^2}{G}$	RESISTANCE L T^2/L		
-7						
-8			c^{-2}			
-9						
-10	Density $\frac{M}{L^3}$	ρ	H $\frac{c^8}{G^3}$ $\frac{M^3}{LT^2}$ $\frac{c}{G}$		~~K $\frac{c^7}{G^3}$ $\frac{M^3}{L^2T}$~~	
-11						
-12			c^{-3}			

J [16, 0]
G [14, 0]
P [6, 0]
I [0, 0]
H [-10, 0]
K [-14, 0]

ELECTRON VOLTS

$E = \sqrt{\frac{\hbar c^5}{G}}$ $\quad \varphi^4$

$M = \frac{E}{c^2}$ $\quad \varphi^{-4}$

$F = \frac{E^2}{\hbar c}$ $\quad 8-2-4 = \varphi^2$

$P = \frac{E^2}{\hbar}$ $\quad 8-2 = \varphi^6$

$\nu = \frac{E}{\hbar}$ $\quad 4-2 = \varphi^2$

$\lambda = \frac{\hbar c}{E}$ $\quad 2+4-4 = \varphi^3$

$\rho = \frac{E^4}{\hbar^3 c^5}$ $\quad 16-6-20 = \varphi^{-10}$

K -14 $\frac{c^7}{G^3}$ $\frac{M^3}{L^2T}$

$X = \sqrt{LT}$ $\quad x^2 = \frac{G\hbar}{c^4}$

$y^2 = \frac{T}{M}$ $\quad y = \left(\frac{L}{T}\right)^{1/4}$ $\quad y^2 = \frac{G}{c^3}$

6-9-19

ORIGIN

$\frac{c^{?}}{G^2} =$ [illegible] $\qquad \frac{U}{I} = \frac{M^2 L}{T^3} \qquad T \quad M$

16			J L^3/M^2T				
15						VOLUME L^3
14			G $\frac{L^3}{MT^2}$				
13							
12					e^2 ML^3/T^2		
11							
10					AREA L^2		
9							
8					ACTION ML^2/T		
7				ENERGY ML^2/T^2			
6			POWER ML^2/T^3	CHARGE $M^{1/2}L^{3/2}/T$			
5			CURRENT $M^{1/2}L^{3/2}/T^2$	Length L			
4			velocity $\frac{L}{T}$				
3		Accel L/T^2		MOMENTUM ML/T			
2			Force ML/T^2				
1			VOLTAGE $M^{1/2}L^{1/2}/T$	TIME T			
0			~~$\frac{M^2L}{T^3}$~~ 1 ~~$\frac{T^3}{M^2L}$~~				
-1		frequency		MASS M			
-2							
-3				RESISTANCE T^2/L			
-4							
-5		CURVATURE $1/L$					
-6							
-7							
-8	PRESSURE M/T^2L						
-9							
-10			H M^3/LT^3				

Ground
Descartes'
Pascal

-16 DENSITY M/L^3

$y^2 = \frac{T}{M}$ ↑ $\qquad$ ↗ T $\qquad$ ↘ M

$X^2 = TM$ →

Power at Origin
$I = P = \frac{ML^2}{T^3}$

Charge = force × area
pressure = force/area
$\frac{\text{charge}}{\text{pressure}} = l^4$

10			G $\frac{L^3}{MT^2}, \frac{L^5}{T^6}$			
4			$\frac{T}{M}$ $\frac{L^2}{T^2}$			
3		ACCELERATION $\frac{L}{T^2}, \frac{T}{ML}$				VOLUME L^3
2			VELOCITY $\frac{L}{T}, \frac{T^2}{ML}$		AREA L^2	
1			CURRENT $\frac{M^{1/2}L^{3/2}}{T^2}, \frac{L^{3/2}}{L^{3/2}}$	LENGTH $\frac{ML^3}{T^3}, L$		
0			POWER $\frac{ML^2}{T^3}$, 1, $\frac{T^3}{ML^2}$	CHARGE $\frac{M^{1/2}L^{3/2}}{T}, L^{1/2}T^{1/2}$		
-1		CURVATURE $\frac{1}{L}$	VOLTAGE $\frac{M^{1/2}L^{1/2}}{T}, \frac{T^{1/2}}{L^{1/2}}$	TIME-ENERGY $T, \frac{ML^2}{T^2}$		
-2			FORCE $\frac{ML}{T^2}, \frac{T}{L}$	~~RESISTANCE~~ ~~MOMENTUM~~	ACTION $T^3, \frac{ML^2}{T}$	
-3				~~MOMENTUM~~ RESISTANCE $\frac{T^2}{L}, \frac{ML}{T}$		
-4	PRESSURE $\frac{M}{T^2L}, \frac{T}{L^3}$					
-5				MASS $\frac{T^3}{L^2}, M$		
-6						
-7						
-8	DENSITY $\frac{T^3}{L^5}, \frac{M}{L^3}$					

$M - L = -6$
$L - T = 2$
$T - M = 4$
$2 \cdot 4 = 8 \neq -6$

$T = \varphi^4 M$
$T = \varphi^{-2} L$
$T^2 = \varphi^{-4} L^2$
$T^3 = ML^2$

$y^2 \uparrow \frac{L}{T}$ $\nearrow L$
~~$x^2 \uparrow \frac{ML^3}{T^2}$~~ $\searrow T$
$x^2 \rightarrow LT$

$\theta = 14°.036$
$= 0.245$ rad

ENERGY

AT ORIGIN

$\frac{L}{MT^2}$				$\frac{ML^3}{T^2}$			
0		$\frac{L}{T^2}$		$\frac{ML^2}{T^2}$ 1			
		$\frac{1}{T^2}$		$\frac{L}{T^2}$ M Force			

$x^2 = \frac{1}{M}$ $y^2 = \frac{1}{L}$ $y^2 \; L^{-1}$

$I = \frac{ML^2}{T^3}$

$\uparrow L^{1/2}$

$\longleftarrow L^{-1/2} M^{-1/2}$

DE - DIMENSIONALING

[New G]

Planck $m_0 = -4.662400$, $l_0 = -32.791345$, $t_0 = -43.268166$

$S = 39.355478 = \varphi$, $\alpha\mu = 1.127074 = \psi$

$\varphi^{1/2} = 19.677739$, $\psi^{1/2} = 0.563537$

$T = \frac{t_B}{t_0} = \frac{-23.026889 \text{ (rel c)}}{-43.268166} = +20.241277 = \varphi^{1/2}\psi^{1/2}$

$L = \frac{r_E}{l_0} = \frac{-12.550068}{-32.791345} = +20.241277 = \varphi^{1/2}\psi^{1/2}$

$M = \frac{m_B}{m_0} = \frac{-23.776602}{-4.662400} = -19.114202 = \varphi^{-1/2}\psi^{+1/2}$

BARYONIC MATTER
Essentially T another "space-time" ⇒ velocity ≡ 1

$T \cdot L = T^2 = L^2 = \varphi\psi$ (AREA); $T^3 = L^3 = \varphi^{3/2}\psi^{3/2}$ (VOLUME) $L^3 T = L^4 = T^4 = \varphi^2\psi^2$ (SPACE TIME)

$\frac{M}{L} = \frac{M}{T} = \varphi^{-1}$; $\frac{L}{T} = 1$ (VELOCITY); $M \cdot L = M \cdot T = \psi$ $\frac{1}{T} = \frac{1}{L} = \varphi^{-1/2}\psi^{-1/2}$ (frequency = curvature)

ENERGY $= \frac{ML^2}{T^2} = \varphi^{-1/2}\psi^{1/2}$, POWER $= \frac{ML^2}{T^3} = \varphi^{-1}$ FORCE $= \frac{ML}{T^2} = \varphi^{-1}$

MOMENTUM $= \frac{ML}{T} = \varphi^{-1/2}\psi^{1/2}$; ACCELERATION $= \frac{L}{T^2} = \varphi^{-1/2}\psi^{-1/2}$ (= freq = curv)

DENSITY $= \frac{M}{L^3} = \varphi^{-2}\psi^{-1}$; PRESSURE $= \frac{M}{LT^2} = \varphi^{-2}\psi^{-1}$

$G = \frac{L^3}{MT^2} = \varphi$; $e^2 = \frac{ML^3}{T^2} = \psi$ (CHARGE²); charge (Q) $= \psi^{1/2} = \sqrt{\frac{ML^3}{T^2}}$

current $= \frac{\text{charge}}{\text{time}} = \varphi^{-\frac{1}{2}}$ voltage $= \frac{P}{I} = \varphi^{-\frac{1}{2}}$ resistance $= \frac{\text{~~POWER~~}}{(\text{current})^2} = \frac{~~\varphi^{-1}\varphi^{\frac{1}{2}}~~}{1}$

ACTION

$\hbar = \frac{ML^2}{T} = \psi$

Space ≡ Time ⇒ Density = pressure, Mass = energy, velocity ≡ 1

voltage² = current² = power, resistance ≡ 1 ~ velocity or resistance × velocity = 1

$G \times \rho = 1$ = resistance = velocity = ~~frequency curvature~~

$G \cdot F = 1$

Area $= \varphi\psi =$ $\frac{P}{F} = \frac{L}{T} = 1$

SPACE-TIME
$L = T$

	ψ^{-1}	$\psi^{-1/2}$	ψ^{0}	$\psi^{1/2}$	ψ	$\psi^{3/2}$	ψ^{2}
φ^{2}							SPACE-TIME
$\varphi^{3/2}$						VOLUME	
φ^{1}			G		AREA		
$\varphi^{1/2}$				LENGTH TIME			
φ^{0}			velocity / c resistance	charge	charge^2 $\hbar$ Action		
$\varphi^{-1/2}$		Curvature Acceleration frequency	current voltage	ENERGY MASS MOMENTUM			
φ^{-1}	~~DENSITY~~ space → time		POWER FORCE				
$\varphi^{-3/2}$	electric →	MASS →					
φ^{-2}	DENSITY PRESSURE						

$\psi = a\mu = 1.127074 \qquad \psi^{1/2} = 0.563537$

$\varphi = s = 39.355478 \qquad \varphi^{1/2} = 19.677739$

$$T = \frac{t_B}{t_0} = +20.241277 = \varphi^{1/2}\psi^{1/2}$$

$$L = \frac{r_e}{l_0} = +20.241277 = \varphi^{1/2}\psi^{1/2}$$

$$M = \frac{m_B}{m_0} = -19.114202 = \varphi^{-1/2}\psi^{1/2}$$

REPRESENTATIONS

~~O~~FOR

DIMENSIONAL~~ITIE~~S

ALTERN6.WPD July 5, 2007 May 31, 2008 July 24, 2008

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBOL	PLANCK	EL–VOLT	$\alpha^u\ \mu^v$	$\alpha^X\ \mu^Y\ S^Z$
LENGTH	L	$\sqrt{(G\hbar/c^3)}$	$\hbar c/E$	α^1	
TIME	T	$\sqrt{(G\hbar/c^5)}$	$\hbar/E$	$\alpha^{12}\ \mu^2$	$\alpha^{1/2}\ \mu^{1/2}\ S^{-1/2}$
MASS	M	$\sqrt{(c\hbar/G)}$	E/c^2	μ^1	
G	L^3/MT^2	G	$\hbar c^5/E^2$	$\alpha^{-21}\ \mu^{-5}$	$\alpha^2\ \mu^{-2}\ S$
VELOCITY	L/T	c	c	$\alpha^{-11}\ \mu^{-2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{1/2}$
FREQUENCY	1/T	$\sqrt{(c^5/G\hbar)}$	$E/\hbar$	$\alpha^{-12}\ \mu^{-2}$	$\alpha^{-1/2}\ \mu^{-1/2}\ S^{1/2}$
ACCELERATION Ω^{-1}	L/T^2	$\sqrt{(c^7/G\hbar)}$	$cE/\hbar$	$\alpha^{-23}\ \mu^{-4}$	$\mu^{-1}\ S$
MOMENTUM	ML/T	$\sqrt{(c^3\hbar/G)}$	E/c	$\alpha^{-11}\ \mu^{-1}$	$\alpha^{1/2}\ \mu^{1/2}\ S^{1/2}$
AREA	L^2	$G\hbar/c^3$	$\hbar^2 c^2/E^2$	α^2	
VOLUME	L^3	$(G\hbar/c^3)^{3/2}$	$\hbar^2 c^2/E^2$	α^3	
DENSITY	M/L^3	$c^5/G^2\hbar$	$E^4/\hbar^3 c^5$	$\alpha^{-3}\ \mu$	
ACTION	ML^2/T	$\hbar$	$\hbar$	$\alpha^{-10}\ \mu^{-1}$	$\alpha^{3/2}\ \mu^{1/2}\ S^{1/2}$
FORCE	ML/T^2	c^4/G	$E^2/\hbar c$	$\alpha^{-23}\ \mu^{-3}$	S
ENERGY $I^2\Omega$	ML^2/T^2	$\sqrt{(c^5\hbar/G)}$	E	$\alpha^{-22}\ \mu^{-3}$	$\alpha\ S$
POWER $I\sqrt{F}$	ML^2/T^3	c^5/G	$E^2/\hbar$	$\alpha^{-34}\ \mu^{-5}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{3/2}$
PRESSURE	M/LT^2	$c^7/G^2\hbar$	$E^4/\hbar^3 c^3$	$\alpha^{-25}\ \mu^{-3}$	$\alpha^{-2}\ S$
[CHARGE]^2 e^2	ML^3/T^2	$\hbar c$	$\hbar c$	$\alpha^{-21}\ \mu^{-3}$	$\alpha^{-+2}\ S$
CHARGE e	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	$\sqrt{(\hbar c)}$	$\alpha^{-21/2}\ \mu^{-3/2}$	$\alpha^{-1}\ S^{1/2}$
CURRENT I	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	$E\sqrt{c/\hbar}$	$\alpha^{-45/2}\ \mu^{-7/2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S$
VOLTAGE $\sqrt{F}$	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	$E\sqrt{c\hbar}$	$\alpha^{-23/2}\ \mu^{-3/2}$	$S^{1/2}$
RESISTANCE Ω λ	T^2/L	$\sqrt{(G\hbar/c^7)}$	$\hbar/cE$	$\alpha^{23}\ \mu^4$	$\mu\ S^{-1}$
e^2/c^2	ML	$\hbar/c$	$\hbar/c$	$\alpha\ \mu$	
$I\ \Omega = e/c$	$\sqrt{(ML)}$	$\sqrt{(\hbar/c)}$	$\sqrt{(\hbar/c)}$	$\alpha^{1/2}\ \mu^{1/2}$	
	M/L	c^2/G	$E^2/\hbar c^3$	$\alpha^{-1}\ \mu$	
	M/T	c^3/G	$E^2/\hbar c^2$	$\alpha^{-12}\ \mu^{-1}$	$\alpha^{-1/2}\ \mu^{1/2}\ S^{1/2}$

Electron volts are based on E, energy. 1 ev = –11.795 290 ergs [c, ħ, E]

The α μ system is base on S, a force ratio. $S = \alpha^{-23}\ \mu^{-3}$ = 39.255471 [α, μ,S]

ALTERN6.WPD July 5, 2007 May 31, 2008 July 24, 2008

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBO L	PLANCK	EL–VOLT	$\alpha^u\ \mu^v$	$\alpha^X\ \mu^Y\ S^Z$
LENGTH	L	$\surd(G\hbar/c^3)$	$\hbar c/E$	α^1	
TIME	T	$\surd(G\hbar/c^5)$	$\hbar/E$	$\alpha^{12}\ \mu^2$	$\alpha^{1/2}\ \mu^{1/2}\ S^{-1/2}$
MASS	M	$\surd(c\hbar/G)$	E/c^2	μ^1	
G	L^3/MT^2	G	$\hbar c^5/E^2$	$\alpha^{-21}\ \mu^{-5}$	$\alpha^2\ \mu^{-2}\ S$
VELOCITY	L/T	c	c	$\alpha^{-11}\ \mu^{-2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{1/2}$
FREQUENCY	1/T	$\surd(c^5/G\hbar)$	$E/\hbar$	$\alpha^{-12}\ \mu^{-2}$	$\alpha^{-1/2}\ \mu^{-1/2}\ S^{1/2}$
ACCELERATION Ω^{-1}	L/T^2	$\surd(c^7/G\hbar)$	$cE/\hbar$	$\alpha^{-23}\ \mu^{-4}$	$\mu^{-1}\ S$
MOMENTUM	ML/T	$\surd(c^3\hbar/G)$	E/c	$\alpha^{-11}\ \mu^{-1}$	$\alpha^{1/2}\ \mu^{1/2}\ S^{1/2}$
AREA	L^2	$G\hbar/c^3$	$\hbar^2c^2/E^2$	α^2	
VOLUME	L^3	$(G\hbar/c^3)^{3/2}$	$\hbar^2c^2/E^2$	α^3	
DENSITY	M/L^3	$c^5/G^2\hbar$	$E^4/\hbar^3c^5$	$\alpha^{-3}\ \mu$	
ACTION	ML^2/T	$\hbar$	$\hbar$	$\alpha^{-10}\ \mu^{-1}$	$\alpha^{3/2}\ \mu^{1/2}\ S^{1/2}$
FORCE	ML/T^2	c^4/G	$E^2/\hbar c$	$\alpha^{-23}\ \mu^{-3}$	S
ENERGY $I^2\Omega$	ML^2/T^2	$\surd(c^5\hbar/G)$	E	$\alpha^{-22}\ \mu^{-3}$	$\alpha\ S$
POWER $I\surd F$	ML^2/T^3	c^5/G	$E^2/\hbar$	$\alpha^{-34}\ \mu^{-5}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{3/2}$
PRESSURE	M/LT^2	$c^7/G^2\hbar$	$E^4/\hbar^3c^3$	$\alpha^{-25}\ \mu^{-3}$	$\alpha^{-2}\ S$
[CHARGE]^2 e^2	ML^3/T^2	$\hbar c$	$\hbar c$	$\alpha^{-21}\ \mu^{-3}$	$\alpha^{+2}\ S$
CHARGE e	$\surd(ML^3/T^2)$	$\surd(\hbar c)$	$\surd(\hbar c)$	$\alpha^{-21/2}\ \mu^{-3/2}$	$\alpha\ S^{1/2}$
CURRENT I	$\surd(ML^3/T^4)$	$c^3/\surd G$	$E\surd c/\hbar$	$\alpha^{-45/2}\ \mu^{-7/2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S$
VOLTAGE $\surd F$	$\surd(ML/T^2)$	$c^2/\surd G$	$E\surd c\hbar$	$\alpha^{-23/2}\ \mu^{-3/2}$	$S^{1/2}$
RESISTANCE Ω	T^2/L	$\surd(G\hbar/c^7)$	$\hbar/cE$	$\alpha^{23}\ \mu^4$	$\mu\ S^{-1}$
e^2/c^2	ML	$\hbar/c$	$\hbar/c$	$\alpha\ \mu$	
$I\ \Omega$ = e/c	$\surd(ML)$	$\surd(\hbar/c)$	$\surd(\hbar/c)$	$\alpha^{1/2}\ \mu^{1/2}$	
	M/L	c^2/G	$E^2/\hbar c^3$	$\alpha^{-1}\ \mu$	
	M/T	c^3/G	$E^2/\hbar c^2$	$\alpha^{-12}\ \mu^{-1}$	$\alpha^{-1/2}\ \mu^{1/2}\ S^{1/2}$

Electron volts are based on E, energy. 1 ev = –11.795 290 ergs [c, ħ, E]

The α μ system is base on S, a force ratio. $S = \alpha^{-23}\ \mu^{-3}$ = 39.355471 [α, μ,S]

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBO L	PLANCK	$\log_{10}$(cgs)	$\alpha^u\ \mu^v$	$\alpha^X\ \mu^Y\ S^Z$
LENGTH	L	$\sqrt{(G\hbar/c^3)}$	–32.791341	α^1	
TIME	T	$\sqrt{(G\hbar/c^5)}$	–43.268161	$\alpha^{12}\mu^2$	$\alpha^{1/2}\ \mu^{1/2}\ S^{-1/2}$
MASS	M	$\sqrt{(c\hbar/G)}$	–4.662404	μ^1	
G	L^3/MT^2	G	–7.175296	$\alpha^{-21}\mu^{-5}$	$\alpha^2\ \mu^{-2}\ S$
VELOCITY	L/T	c	10.476821	$\alpha^{-11}\mu^{-2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{1/2}$
FREQUENCY	1/T	$\sqrt{(c^5/G\hbar)}$	43.268161	$\alpha^{-12}\mu^{-2}$	$\alpha^{-1/2}\ \mu^{-1/2}\ S^{1/2}$
ACCELERATION Ω^{-1}	L/T^2	$\sqrt{(c^7/G\hbar)}$	53.744983	$\alpha^{-23}\mu^{-4}$	$\mu^{-1}\ S$
MOMENTUM	ML/T	$\sqrt{(c^3\hbar/G)}$	5.814417	$\alpha^{-11}\mu^{-1}$	$\alpha^{1/2}\ \mu^{1/2}\ S^{1/2}$
AREA	L^2	$G\hbar/c^3$	–65.582382	α^2	
VOLUME	L^3	$(G\hbar/c^3)^{3/2}$	–98.373723	α^3	
DENSITY	M/L^3	$c^5/G^2\hbar$	93.711319	$\alpha^{-3}\mu$	
ACTION	ML^2/T	$\hbar$	–26.976924	$\alpha^{-10}\mu^{-1}$	$\alpha^{3/2}\ \mu^{1/2}\ S^{1/2}$
FORCE	ML/T^2	c^4/G	49.082578	$\alpha^{-23}\mu^{-3}$	S
ENERGY $I^2\Omega$	ML^2/T^2	$\sqrt{(c^5\hbar/G)}$	16.291238	$\alpha^{-22}\mu^{-3}$	$\alpha\ S$
POWER $I\sqrt{F}$	ML^2/T^3	c^5/G	59.559399	$\alpha^{-34}\mu^{-5}$	$\alpha^{1/2}\ \mu^{-1/2}\ S^{3/2}$
PRESSURE	M/LT^2	$c^7/G^2\hbar$	114.664960	$\alpha^{-25}\mu^{-3}$	$\alpha^{-2}\ S$
[CHARGE]^2 e^2	ML^3/T^2	$\hbar c$	–16.500103	$\alpha^{-21}\mu^{-3}$	$\alpha^{+2}\ S$
CHARGE e	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	–8.250052	$\alpha^{-21/2}\mu^{-3/2}$	$\alpha^{+1}\ S^{1/2}$
CURRENT I	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	35.018110	$\alpha^{-45/2}\mu^{-7/2}$	$\alpha^{1/2}\ \mu^{-1/2}\ S$
VOLTAGE $\sqrt{F}$	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	24.541289	$\alpha^{-23/2}\mu^{-3/2}$	$S^{1/2}$
RESISTANCE Ω	T^2/L	$\sqrt{(G\hbar/c^7)}$	–53.744983	$\alpha^{23}\mu^4$	$\mu\ S^{-1}$
e^2/c^2	ML	$\hbar/c$	–37.453745	$\alpha\mu$	
$I\Omega = e/c$	$\sqrt{(ML)}$	$\sqrt{(\hbar/c)}$	–18.726873	$\alpha^{1/2}\mu^{1/2}$	
	M/L	c^2/G	28.128937	$\alpha^{-1}\mu$	
	M/T	c^3/G	38.605758	$\alpha^{-12}\mu^{-1}$	$\alpha^{-1/2}\ \mu^{1/2}\ S^{1/2}$

I DIMENSIONS & DIMENSIONALITIES
Need ≥ 2 = DIMENSIONALITIES DIRECTIONS
ORTHOGONAL

II SYSTEMS OF REPRESENTATION OF DIMENSIONALITIES
M, L, T, C, G, S, NAMES of UNITS, ELECTRON-VOLTS [$\alpha^n \mu^m$ [n, m]]

III VECTOR DATA
SCALE e^i DIMENSIONALITY

IV REPRESENTATION OF SCALE
SI (mks), ~~Metric~~ (cgs)

V BARYON INTRA-LEVEL $\frac{\lambda_c}{r_e} \to \alpha$ $\frac{m_p}{m_e} \to \mu$ $\frac{\hbar \alpha c}{G m_p m_e} \to S$
Most accurate measures α, μ, S ...

VI PLANCK INTRA-LEVEL ~~INTRA~~ log CGS
all = 1 e.g. $\frac{G m_0}{c^2} = l_0$ etc

VII RATIOS
A. BARYON/PLANCK → {values $\alpha^n \mu^m$} [S] any
(*) INTER-LEVEL RATIOS [Note all inter ratios of all dimensionalities are f(α, μ) & S]

VIII CONSTRUCT TEMPLATE or GRID
Using VII; inter level ratios α, μ, ..., Σ

Check with astrophysical observations

IX ~~Check w~~ STANDARD MODEL
Electron-volts → planck energy unit
Ratio with plank energy etc.

(*) B/P Mass $\alpha^{12}\mu^2 = -19.114$ HIGGS BOSON
Length $\alpha^{-11}\mu^{-1} = +20.241$
Energy $\alpha^{-12}\mu^{-2} = +19.114$?
Force ~~α~~ S^{-1} = −39.355
Power S^{-1}

ALTERN7.WPD July 26, 2008 P/P

INTER RATIO

inter ratios tend to c G ħ or √e μ

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBO L	PLANCK	DIFFERENCE		BARYON	
LENGTH	$\sqrt{(G \hbar/c^3)}$	–32.791341	20.241273	$\alpha^{-11}\mu^{-1}$	–12.550 068	$(\alpha\mu S)^{1/2}$
TIME	$\sqrt{(G \hbar/c^5)}$	–43.268161	20.241272	$\alpha^{-11}\mu^{-1}$	–23.026 889	
MASS	$\sqrt{(c \hbar/G)}$	–4.662404	– 19.114198	$\alpha^{+12}\mu^{+2}$	–23.776 602	
G	G	–7.175296	39.355472	S	32.180 176	
VELOCITY	c	10.476821	1	$\alpha^0\mu^0$	10.476 521	2C
FREQUENCY	$\sqrt{(c^5/G \hbar)}$	43.268161	– 20.241272	$\alpha^{11}\mu^{1}$	23.026 898	
ACCELERATION Ω^{-1} X	$\sqrt{(c^7/G \hbar)}$	53.744983	–20.241273	$\alpha^{11}\mu^{1}$	33.503 710	
MOMENTUM	$\sqrt{(c^3 \hbar/G)}$	5.814417	–19.114498	$\alpha^{12}\mu^{2}$	–13.300 081	
AREA	$G \hbar/c^3$	–65.582382	+40.462246	$\alpha\mu S$	–25.100 136	
VOLUME	$(G \hbar/c^3)^{3/2}$	–98.373723	+60.723519	$(\alpha\mu S)^{3/2}$	–37.650 204	
DENSITY	$c^5/G^2 \hbar$	93.711619	+79.838017	$\alpha^{-1}\mu^{-1}S^{-2}$	13.873 602	
ACTION	$\hbar$	–26.976924	+ 1.127077	$\alpha\mu$	–25.849 847	
FORCE	c^4/G	49.082578	– 39.355470	S^{-1}	9.727 108	
ENERGY $I^2\Omega$	$\sqrt{(c^5 \hbar/G)}$	16.291238	– 19.114198	$\alpha^{12}\mu^{2}$	–2.822 960	
POWER $I\sqrt{F}$	c^5/G	59.559399	– 39.355470	S^{-1}	20.203 929	
PRESSURE	$c^7/G^2\hbar$	114.664960				
[CHARGE]^2 e^2	$\hbar c$	–16.500103	– 2.136835	α	–18.636 938	
CHARGE e	$\sqrt{(\hbar c)}$	–8.250052	– 1.068417	$\alpha^{1/2}$	–9.318 469	
CURRENT I	$c^3/\sqrt{G}$	35.018110	– 21.309690	$\alpha^{-21/2}\mu^{-1}$	13.708 420	
VOLTAGE $\sqrt{F}$	$c^2/\sqrt{G}$	24.541289	–19.677735	$S^{-1/2}$	4.863 554	
RESISTANCE Ω = X	$\sqrt{(G\hbar/c^7)}$	–53.744983	+ 20.241773	$\alpha^{-11}\mu^{-1}$	–33.503 710	
e^2/c^2	$\hbar/c$	–37.453745	+ 1.127074	$\alpha\mu$	–36.326 670	
$I\Omega = e/c$	$\sqrt{(\hbar/c)}$	–18.726873	– 1.068417 ~~38.522763~~ ?	$\alpha^{1/2}$	–19.795 290	?
	c^2/G	28.128937	– 39.355471	S^{-1}	–11.226 534	
	c^3/G	38.605758				

All ratios are expressible in terms of $\alpha\mu$

$R = \frac{1}{vel}, \frac{1}{c}$

ALTERN7.WPD July 26, 2008 RATIO $\frac{B}{P}$

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBO L	PLANCK	~~DIFFERENCE~~		BARYON
LENGTH	$\sqrt{(G \hbar/c^3)}$	–32.791341			–12.550 068
TIME	$\sqrt{(G \hbar/c^5)}$	–43.268161			–23.026 889
MASS	$\sqrt{(c \hbar/G)}$	–4.662404			–23.776 602
G	G	–7.175296			32.180 176
VELOCITY	c	10.476821			10.476 521
FREQUENCY	$\sqrt{(c^5/G \hbar)}$	43.268161			23.026 898
ACCELERATION Ω^{-1}	$\sqrt{(c^7/G \hbar)}$	53.744983			33.503 710
MOMENTUM	$\sqrt{(c^3 \hbar/G)}$	5.814417			–13.300 081
AREA	$G \hbar/c^3$	–65.582382			–25.100 136
VOLUME	$(G \hbar/c^3)^{3/2}$	–98.373723			–37.650 204
DENSITY	$c^5/G^2 \hbar$	93.711~~3~~619 ✗			13.873 602
ACTION	$\hbar$	–26.976924			–25.849 847
FORCE	c^4/G	49.082578			9.727 108
ENERGY $I^2 \Omega$	$\sqrt{(c^5 \hbar/G)}$	16.291238			–2.822 960
POWER $I \sqrt{F}$	c^5/G	59.559399			20.203 929
PRESSURE	$c^7/G^2\hbar$	114.664960			
[CHARGE]^2 e^2	$\hbar c$	–16.500103			–18.636 938
CHARGE e	$\sqrt{(\hbar c)}$	–8.250052			–9.318 469
CURRENT I	$c^3/\sqrt{G}$	35.018110			13.708 420
VOLTAGE $\sqrt{F}$	$c^2/\sqrt{G}$	24.541289			4.863 554
RESISTANCE Ω	$\sqrt{(G\hbar/c^7)}$	–53.744983			–33.503 710
e^2/c^2	$\hbar/c$	–37.453745			–36.326 670
$I \Omega = e/c$	$\sqrt{(\hbar/c)}$	–18.726873			19.795 290
	c^2/G	28.128937			–11.226 534
	c^3/G	38.605758			

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBOL	PLANCK	$\alpha^N \mu^M$	$\log_{10}$(cgs)	BARYON	
LENGTH	$\sqrt{(G \hbar/c^3)}$	–32.791341	α^1	–2.136835*	–12.550 068	$\alpha^{-11}\mu^{-1}$
TIME	$\sqrt{(G \hbar/c^5)}$	–43.268161	$\alpha^{12} \mu^2$	–19.114202*	–23.026 889	$\alpha^{-11}\mu^{-1}$
MASS	$\sqrt{(c \hbar/G)}$	–4.662404	μ^1	3.263909	–23.776 602	$\alpha^{12}\mu^3$
G	G	–7.175296	$\alpha^{-21} \mu^{-5}$	28.553990	32.180176	
VELOCITY	c	10.476821	$\alpha^{-11} \mu^{-2}$	16.977367	10.476521	$\alpha^0\mu^0$
FREQUENCY	$\sqrt{(c^5/G \hbar)}$	43.268161	$\alpha^{-12} \mu^{-2}$	19.114202*	23.026889	$\alpha^{-11}\alpha^{-1}$
ACCELERATION Ω^{-1}	$\sqrt{(c^7/G \hbar)}$	53.744983	$\alpha^{-23} \mu^{-4}$	36.091569	33.503710	
MOMENTUM	$\sqrt{(c^3 \hbar/G)}$	5.814417	$\alpha^{-11} \mu^{-1}$	20.241276*	–13.300081	
AREA	$G \hbar/c^3$	–65.582382	α^2	–4.273670	–25.100136	
VOLUME	$(G \hbar/c^3)^{3/2}$	–98.373723	α^3	–6.410505	–37.650 204	
DENSITY	$c^5/G^2 \hbar$	93.711819	$\alpha^{-3} \mu$	9.674414	13.873 602	
ACTION	$\hbar$	–26.976924	$\alpha^{-10} \mu^{-1}$	18.104441	–25.849847	
FORCE	c^4/G	49.082578	$\alpha^{-23} \mu^{-3}$	39.355471*	9.727 108	5^{-1}
ENERGY $I^2 \Omega$	$\sqrt{(c^5 \hbar/G)}$	16.291238	$\alpha^{-22} \mu^{-3}$	37.218643	–2.822 960	
POWER $I \sqrt{F}$	c^5/G	59.559399	$\alpha^{-34} \mu^{-5}$	56.332845	20.203 929	
PRESSURE	$c^7/G^2\hbar$	114.664960	$\alpha^{-25} \mu^{-3}$	43.629148		
[CHARGE]² e^2	$\hbar c$	–16.500103	$\alpha^{-21} \mu^{-3}$	35.081808	–15.373028 x	$\alpha\mu$
CHARGE e	$\sqrt{(\hbar c)}$	–8.250052	$\alpha^{-21/2} \mu^{-3/2}$	17.540904		
CURRENT I	$c^3/\sqrt{G}$	35.018110	$\alpha^{-45/2} \mu^{-7/2}$	36.655106		
VOLTAGE $\sqrt{F}$	$c^2/\sqrt{G}$	24.541289	$\alpha^{-23/2} \mu^{-3/2}$	19.677739*		
RESISTANCE Ω	$\sqrt{(G\hbar/c^7)}$	–53.744983	$\alpha^{23} \mu^4$	–36.091569	–33.503710	
e^2/c^2	$\hbar/c$	–37.453745	$\alpha \mu$	1.127074*	–36.326 670	
$I \Omega = e/c$	$\sqrt{(\hbar/c)}$	–18.726873	$\alpha^{1/2} \mu^{1/2}$	0.563527*		
	c^2/G	28.128937	$\alpha^{-1} \mu$	5.400744	–11.226 534	
	c^3/G	38.605758	$\alpha^{-12} \mu^{-1}$	22.378107		

* = used by natro

me and mp

–18.636935 $\Delta\Xi\mu$

ALTERN3.WPD July 5, 2007 May 31, 2008

ALTERNATE REPRESENTATIONS FOR PHYSICAL DIMENSIONS

DIMENSION	SYMBOL	PLANCK	$\log_{10}$(cgs)	$\alpha^u \mu^v$	$\log_{10}(\alpha^u \mu^v)$
LENGTH	L	$\sqrt{(G \hbar/c^3)}$	–32.791341	α^1	–2.136835
TIME	T	$\sqrt{(G \hbar/c^5)}$	–43.268161	$\alpha^{12} \mu^2$	–19.114202
MASS	M	$\sqrt{(c \hbar/G)}$	–4.662404	μ^1	3.263909
G	L^3/MT^2	G	–7.175296	$\alpha^{-21} \mu^{-5}$	28.553990
VELOCITY	L/T	c	10.476821	$\alpha^{-11} \mu^{-2}$	16.977367
FREQUENCY	1/T	$\sqrt{(c^5/G \hbar)}$	43.268161	$\alpha^{-12} \mu^{-2}$	19.114202
ACCELERATION Ω^{-1}	L/T^2	$\sqrt{(c^7/G \hbar)}$	53.744983	$\alpha^{-23} \mu^{-4}$	36.091569
MOMENTUM	ML/T	$\sqrt{(c^3 \hbar/G)}$	5.814417	$\alpha^{-11} \mu^{-1}$	20.241276
AREA	L^2	$G \hbar/c^3$	–65.582382	α^2	–4.273670
VOLUME	L^3	$(G \hbar/c^3)^{3/2}$	–98.373723	α^3	–6.410505
DENSITY	M/L^3	$c^5/G^2 \hbar$	93.711619	$\alpha^{-3} \mu$	9.674414
ACTION	ML^2/T	$\hbar$	–26.976924	$\alpha^{-10} \mu^{-1}$	18.104441
FORCE	ML/T^2	c^4/G	49.082578	$\alpha^{-23} \mu^{-3}$	39.355471
ENERGY $I^2 \Omega$	ML^2/T^2	$\sqrt{(c^5 \hbar/G)}$	16.291238	$\alpha^{-22} \mu^{-3}$	37.218643
POWER $I\sqrt{F}$	ML^2/T^3	c^5/G	59.559399	$\alpha^{-34} \mu^{-5}$	56.332845
PRESSURE	M/LT^2	$c^7/G^2\hbar$	114.664960	$\alpha^{-25} \mu^{-3}$	43.629148
[CHARGE]^2 e^2	ML^3/T^2	$\hbar c$	–16.500103	$\alpha^{-21} \mu^{-3}$	35.081808
CHARGE e	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	–8.250052	$\alpha^{-21/2} \mu^{-3/2}$	17.540904
CURRENT I	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	35.018110	$\alpha^{-45/2} \mu^{-7/2}$	36.655106
VOLTAGE $\sqrt{F}$	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	24.541289	$\alpha^{-23/2} \mu^{-3/2}$	19.677739
RESISTANCE Ω	T^2/L	$\sqrt{(G\hbar/c^7)}$	–53.744983	$\alpha^{23} \mu^4$	–36.091569
e^2/c^2	ML	$\hbar/c$	–37.453745	$\alpha \mu$	1.127074
$I \Omega$ = e/c	$\sqrt{(ML)}$	$\sqrt{(\hbar/c)}$	–18.726873	$\alpha^{1/2} \mu^{1/2}$	0.563527
	M/L	c^2/G	28.128937	$\alpha^{-1} \mu$	5.400744
	M/T	c^3/G	38.605758	$\alpha^{-12} \mu^{-1}$	22.378107

ALTERN2.WPD July 21, 2007

TWO PARAMETER REPRESENTATIONS FOR PHYSICAL DIMENSIONS

various assumptions for M, L, T

SYMBOL	$\alpha^u\ \mu^v$	$\log_{10}(\alpha^u\mu^v)$	$\alpha^u\ \mu^v$	$\log_{10}(\alpha^u\mu^v)$	$\alpha^u\ \mu^v$	$\log_{10}(\alpha^u\mu^v)$
L	α^1	–2.136835	$\alpha^{-1}\mu^{-1}$	? 1.127074	$\alpha^3\mu^3$	+3.381222
T	$\alpha^{12}\mu^2$	–19.114202	α^5	–10.684175	$\alpha^{12}\mu^2$	–19.114202
M	μ^1	3.263909	$\alpha^{-12}\mu^{-2}$	19.114202	$\alpha^{-2}\mu^{-2}$	– 2.254148
L^3/MT^2	$\alpha^{-21}\mu^{-5}$	28.553990	$\alpha^{-1}\mu^{-1}$	? 1.127074	$\alpha^{-13}\mu^7$	50.626218
L/T	$\alpha^{-11}\mu^{-2}$	16.977367	$\alpha^{-6}\mu^{-1}$	9.557101	$\alpha^{-9}\mu^1$	22.495424
1/T	$\alpha^{-12}\mu^{-2}$	19.114202	α^{-5}	10.684175	$\alpha^{-12}\mu^{-2}$	19.114202 ✓
L/T^2	$\alpha^{-23}\mu^{-4}$	36.091569	$\alpha^{-11}\mu^{-1}$	20.241276	$\alpha^{-21}\mu^{-1}$	41.609626
ML/T	$\alpha^{-11}\mu^{-1}$	20.241276	$\alpha^{-18}\mu^{-3}$	28.671303	$\alpha^{-11}\mu^{-1}$	20.241276 ✓
L^2	α^2	–4.273670	$\alpha^{-2}\mu^{-2}$	– 2.254148	$\alpha^6\mu^6$	–6.762444
L^3	α^3	–6.410505	$\alpha^{-3}\mu^{-3}$	– 3.381222	$\alpha^9\mu^9$	–10.143666
M/L^3	$\alpha^{-3}\mu$	9.674414	$\alpha^{-9}\mu^1$	22.495424	$\alpha^{-11}\mu^{-11}$	–12.397814
ML^2/T	$\alpha^{-10}\mu^{-1}$	18.104441	$\alpha^{-19}\mu^{-4}$	27.544229	$\alpha^{-8}\mu^2$	23.622498
ML/T^2	$\alpha^{-23}\mu^{-3}$	39.355478	$\alpha^{-23}\mu^{-3}$	39.355478	$\alpha^{-23}\mu^{-3}$	39.355478 ✓
ML^2/T^2	$\alpha^{-22}\mu^{-3}$	37.218643	$\alpha^{-24}\mu^{-4}$	38.228404	α^{-20}	42.736700
ML^2/T^3	$\alpha^{-34}\mu^{-5}$	56.332845	$\alpha^{-29}\mu^{-4}$	48.912579	$\alpha^{-32}\mu^{-2}$	61.850902
M/LT^2	$\alpha^{-25}\mu^{-3}$	43.629148	$\alpha^{-21}\mu^{-1}$	41.609626	$\alpha^{-29}\mu^{-9}$	32.593034
ML^3/T^2	$\alpha^{-21}\mu^{-3}$	35.081808	$\alpha^{-25}\mu^{-5}$	37.101330	$\alpha^{-17}\mu^3$	46.117922
$\sqrt{(ML^3/T^2)}$	$\alpha^{-21/2}\mu^{-3/2}$	17.540904	$\alpha^{-25/2}\mu^{-5/2}$	18.550665	$\alpha^{-17/2}\mu^{3/2}$	23.058961
$\sqrt{(ML^3/T^4)}$	$\alpha^{-45/2}\mu^{-7/2}$	36.655106	$\alpha^{-35/2}\mu^{-5/2}$	29.234840	$\alpha^{-41/2}\mu^{-1/2}$	42.173156
$\sqrt{(ML/T^2)}$	$\alpha^{-23/2}\mu^{-3/2}$	19.677739 ✓	$\alpha^{-23/2}\mu^{-3/2}$	19.677739 ✓	$\alpha^{-23/2}\mu^{-3/2}$	19.677739 ✓
T^2/L	$\alpha^{23}\mu^4$	–36.091569	$\alpha^{11}\mu^1$	–20.241276	$\alpha^{21}\mu^1$	–41.609626

which of above are B? ratios or values
are E!

PHYSICAL DIMENSIONS log(PLANCK) ORDER

DIMENSION	SYMBOL	PLANCK	$\log_{10}$(cgs)	$\alpha^u \mu^v$	$\log_{10}(\alpha^u\mu^v)$
VOLUME	L^3	$(G\hbar/c^3)^{3/2}$	–98.373723	α^3	–6.410505
AREA	L^2	$G\hbar/c^3$	–65.582382	α^2	–4.273670
RESISTANCE Ω	T^2/L	$\sqrt{(G\hbar/c^7)}$	–53.744983	$\alpha^{23}\mu^4$	–36.091569
TIME	T	$\sqrt{(G\hbar/c^5)}$	–43.268161	$\alpha^{12}\mu^2$	–19.114202
e^2/c^2	ML	$\hbar/c$	–37.453745	$\alpha\mu$	1.127074
LENGTH	L	$\sqrt{(G\hbar/c^3)}$	–32.791341	α^1	–2.136835
ACTION	ML^2/T	$\hbar$	–26.976924	$\alpha^{-10}\mu^{-1}$	18.104441
$I\Omega = e/c$	$\sqrt{(ML)}$	$\sqrt{(\hbar/c)}$	–18.726873	$\alpha^{1/2}\mu^{1/2}$	0.563527
[CHARGE] ^{2} e^2	ML^3/T^2	$\hbar c$	–16.500103	$\alpha^{-21}\mu^{-3}$	35.081808
CHARGE e	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	–8.250052	$\alpha^{-21/2}\mu^{-3/2}$	17.540904
G	L^3/MT^2	G	–7.175296	$\alpha^{-21}\mu^{-5}$	28.553990
MASS	M	$\sqrt{(c\hbar/G)}$	–4.662404	μ^1	3.263909
MOMENTUM	ML/T	$\sqrt{(c^3\hbar/G)}$	5.814417	$\alpha^{-11}\mu^{-1}$	20.241276
VELOCITY	L/T	c	10.476821	$\alpha^{-11}\mu^{-2}$	16.977367
ENERGY $I^2\Omega$	ML^2/T^2	$\sqrt{(c^5\hbar/G)}$	16.291238	$\alpha^{-22}\mu^{-3}$	37.218643
VOLTAGE $\sqrt{F}$	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	24.541289	$\alpha^{-23/2}\mu^{-3/2}$	19.677739
	M/L	c^2/G	28.128937	$\alpha^{-1}\mu$	5.400744
CURRENT I	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	35.018110	$\alpha^{-45/2}\mu^{-7/2}$	36.655106
	M/T	c^3/G	38.605758	$\alpha^{-12}\mu^{-1}$	22.378107
FREQUENCY	1/T	$\sqrt{(c^5/G\hbar)}$	43.268161	$\alpha^{-12}\mu^{-2}$	19.114202
FORCE	ML/T^2	c^4/G	49.082578	$\alpha^{-23}\mu^{-3}$	39.355471
ACCELERATION Ω^{-1}	L/T^2	$\sqrt{(c^7/G\hbar)}$	53.744983	$\alpha^{-23}\mu^{-4}$	36.091569
POWER $I\sqrt{F}$	ML^2/T^3	c^5/G	59.559399	$\alpha^{-34}\mu^{-5}$	56.332845
DENSITY	M/L^3	$c^5/G^2\hbar$	93.711319	$\alpha^{-3}\mu$	9.674414
PRESSURE	M/LT^2	$c^7/G^2\hbar$	114.664960	$\alpha^{-25}\mu^{-3}$	43.629148

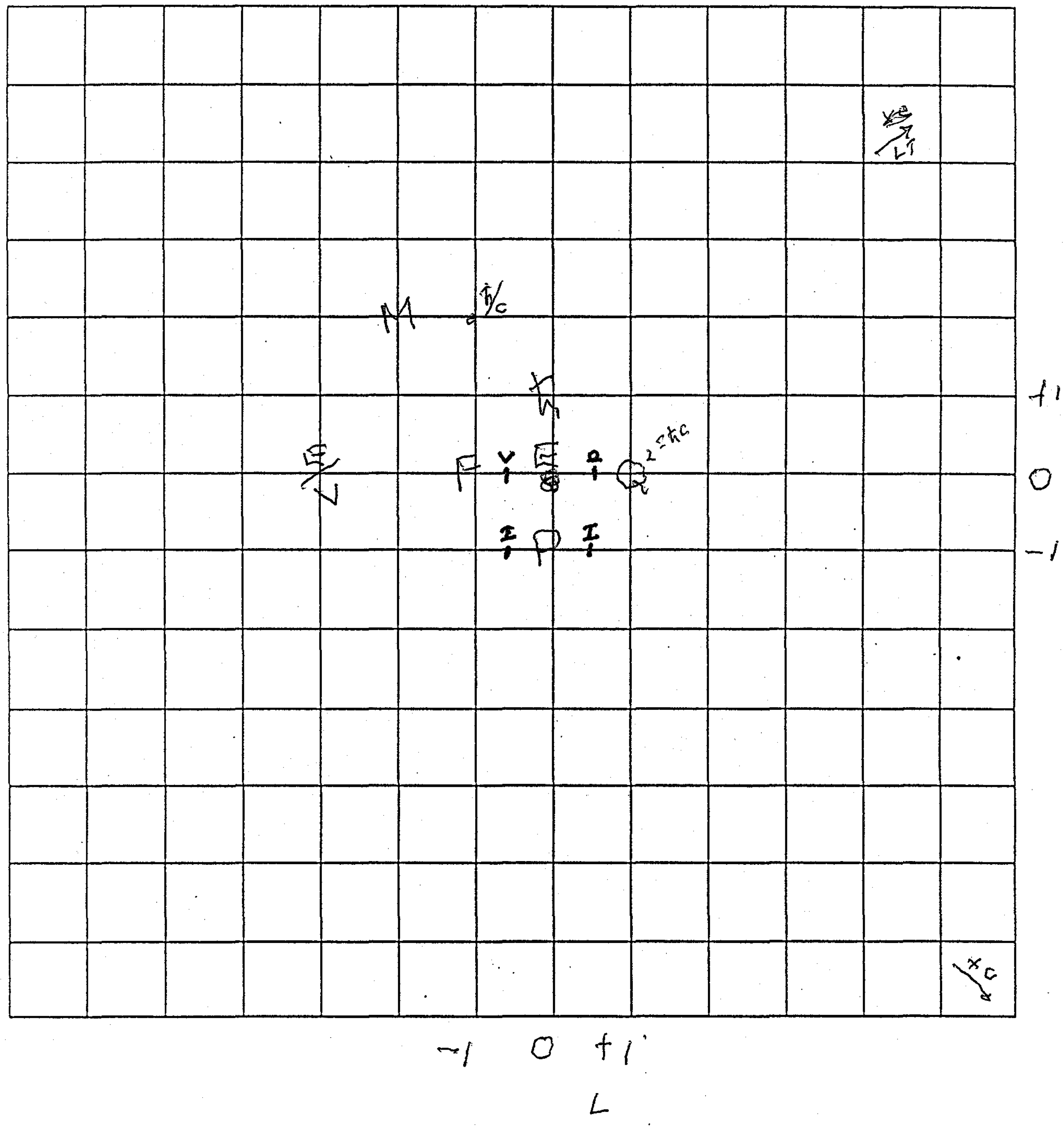
PHYSICAL DIMENSIONS log(αμ) ORDER

DIMENSION	SYMBO L	PLANCK	$\log_{10}$(cgs)	$\alpha^u\ \mu^v$	$\log_{10}(\alpha^u\mu^v)$
RESISTANCE Ω	T^2/L	$\sqrt{(G\hbar/c^7)}$	–53.744983	$\alpha^{23}\mu^4$	–36.091569
TIME	T	$\sqrt{(G\hbar/c^5)}$	–43.268161	$\alpha^{12}\mu^2$	–19.114202
VOLUME	L^3	$(G\hbar/c^3)^{3/2}$	–98.373723	α^3	–6.410505
AREA	L^2	$G\hbar/c^3$	–65.582382	α^2	–4.273670
LENGTH	L	$\sqrt{(G\hbar/c^3)}$	–32.791341	α^1	–2.136835
I Ω = e/c	$\sqrt{(ML)}$	$\sqrt{(\hbar/c)}$	–18.726873	$\alpha^{1/2}\mu^{1/2}$	0.563527
e^2/c^2	ML	$\hbar/c$	–37.453745	$\alpha\ \mu$	1.127074
MASS	M	$\sqrt{(c\hbar/G)}$	–4.662404	μ^1	3.263909
	M/L	c^2/G	28.128937	$\alpha^{-1}\mu$	5.400744
DENSITY	M/L^3	$c^5/G^2\hbar$	93.711319	$\alpha^{-3}\mu$	9.674414
VELOCITY	L/T	c	10.476821	$\alpha^{-11}\mu^{-2}$	16.977367
CHARGE e	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	–8.250052	$\alpha^{-21/2}\mu^{-3/2}$	17.540904
ACTION	ML^2/T	$\hbar$	–26.976924	$\alpha^{-10}\mu^{-1}$	18.104441
FREQUENCY	1/T	$\sqrt{(c^5/G\hbar)}$	43.268161	$\alpha^{-12}\mu^{-2}$	19.114202
VOLTAGE $\sqrt{F}$	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	24.541289	$\alpha^{-23/2}\mu^{-3/2}$	19.677739
MOMENTUM	ML/T	$\sqrt{(c^3\hbar/G)}$	5.814417	$\alpha^{-11}\mu^{-1}$	20.241276
	M/T	c^3/G	38.605758	$\alpha^{-12}\mu^{-1}$	22.378107
G	L^3/MT^2	G	–7.175296	$\alpha^{-21}\mu^{-5}$	28.553990
[CHARGE]^2 e^2	ML^3/T^2	$\hbar c$	–16.500103	$\alpha^{-21}\mu^{-3}$	35.081808
ACCELERATION Ω^{-1}	L/T^2	$\sqrt{(c^7/G\hbar)}$	53.744983	$\alpha^{-23}\mu^{-4}$	36.091569
CURRENT I	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	35.018110	$\alpha^{-45/2}\mu^{-7/2}$	36.655106
ENERGY $I^2\Omega$	ML^2/T^2	$\sqrt{(c^5\hbar/G)}$	16.291238	$\alpha^{-22}\mu^{-3}$	37.218643
FORCE	ML/T^2	c^4/G	49.082578	$\alpha^{-23}\mu^{-3}$	39.355471
PRESSURE	M/LT^2	$c^7/G^2\hbar$	114.664960	$\alpha^{-25}\mu^{-3}$	43.629148
POWER $I\sqrt{F}$	ML^2/T^3	c^5/G	59.559399	$\alpha^{-34}\mu^{-5}$	56.332845

ALTERNATE REPRESENTATIONS FOR DIMENSIONALITIES

NAME	SYMBOL	PLANCK	$\alpha^N \mu^M$	$\log_{10}$(cgs)	BARYON
LENGTH	$\surd(G\hbar/c^3)$	–32.791341	α^1	–2.136835	–12.550 068
TIME	$\surd(G\hbar/c^5)$	–43.268161	$\alpha^{12}\mu^2$	–19.114202	–23.026 889
MASS	$\surd(c\hbar/G)$	–4.662404	μ^1	3.263909	–23.776 602
G	G	–7.175296	$\alpha^{-21}\mu^{-5}$	28.553990	32.180 176
VELOCITY	c	10.476821	$\alpha^{-11}\mu^{-2}$	16.977367	10.476 521
FREQUENCY	$\surd(c^5/G\hbar)$	43.268161	$\alpha^{-12}\mu^{-2}$	19.114202	23.026 898
ACCELERATION Ω^{-1}	$\surd(c^7/G\hbar)$	53.744983	$\alpha^{-23}\mu^{-4}$	36.091569	33.503 710
MOMENTUM	$\surd(c^3\hbar/G)$	5.814417	$\alpha^{-11}\mu^{-1}$	20.241276	–13.300 081
AREA	$G\hbar/c^3$	–65.582382	α^2	–4.273670	–25.100 136
VOLUME	$(G\hbar/c^3)^{3/2}$	–98.373723	α^3	–6.410505	–37.650 204
DENSITY	$c^5/G^2\hbar$	93.711319	$\alpha^{-3}\mu$	9.674414	13.873 602
ACTION	$\hbar$	–26.976924	$\alpha^{-10}\mu^{-1}$	18.104441	–25.849 847
FORCE	c^4/G	49.082578	$\alpha^{-23}\mu^{-3}$	39.355471	9.727 108
ENERGY $I^2\Omega$	$\surd(c^5\hbar/G)$	16.291238	$\alpha^{-22}\mu^{-3}$	37.218643	–2.822 960
POWER $I\surd F$	c^5/G	59.559399	$\alpha^{-34}\mu^{-5}$	56.332845	20.203 929
PRESSURE	$c^7/G^2\hbar$	114.664960	$\alpha^{-25}\mu^{-3}$	43.629148	
[CHARGE]^2 e^2	$\hbar c$	–16.500103	$\alpha^{-21}\mu^{-3}$	35.081808	–18.636 938
CHARGE e	$\surd(\hbar c)$	–8.250052	$\alpha^{-21/2}\mu^{-3/2}$	17.540904	–9.318 469
CURRENT I	$c^3/\surd G$	35.018110	$\alpha^{-45/2}\mu^{-7/2}$	36.655106	13.708 420
VOLTAGE $\surd F$	$c^2/\surd G$	24.541289	$\alpha^{-23/2}\mu^{-3/2}$	19.677739	4.863 554
RESISTANCE Ω	$\surd(G\hbar/c^7)$	–53.744983	$\alpha^{23}\mu^4$	–36.091569	–33.503 710
e^2/c^2	$\hbar/c$	–37.453745	$\alpha\mu$	1.127074	–36.326 670
$I\Omega$ = e/c	$\surd(\hbar/c)$	–18.726873	$\alpha^{1/2}\mu^{1/2}$	0.563527	19.795 290
	c^2/G	28.128937	$\alpha^{-1}\mu$	5.400744	–11.226 534
	c^3/G	38.605758	$\alpha^{-12}\mu^{-1}$	22.378107	

E = 1 PLANE or M = 1 plane



$\sqrt{M}$ plane

$Q^2 = GM^2 = \hbar c$

A SOLAR CURIOSITY [Deception by choice of units]

measured $M_\odot = 33.298645$

" $R_\odot = 10.842302 \times 3 = 32.526906$

$\frac{M_\odot}{R_\odot} =$ ~~22.49357~~ $22.456343 \quad \div 2 = 11.228172 \quad \times 3 = 33.684516$

$M_\odot \cdot R_\odot = 44.140947 \quad \div 4 = 11.035236 \quad \times 3 = 33.105708$

$\sqrt{\alpha_{\mu s}}(\alpha_\mu)^2 = \alpha^{-9}\mu = 22.495424$ pure number $\div 2 = 11.247712$ pure# ∈ ~~[illegible]~~

$\times 3 = 33.743136$

$\frac{m_p}{r_e} = -11.226534 \quad \times$ ~~[illegible]~~ $-3 = 33.679602$

$\frac{M_\odot}{R_\odot} = A \qquad M^2 = A^3 \qquad M = A^{3/2}$

$M_\odot R_\odot = A^2 \qquad R^2 = A \qquad R = A^{1/2}$

$\frac{m_p}{r_e} = A^{-1/2} \qquad \frac{M_\odot/R_\odot}{m_p/r_e} = A^{3/2}$ pure # 33.682877

$M_\odot = 33.298645$

$3 \times R_\odot = 32.526906$

$\frac{3}{2} \times \frac{M_\odot}{R_\odot} = 33.684516$

$\frac{3}{4} \times M_\odot \cdot R_\odot = 33.105708$

$-3 \times \frac{m_p}{r_e} = 33.679602$

$\frac{M_\odot/R_\odot}{m_p/r_e} = 33.682877$ [pure #]

$\frac{3}{2} \times \alpha^{-9}\mu = 33.743136$ [pure #]

If Take $-\frac{m_p}{r_e} = 11.226534$ as the basic $A^{1/2}$

22.453068 A

33.679602 $A^{3/2}$

44.906136 A^2

		Measured	δ%
"$M_\odot$"	= 33.679602 ≠	33.298645	0.381
"$R_\odot$"	= 11.226534 ≠	10.842302	0.384
"$\frac{M_\odot}{R_\odot}$"	= 22.453068 ≈	22.456343	0.005
"$M_\odot R_\odot$"	= 44.906136 ≠	44.140947	0.765

If Take $\frac{\alpha^{-9}\mu}{2} = 11.247712$ as $A^{1/2}$

"$\frac{M_\odot}{R_\odot}$" = 22.495424

"$M_\odot$" = 33.743136

"$M_\odot R_\odot$" = 44.990848

alpha mu table #4

n horizontal , m vertical

$a := -2.136835$ $\quad m := 0, 1 .. 18$

$b := 3.263909$ $\quad n := 0, 1 .. 16$

$K_{m,n} := n \cdot a - m \cdot b$

$\frac{\alpha^n}{\mu^m}$

K =

	10	11	12	13	14	15
0	-21.36835	-23.505185	-25.64202	-27.778855	-29.91569	-32.052525
1	-24.632259	-26.769094	-28.905929	-31.042764	-33.179599	-35.316434
2	-27.896168	-30.033003	-32.169838	-34.306673	-36.443508	-38.580343
3	-31.160077	-33.296912	-35.433747	-37.570582	-39.707417	-41.844252
4	-34.423986	-36.560821	-38.697656	-40.834491	-42.971326	-45.108161
5	-37.687895	-39.82473	-41.961565	-44.0984	-46.235235	-48.37207
6	-40.951804	-43.088639	-45.225474	-47.362309	-49.499144	-51.635979
7	-44.215713	-46.352548	-48.489383	-50.626218	-52.763053	-54.899888
8	-47.479622	-49.616457	-51.753292	-53.890127	-56.026962	-58.163797
9	-50.743531	-52.880366	-55.017201	-57.154036	-59.290871	-61.427706
10	-54.00744	-56.144275	-58.28111	-60.417945	-62.55478	-64.691615
11	-57.271349	-59.408184	-61.545019	-63.681854	-65.818689	-67.955524
12	-60.535258	-62.672093	-64.808928	-66.945763	-69.082598	-71.219433
13	-63.799167	-65.936002	-68.072837	-70.209672	-72.346507	-74.483342
14	-67.063076	-69.199911	-71.336746	-73.473581	-75.610416	-77.747251
15	-70.326985	-72.46382	-74.600655	-76.73749	-78.874325	-81.01116
16	-73.590894	-75.727729	-77.864564	-80.001399	-82.138234	-84.275069
17	-76.854803	-78.991638	-81.128473	-83.265308	-85.402143	-87.538978
18	-80.118712	-82.255547	-84.392382	-86.529217	-88.666052	-90.802887

GENERAL

$e=0$
ML matrix

$$M^a L^b c^x G^y \hbar^z = M^u L^v T^w$$

$$2x = u - 3v - 5w - a + 3b$$
$$2y = -u + v + w + a - b$$
$$2z = u + v + w - a - b$$

ENERGY
$u=1$
$v=2$
$w=-3$

2x 5
2y −1
2z 1

Action $\frac{ML^2}{T}$ $u=1$, $v=2$, $w=-1$
2x

A T MATRIX $w=1,\ u=0\ v=0$

$$2x = -5 - a + 3b$$
$$2y = 1 + a - b$$
$$2z = 1 - a - b$$

$$T = M^a L^b c^{\frac{3b-5-a}{2}} G^{\frac{1+a-b}{2}} \hbar^{\frac{1-a-b}{2}}$$

$$T = \left[\left(\frac{M^2 G}{c\hbar}\right)^a \left(\frac{L^2 c^3}{G\hbar}\right)^b\right]^{1/2} t_0 \qquad t_0 = \sqrt{\frac{G\hbar}{c^5}}$$

$$T = \left[\left(\frac{M^2 G}{c\hbar}\right)^a \left(\frac{L^2 c^3}{G\hbar}\right)^b \frac{G\hbar}{c^5}\right]^{1/2}$$

$$T = \left[\left(\frac{M^2}{m_0^2}\right)^a \left(\frac{L^3}{l_0^2}\right)^b t_0\right]^{1/2} = \left(\frac{M}{m_0}\right)^a \left(\frac{L}{l_0}\right)^b t_0$$

velocity $\frac{L}{T}$ $u=0$, $v=1$, $w=-1$
2x = 2
2y = 0
2z = 0

MASS
$u=1$
$L=0$
$w=0$
2x = 1
2y = −1
2z 1

A Force Matrix $u=1,\ v=1,\ w=-2$

$$x = \frac{8-a+3b}{2}$$
$$y = \frac{-2+a-b}{2}$$
$$z = \frac{-a-b}{2}$$

$$F = \left(\frac{M}{m_0}\right)^a \left(\frac{L}{l_0}\right)^b \frac{c^4}{G}$$

$T \to F$
$$\frac{m_0 l_0}{t_0^2} = \frac{c^4}{G}$$

$T \to F$
2x add +13
2y −3
2z −1

Length
$u=0$
$v=1$
$w=0$
2x = −3
2y 1
2z 1

non a, b's

$TE = \hbar$

	T	F	E	Action	velocity	POWER	LENGTH	MASS
2x	−5	8	5	0	2	+10	−3	1
2y	1	−2	−1	0	0	−2	1	−1
2z	1	0	1	2	0	0	1	1

Power

$$\text{Mass} \quad \left(\frac{M}{m_0}\right)^a \left(\frac{L}{l_0}\right)^b \frac{c^{1/2}\hbar^{1/2}}{G^{1/2}} = m_0 \qquad M = M^a \left(\frac{L}{l_0}\right)^b$$

GENERAL FORMULAE:

I For time [or frequency]

$$T = f(M^a R^b c^x G^y \hbar^w)$$

$$T' = M^a R^b \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{R^{2w} M^w}{T^w}$$

T: $1 = -x - 2y - w$

M: $0 = a - y + w$

R: $0 = b + x + 3y + 2w$

$$x = \frac{3b - a - 5}{2} \qquad y = \frac{1 + a - b}{2} \qquad w = \frac{1 - a - b}{2}$$

$$\boxed{T = M^a R^b c^{\frac{3b-a-5}{2}} G^{\frac{a-b+1}{2}} \hbar^{\frac{1-a-b}{2}}} = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b t_0$$

Special Cases: $a = 0$, $T = R^b c^{\frac{3b}{2}} c^{-\frac{5}{2}} (G\hbar)^{\frac{1}{2}} (G\hbar)^{-b/2} = \frac{R^b}{l_0^b} t_0$

$b = 0$, $T = M^a c^{-\frac{a}{2}} G^{\frac{a}{2}} \hbar^{-a/2} c^{-5/2} (G\hbar)^{1/2} = \frac{M^a}{m_0^a} t_0$

$a = b = k$, $T = \left(\frac{MRc}{\hbar}\right)^k t_0$

$a = -b = j$, $T = \left(\frac{M}{R}\frac{G}{c^2}\right)^j t_0$

$$\frac{T}{t_0} = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b$$ See X's

07-05-07

II For Force: $\frac{MR}{T^2} = f(M^a R^b T^d c^x G^y \hbar^w)$

$$\frac{MR}{T^2} = M^a R^b T^d \frac{R^x}{T^x} \frac{R^{3y}}{M^y T^{2y}} \frac{R^{2w} M^w}{T^w}$$

T: $-2 = d - x - 2y - w$

M: $1 = a - y + w$

R: $1 = b + x + 3y + 2w$

~~$x = \frac{8 + 3b - a + 5d}{2}$~~

$y = \frac{a - b - d - 2}{2}$ ✓

$w = \frac{-a + b + d}{2}$ ✓

$$\boxed{F = M^a R^b T^d c^{\frac{8+3b-a+5d}{2}} G^{\frac{a-b-d-2}{2}} \hbar^{\frac{-a-b-d}{2}}}$$

$x = \frac{8 + 3b - a + 5d}{2}$ ✓

$$F = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b \left(\frac{T}{t_0}\right)^d \frac{c^4}{G}$$

$$\frac{F}{f_0} = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b \left(\frac{T}{t_0}\right)^d$$

$$\frac{c^4}{G} = f_0$$

By analogy:

III $M = \left(\frac{R}{l_0}\right)^b \left(\frac{T}{t_0}\right)^d m_0$ mass $\sqrt{\frac{\hbar c}{G}}$

IV $R = \left(\frac{M}{m_0}\right)^a \left(\frac{T}{t_0}\right)^d l_0$ size $\sqrt{\frac{G\hbar}{c^3}}$

V $P = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b \left(\frac{T}{t_0}\right)^d \frac{c^5}{G}$ power $P_0 = \frac{c^5}{G}$

VI $E = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b \left(\frac{T}{t_0}\right)^d \mathcal{E}_0$ Energy $\mathcal{E}_0 = \sqrt{\frac{\hbar c^5}{G}}$

VII $\rho = \left(\frac{M}{m_0}\right)^a \left(\frac{R}{l_0}\right)^b \rho_0$ Density $\rho_0 = \frac{m_0}{l_0^3} = \frac{c^5}{\hbar G^2}$

$$M^a L^b \left(\frac{L}{T}\right)^x \frac{L^{3y}}{M^y T^{2y}} \frac{M^z L^{2z}}{T^z} = M^u L^v T^w$$

TIME $\quad$ $a = 0$

$u = 0$ $\quad$ $2x = -5 - a + 3b$

$v = 0$ $\quad$ $2y = 1 + a - b$

$w = 1$ $\quad$ $2z = 1 - a - b$

$$T = M^a L^b c^{\frac{3b-5-a}{2}} G^{\frac{1+a-b}{2}} \hbar^{\frac{1-a-b}{2}}$$

$a = 0$, $b = 0$: $\quad T = c^{-5/2} G^{1/2} \hbar^{1/2} = \sqrt{\frac{G\hbar}{c^5}}$ ✓

$a = 0$, $b = 1$: $\quad T = L c^{-1} G^0 \hbar^0 = \frac{L}{c}$ ✓

~~$b = 5$~~ ~~$M^2 c^{-7/2} G^{3/2} \hbar^{-1/2}$~~

$b = 0$, $a = 1$: $\quad M c^{-3} G$

$$T = \frac{GM}{c^3}$$

$b = 3$, $a = 1$: $\quad T = M^{-1} L^3 c^{3/2} G^{-1/2} \hbar^{-3/2}$

$$\sqrt{\frac{L^6 c^3}{G M^2 \hbar^3}}$$

$T \tau^3 = t^3$ $M\tau^2 = L^3$

THE [M, T, τ, L, ℓ, L] GROUP

Arrangements of the full 6 ~~el~~ elements → DIMENSIONALITIES

I conformity with $MT^2 = L^3$ [classical] all SN

$$\frac{L^3}{MT^2} = G = 1 \qquad \frac{M}{L} = \frac{L^2}{T^2} = c^2$$

II Alternate arrangements with 6 Full Group arrangements

$$\frac{ML^3}{T^2} = e^3 = \frac{ML^2}{T} \cdot \frac{L}{T} = c\hbar$$

$$\frac{M}{L^3}\frac{T}{T} = \rho$$

$$\frac{ML}{T^2}\frac{L}{L} = \text{Force}$$

~~$\frac{M}{L} = \frac{L^2}{T^2} = c^2$~~

III Sub-Groups ~~with G~~

$-L$, $\frac{ML^2}{T^2} = E$

~~L=T $-L, T$, $\frac{ML^3}{T} = \hbar$ or allow L = T the [6]~~ $e^2 = c\hbar$

~~[M=L $-M, L$, $\frac{L^3}{T^2} = c^2$~~

~~$\frac{M}{L} = \frac{L^2}{T^2} = c^2$ [6] full G.~~

But ~~$\frac{MT^2}{L^3} = 1$ ∴ $\frac{M}{L} = \frac{L^2}{T^2} \cdot 1 = \frac{L^2}{L^2} \cdot \frac{MT^2}{L^3}$~~

Space Group [6]

$$\frac{ML^3}{T^2} = e^2$$

$$\frac{L^3}{MT^2} = G$$

$$\frac{ML^2}{T}\,\frac{L}{T} = \hbar c = e^2$$

$$\frac{ML}{T^2}\,\frac{L}{L} = F$$

$$\frac{M}{L^3}\,\frac{T}{T} = \rho$$

Time Group [6]

$$\frac{T^3}{M^2L}$$

$$\frac{ML^2}{T^3} = P$$

$$\frac{ML^2}{T}\cdot\frac{T}{T} = \hbar$$

Energy Group [5]

$$\frac{ML^2}{T^2}$$

$$ML\,\frac{T}{T}\,\frac{L}{L} = ML$$

$$\frac{M}{L}\,\frac{L}{T}\,\frac{L}{T} \quad \frac{M}{L} = \frac{1}{c^2}$$

$$\frac{ML}{T^2}$$

Pressure

$$\frac{M}{LT^2}\,\frac{L}{L} = \text{PRESSURE}$$

$$\frac{GMT^3}{L^3} = R$$

$$\frac{L^3}{MT^2}\cdot\frac{MT^2}{L^2} = L$$

01/11/10

PRIMARY DIMENSIONAL MATRIX FOR T=1

TIME TABLE

COMBINATIONS FOR [T = 1]

$\frac{\hbar c}{R^2} = \frac{M}{R} c^2$ all or $\frac{c^4}{G}$ exp

Forces $\frac{MR}{time^2}$ all → $\frac{M}{R}c^2 \sim \frac{c^4}{G}$ except $R^{3/2}$, $M^{-1/2}$ → $\frac{GM^2}{R^2}$

$\sqrt{\frac{G^5M^4\hbar}{R^4c^{13}}}$		$\frac{G^2M^2}{c^5R}$ K	$\frac{M}{R}c^2$ (scribbled)	$\sqrt{\frac{G^3M^4}{c^7\hbar}}$	$\frac{M}{R}c^2$	$\frac{GM^2R}{c^2\hbar}$	$\frac{M}{R}c^2$	$\sqrt{\frac{GM^4R^4}{c\hbar^3}}$	$\frac{c^4}{G}$ or $\frac{M}{R}c^2$ 2
	$\sqrt{\frac{G^4M^3\hbar}{c^{11}R^3}}$		$\sqrt{\frac{G^3M^3}{Rc^8}}$	$\frac{M}{R}c^2$	$\sqrt{\frac{G^2M^3R}{c^5\hbar}}$		$\sqrt{\frac{GM^3R^3}{\hbar^2c^2}}$		3/2
$\frac{G^2M\hbar}{R^2c^6}$ ✓		$\sqrt{\frac{G^3M^2\hbar}{c^9R^2}}$		T $\frac{GM}{c^3}$ ✓	$\left(\frac{M}{R}\right)^{-1}\frac{c^6}{G^2}$ or $\frac{M}{R}c^2$	$\sqrt{\frac{GM^2R^2}{\hbar c^3}}$		$\frac{MR^2}{\hbar}$ φ	$\frac{M}{R}c^2$ 1
	$\sqrt{\frac{M\hbar^2G^3}{c^{10}R^3}}$	$\frac{M}{R}c^2$	$\sqrt{\frac{G^3\hbar M}{c^7R}}$	$\frac{M}{R}c^2$	$\sqrt{\frac{GMR}{c^4}}$	$\frac{c^4}{G} \approx \frac{M}{R}c^2$	Φ $\sqrt{\frac{MR^3}{\hbar c}}$ ✓	$\frac{M}{R}c^2$	1/2
$\sqrt{\frac{\hbar^3G^3}{c^4R^4}}$		k $\frac{\hbar G}{c^4R}$ $\frac{M}{R}c^2$	$\sqrt[4]{\frac{G^3\hbar^3}{R^2c^{13}}}$	t_0 $\sqrt{\frac{G\hbar}{c^5}}$ $\frac{M}{R}c^2$ (scribbled)	$\sqrt[4]{\frac{G\hbar R^2}{c^7}}$	t $\frac{R}{c}$ ✓ $\frac{M}{R}c^2$	M/R c2 $\sqrt[4]{\frac{R^6}{cG\hbar}}$	$\sqrt{\frac{cR^4}{G\hbar}}$	0 M a
	$\sqrt{\frac{G^2\hbar^3}{c^9R^3M}}$	$\frac{M}{R}c^2$	$\sqrt{\frac{G\hbar^2}{MRc^6}}$	$\frac{M}{R}c^2$	$\sqrt{\frac{\hbar R}{c^3M}}$	$\frac{M}{R}c^2$	τ $\sqrt{\frac{R^3}{GM}}$ ✓	$\left(\frac{M}{R}\right)^2 G$ (boxed)	−1/2
$\frac{G\hbar^2}{c^5MR^2}$		$\sqrt{\frac{G\hbar^3}{M^2R^2c^7}}$		z $\frac{\hbar}{Mc^2}$ ✓	$\frac{M}{R}c^2$	$\sqrt{\frac{\hbar R^2}{cGM^2}}$		$\frac{R^2c}{GM}$	$\frac{M}{R}c^2$ −1
	$\sqrt{\frac{G\hbar^4}{M^3R^3c^8}}$		$\sqrt{\frac{\hbar^3}{c^5M^3R}}$		$\sqrt{\frac{\hbar^2R}{Gc^2M^3}}$		$\sqrt{\frac{\hbar cR^3}{G^2M^3}}$		−3/2
$\sqrt{\frac{G\hbar^5}{M^4R^4c^9}}$	$\frac{M}{R}c^2$	$\frac{\hbar^2}{c^3RM^2}$		$\sqrt{\frac{\hbar^3}{c^3M^4G}}$	$\frac{M}{R}c^2$	ζ $\frac{\hbar R}{GM^2}$ ✓	$\frac{M}{R}c^2$ (scribbled)	$\sqrt{\frac{\hbar c^3R^4}{G^3M^4}}$	−2 $\frac{M}{R}c^2$
−2	−3/2	−1	−1/2	0	1/2	1	3/2	2	

R

b

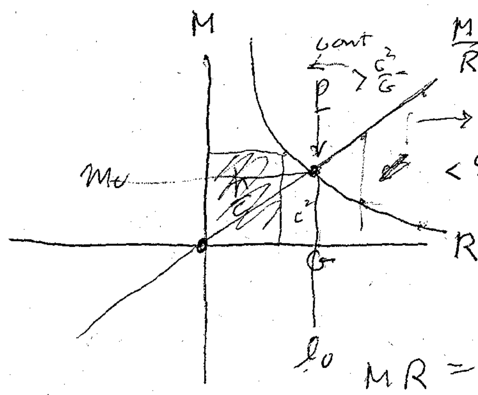
ORIGINAL SIX
Additional 4 Feb 2000

IF $M = m_0$
$R = l_0$
all entries $= t_0$

IN PLANCK UNITS ALL FREQUENCIES ARE SYMMETRIC ABOUT t_0

MAKE TABLE FOR $[T^2]$ INSTEAD

or represent all with $\sqrt{\ }$



$\frac{M}{R} = \frac{c^2}{G}$

all Forces $= \frac{c^4}{G}$

all frequencies $= \frac{1}{t_0}$

$MR = \frac{\hbar}{c}$

$\frac{c^2}{G} = 28.129347$

$MR = \frac{\hbar}{c}$

$\frac{M}{R} = \frac{c^2}{G}$

$R^2 \cdot \frac{c^2}{G} = \frac{\hbar}{c}$ $\quad R^2 = l_0^2$

$M^2 = \frac{\hbar c}{G} = m_0^2$

$\frac{m_0}{l_0} = \sqrt{\frac{\hbar c}{G}\frac{c^3}{\hbar G}} = \frac{c^2}{G}$

Size of Black Hole
$f(M)$

$M \cdot R = \frac{\hbar}{c}$

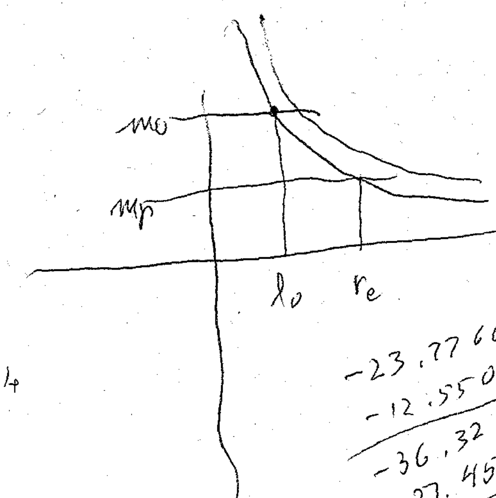
$\check{R} = \frac{\hbar}{cM} = \frac{-37.453745}{M}$

$\exists$ $M_{critical}$

to contract

$\frac{c^2}{G} =$ 37.453745
28.129347
65.583092

9.324398



if $\odot_{23} < \frac{c^2}{G}$

33

and stable

$56. > 28$ $\quad 43 > \frac{\hbar}{c}$

$28 > \frac{\hbar}{c}$

-23.776602
-12.550068
-36.326670 $= m_p r_e$
-37.453745 $= \frac{\hbar}{c} = m_0 l_0$
1.127075 αM

δ^2

63.77

.43 $\quad$ 37

2 conditions

If $\frac{M}{R} > \frac{c^2}{G}$ exp

if $\frac{M}{R} < \frac{c^2}{G}$ OK

if $< \frac{c^2}{G}$ exp

$\frac{m_p}{r_e} =$ -23.776602 M.L
-12.550068
-11.226534
$=$ 28.129347 $= \frac{c^2}{G}$
39.355881

$\mathcal{S} = S$

$ML \quad \delta = \alpha_M$

$\frac{M}{L} \quad \delta = S$

$\rho \to B$

$\frac{M}{L} \times S^{-1}$

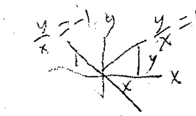
$ML \times \alpha M$

$M = \sqrt{\frac{\alpha N}{S}}$

$L = \sqrt{\alpha M S}$

5-9-25

$F_t = \left(\frac{M}{L}\right)^1 c^2$ when $\frac{M}{L} = \frac{c^2}{G}$ $F_t = \frac{c^2}{G} \cdot c^2 = \frac{c^4}{G}$



$F_T = \left(\frac{M}{L}\right)^{-1} \frac{c^6}{G^2}$ " $F_T = \frac{G}{c^2} \cdot \frac{c^6}{G^2} = \frac{c^4}{G}$

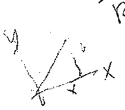
$\therefore F_T = F_t$ opposite?

$\frac{M}{R}$ MR

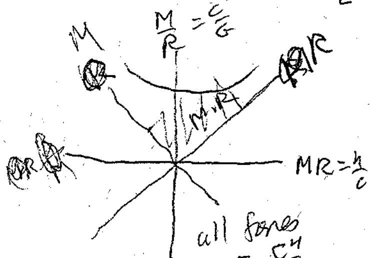
$\frac{1}{R^2}$

$\frac{T}{t} = \frac{GM}{c^2 L} c = \frac{G}{c^2} \cdot \frac{M}{L}$ if $\frac{M}{L} = \frac{c^2}{G}$, $T = t$

frequencies times are equal
Forces are equal
at $\frac{M}{L} = \frac{c^2}{G}$



$F_\tau = \left(\frac{M}{L}\right)^2 G$ when $\frac{M}{L} = \frac{c^2}{G}$ $F_\tau = \frac{c^4}{G^2} \cdot G = \frac{c^4}{G}$



$\therefore F_T = F_t = F_\tau$

$\frac{\tau^2}{T^2} = \frac{L^3}{GM} \frac{c^6}{G^3 M^3} = \frac{L^3 c^6}{G^3 M^3} = \left(\frac{G}{c^2}\right)^3 \frac{c^6}{G^3} = 1$ $\tau^2 = T^2$ when $\frac{M}{L} = \frac{c^2}{G}$

$\therefore \tau^2 = \tau^2 = t^2 = ?$

all times $= t_0$ along both axes

all forces along both axes

$F_{t_0} = \frac{c^4}{G}$ all forces = the Planck force at the Schwarzschild Boundary

Grav $\frac{GM^2}{L^2} = G \frac{c^4}{G^2} = \frac{c^4}{G}$ etc and all times $= t_0$

$T = \frac{h}{c} c^{-3/2} G^{1/2} \hbar^{-1/2}$

$= \sqrt{\frac{\hbar^2}{c^2} \frac{G}{c^3} \frac{1}{\hbar}}$

$t = \frac{L}{c}$

$= \sqrt{\frac{G\hbar}{c^5}} = t_0$

$\frac{t_0^2}{t^2} = \frac{G\hbar}{c^5} \frac{c^2}{L^2} = \frac{l_0^2}{L^2}$

at $\frac{M}{L} = \frac{c^2}{G}$

The frequencies $T, t, \tau \ldots = t_0$

$\tau^2 = \frac{L^3}{GM}$ $\frac{L}{M} = \frac{G}{c^2}$

Force at $MR = \frac{h}{c}$
$a=1, b=1$

$F = \frac{h}{c} c^5 G^{-1} \hbar^{-1}$

$F = \frac{c^4}{G}$

$\tau^2 = \frac{G}{c^2} \frac{L^2}{G} = t^2$

What happens at the Heisenberg Bound?

$F \cdot t = \hbar$

$\frac{MR^2}{t} = \hbar$ $a=1$ $b=1$

$MR = \frac{h}{c}$

$T = M^a R^b c^{\frac{3b-a-5}{2}} G^{\frac{a-b+1}{2}} \hbar^{\frac{1-a-b}{2}}$

$a=1, b=-1$

$c^{-9/2} G^{3/2} \hbar^{1/2} \sqrt{\frac{c^4}{G^2} \cdot \frac{G^3 \hbar}{c^9}} = \sqrt{\frac{G\hbar}{c^5}} = t_0$

$T = \frac{c^2}{G} \cdot$

$\frac{M}{R} = \frac{c^2}{G}$ $T = t_0$

⊕ Frequencies

		log₁₀
σ = Rotation	$24^h = 1440^m = 86400$ sec	4.936514 sec
$\S$ = Schuster	$2\pi\sqrt{\frac{R^3}{GM}}$ $\sqrt{\frac{3\pi}{G\rho}}$ [here $\rho = \frac{M}{V}$] 5060.8445 sec 84.347 m	3.704223 sec
T = Schwarzschild	$\frac{Gm_\oplus}{c^3}$ =	−10.829925 sec
t_s = Schuman	$\frac{2\pi r_\oplus}{c}$ =	−0.873947 sec
$\tau = \frac{1}{\sqrt{G\rho}}$	[here $\rho = \frac{M}{R^3}$] ~ cube not sphere	3.217087 sec ✓
$t = \frac{r}{c}$ =		−1.672127 sec

$\mathcal{R}$ = Synchronous orbit $\frac{2\pi\mathcal{R}}{c} = \sigma$) $\mathcal{R} = 14.615155$ cm

τ

Schuman $\frac{\mathcal{R}}{R} = 5.810461$

a

$T\S^2 = t_s^4$

$-3.421479 = -3.495788$

$\Delta = 0.074$

$\S = 2\pi\sqrt{\frac{R^3}{GM}} = \sqrt{\frac{3\pi}{G\rho}}$

where $\rho = \frac{M}{V}$ and $V = \frac{4}{3}\pi a^2 b$

$14.809542 = \sigma^3 = \S^4 = 14.816892$ $\Delta = 0.00735$

$T^2\sigma^3 = t_s^8$

$R_s = \frac{GM}{c^2} = -0.892104$

cm

$\mathcal{R}$ 14.615155 5.810461

a 8.804694

R_s −0.892104

$m_\oplus = 5.9737 \times 10^{27}$ g		27.776243 g ✓
a: $R_{eq} = 6.378136 \times 10^8$ cm	a	8.804694 cm
$\bar{\rho}_\oplus = 5.51482\overset{8}{}$ g/cm³		0.741530 g/cm³ ✓
$V_\oplus = 1.083207 \times 10^{27}$ cm³		27.034712 cm³ ✓
b R_{polar} 6.356753 × 10⁸ cm	b	8.803234 cm
$V = \frac{4}{3}\pi a^2 b$ $\rho = \frac{M}{V}$	2π	0.798180
	c	= 10.476821 cm/sec

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What If It Was All a Big Mistake?
By Rep. Ron Paul (R-TX)

Delivered to the U.S. House of Representatives.

America's policy of foreign intervention, while still debated in the early 20th century, is today accepted as conventional wisdom by both political parties. But what if the overall policy is a colossal mistake, a major error in judgment? Not just bad judgment regarding when and where to impose ourselves, but the entire premise that we have a moral right to meddle in the affairs of others? Think of the untold harm done by years of fighting - hundreds of thousands of American casualties, hundreds of thousands of foreign civilian casualties, and unbelievable human and economic costs. What if it was all needlessly borne by the American people? If we do conclude that grave foreign policy errors have been made, a very

more compatible with a true republic's goal of peace, commerce, and friendship

alliances is sound advice even today?

In medicine mistakes are made - man is fallible. Misdiagnoses are made, incorrect treatments are given, and experimental trials of medicines are advocated. A good physician understands the imperfections in medical care, advises close follow-ups, and double-checks the diagnosis, treatment, and medication

omnipotence - refusing to concede that the initial course of treatment was a mistake? Let me assure you, the results would not be good. Litigation and the loss of reputation in the medical community place restraints on this type of bullheaded behavior.

and refuse to reexamine them, there is little the victims can do to correct things

government cover-ups and deception, the final truth emerges slowly, and only after

actually causes them to become even more aggressive and more determined to

The unwillingness to ever reconsider our policy of foreign intervention, despite

to our country and our liberty. Historically, financial realities are the ultimate check

$\oplus$ frequencies

The Schuman ~~Period~~ Frequency $c/\oplus$ circumference

			$R \times 2\pi$	$\log_{10}$
1)	Eq rad	$a = 6.378\,136 \times 10^8$ cm	40.07501×10^8 cm	9.602874
2)	Polar	$c = 6.356\,753 \times 10^8$ cm	$39.940\,657 \times 10^8$	9.601415
3)	Mean $\sqrt[3]{a^2c}$	$= 6.371000 \times 10^8$ cm	$40.030\,174 \times 10^8$	9.602388

$C = 10.476821$ cm/sec

Schuman Period	log	sec
1)	0.873947 sec	7.480782
2)	0.875406 sec	7.505956
3)	0.874433 sec	7.489158

Schuster Period

$2\pi\sqrt{\frac{R^3}{GM}}$ $\quad S_\oplus$ 84 m $\quad$ 5059.8368 sec $\quad$ $84^m\ 19.837^s$ solar

$S = \sqrt{\frac{3\pi}{G\rho}}$ $\quad$ S H Period $\quad$ 7239.942 sec $\quad$ $2^h\ 39.942^s$ solar

sidereal $\quad$ $\oplus$ rot 24^h solar

$\frac{S_\oplus}{S_H} = 0.698878$ $\qquad \times \alpha = 0.700792$

$S_\oplus \times 10 = 50598.368$

$S_H \times 7 = 50679.594$

$\frac{☆}{\odot} = \frac{86400}{86164} = 1.002739 = \alpha$

$\delta = \frac{81}{50000} = 0.00162$

$\frac{S_\oplus}{S_H} \doteq \frac{7}{10}$ $\qquad \frac{S_\oplus}{Rot_\oplus} =$ $\qquad \frac{Rot}{S_\oplus} = 17.07565$

$\frac{Rot}{S_H} = 11.93379 \doteq 12$ $\qquad \frac{Rot}{H} \doteq 12$ $\qquad \frac{Rot}{S_\oplus} \doteq 17$

Rot = 86400 sec

$\times \alpha = 11.966484 \doteq 12$

$\frac{S_H}{S_\oplus} = \frac{10}{7}$

$\frac{120}{7} = 17.1$

This is a test of dropcaps with WordPerfect for Windows

Always use the present directed to the future, never directed to the past. This difference has been called *Honganmyo* for living in the effect, and *Honinmyo* for living in the cause. Thus Honganmyo living makes one a victim of the past while Honinmyo living takes charge of the future.

FREQUENCIES

$\tau_G^2 = \frac{R^3}{GM}$ $\tau_e \tau_G = \frac{R^3}{\sqrt{G\hbar c}}$ ⇒ electric × gravity ∝ Volume (i.e. space)

$\tau_e^2 = \frac{R^3 M}{\hbar c}$ $\frac{\tau_e}{\tau_G} = \frac{M}{m_0}$ ⇒ $\frac{\text{electric}}{\text{gravity}} \propto$ Mass

$S^2 t_0 = 35.443894$
$S^{3/2} t_0 = 15.765454$
$S t_0 = -3.912486$
$\sqrt{S} t_0 = -23.590426$
~~$S^3 t_0$ 62.799274~~
$S^3 t_0 = 74.799274$

Planck I. when $R = l_0$, $M = m_0$

$\tau_e = \tau_G = t_0 = -43.268366$

$\frac{r_e}{m_e} = \mu S \frac{l_0}{m_0}$

Electron II when $R = r_e$ $\tau_e = -24.095306 = \sqrt{\alpha}\,\mu S\, t_0$ $\frac{\tau_e}{\tau_G} = \frac{M}{m_0} = \sqrt{\frac{\mu S}{\alpha}}$

$-12.550068 = r_e = (\alpha\mu S)^{1/2} l_0$ $M = m_e$ $\tau_G = -1.717044 = \alpha\sqrt{\mu S}\, t_0$

$-27.040511 = m_e = \left(\frac{\alpha}{\mu S}\right)^{1/2} m_0$ $R \cdot M = \alpha\, l_0 m_0$ $\tau_e \cdot \tau_G = (\alpha\mu S)^{3/2} t_0^2$

$\frac{R}{M} = (\alpha\mu)^2 \frac{l}{m}$ N. S. III when $R = (\alpha\mu S) l_0$ ~~33.576607~~ $\tau_e = 36.570468 = \alpha\mu S^2 t_0$

$R \cdot M = S^2 l_0 m_0$ $M = \left(\frac{S}{\alpha\mu}\right) m_0$ ~~7.691409~~ $\tau_G = -1.658337 = (\alpha\mu)^2 S\, t_0$

$\frac{\tau_e}{\tau_G} = \frac{S}{\alpha\mu}$, $\tau_e \cdot \tau_G = (\alpha\mu S)^3 t_0^2$

Proton IV $\frac{r_p}{m_p} = \frac{1}{\alpha}\frac{l_0}{m_0}$

$-9.286159 = \boxed{r_p = \left(\frac{\mu}{\alpha S}\right)^{1/2} l_0}$?, ~~$\tau_e = -17.567468$~~ ?

$\tau_e = 10.290984$?

$-23.776602 = m_p = \left(\frac{\alpha\mu}{S}\right)^{1/2} m_0$ $\tau_G = 29.405392$?

$\frac{\tau_e}{\tau_G} = \frac{1}{\sqrt{S}}$

$\frac{r_p}{} = \frac{M}{G}$

$\frac{R_U}{M_U} = (\alpha\mu)^3 \frac{l_0}{m_0}$ U V $r_U = (\alpha\mu S)^{3/2} l_0$ 27.982886 τ_e : ~~76.489885~~ $= (\alpha\mu) S^3 t_0$

$R_U M_U = S^3 l m$ $m_U = \left(\frac{S}{\alpha\mu}\right)^{3/2} m_0$ 52.681010 τ_G = ~~[illegible]~~ 19.146672 $= (\alpha\mu)^3 S^{3/2} t_0$

$T_G = (\alpha\mu)^{3/2} t$ $t = 17.456065$

$T(\alpha\mu)^3 = t$ $T = 14.074842$ $\frac{\tau_e}{\tau_G} = \left(\frac{S}{\alpha\mu}\right)^{3/2}$; $\tau_e \cdot \tau_G = (\alpha\mu S)^{9/2} t_0^2$

D VI $R = r_e = (\alpha\mu S)^{1/2} l_0 = -12.550068$ $\tau_e = -3.348948 = \sqrt{\alpha\mu}\, S\, t_0$

$RM = S\, l m$ $M = m_D = \left(\frac{S}{\alpha\mu}\right)^{1/2} m_0 = 14.452204$ $\tau_G = -22.463352 = \alpha\mu\sqrt{S}\, t_0$

$\frac{R}{M} = \alpha\mu \frac{l}{m}$

$\frac{\tau_e}{\tau_G} = \sqrt{\frac{S}{\alpha\mu}}$; $\tau_e \cdot \tau_G = (\alpha\mu S)^{3/2} t_0^2$

~~Proton~~

$M = \frac{c^3}{G} T$ $m_0 = \sqrt{\frac{\hbar c}{G}}$

$$\frac{\tau_E}{\tau_G} = \frac{M}{m_0} = T\frac{c^3}{G}\sqrt{\frac{G}{\hbar c}} = T\sqrt{\frac{c^5}{\hbar G}} = \frac{T}{t_0}$$

$\tau_G^2 T = t^3$ $\tau_e \tau_G = \frac{R^3}{\sqrt{\hbar c G}} = \frac{t^3 c^3}{\sqrt{\hbar c G}} = \frac{t^3}{\sqrt{\frac{\hbar G}{c^5}}} = \frac{t^3}{t_0}$ $\tau_e \tau_G = \frac{t^3}{t_0} = \frac{\tau_G^2 T}{t_0}$

$\frac{T}{t} = \frac{t^2}{\tau_G^2}$ $\boxed{\tau_e t_0 = \tau_G T} = \frac{t^3}{\tau_G}$

$t_0 \tau_E = \tau_G T$

$\tau_E \tau_G t_0 = t^3$

FREQUENCIES

$t_0 = -43.268366$

$\tau_G^2 = \frac{1}{G}\frac{R^3}{M}$ $\qquad \tau_G \tau_E = \frac{R^3}{\sqrt{G\hbar c}}$

$\tau_E^2 = \frac{1}{\hbar c} M R^3$ $\qquad \frac{\tau_E}{\tau_G} = \frac{M}{m_0}$

$\sqrt{G\hbar c} = -11.837904$

$\left[\frac{R^3}{T^2}\right]$

Grav × Elec ∝ Volume i.e space

Elec/Grav ∝ Mass

$\hbar c = e_0^2 = -16.560103$

$h\alpha c = e^2 = -18.636938$

with $R = r_e = -12.550068$

$M = m_e = -27.040511$

~~$\tau_E = -22.615306$~~ $\tau_E = -24.095306$

~~$\tau_G = -3.196994$~~ $\tau_G = -1.717044$

$\frac{e_0^2}{G} = m_0^2, \quad \frac{e_0^2}{m_0^2} = G$

$\frac{e^2}{G} = \alpha m_0^2$

~~$\tau_G = 1.697044$~~

~~$\tau_E = -24.115306$~~

$\frac{e^2}{m_p^2} =$

electron $\frac{e^2}{m_e^2} = G \cdot S \cdot \mu$

$\delta\mu = 42.619789$

$\tau_E = \sqrt{\alpha}\cdot(-23.026889)$

$= \sqrt{\alpha}\,\frac{r_e}{c}$

$\frac{\tau_E}{\sqrt{\alpha}} = \frac{r_e}{c}$

$\boxed{\tau_E = \alpha\sqrt{\mu S}\, t_0}$

$\tau_G \cdot \sqrt{\alpha} = \tau_\star = t_\star = T_\star = -2.785412 = (\alpha\mu S)\, t_0$

$\boxed{\tau_G = \sqrt{\alpha}\,\mu S\, t_0}$

$\frac{\tau_E}{\tau_G} = \sqrt{\frac{\alpha}{\mu S}} = \frac{M}{m_0}$

Locally	$t \propto R$	$T \propto M$
Kepler	$t^2 \propto R^3$	$T^2 \propto M R^3$
....		
Beyond Kepler — galaxies?	$t^n \propto R^m$ — dark matter	

$\tau_E \cdot \tau_G = (\alpha\mu S)^{3/2} t_0^2 = \frac{R^3}{\sqrt{G\hbar c}}$

$\left(\frac{\alpha}{\mu S}\right)^{1/2} = -22.378317$

$\times m_0 = m_e = -27.040516$

$(\alpha\mu S)^{3/2} t_0^2 = -25.812301$

$\times\sqrt{G\hbar c} = -37.650205 = r_e^3$

with $R = l_0$, $M = m_0$

$\tau_E = \tau_G$

$\tau_E^2 = \tau_G^2 = \frac{l_0^3}{\sqrt{G\hbar c}} = t_0^2$

Next ⊕ ⊙

NS ☆ $M = \left(\frac{S}{\alpha\mu}\right) m_0 = 33.566607$

$R = (\alpha\mu S)\, l_0 = 7.691409$

$\frac{\tau_E}{\tau_0} = \frac{S}{\alpha\mu} = 38.228806$

$\tau_E \cdot \tau_G = \frac{(\alpha\mu S)^3 l_0^2}{\sqrt{G\hbar c}} = 34.912131$

U $M = \left(\frac{S}{\alpha\mu}\right)^{3/2} m_0 =$

$R = (\alpha\mu S)^{3/2} l_0 =$

$\tau_E = 36.570468 = \alpha\mu S^2 t_0$

$\tau_G = -1.658337 \quad (\alpha\mu)^2 S\, t_0$

05-08-19

COX p12

		log
1 AU =	$1.495\ 978\ 707 \times 10^{13}$ cm	13.174926 cm
1 LY =	$9.460\ 730\ 472 \times 10^{17}$ cm	17.975925 cm
1 Psc =	$3.085\ 677\ 6 \times 10^{18}$ cm	18.489351 cm

Light time to sun (1 AU) = 499.004783 70 s

THE SCHUMAN ~~PERIOD~~ frequency = $\frac{c}{\oplus \text{circumference}}$

			× 2π	log₁₀
1)	a Equatorial Radius	$6.378\ 136 \times 10^8$ cm	40.07501×10^8 cm	9.602 874
2)	c Polar Radius	$6.356\ 753 \times 10^8$ cm	39.940657×10^8 cm	9.601 415
3)	Mean $\sqrt[3]{a^2c}$	$6.371\ 000 \times 10^8$ cm	$40.030\ 174 \times 10^8$ cm	9.602 388

Schuman period log

1) 0.873 947 → 7.480782 sec^{-1}

2) 0.875 406 → 7.505956 sec^{-1} ≐ 7.5 ~~beats~~ Hz

3) 0.874 433 → 7.489158 sec^{-1}

or $0.1\bar{3}$ sec

period = $\frac{2}{15}$ sec

connected to pitch/beat?

TIMEFORCE.WPD July 6, 2005

THE $\left(\frac{M}{L}\right)^a$ Forces [ħ=0]

The first physical notion of time was Newton's: time = space/velocity, t =L/c

The next was Keplers: time^2 ~ space^3, refined by Newton to: $\tau^2 = L^3/GM$

The third was Schwarzschild's, $T = GM/c^3$

The fourth was Planck's, $t_o^2 = G\hbar/c^5$

* *

Substituting for Time^2 in the formula, Force = Mass x Length / Time^2, force can be expressed as:

1) $$\mathbf{F_t} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^1 \cdot \mathbf{C}^2$$

2) $$\mathbf{F_\tau} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^2 \cdot \mathbf{G}$$

3) $$\mathbf{F_T} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-1} \cdot \frac{\mathbf{C}^6}{\mathbf{G}^2}$$

4) $$\mathbf{F_{to}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^0 \cdot \frac{\mathbf{C}^4}{\mathbf{G}}$$

when $\frac{M}{L} = \frac{c^2}{G}$ $\frac{T}{t} = \frac{c^2}{G}\frac{t^2}{\tau^2}$

$F_t = \frac{c^4}{G}$ $F_t = \frac{c^4}{G}\frac{T}{t} = \frac{c^4}{G}\frac{t^2}{\tau^2}$

$F_\tau = \frac{c^4}{G^2} \cdot G$ $F_\tau = \frac{c^4}{G}\left(\frac{T}{t}\right)^2 = \frac{c^4}{G}\frac{t^4}{\tau^4}$

$F_T = \frac{G}{c^2} \cdot \frac{c^6}{G^2}$ $F_T = \frac{c^4}{G}\frac{t}{T} = \frac{c^4}{G}\frac{\tau^2}{t^2}$

$F_{to} = \frac{c^4}{G}$ $\frac{T}{t} =$

$\left(\frac{M}{L}\right)$ ħ=0

All forces can be written in the form: $$\mathbf{F} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^a \cdot \mathbf{c}^n \cdot \mathbf{G}^m$$

where, $a + m + n = 3$

$a - m = 1$ $m = a - 1$

$2a + n = 4$ $n = 4 - 2a$

$2a - 4m = n$

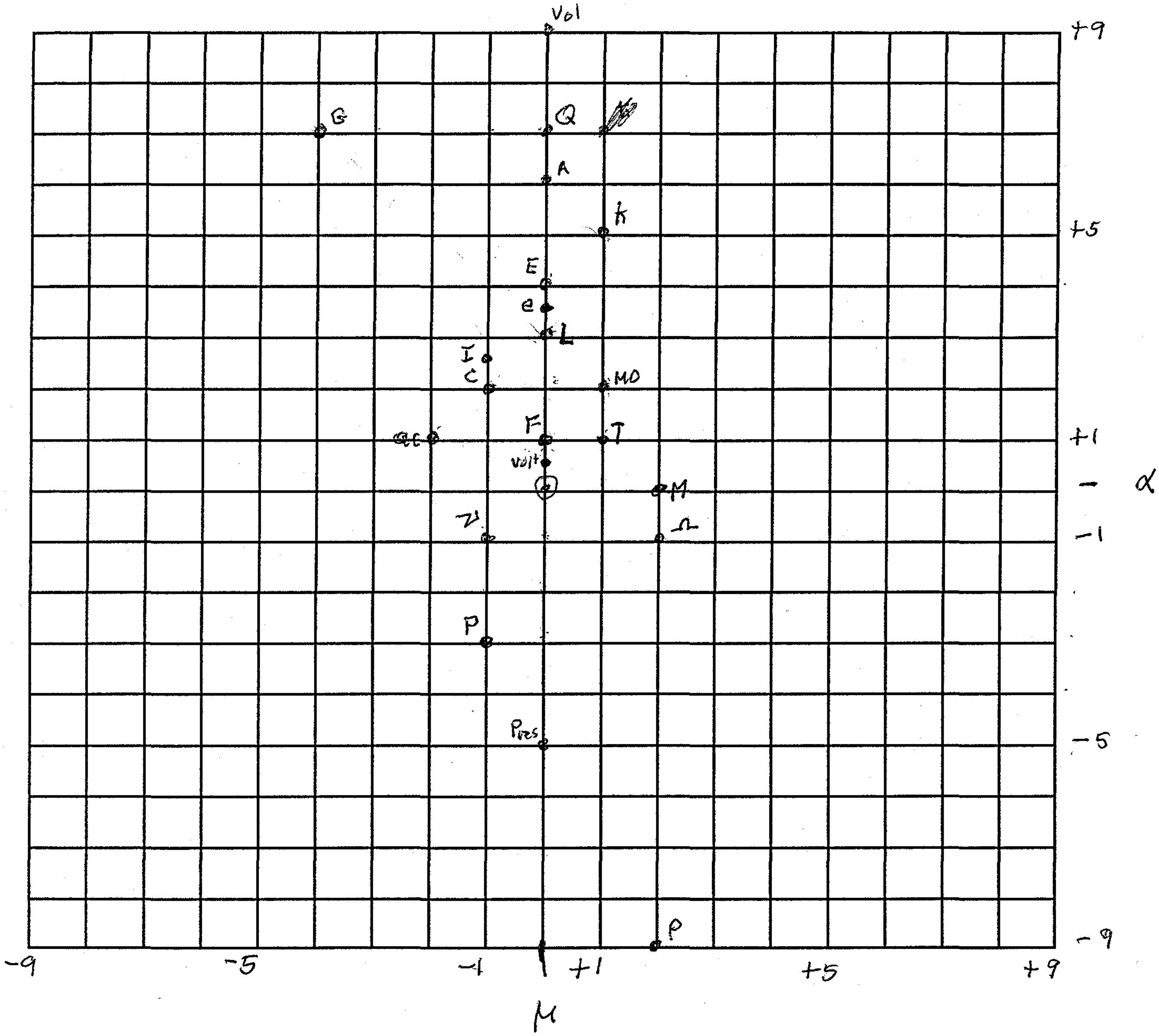
$2m + n = 2$

$F = \left(\frac{M}{L}\right)^a c^{4-2a} G^{a-1}$

$L = \alpha^3$

$T = \alpha\mu$

$M = \mu^2$



Product of G/c^8 and c^8/G

DIMENSION	X					
LENGTH	α^3					
TIME	$\alpha \mu$					
MASS	μ^2					
G	$\alpha^4 \mu^{-4}$					
VELOCITY	$\alpha \mu^{-1}$					
FREQUENCY	$\alpha^{-1} \mu^{-1}$					
ACCELERATION	μ^{-3}					
MOMENTUM	$\alpha \mu$					
AREA	α^4					
VOLUME	α^6					
DENSITY	$\alpha^{-6} \mu^2$					
ACTION	$\alpha^3 \mu$					
FORCE	0					
ENERGY	α^2					
POWER	$\alpha \mu^{-1}$					
PRESSURE	α^{-4}					
$[CHARGE]^2$	α^4					
CHARGE	α^2					
CURRENT	μ^{-1}					
VOLTAGE	0					
RESISTANCE	μ^2					

ALTERNATE REPRESENTATIONS FOR PHYSICAL DIMENSIONS

DIMENSION	SYMBOL	PLANCK	$\alpha^u\ \mu^v$			
LENGTH	L	$\sqrt{(G \hbar/c^3)}$	α^3	α^5	α	α
TIME	T	$\sqrt{(G \hbar/c^5)}$	$\alpha \mu$	$\alpha^2 \mu$	$\alpha^{-11} \mu^{-1}$	$\alpha^{12} \mu^2$
MASS	M	$\sqrt{(c \hbar/G)}$	μ^2	μ^2	μ	μ
G	L^3/MT^2	G	$\alpha^7 \mu^{-4}$	$\alpha^{11} \mu^{-4}$	$\alpha^{25} \mu$	$\alpha^{-21} \mu^{-5}$
VELOCITY	L/T	c	$\alpha^2 \mu^{-1}$	$\alpha^3 \mu^{-1}$	$\alpha^{12} \mu$	$\alpha^{-11} \mu^{-2}$
FREQUENCY	1/T	$\sqrt{(c^5/G \hbar)}$	$\alpha^{-1} \mu^{-1}$	$\alpha^{-2} \mu^{-1}$	$\alpha^{11} \mu$	$\alpha^{-12} \mu^{-2}$
ACCELERATION	L/T^2	$\sqrt{(c^7/G \hbar)}$	$\alpha \mu^{-2}$	$\alpha \mu^{-2}$	$\alpha^{23} \mu^2$	$\alpha^{-23} \mu^{-4}$
MOMENTUM	ML/T	$\sqrt{(c^3 \hbar/G)}$	$\alpha^2 \mu$	$\alpha^3 \mu$	$\alpha^{12} \mu^2$	$\alpha^{-11} \mu^{-1}$
AREA	L^2	$G \hbar/c^3$	α^6	α^{10}	α^2	α^2
VOLUME	L^3	$(G \hbar/c^3)^{3/2}$	α^9	α^{15}	α^3	α^3
DENSITY	M/L^3	$c^5/G^2 \hbar$	$\alpha^{-9} \mu^2$	$\alpha^{-15} \mu^2$	$\alpha^{-3} \mu$	$\alpha^{-3} \mu$
ACTION	ML^2/T	$\hbar$	$\alpha^5 \mu$	$\alpha^8 \mu$	$\alpha^{1,3[illegible]} \mu^2$	$\alpha^{-10} \mu^{-1}$
FORCE	ML/T^2	c^4/G	α	α	$\alpha^{23} \mu^3$	$\alpha^{-23} \mu^{-3}$
ENERGY	ML^2/T^2	$\sqrt{(c^5 \hbar/G)}$	α^4	α^6	$\alpha^{24} \mu^3$	$\alpha^{-22} \mu^{-3}$
POWER	ML^2/T^3	c^5/G	$\alpha^{-3} \mu^{-1}$	$\alpha^4 \mu^{-1}$	$\alpha^{35} \mu^4$	$\alpha^{-34} \mu^{-5}$
PRESSURE	M/LT^2	$c^7/G^2\hbar$	α^{-5}	α^{-9}	$\alpha^{21} \mu^3$	$\alpha^{-25} \mu^{-3}$
[CHARGE] ²	ML^3/T^2	$\hbar c$	α^7	α^{11}	$\alpha^{25} \mu^3$	$\alpha^{-21} \mu^{-3}$
CHARGE	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	$\alpha^{7/2}$	$\alpha^{11/2}$	$\alpha^{\frac{25}{2}} \mu^{3/2}$	$\alpha^{-\frac{21}{2}} \mu^{-\frac{3}{2}}$
CURRENT	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	$\alpha^{5/2} \mu^{-1}$	$\alpha^{7/2} \mu^{-1}$	$\alpha^{\frac{45}{2}} \mu^{5/2}$	$\alpha^{-\frac{45}{2}} \mu^{-\frac{7}{2}}$
VOLTAGE √F	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	$\alpha^{1/2}$	$\alpha^{1/2}$	$\alpha^{\frac{23}{2}} \mu^{3/2}$	$\alpha^{-\frac{23}{2}} \mu^{-\frac{3}{2}}$
RESISTANCE	T^2/L	$\sqrt{(G\hbar/c^7)}$	$\alpha^{-1} \mu^2$	$\alpha^{-1} \mu^2$	$\alpha^{-23} \mu^{-2}$	$\alpha^{23} \mu^4$

Based on F ratio — also α

$C_B/C_E = \alpha$

C = coulomb

$\frac{G}{C_B} = S^{-1}$ $\frac{C_B}{G} = S$

DIMENSION	SYMBOL	PLANCK	$\alpha^{n} \mu^{m}$	Oct 15, 2007		
LENGTH	L	$\sqrt{(G \hbar / c^3)}$	$\alpha^{1} \mu^{0}$	7	-5	10
TIME	T	$\sqrt{(G \hbar / c^5)}$	$\alpha^{12} \mu^{2}$	10	-12	15
MASS	M	$\sqrt{(c \hbar / G)}$	$\alpha^{0} \mu^{1}$	15	-15	7
G	L^3/MT^2	G	$\alpha^{-21} \mu^{-5}$	-14	24	-7
VELOCITY	L/T	c	$\alpha^{-11} \mu^{-2}$	-3	7	-5
FREQUENCY	1/T	$\sqrt{(c^5 / G \hbar)}$	$\alpha^{-12} \mu^{-2}$	-10	12	-15
ACCELERATION	L/T^2	$\sqrt{(c^7 / G \hbar)}$	$\alpha^{-23} \mu^{-4}$	-13	19	-20
MOMENTUM	ML/T	$\sqrt{(c^3 \hbar / G)}$	$\alpha^{-11} \mu^{-1}$	12	-27	2
AREA	L^2	$G \hbar / c^3$	$\alpha^{2} \mu^{0}$	14	-10	20
VOLUME	L^3	$(G \hbar / c^3)^{3/2}$	$\alpha^{3} \mu^{0}$	21	-15	30
DENSITY	M/L^3	$c^5 / G^2 \hbar$	$\alpha^{-3} \mu$	-6	0	-23
ACTION	ML^2/T	$\hbar$	$\alpha^{-10} \mu^{-1}$	19	-13	13
FORCE	ML/T^2	c^4/G	$\alpha^{-23} \mu^{-3}$	2	4	-13
ENERGY	ML^2/T^2	$\sqrt{(c^5 \hbar / G)}$	$\alpha^{-22} \mu^{-3}$	9	-1	3
POWER	ML^2/T^3	c^5/G	$\alpha^{-34} \mu^{-5}$	-1	11	-12
PRESSURE	M/LT^2	$c^7/G^2 \hbar$	$\alpha^{-25} \mu^{-3}$	-12	14	-33
$[\text{CHARGE}]^2$	ML^3/T^2	$\hbar c$	$\alpha^{-21} \mu^{-3}$	16	-6	7
CHARGE	$\sqrt{(ML^3/T^2)}$	$\sqrt{(\hbar c)}$	$\alpha^{-21/2} \mu^{-3/2}$	8	-3	7/2
CURRENT	$\sqrt{(ML^3/T^4)}$	$c^3/\sqrt{G}$	$\alpha^{-45/2} \mu^{-7/2}$	-2	9	-23/2
VOLTAGE	$\sqrt{(ML/T^2)}$	$c^2/\sqrt{G}$	$\alpha^{-23/2} \mu^{-3/2}$	1	2	-13/2
RESISTANCE	T^2/L	$\sqrt{(G\hbar / c^7)}$	$\alpha^{23} \mu^{4}$	13	-19	20
			Based on			
			Force ratio			
			F_B / G	UNIQUE	M = VOL	Ω = Area

$\alpha^{-23} \mu^{-3}$

DIMENSIONAL UNIT SYSTEMS

NAMES	SYMBOL	cgs UNITS	SI UNITS	PLANCK	log (planck)*	ELEC-VOLT	log(Gev)**
PRESSURE	M/LT^2	$dynes/cm^2$	$newtons/m^2$	$c^7/G^2\hbar$	114.665 261	$E^4/\hbar^3c^3$	125.846 421
[CHARGE] [2]	ML^3/T^2	erg ·cm	$(ampere \cdot sec)^2$	ħc	–16.500 103	ħc	–16.500 103
CHARGE	$\sqrt{(ML^3/T^2)}$	$(erg \cdot cm)^{1/2}$	coulomb	$\sqrt{(\hbar c)}$	–8.250 052	$\sqrt{(\hbar c)}$	–8.250 052
CURRENT	$\sqrt{(ML^3/T^4)}$	$(force \cdot vel^2)^{1/2}$	ampere	$c^3/\sqrt{G}$	35.018 110	$E\sqrt{c/\hbar}$	37.813 400
VOLTAGE	$\sqrt{(ML/T^2)}$	$(force)^{1/2}$	volt	$c^2/\sqrt{G}$	24.541 289	$E\sqrt{c\hbar}$	27.336 579
RESISTANCE	T^2/L	$(acceler)^{-1}$	ohm	$\sqrt{(G\hbar/c^7)}$	–53.744 983	ħ/cE	–56.540 273
	M/L			c^2/G	28.128937	$E^2/\hbar c^3$	33.719 517
	~~M/T~~			c^3/Gd	36.605 758	$E^2/\hbar c^2$	44.196 338
	M·L			ħ/c	–37.453 745	ħ/c	–37.453745

* The values in this column are the $\log_{10}$(cgs) values of the corresponding plank dimension.
** The values in this column are the $\log_{10}$(Gev) values of the corresponding plank dimension.

ALTERN4.WPD November 23, 2008

DIMENSIONAL UNIT SYSTEMS

NAMES	SYMBOL	cgs UNITS	SI UNITS	PLANCK	log (planck)*	ELEC-VOLT	log(Gev)**
LENGTH	L	centimeter	meter	$\sqrt{(G\hbar/c^3)}$	–32.791 341	$\hbar c/E$	–35.586 631
TIME	T	second	second	$\sqrt{(G\hbar/c^5)}$	–43.268 162	$\hbar/E$	–46.063 452
MASS	M	gram	kilogram	$\sqrt{(c\hbar/G)}$	–4.662 404	E/c^2	–1.867 114
G	L^3/MT^2			G	–7.175 296	$\hbar c^5/E$	–12.765 876
VELOCITY	L/T	cm/sec	meters/sec	c	10.476 821	c	10.476 821
FREQUENCY	1/T	hertz	hertz	$\sqrt{(c^5/G\hbar)}$	43.268 162	$E/\hbar$	46.063 452
ACELRATION	L/T^2	cm/sec^2	$meters/sec^2$	$\sqrt{(c^7/G\hbar)}$	53.744 983	$cE/\hbar$	56.540 273
MOMENTUM	ML/T	gram sec	kilogram sec	$\sqrt{(c^3\hbar/G)}$	5.814 417	E/c	8.609 707
AREA	L^2	cm^2	$meters^2$	$G\hbar/c^3$	–65.582 682	$\hbar^2c^2/E^2$	–71.173 262
VOLUME	L^3	cm^3	$meters^3$	$(G\hbar/c^3)^{3/2}$	–98.374 023	$\hbar^2c^2/E^2$	–103.964 603
DENSITY	M/L^3	$grams/cm^3$	$kilograms/m^3$	$c^5/G^2\hbar$	93.711 619	$E^4/\hbar^3c^5$	104.892 779
ACTION	ML^2/T			$\hbar$	–26.976 924	$\hbar$	–26.976 924
FORCE	ML/T^2	dyne	newton	c^4/G	49.082 578	$E^2/\hbar c$	54.673 158
ENERGY	ML^2/T^2	erg	joule	$\sqrt{(c^5\hbar/G)}$	16.291 238	E	19.086 528
POWER	ML^2/T^3		watt	c^5/G	59.559 399	$E^2/\hbar$	65.149 979

* The values in this column are the $\log_{10}$(cgs) values of the corresponding plank dimension.

** The values in this column are the $\log_{10}$(Gev) values of the corresponding plank dimension.

The shaded cell gives the $\log_{10}$ of the Giga electron-volt value of the energy of the planck particle

STRUCTURALIST APPROACH TO DIMENSIONALITIES

DIMSPA32.WPD December 29, 2009 ħ ρ α √

3 SPACED AND 2 SPACED DIMENSIONALITIES

(annotations above columns: ρ⁻¹ "3,2 ↓"; α "3,3,1 ↓"; c "1")

	0	E	M^2	L^2	T^2	ħ	F	Q^2	W	G	ρ^{-1}	ρ	α	c	L^3
0		3	2	2	2	√6	√6	√14	√14	√14	√10	√10	√5	√2	3
E	3		3	√5	√21	1 ✓	1 ✓	1 ✓	1 ✓	√5	~~√29~~ 3	√29	√2	√3	√6
M^2	2	3		√8	√8	√6	√6	√14	√14	√22	√18	√10	3	√6	
L^2	2	√5	~~8~~√8		√8	√2	√6	√6	√10	√6	√2	√26	√5	√2	
T^2	2	√21	√8	√8		√14	√10	√26	√30	√26	√14	√14	√17	√10	
ħ	√6	1	√6	√2	√14		√2	√2	~~2~~ 2	√6	√6	√26	√3	√2	
F	√6	1	√6	√6	√10	√2		2 ✓	√2	√8	√12	√20	1	√2	
Q^2	√14	1	√14	√6	~~√26~~ √26	√2	2 ✓		√2 ✓	2 ✓	√8	√40	√5	√6	
W	√14	1	√14	√10	√30	~~2~~ 2	√2	√2		√6	√14	√34	√3	√6	
G	√14	√5	√22	√6	√26	√6	√8	2	√6		2	√44	√5	√6	
ρ^{-1}	√10	3								2		√40	3	√6	
ρ	√10	√29									√40		√21	√18	
α	√5	√2	3								3	√21		1	
c	√2	√3		√2		√2			√6	√6	√6	√18	1		

L^3 3 Q = charge
W = POWER
F = FORCE
α = acceleration
ρ = density M/L^3
E = Energy

3's 0, E, M^2, ρ^{-1}, α
2's (MOE) M^2 ... G, ρ^{-1}
1's ħ F Q^2 W, α, c

re-do the table

DIMSPA32.WPD December 29, 2009 ħ ρ α √ ω

3 SPACED AND 2 SPACED DIMENSIONALITIES

	0	E	M^2	L^2	T^2	ħ	F	Q^2	W	G	c	ρ	ω	ρ^{-1}
0		3	2	2	2	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{2}$			
E	3		3	$\sqrt{5}$	$\sqrt{21}$	1	1	1	1	$\sqrt{5}$	$\sqrt{3}$			
M^2	2	3		$\sqrt{8}$	$\sqrt{8}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{22}$	$\sqrt{6}$		3	
L^2	2	$\sqrt{5}$	$\sqrt{8}$		$\sqrt{8}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{10}$	$\sqrt{6}$	$\sqrt{2}$			
T^2	2	$\sqrt{21}$	$\sqrt{8}$	$\sqrt{8}$		$\sqrt{14}$	$\sqrt{10}$	$\sqrt{26}$	$\sqrt{30}$	$\sqrt{26}$	$\sqrt{10}$			
ħ	$\sqrt{6}$	1	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{14}$		$\sqrt{2}$	$\sqrt{2}$	2	$\sqrt{6}$	$\sqrt{2}$			
F	$\sqrt{6}$	1	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{10}$	$\sqrt{2}$		2	$\sqrt{2}$	$\sqrt{8}$	$\sqrt{2}$			
Q^2	$\sqrt{14}$	1	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{26}$	$\sqrt{2}$	2		$\sqrt{2}$	2	$\sqrt{6}$			
W	$\sqrt{14}$	1	$\sqrt{14}$	$\sqrt{10}$	$\sqrt{30}$	2	$\sqrt{2}$	$\sqrt{2}$		$\sqrt{6}$	$\sqrt{6}$			
G	$\sqrt{14}$	$\sqrt{5}$	$\sqrt{22}$	$\sqrt{6}$	$\sqrt{26}$	$\sqrt{6}$	$\sqrt{8}$	2	$\sqrt{6}$		$\sqrt{6}$			
c	$\sqrt{2}$	$\sqrt{3}$	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{10}$	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{6}$				
ρ														
ω			3											3
ρ^{-1}													3	

E = ENERGY; F=FORCE; Q=CHARGE; W=POWER; ρ =DENSITY; ω=ACCELERATION

E - M²
E - O

3 2 1

	3.742	3.162	2.828	2.449	2.236	2	1.414	1		√26	√21			
	√14	√10	√8	√6	√5	O - M²	√2	h - E		Q² - T²	E - T²	√17	~~4.123~~	4.123
	O - Q²	F - T²	L² - M²	O - h	G - E	O - L²	h - L²	F - E		G - T²			√18	4.243
	O - W		M² - T²	O - F		O - T²	O - C	Q² - E					√20	4.472
	O - G		L² - T²	M² - h		h - F	L² - C	W - E			√22		√21	4.538
	M² - Q²		G - F	M² - F		h - Q²	h - C				G - M²		√22	4.690
	M² - W			L² - F		h - W	F - C						√26	5.099
	h - T²			L² - Q²		F - Q²	Q² - W						√30	5.477
				G - h		F - W								
				G - W		G - Q²								
				L² - G										
				C - M²										
				C - Q²										
				C - W										
				C - G										

LINKS IN DIMENSIONALITY SPACE

Units of M = 1, L = 1, T = 1

E – [L, [illegible], F, Q²]

BASIC 1's
E, A, c, ħ, Q² P F

½ × ½ × ½ grid

V = 1

Points are dimensionalities
Table is size of links

V = ½

	G	c	ħ	L^2	M^2	O	P	F	e^2	E	A	ρ	T^2	Q	I	V	Ω
G	0	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{22}$	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{8}$	2	$\sqrt{5}$	$\sqrt{5}$	$\sqrt{44}$		$\sqrt{\frac{11}{2}}$	$\sqrt{\frac{9}{2}}$	$\sqrt{\frac{19}{2}}$	$\sqrt{26}$
c	$\sqrt{6}$	0	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{3}$	1	$\sqrt{18}$		$\frac{1}{\sqrt{2}}$			
ħ	$\sqrt{6}$	$\sqrt{2}$	0	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{6}$	2	$\sqrt{2}$	$\sqrt{2}$	1	$\sqrt{5}$	$\sqrt{26}$		$\frac{1}{\sqrt{2}}$			
L^2	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{2}$	0	$\sqrt{8}$	2	$\sqrt{10}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{5}$	$\sqrt{5}$			$\sqrt{\frac{3}{2}}$			
M^2	$\sqrt{22}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{8}$	0	2	$\sqrt{10}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{5}$	$\sqrt{10}$			$\sqrt{\frac{11}{2}}$			
O	$\sqrt{14}$	$\sqrt{2}$	$\sqrt{6}$	2	2	0	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{14}$	3	$\sqrt{5}$	$\sqrt{10}$		$\sqrt{\frac{7}{2}}$			
P	$\sqrt{6}$	$\sqrt{6}$	2	$\sqrt{10}$	$\sqrt{10}$	$\sqrt{14}$	0	$\sqrt{2}$	$\sqrt{2}$	1	$\sqrt{3}$			$\sqrt{\frac{9}{2}}$			
F	$\sqrt{8}$	$\sqrt{2}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{2}$	0	2	1	[illegible]	1	$\sqrt{\frac{3}{2}}$	[illegible]		$\sqrt{\frac{3}{2}}$	
e^2	2	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{2}$	2	0	1	$\sqrt{5}$						
E	$\sqrt{5}$	$\sqrt{3}$	1	$\sqrt{5}$	$\sqrt{5}$	3	1	1	1	0	$\sqrt{2}$	$\sqrt{34}$					
A	$\sqrt{5}$	1	$\sqrt{5}$	$\sqrt{5}$	$\sqrt{10}$	$\sqrt{5}$	$\sqrt{3}$	1	$\sqrt{5}$	$\sqrt{2}$	0						
ρ	$\sqrt{44}$	$\sqrt{18}$	$\sqrt{26}$			$\sqrt{10}$				$\sqrt{34}$				Q	I	V	Ω
T^2	$\sqrt{26}$	$\sqrt{10}$	$\sqrt{18}$			2						Q		0	1	1	
$\frac{1}{P}$	2											I		1	0	$\sqrt{2}$	$\frac{3}{2}$
												V		1	$\sqrt{2}$	0	
												Ω					0

GRIDS: 2 $M^2, T^2/L^2$ × 1 × 1 Grid (ABOVE)

1 V

½ $\frac{V}{\sqrt{2}}$

∃
13 $\sqrt{6}$
10 $\sqrt{2}$
8 $\sqrt{5}$
6 1's
5 2's

4 $\sqrt{14}$
3 $\sqrt{10}$
2 $\sqrt{8}$
2 $\sqrt{3}$
1 $\sqrt{22}$
1 3

TOTAL 55

QV 2 6

DIMENSIOALITY SPACE

$U = 3, 2$

	O	E	T^2	L^2	M^2	Q^2	ħ	G	F	W
O		3	2	2	2	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{14}$
E	3		$\sqrt{21}$	$\sqrt{5}$	3	1	1	$\sqrt{5}$	1	1
T^2	2	$\sqrt{21}$								
L^2	2	$\sqrt{5}$								
M^3	2	3								
Q^2	$\sqrt{14}$	1								
ħ	$\sqrt{6}$									
G	$\sqrt{14}$									
F	$\sqrt{6}$									
W	$\sqrt{14}$									
		③		O	E	M^2		③		
		②		O	E	--	G $\frac{1}{6}$	(1D)		
		①		—	E	ħ	F	Q^2	W	
		($\frac{1}{2}$)								

⊃3 | ⊃2

	O	E	M^2	L^2	T^2	ħ	F	Q^2	W	G	C	A	ρ	$\frac{1}{\rho}$
O		3	2	2	2	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{14}$				
E	3		3	$\sqrt{5}$	$\sqrt{21}$	1	1	1	1	$\sqrt{5}$				
M^2	2	3		$\sqrt{8}$	$\sqrt{8}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{14}$	$\sqrt{14}$	$\sqrt{22}$				
L^2	2	$\sqrt{5}$	$\sqrt{8}$		$\sqrt{8}$	$\sqrt{2}$	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{10}$	$\sqrt{6}$				
T^2	2	$\sqrt{21}$	$\sqrt{8}$	$\sqrt{8}$		$\sqrt{14}$	$\sqrt{10}$	$\sqrt{26}$	$\sqrt{30}$	$\sqrt{26}$				
ħ	$\sqrt{6}$	1	$\sqrt{6}$	$\sqrt{2}$	$\sqrt{14}$		2	2	2	$\sqrt{6}$				
F	$\sqrt{6}$	1	$\sqrt{6}$	$\sqrt{6}$	$\sqrt{10}$	2		2	2	$\sqrt{8}$				
Q^2	$\sqrt{14}$	1	$\sqrt{14}$	$\sqrt{6}$	$\sqrt{26}$	2	2		$\sqrt{2}$	2				
W	$\sqrt{14}$	1	$\sqrt{14}$	$\sqrt{10}$	$\sqrt{30}$	2	2	$\sqrt{2}$		$\sqrt{6}$				
G	$\sqrt{14}$	$\sqrt{5}$	$\sqrt{22}$	$\sqrt{6}$	$\sqrt{26}$	$\sqrt{6}$	$\sqrt{8}$	2	$\sqrt{6}$					2
C														
A														
ρ														
$\frac{1}{\rho}$										2				

# of 3's [2]
# of 2's [10]
# of 1's [4]

of $\sqrt{6}$'s [9]
of $\sqrt{14}$'s [6]
of $\sqrt{8}$'s [4]

$\sqrt{5}$ 2
$\sqrt{2}$ 2
$\sqrt{26}$ 2

$\sqrt{10}$ 2
$\sqrt{21}$
~~$\sqrt{22}$~~
$\sqrt{30}$

③

What can evolve from ③

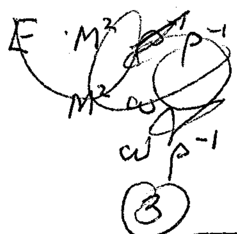
	O	E	M^2	ω	ρ^{-1}
O	▨	3	2	$\sqrt{5}$	$\sqrt{10}$
E	3	▨	3	$\sqrt{2}$	3
M^2	2	3	▨	3	$\sqrt{18}$
ω	$\sqrt{5}$	$\sqrt{2}$	3	▨	3
ρ^{-1}	$\sqrt{10}$	3	$\sqrt{18}$	3	▨

$M^2\rho^{-1}\omega = Q^2L$

$\frac{M^2}{\rho^{-1}} = \left(\frac{M}{L}\right)^3$

$\rho^{-1}\omega = GL$

$M^2\omega = GL\frac{M^3}{L^3} = \frac{GM^2}{L^2}\cdot M$



O	E		
	E	M^2	ρ^{-1}
		$M^2\omega$	
			$\omega\rho^{-1}$

1° O E

2° $E \to M^2$, $\rho^{-1} \to ML^3$, $\left(\frac{M}{L}\right)^3$ or $\frac{M^4}{\frac{L^6}{M^2}}$ $\left(\frac{L^3}{M}\right)^2 = (\rho^{-1})^2$

3° $M^2 \to \omega$ $\to MF$

4° $\omega \to \rho^{-1}$ $\to GL$

~~$\frac{L^6}{M^2}\cdot\frac{1}{\omega^2} =$~~

M^2 ~ matter and anti matter

$\rho^{-1} = \frac{L^3}{M}$ $\omega = \frac{L}{T^2}$ $\omega\rho = \frac{L}{T^2}\frac{M}{L^3} = \frac{M}{L^2T^2}$

$M^2\omega = MF$ $M^2\rho^{-1} = \frac{L^3M}{M}$

$\rho^{-1}\omega = GL$ $M^2\rho^{-1}\omega = Q^2L$ $Q^2L\left(\frac{M}{L}\right)^3 = M^2\frac{Q^2}{L^2}$

$\left(\frac{M}{L}\right)^3\frac{Q^2L}{M^2} = \frac{Q^2}{L^2} = F$

$\frac{M^2}{\rho^{-1}} = M^2\rho = ML^3$

$\frac{M^3}{L^3}$ $\frac{L}{M^2T^2}$

$\frac{\rho^{-1}}{G} = \frac{L}{\omega} = T^2$

If $\frac{M}{L} = \frac{c^2}{G}$

$\left(\frac{M}{L}\right)^3 = \frac{c^6}{G^3} = \frac{c^4}{G}\cdot\frac{c^2}{G^2} = F\cdot\frac{c^2}{G^2} = \frac{F}{G}\cdot\frac{c^2}{G} = \left(\frac{M}{L}\right)^3$ is $\frac{c^2}{G} = \frac{M}{L}$

$\frac{F}{G} = \left(\frac{M}{L}\right)^2$ or $F = \frac{GM^2}{L^2}$ when $\frac{M}{L} = \frac{c^2}{G}$

i.e. gravity when $\frac{M}{L} = \frac{c^2}{G}$ ⇒ Gravity

If $\frac{M}{L} = \frac{c^2}{G}$ not gravity ~ $\frac{c^4}{G} =$

equilibrium at $\frac{M}{L} = \frac{c^2}{G}$

FRACTALS

FRACTDIM.WP6
[91/06/10;96/01/13;96/04/04;97/09/26;98/08/21;98/09/29]

FRACTAL DIMENSION

The modern concept of what we call a *fractal* probably began with the discovery by Galileo of the moons of Jupiter. Through subsequent centuries seeing the same form on two different scales — Copernicus' planets revolving about the sun and Galileos moons revolving about Jupiter — intrigued the imaginations of philosophers, scientists, and mathematicians. Emmanuel Swedenborg (1734) noted, " Nature is always the same and identical with hereself", while Jonathan Swift (1733) captured the idea in verse,

So, Naturalists observe, a Flea
Hath smaller Fleas that on him prey,
And these have smaller Fleas to bite 'em,
And so proceed ad infinitum.

Lewis Fry Richardson (1922) repeated this motif ,

Big whorls have little whorls,
Which feed on their velocity;
And little whorls have lesser whorls,
And so on to viscosity.

The concept of fractal also emerged in attempts to explain why the sky is dark, the so-called Cheseau-Olbers Paradox. Speculators in this area included Immanuel Kant (1755), Johann Lambert (1761), John Herschel (1848), Edward Fournier d'Albe (1907) and Carl Charlier (1922). Mathematicians pursued like concepts through their interest in self-similar sets, Georg Cantor (1915), and "monster" curves, Felix Hausdorf (1914). But the ultimate sealing of the fractal concept both by generalizing it and naming it was the work of the mathematician, Benoit B. Mandelbrot (1977). And today fractals are everywhere.

It has been a matter of much amazement on the part of philosophers from the Greeks to Einstein that the structures of pure thought we call mathematics appear to have an isomorphic relation to the physical world. That mathematical constructs can be successfully used to explain and predict physical phenomena is itself a phenomenon that up to the present has eluded explanation. However, there are hiati in the successful representations of the world by mathematics. In particular several difficulties arise when treating the infinitely large and the infinitesimally small. While the geometry of Euclid, for example, has been most useful in the solution of myriads of problems, its sizeless points, diameterless lines, and thickless planes frequently lead to singularities and non-sensical physical conclusions. When mathematical thinking turned to the paradoxes implicit in the infinitely large and small, it opened new regions to the successful mathematical representation of the physical world.

The sizeless points of Euclid vs. the finite atoms of nature are but one example of the general dichotomy of continuum vs discretum. There is the continuousness of geometry vs. the discreteness of arithmetic; the continuous real numbers vs the discrete natural numbers; in technology, the analogue vs. the digital; in space, extension vs. separation; and in time, duration vs. interval. There appear to be two distinct worlds, or is it perhaps only two world descriptions, that need to be reconciled — the classical world of continuity and the quantized world of Max Planck.

There have been many mathematical approaches to the resulting paradoxes. Some, which should be mentioned, are Cantor's studies of transfinite sets, Hausdorf and Besicovitch's dimension, Lesbegue's theory of measure, and Mandelbrot's fractal dimension. Also related to this area are the finite difference calculus and some of the work of Buckminster Fuller. All are concerned with bridging the gap between the sizeless elements of abstract thought and the finite elements of physical experience.

The development of the concept of fractal, pioneered by Mandelbrot, has led to new isomorphisms between the formulae of mathematics and the laws and patterns of nature. Complex patterns in nature, such as shore lines and mountain ridge contours, always considered too complicated to be mathematically treated, have suddenly been made accessible through relatively simple expressions. At the present time not only are unexpected new isomorphisms being generated, but reexamination of classical models in such areas as geology and astronomy has led, through the fractal approach, to new and deeper insights.

SPACES OF FRACTIONAL DIMENSION

In enquiring into what ways the sizeless species of thought may be rendered useful representations of the finite elements of physical experience, one device is the concept of fractal or fractional dimension. The idea of fractal dimension requires abandoment of the view of homogeneity of space. Traditionally, conceptual spaces from Euclid to Riemann have been uniform or homogeneous spaces. However, to conform to physical space our conceptual spaces must be allowed to contain *gaps* or regions of "under density" and *fills* or regions of "over density". Only those spaces devoid of gaps and fills, having uniform density, turn out to have the integral dimensions, one, two, three,... of the spaces of mathematical thought. Thus to render our concepts of space more compatible with physical space, the concept of variable density, gaps and fills, turns out to be useful.

One approach to spaces with fractional or fractal dimension can be formulated as follows: First consider spaces consisting only of two values of density, elements possessing extension and gaps possessing separation.
Let E represent an *element* possessing extension. An element can be a line segment, square, cube, etc. and let u be a unit of length, area, volume, etc.
The *extension* of E is measured in units **u**. (for example E = 5u, 8u,...eu, etc)

Let G represent a gap or *no-element*, whose *separation* is also measured in units **u.** (G=5u, 8u,...gu, etc). Next construct a module out of elements (E's) and gaps (G's). Let **M** represent a *module* composed of R elements and gaps together. Let A be the number of elements in **M**. The extension of M will be A E = Aeu, and the separation contained within **M** will be (R-A)G = (R-A)gu, giving the size of **M** = AE + (R-A)G. If elements and no-elements are of the same size, E=G then the size of M will be = RE.

With A = the number of elements in **M** and R the total of elements and gaps, fractal dimension d is defined by $A = R^d$, or d = log(A)/log(R).

If we note that extension is manifested as appearance and separation as emptiness, then this so-called Hausdorf fractal dimension is the ratio of the logarithms of the number of appearance segments in a module to the number of appearance plus emptiness segments in the module. Or d is the ratio of the logarithms of the manifested to the total manifested and unmanifested.

In order that fractal dimension be consistent with classical notions of dimension, the fractal dimension must reduce to ordinary dimension when all segments are manifest, no gaps. That is whenever a line, area, or volume is filled in completely, the dimension should be an integer.

Examples:

I The Cantor Set

Take as the element a line segment of length 3 units = ___.

E = ___

Let R = 3, then M = 3 E = _________ = 9 units

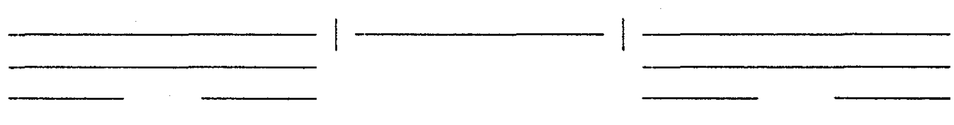
Remove the central E, ___ ___ leaving A = 2

The fractal dimension of the Cantor set is then,

d = log(2)/log(3) = 0.631

The Cantor set continues this operation with the resulting

d = log(manifest)/log(total) = 0.631



II A straight line

Take u, **E,** and **M** as before

R again = 3 **M** = 3 E = _________ = 9 units

If the line is left solid, A then is = 3 and

the fractal dimension d = log(3)/log(3) = 1, which is the proper dimension for a line.

INTRODUCTION TO MEASURE AND FRACTAL DIMENSION

It has been a matter of much amazement on the part of philosophers from the Greeks to Einstein that the structures of pure thought we call mathematics appear to be isomorphic to the physical world. That mathematical constructs can be successfully used to explain and predict physical phenomena is itself a phenomenon that up to the present has eluded explanation. However, there are hiati in the successful representations of the world by mathematics. In particular several difficulties arise when treating the infinitely large and the infinitesimally small. While the geometry of Euclid, for example, has been most useful in the solution of myriads of problems, its sizeless points, diameterless lines, and thickless planes frequently lead to singularities and non-sensical conclusions. When mathematical thinking turned to the paradoxes implicit in the infinitely large and small, it opened new regions to the successful mathematical representation of the physical world.

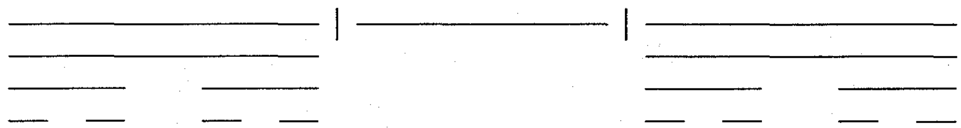
There have been many approaches to these paradoxes. Some, which should be mentioned, are Cantor's studies of transfinite sets, Hausdorf and Besicovitch's dimension, Lesbegue's theory of measure, and Mandelbrot's fractal dimension. Also related to this area are the finite difference calculus and some of the work of Buckminster Fuller. All are concerned with bridging the gap between the sizeless elements of classical geometric thought and the finite elements of physical experience.

The development of the concept of fractal, pioneered by Mandelbrot, has led to new isomorphisms between the formulae of mathematics and the laws and patterns of nature. Complex patterns in nature, such as shore lines and mountain contours, always considered too complicated to be mathematically treated, have suddenly been made accessible through relatively simple expressions. At the present time not only are unexpected new isomorphisms being generated, but reexamination of classical models in such areas as geology and astronomy has led, through the fractal approach, to new and deeper insights.

In addition to the sizeless points of Euclid vs. the finite atoms of nature, there is the continuum vs the discretum: the continuousness of geometry vs. the discreteness of arithmetic and algebra; the analogue vs. the digital; in space, extension vs. separation; and in time, duration vs. interval. There are two worlds to be brought together.

THE CANTOR SET

What are the ways in which the sizeless species of thought can be rendered useful to the representation of the finite elements of physical experience? Let us begin with the example known as Cantor's Set. Take a line segment of length L, divide it into three parts and remove the middle section. Iterate this process each time removing the middle section of the remaining line segments.



January 13, 1996 FRACDIM2.WP6

F R A C T A L   D I M E N S I O N S

See also 91-#78

This is a modified approach to the Hausdorf definition of fractal dimension. We begin with the following definitions:

- **e** = an element. This can refer to a line segment, a triangle, a square, a cube, ...
- **m** = magnification. This is the number of repetitions of an element.
- **M** = Module. **M** = **m** x **e**. extension or separation
- **N** = The number of "activated" elements in a module.
- **d** = the fractal dimension. $\mathbf{N} = \mathbf{m}^{\mathbf{d}}$, or $\mathbf{d} = \log(\mathbf{N})/\log(\mathbf{m})$.

A definition of fractal dimension must reduce to ordinary dimension when **N** = **M** = **m** x **e**. That is whenever a line, area, or volume is filled in completely, the dimension should be an integer.

Examples:

I The Cantor Set

Take as the element a line segment of length u = ___.

e = ___

Let m = 3, the M = 3m = _________ = 9u

Remove the central e, ___ ___ leaving N = 2

The fractal dimension of the Cantor set is then,

d = log(2)/log(3) = 0.631

The set continuous fractically:

__ __   __ __

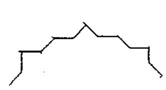
II A straight line

Take u, e, and M as before

M = 3m = _________ = 9u

Leave the line solid, N then is = 3 and the fractal dimension d = log(3)/log(3) = 1, which is the proper dimension for a line.

III The Koch Curve



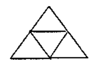
e = 1, m = 3, but here M = 4e

__/__ and N = 4e

Hence d = log(4)/log(3) = 1.262

IV THE SIERPINSKI GASKET

e = Δ , m = 2 ,



= M

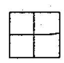
■N

N = 3

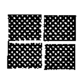
d = log(3)/log(2) = 1.585

V An Area

e = □ , m = 2 , M =



N =



N = 4, d = log(4)/log(2) = 2

VI

A fractal universe ⇒ $K \simeq 0$, flat space
If form changes with scale, then $K \neq 0$

FRACTDIM.WP6 [91/06/10;96/01/13;96/04/04;97/09/26]

add ref Hermes Trismegistes

FRACTAL DIMENSION

The modern concept of what we call a *fractal* probably began with the discovery by Galileo of the moons of Jupiter. Seeing the same form on two different scales: Copernicus' planets revolving about the sun and Galileos moons revolving about Jupiter, inspired the imaginations of many scientists, mathematicians and philosophers through the subsequent centuries. Emmanuel Swedenborg (1734) noted, " Nature is always the same and identical with hereself". Swift (1733) captured the idea in his verse,

So, Naturalists observe, a Flea
Hath smaller Fleas that on him prey,
And these have smaller Fleas to bite 'em,
And so proceed ad infinitum.

Lewis Fry Richardson (1922) repeated the motif ,

Big whorls have little whorls,
Which feed on their velocity;
And little whorls have lesser whorls,
And so on to viscosity.

Many names are associated with the concept of fractal through its possible explanation of why the night sky is dark, the so-called Cheseau-Olbers Paradox. These include Immanuel Kant (1755), Johann Lambert (1761), John Herschel (1848), Edward Fournier d'Albe (1907) and Carl Charlier (1922). Mathematicians invoked the concept through interest in self-similar sets, Georg Cantor (1915), or "monster" curves, Felix Hausdorf (1914). But the ultimate sealing of the fractal concept both by generalizing it and giving it a name was the work of the mathematician, Benoit B. Mandelbrot (1977). And today fractals are everywhere.

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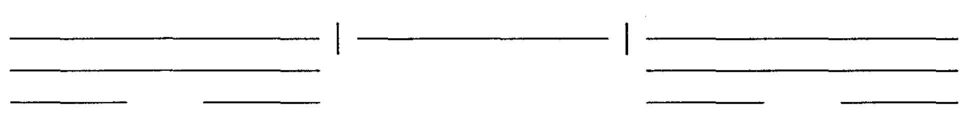

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m = magnification. This is the number of repetitions of an element.
M = Module. **M** = **m** x **e**.
N = The number of elements with extension in a module.
[Here we differentiate between extension and separation, two species of linearity. Extension is manifested as appearance (black), separation as emptiness, (white).]
d = the fractal dimension. $\mathbf{N} = \mathbf{m}^{\mathbf{d}}$, or **d** = log(**N**)/log(**m**).

A definition of fractal dimension must reduce to ordinary dimension when **N** = **M** = **m** x **e**. That is whenever a line, area, or volume is filled in completely, the dimension should be an integer.

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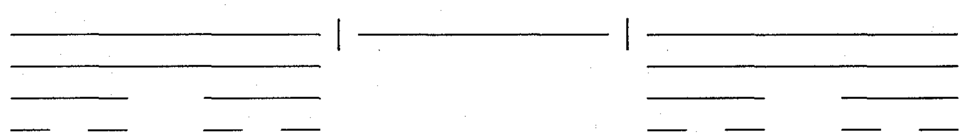

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