FORCES

FORCARAY.WPD November 30, 2009 June 29, 2010

$L \times F \rightarrow E$

$c \times F \rightarrow p$

FORCE ARRAY: F=F(M,L,G,ħ,c)

ħ

M\L	3	2	1	0	-1	-2	-3
-5							
-4							
-3	L^3c^{10}/G^4M^3		$Lc^7\hbar/G^3M^3$		$c^4\hbar^2/G^2M^3L$		$c\hbar^3/GM^3L^3$
-2		L^2c^8/G^3M^2 ?		$c^5\hbar/G^2M^2$		$c^2\hbar^2/GM^2L^2$	
-1	X $L^3c^9/G^3M\hbar$		Lc^6/G^2M		$c^3\hbar/GML$		$\hbar^2/ML^3$
0		XW ? $L^2c^7/G^2\hbar$		c^4/G		$c\hbar/L^2$	
1	$ML^3c^8/G^2\hbar^2$		$MLc^5/G\hbar$		Mc^2/L		$GM\hbar/L^3c$
2		$M^2L^2c^6/G\hbar^2$		$M^2c^3/\hbar$		GM^2/L^2	
3	$M^3L^3c^7/G\hbar^3$		$M^3Lc^4/\hbar^2$		$GM^3c/L\hbar$		G^2M^3/L^3c^2
4		$M^4L^2c^5/\hbar^3$		$GM^4c^2/\hbar^2$		$G^2M^4/L^2c\hbar$	
5	$M^5L^3c^6/\hbar^4$		$GM^5Lc^3/\hbar^3$		$G^2M^5/L\hbar^2$		$G^3M^5/L^3c^3\hbar$
6							
7							

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

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

X $L^2\frac{c^7}{G^2\hbar}$ ~~strong?~~ $= L^2\ 117.665\ 261$

"

$\left(\frac{5}{\alpha_M}\right)^3$ with $\alpha = 0.118$

$L_2, M_{-2} \overset{?}{=}$ strong?

$L_2, M_0 =$ weak??

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

$= \frac{ML}{t^2}$

PLNK2BN5.WPD MAY 3, 1999

FORCES [ML/T^2] $\hbar$ forces

The Planck Particle:

The gravitational force: $F_{go} = Gm_o^2/l_o^2 = 49.082\ 988$

$c^4/G = 49.082\ 989$; $\hbar/ct_o^2 = 49.082\ 989$

The electric force: $F_{eo} = e_o^2/l_o^2 = 49.082\ 988 = \frac{\hbar c}{l_o^2}$ $F_{eo} = F_{go} = F_o$

$e_o^2 = e^2/\alpha = \hbar c$ $e^2 = \hbar \alpha c$

Note that a Planck Particle's gravitational and electric forces are equal.

RATIOS

Proton: LEVEL

The gravitational force: $F_{gp} = Gm_p^2/r_e^2 = -29.628\ 773$ $\frac{F_{go}}{F_{gp}} = \cancel{N^4} = S^2$ Grav $\frac{\rho}{\rho_p}$

The electric forces: ~~$F_{ept} = e_{pt}^2/r_e^2 = 9.727\ 108$~~ $= \frac{F_{eo}}{F_{ept}} = \cancel{N^2} = S\mu$ Elec $\frac{\rho}{\rho_r}$

$\frac{e^2}{r_e^2} = \frac{\hbar \alpha c}{r_e^2} = 6.463\ 198 = F_{ep}$ 42.619790 " μS

$r_e^2 = -25.100136$ ~~$F_{ep\tau} = e_{p\tau}^2/r_e^2 = -29.628\ 772$ $\frac{F_{eo}}{F_{ep\tau}} = \cancel{N^4} = S^2$~~

Electron: LEVEL

$n = \sqrt{\alpha\mu}$ ~~$n^2 = (\alpha\mu)$~~

The gravitational force: $F_{ge} = Gm_e^2/r_e^2 = -36.156\ 591$ $\frac{F_{go}}{F_{ge}} = \cancel{N^4 \mu^2} = \frac{\cancel{N^4 n^4}}{\cancel{\alpha^2}}$ $S^2\mu^2$

?

The electric forces: $F_{et} = e_{[illegible]}^2/r_e^2 = m_e r_e/t_e^2 = 6.463\ 199$ $\frac{F_{eo}}{F_{eet}} = \cancel{N^2}\mu = \frac{\cancel{N^2 n^2}}{\cancel{\alpha}} = S^2\mu$

~~$F_{e\tau} = e_{e\tau}^2/r_e^2 = G m_e^2/r_e^2 = -36.156\ 591$ $\frac{F_{eo}}{F_{e\tau}} = N^4\mu^2 = \frac{N^4 n^4}{\alpha^2}$~~

Note that in the Planck particle, the proton, and the electron, the gravitational and τ-electric forces are equal.

STANUNIT.WPD Jun 6, 2000

~~$\log_{10}(\alpha^{1/2}) = 1.068417$~~

PART II. THE COULOMB-GRAVITY FORCE RATIO:

The original definition of the coulomb/gravity force ratio is $S = e^2/Gm_pm_e$, where m_p and m_e are the proton and electron masses respectively. [1] This equation can be rewritten in terms of mass ratios,

$$1) \qquad S=\frac{e^2}{Gm_pm_e}=\frac{e^2\mu}{Gm_p{}^2}=\frac{\hbar c\alpha\mu}{Gm_p^2}=\alpha\mu\frac{m_o^2}{m_p^2}$$

where m_o is the planck mass. In terms of size ratios, we can write,

$$2) \qquad \frac{1}{S}=\alpha\mu\frac{l_o^2}{r_e^2}$$

where l_o is the planck size and r_e is the nuclear radius. Equation 1) shows that the mass scale factor is $(S/\alpha\mu)^{1/2}$ and equation 2) shows that the size scale factor is $(S\alpha\mu)^{1/2}$.
Dividing equation 1) by equation 2),

$$3) \qquad G\frac{m_p^2}{r_e^2}=\frac{1}{S^2}G\frac{m_o^2}{l_o^2}$$

shows that the gravitational force scale factor is S^2. Also,

$$4) \qquad G\frac{m_o^2}{l_o^2}=\frac{c^4}{G}$$

Equation 4) is the planck force, scale independent, being a function only of the fundamental constants. This force operates at all levels. [Could this be the expansive force of empty space? Einstein's Λ ?]

Multiplying equation 1) by equation 2),

$$5) \qquad m_pr_e=(\alpha\mu)m_ol_o$$

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[1] S is a pure number with the value $\log_{10} = 39,355879$

NEWPYTH1.WPD JUNE 11, 2001

THE PYTHAGOREAN UNIVERSE

FORCE EQUILIBRIA

I. We consider four basic meso or macro forces, leaving thermal and micro forces for later.

Gravitation	GM^2/R^2	attraction (+)
Centrifugal	Mv^2/R	repulsion (–)
Electric	$\hbar c/R^2$	both (+,–)
Planck	c^4/G	(?)

Assuming the Planck force to be repulsion, with the repulsion case of the electric force, we have:

TABLE I

	Gravitation	Centrifugal	Electric	Planck
Gravitation	-----	< Schwarzschild	–>Planck mass	M/R = R/M *
Centrifugal	$M/R=v^2/G<c^2/G$	-----	–> ∞	–> ∞
Electric	$M^2=\hbar c/G=m_o^2$	both repel	-----	–> ∞
Planck	$M/R=\pm c^2/G$	both repel	both repel	-----

Under the Table I assumptions, the interactions of the four forces lead to:
Grav-Cent –> a value of M/R < the value of the Schwarzschild bound.
Grav-Elec –> the Planck particle mass = m_o
*Grav-Planck –> a "dual" Schwarzschild boundary, with the properties:
$G^2M^2 = c^4R^2$; $GM/c^2R = c^2R/GM$; or in Planck units: $M/R = R/M$, $\pm M = \pm R$
The other combinations do not lead to equilibria, but to continual expansion.

Assuming the Planck force to be repulsion, but taking the attraction case of the electric force, we have:

TABLE II

	Gravitation	Centrifugal	Electric	Planck
Gravitation	-----	< Schwarzschild	–> 0	M/R = R/M *
Centrifugal	$M/R=v^2/G<c^2/G$	-----	> Heisenberg	–> ∞
Electric	both attract	$MR=\hbar c/v^2>\hbar/c$	-----	–> Planck size
Planck	$M/R=\pm c^2/G$	both repel	$R^2=G\hbar/c^3=l_o^2$	-----

Under the assumptions of Table II, the changes from Table I are:
Grav-Elec –> both contractive –> 0
Cent-Elec –> equilibrium above $\hbar/c$, the value of the Heisenberg bound
Planck-Elec –> the Planck particle size = l_o

Assuming the Planck force to be attraction, taking the repulsion case of the electric force, we have:

TABLE III

	Gravitation	Centrifugal	Electric	Planck
Gravitation	-----	< Schwarzschild	–> Planck mass	–> 0
Centrifugal	$M/R=v^2/G<c^2/G$	-----	–> ∞	> Schwarzschild
Electric	$M^2=\hbar c/G=m_o^2$	both repel	-----	Planck size
Planck	both attract	$GM/c^2R=c^2/v^2>1$	$R^2=G\hbar/c^3= l_o^2$	-----

A contradiction is introduced under the assumptions of Table III, in the system being placed on both sides of the Schwarzschild boundary.

Assuming the Planck force to be attraction, taking the attraction case of the electric force, we have:

TABLE IV

	Gravitation	Centrifugal	Electric	Planck
Gravitation	-----	< Schwarzschild	–> 0	–> 0
Centrifugal	$M/R=v^2/G<c^2/G$	-----	> Heisenberg	> Schwarzschild
Electric	both attract	$MR= \hbar c/v^2 >\hbar/c$	-----	–> 0
Planck	both attract	$GM/c^2R=c^2/v^2>1$	both attract	-----

The same contradiction occurs in Table IV as in Table III

We conclude that the Planck force, c^4/G, is a repulsion force. This force may be the Λ force of general relativity. [Its ($\log_{10}$) cgs value is 49.082989 ~~ergs~~ dynes.] From Tables I and II we infer that the inequalities, $M/R < c^2/G$ [< Schwarzschild] and $MR > \hbar/c$ [>Heisenberg] place all equilibria resulting from these four forces in the first quadrant. The first quadrant is the quadrant in which unlimited expansion can take place.

PLKFORCE.WPD NOTES 7 March

THE PLANCK FORCE

To the four forces currently recognized by physicists should be added a fifth: the Planck Force. This force is independent of mass, charge, distance from a source, etc. It is present at all times throughout all space. It is a candidate for Einstein's *lambda* and for the effects of dark matter. It may well be the cause of the expanding or accelerating universe. The Planck Force is equal to c^4/G, with dimensionality $[ML/T^2]$, and the $\log_{10}$ cgs value of 49.082989.

How does the strength of the Planck Force compare with that of gravity and coulomb forces?

Level
planck/gravity
planck/coulomb
coulomb/gravity

R^2c^4/M^2G^2
R^2/r_o2
$m_o2/M2$

planck particle
1
1
1

baryon
S^2
$\underline{\alpha}\mu S$
$S/\underline{\alpha}\mu$

D
$(\underline{\alpha}\mu)^2$
$\underline{\alpha}\mu S$
$\underline{\alpha}\mu/S$

stellar
$(\underline{\alpha}\mu)^4$
$(\underline{\alpha}\mu S)^2$
$(\underline{\alpha}\mu/S)^2$

universe

$(\alpha\mu)^6$
$(\alpha\mu S)^3$
$(\alpha\mu/S)^3$

In this table, c = the velocity of light, G = Newton's gravitational constant, r_o =the planck radius, m_o= the planck mass, α = the fine structure constant, μ = the proton/electron mass ratio, and $S = \alpha\hbar c/Gm_pm_e$ where $\hbar$ is Planck's constant, m_p the proton mass, and m_e the electron mass. $\log_{10}$ cgs values: S = 39.355880, $\alpha\mu$ = 1.127074; D = has the mass 14.452204 and a radius equal to the electron radius, r_e = -12.550068

If the Planck Force is an expansive force it will be in equilibrium with gravity when, ,

These equations define the Schwarzschild bound or Schwarzschild radius, **GM/c^2**. If gravity and the planck force are the only significant forces operating, then when R is greater than the Schwarzschild radius [first quadrant] the system will expand,, and when less than the Schwarzschild radius [second quadrant] it will contract (to a black hole). For the universe as a whole it appears that gravity and the planck force are the only significant forces. It follows that at the present time the size of the universe exceeds its Schwarzschild radius.

The plank force interacting with contractive charges will be in balance only when,

which is the value of **R** equal to the plank radius.

While the planck force seems to be an expansive or repelling force, there is also the possibility that it may play a different role. Newton's third law states that to every action there is an **equal** and opposite reaction. If we allow the reaction to sometimes be **unequal**, then the planck force may supply the ubiquitous reaction to all action. That is the Planck Force is a force that preserves stability in the cosmos by opposing and mitigating other forces, be they expansive or contractive.

0

PLKFORCE.WPD March 1, 2004

THE PLANCK FORCE

cosmic constant

To the four forces currently recognized by physicists should be added a fifth: the Planck Force. This force is independent of mass, charge, distance from a source, etc. It is present at all times throughout all space. It is a candidate for Einstein's *lambda* and for the effects of dark matter. It may well be the cause of the expanding or accelerating universe. The Planck Force is equal to c^4/G , with dimensionality $[ML/T^2]$, and the $\log_{10}$ cgs value of 49.082989.

How does the strength of the Planck Force compare with that of gravity and coulomb forces?

Level	planck/gravity	planck/coulomb	coulomb/gravity
	R^2c^4/M^2G^2	R^2/r_o^2	m_o^2/M^2
planck particle	1	1	1
baryon	S^2	$\alpha\mu S$	$S/\alpha\mu$
D	$(\alpha\mu)^2$	$\alpha\mu S$	$\alpha\mu/S$
stellar	$(\alpha\mu)^4$	$(\alpha\mu S)^2$	$(\alpha\mu/S)^2$
universe	$(\alpha\mu)^6$	$(\alpha\mu S)^3$	$(\alpha\mu/S)^3$

In this table, c = the velocity of light, G = Newton's gravitational constant, r_o =the planck radius, m_o= the planck mass, α = the fine structure constant, μ = the proton/electron mass ratio, and $S = \hbar\alpha c/Gm_pm_e$ where $\hbar$ is Planck's constant, m_p the proton mass, and m_e the electron mass. $\log_{10}$ cgs values: S = 39.355880, $\alpha\mu$ = 1.127074; D = has the mass 14.452204 and a radius equal to the electron radius, r_e = -12.550068

If the Planck Force is an expansive force it will be in equilibrium with gravity when, ,

$$\frac{GM^2}{R^2} = \frac{c^4}{G} \quad \text{or} \quad \frac{M}{R} = \frac{c^2}{G}$$

These equations define the Schwarzschild bound or Schwarzschild radius, **GM/c^2**. If gravity and the planck force are the only significant forces operating, then when R is greater than the Schwarzschild radius [first quadrant] the system will expand,, and when less than the Schwarzschild radius [second quadrant] it will contract (to a black hole). For the universe as a whole it appears that gravity and the planck force are the only significant forces. It follows that at the present time the ~~size of the~~ universe exceeds its Schwarzschild radius.

is in the first quadrant

The plank force interacting with contractive charges will be in balance only when,

$$\frac{\hbar c}{R^2} = \frac{c^4}{G} \quad \text{or} \quad R^2 = \frac{\hbar G}{c^3}$$

which is the value of **R** equal to the plank radius.

The basic problem with the data in the planck/gravity column is the stability of stars if the only forces acting are planck & gravity

Radiation Pressure

TIMEFORCE.WPD July 6, 2005 September 13, 2008

MORPHOLOGY OF FORCES [PART I]

Sub-case $\hbar = 0$

The first physical notion of time was: time = distance/velocity, $t = L/c$

The next was Keplers: time^2 $\propto$ distance^3, $\tau^2 \propto L^3$, refined by Newton to: $\tau^2 = L^3/GM$

The third was Schwarzschild's, $T = GM/c^3$ $T = t^3/\tau^2$

The fourth was Planck's, $t_o{}^2 = G\hbar/c^5$

The fifth was $Z^2 = T^3/t = t^8/\tau^6$ $Z = t^4/\tau^3$

* *

Substituting the above values for time in the formula, Force = Mass x Length / Time^2, force can be expressed as:

1) $\mathbf{F}_Z = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{-2} \cdot \dfrac{\mathbf{C}^8}{\mathbf{G}^3}$ eg strength $\propto L^2$, strong force ?

2) $\mathbf{F}_\mathbf{T} = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{-1} \cdot \dfrac{\mathbf{C}^6}{\mathbf{G}^2}$ eg here strength $\propto$ L, weak force ?

3) $\mathbf{F}_{\mathbf{to}} = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{0} \cdot \dfrac{\mathbf{C}^4}{\mathbf{G}}$ The Planck force

4) $\mathbf{F}_\mathbf{t} = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{1} \cdot \mathbf{C}^2$ eg centrifugal force with c –> v

5) $\mathbf{F}_\tau = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{2} \cdot \mathbf{G}$ eg gravity

In general, with $\hbar = 0$, force can be written in the form: $\mathbf{F} = \left(\dfrac{\mathbf{M}}{\mathbf{L}}\right)^{\mathbf{a}} \cdot \mathbf{c}^{4-2\mathbf{a}} \cdot \mathbf{G}^{\mathbf{a}-1}$

$t \Leftrightarrow c^2$ $\tau \Leftrightarrow G$

THE $\hbar = 0$ FORCES

1) $\mathbf{F} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{4} \cdot \frac{\mathbf{G}^{3}}{\mathbf{C}^{4}}$ dark matter ? TIME = β

2) $\mathbf{F} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{3} \cdot \frac{\mathbf{G}^{2}}{\mathbf{C}^{2}}$ dark matter ? TIME = λ

3) $\mathbf{F}_{\tau} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{2} \cdot \mathbf{G}$ gravity TIME = τ

4) $\mathbf{F}_{\mathbf{t}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{1} \cdot \mathbf{C}^{2}$ centrifugal with c -> v TIME = t

5) $\mathbf{F}_{\mathbf{to}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{0} \cdot \frac{\mathbf{C}^{4}}{\mathbf{G}}$ Planck force TIME = ψ

6) $\mathbf{F}_{\mathbf{T}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-1} \cdot \frac{\mathbf{C}^{6}}{\mathbf{G}^{2}}$ strong force ? TIME = T

7) $\mathbf{F}_{\mathbf{T}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-2} \cdot \frac{\mathbf{C}^{8}}{\mathbf{G}^{3}}$ strong force ? TIME = s

TIMEFORCE2.WPD July 6, 2005 September 14, 2009

MORPHOLOGY OF FORCES [PART I]
Mass or Particle Forces, Sub-case $\hbar = 0$

The first physical notion of time was: time = distance/velocity, $t = L/c$
The next was Keplers: $\text{time}^2 \propto \text{distance}^3$, $\tau^2 \propto L^3$, 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 the above values for time in the formula, Force = Mass x Length / Time^2, force can be expressed as:

			[M,L]		
$\mathbf{F}_\tau = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^2 \cdot \mathbf{G}$	gravity	TIME =	$[-\frac{1}{2}, 3/2]$	$= \sqrt{(L^3/GM)}$	$= \tau$
$\mathbf{F}_t = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^1 \cdot \mathbf{C}^2$	centrifugal	TIME =	$[0,1]$	$= L/c$	$= t$
$\mathbf{F}_{to} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^0 \cdot \frac{\mathbf{C}^4}{\mathbf{G}}$	Planck*	TIME =	$[\frac{1}{2},\frac{1}{2}]$	$= \sqrt{(GML/c^4)}$	
$\mathbf{F}_T = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-1} \cdot \frac{\mathbf{C}^6}{\mathbf{G}^2}$	centripetal	TIME =	$[1,0]$	$= GM/c^3$	$= T$
$\mathbf{F} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-2} \cdot \frac{\mathbf{C}^8}{\mathbf{G}^3}$	strong	TIME =	$[3/2,-\frac{1}{2}]$	$= \sqrt{(G^3M^3/Lc^8)}$	

In general, for the subset $\hbar = 0$, force can be written in the form:

$$F = \left(\frac{M}{L}\right)^a \cdot C^{4-2a} G^{a-1}$$

$$\mathbf{F} = \left(\frac{\mathbf{GM}}{\mathbf{c^2L}}\right)^a \times \frac{\mathbf{c}^4}{\mathbf{G}} = \left(\frac{\mathbf{R}}{\mathbf{L}}\right)^a \times \frac{\mathbf{c}^4}{\mathbf{G}}$$ where $R = GM/c^2$ is the schwartzschild radius.

* The Planck force, c^4/G, is also $[0,0]$ with $\text{TIME} = \sqrt{(G\hbar/c^5)} = t_o$

$\hbar = 0$ FORCES

$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^4 \quad \frac{R}{L}$	TIME = $\sqrt{\frac{c^4 L^5}{G^3 M^3}}$	
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^3$	TIME = $\frac{cL^2}{GM}$	
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^2$	TIME = $\sqrt{\frac{L^3}{GM}}$	GRAVITY
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^1$	TIME = $\frac{L}{c}$	CENTRIFUGAL
$\mathbf{F} = \left(\frac{c^4}{G}\right)$	TIME = $\sqrt{\frac{Gh}{c^5}}$	PLANCK
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^{-1}$	TIME = $\frac{GM}{c^3}$	CENTRIPETAL
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^{-2}$	TIME = $\sqrt{\frac{G^3 M^3}{c^8 L}}$	STRONG
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^{-3}$	TIME = $\frac{G^2 M^2}{c^5 L}$	
$\mathbf{F} = \left(\frac{c^4}{G}\right) \cdot \left(\frac{GM}{c^2 L}\right)^{-4}$	TIME = $\sqrt{\frac{G^5 M^5}{c^{12} L^3}}$	

FORCARAY.WPD November 30, 2009

strong

$F=F(M,L,G,c,\hbar)$

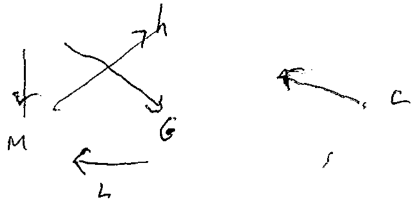
FORCE ARRAY: T=T(G,M,L,ħ,c) ~~$\hbar^2/ML^3$~~

~~[T]=1~~

aH

$m_0\backslash l_0$

		3	2	1	0	-1	-2	-3	
	M\L	~~-1~~	~~-0.5~~	~~0~~	~~+0.5~~	~~+1~~	~~+1.5~~	~~+2~~	
-5	+3	$L^3\hbar c^{11}/G^5M^5$		$Lc^8\hbar^2/G^4M^5$		$c^5\hbar^3/G^3M^5L$		$c^2\hbar^4/G^2M^5L^3$	both
-4	+2.5		$L^2\hbar c^9/G^4M^4$		$c^6\hbar^2/G^3M^4$		$c^3\hbar^3/L^2M^4G^2$		
-3	+2	$c^{10}L^3/G^4M^3$		$Lc^7\hbar/G^3M^3$		$c^4\hbar^2/G^2M^3L$		$c\hbar^3/GM^3L^3$	repl
-2	+1.5		$L^2c^8/G^3M^{2'5}$		$c^5\hbar/G^2M^{2w}$		$c^2\hbar^2/GM^2L^2$		both
-1	+1	$L^3c^9/G^3M\hbar$		**Lc^6/MG^2**	$\left(\frac{c^3}{G}\right)^{3/2}\frac{\sqrt{\hbar}}{M}$	$c^3\hbar/GML$		**$\hbar^2/ML^3$**	
0	+0.5		$c^7L^2/G^2\hbar$		**c^4/G**		**$\hbar c/L^2$** E		aH
1	0	$c^8ML^3/G^2\hbar^3$		$G\frac{MLc^5}{G\hbar}$		**Mc^2/L**	$\frac{M}{L^2}\sqrt{cG\hbar}$	$GM\hbar/L^3c$	
2	-0.5		$c^6M^2L^2/G\hbar^2$		$M^2c^3/\hbar$		**GM^2/L^2** G		
3	-1	$c^8M^3L^3/G\hbar^3$		$M^3Lc^4/\hbar^2$		$GM^3c/L\hbar$		G^2M^3/L^3c^2	both
4	-1.5		$L^2M^4c^5/\hbar^3$		$GM^4c^2/\hbar^3$		$G^2M^4/L^2\hbar c$		weak
5	-2	$L^3M^5c^6/\hbar^4$		$M^5Lc^3G/\hbar^3$		$G^2M^5/L\hbar^2$		$G^3M^5/L^3\hbar c^3$	rep weak
6	-2.5		$L^2M^6c^4G/\hbar^4$		$G^2M^6c/\hbar^3$		$G^3M^6/\hbar^2L^2c^2$		
7	-3	$L^3M^7Gc^5/\hbar^5$		$G^2LM^7c^3/\hbar^4$		$G^3M^7/L\hbar^3c$		$G^4M^7/L^3\hbar^2c^4$	



order

~~GchLMc~~

~~GchML~~

G M L c ħ

G^+ aH ?

$+G^-$ rep

weak ? G^3M^4/L^4c^4 Nb

FORCES

NEWTON'S 2^d LAW

$$F = \frac{d(Mv)}{dt} = M\frac{dv}{dt} + \frac{v\,dM}{dt}$$

This entry contributed by Leonardo Motta

The Coriolis force is a fictitious force exerted on a body when it moves in a rotating reference frame. It is called a fictitious force because it is a by-product of measuring coordinates with respect to a rotating coordinate system as opposed to an actual "push or pull."

See fictitious force for a derivation.

The Coriolis effect is the behavior added by the Coriolis acceleration. The formula implies that the Coriolis acceleration is perpendicular both to the direction of the velocity of the moving mass and to the frame's rotation axis. So in particular:

* if the velocity is parallel to the rotation axis, the Coriolis acceleration is zero.
* if the velocity is straight inward to the axis, the acceleration is in the direction of local rotation.
* if the velocity is straight outward from the axis, the acceleration is against the direction of local rotation.
* if the velocity is in the direction of local rotation, the acceleration is outward from the axis.
* if the velocity is against the direction of local rotation, the acceleration is inward to the axis.

The vector cross product can be evaluated as the determinant of a matrix:

\boldsymbol{\Omega \times v} = \begin{vmatrix} \boldsymbol{i}&\boldsymbol{j}&\boldsymbol{k} \\ \Omega_x & \Omega_y & \Omega_z \\ v_x & v_y & v_z \end{vmatrix}\ = \begin{pmatrix} \Omega_y v_z - \Omega_z v_y \\ \Omega_z v_x - \Omega_x v_z \\ \Omega_x v_y - \Omega_y v_x \end{pmatrix}\ ,

see p 2

where the vectors i, j, k are unit vectors in the x, y and z directions.

The Coriolis effect exists only when using a rotating reference frame. In the rotating frame it behaves exactly like a real force (that is to say, it causes acceleration and has real effects). However, Coriolis force is a consequence of inertia, and is not attributable to an identifiable originating body, as is the case for electromagnetic or nuclear forces, for example. From an analytical viewpoint, to use Newton's second law in a rotating system, Coriolis force is mathematically necessary, but it disappears in a non-accelerating, inertial frame of reference. For a mathematical formulation see Mathematical derivation of fictitious forces.

A denizen of a rotating frame, such as an astronaut in a rotating space station, very probably will find the interpretation of everyday life in terms of the Coriolis force accords more simply with intuition and experience than a cerebral reinterpretation of events from an inertial standpoint. For example, nausea due to an experienced push may be more instinctively explained by Coriolis force than by the law of inertia.[10][11] See also Coriolis effect (perception). In meteorology, a rotating frame (the Earth) with its Coriolis force proves a more natural framework for explanation of air movements than a hypothetical, non-rotating, inertial frame without Coriolis forces.[12][13] In long-range gunnery, sight corrections for the Earth's rotation are based upon Coriolis force.[14] These examples are described in more detail below.

The acceleration entering the Coriolis force arises from two sources of change in velocity that result from rotation: the first is the change of the velocity of an object in time. The same velocity (in an inertial frame of reference where the normal laws of physics apply) will be seen as different velocities at different times in a rotating frame of reference. The apparent acceleration is proportional to the angular velocity of the reference frame (the rate at which the coordinate axes change direction), and to the component of velocity of the object in a plane perpendicular to the axis of rotation. This gives a term -\boldsymbol\Omega\times\boldsymbol v. The minus sign arises from the traditional definition of the cross product (right hand rule), and from the sign convention for angular velocity vectors. $-\Omega \times v$

The second is the change of velocity in space. Different positions in a rotating frame of reference have different velocities (as seen from an inertial frame of reference). In order for an object to move in a straight line it must therefore be accelerated so that its velocity changes from point to point by the same amount as the velocities of the frame of reference. The effect is proportional to the angular velocity (which determines the relative speed of two different points in the rotating frame of reference), and to the component of the velocity of the object in a plane perpendicular to the axis of rotation (which determines how quickly it moves between those points). This also gives a term -\boldsymbol\Omega\times\boldsymbol v.

$$- \Omega \times v$$

$$\text{Corrolis Foce} = -2 \cdot M \Omega \times v$$

$$-\Omega \times v = \begin{vmatrix} i & j & k \\ \Omega_x & \Omega_y & \Omega_z \\ v_x & v_y & v_3 \end{vmatrix} = \begin{pmatrix} \Omega_y v_3 - \Omega_3 v_y \\ \Omega_3 v_x - \Omega_x v_3 \\ \Omega_x v_y - \Omega_y v_x \end{pmatrix}$$

v matrix p matrix

FORCES.WPD

Fundamental Forces
Fundamental force concepts
Coupling constants

The Strong Force

A force which can hold a nucleus together against the enormous forces of repulsion of the protons is strong indeed. However, it is not an inverse square force like the electromagnetic force and it has a very short range. Yukawa modeled the strong force as an exchange force in which the exchange particles are pions and other heavier particles. The range of a particle exchange force is limited by the uncertainty principle. It is the strongest of the four fundamental forces

Since the protons and neutrons which make up the nucleus are themselves considered to be made up of quarks, and the quarks are considered to be held together by the color force, the strong force between nucleons may be considered to be a residual color force. In the standard model, therefore, the basic exchange particle is the gluon which mediates the forces between quarks. Since the individual gluons and quarks are contained within the proton or neutron, the masses attributed to them cannot be used in the range relationship to predict the range of the force. When something is viewed as emerging from a proton or neutron, then it must be at least a quark-antiquark pair, so it is then plausible that the pion as the lightest meson should serve as a predictor of the maximum range of the strong force between nucleons.

The sketch is an attempt to show one of many forms the gluon interaction between nucleons could take, this one involving up-antiup pair production and annililation and producing a ?- bridging the nucleons.
Feynman diagrams and the strong force

The Electromagnetic Force

One of the four fundamental forces, the electromagnetic force manifests itself through the forces between charges (Coulomb's Law) and the magnetic force, both of which are summarized in the Lorentz force law. Fundamentally, both magnetic and electric forces are manifestations of an exchange force involving the exchange of photons . The quantum approach to the electromagnetic force is called quantum electrodynamics or QED. The electromagnetic force is a force of infinite range which obeys the inverse square law, and is of the same form as the gravity force.

The electromagnetic force holds atoms and molecules together. In fact, the forces of electric attraction and repulsion of electric charges are so dominant over the other three fundamental forces that they can be considered to be negligible as determiners of atomic and molecular structure. Even magnetic effects are usually apparent only at high resolutions, and as small corrections.

The Weak Force

One of the four fundamental forces, the weak interaction involves the exchange of the intermediate vector bosons, the W and the Z. Since the mass of these particles is on the order of 80 GeV, the uncertainty principle dictates a range of about 10-18 meters which is about 0.1% of the diameter of a proton.

The weak interaction changes one flavor of quark into another. It is crucial to the structure of the universe in that

1. The sun would not burn without it since the weak interaction causes the transmutation p -> n so that deuterium can form and deuterium fusion can take place.

2. It is necessary for the buildup of heavy nuclei.

The role of the weak force in the transmutation of quarks makes it the interaction involved in many decays of nuclear particles which require a change of a quark from one flavor to another. It was in radioactive decay such as beta decay that the existence of the weak interaction was first revealed. The weak interaction is the only process in which a quark can change to another quark, or a lepton to another lepton - the so-called "flavor changes".

The discovery of the W and Z particles in 1983 was hailed as a confirmation of the theories which connect the weak force to the electromagnetic force in electroweak unification.

The weak interaction acts between both quarks and leptons, whereas the strong force does not act between leptons. "Leptons have no color, so they do not participate in the strong interactions; neutrinos have no charge, so they experience no electromagnetic forces; but all of them join in the weak interactions."(Griffiths)
Show Feynmann diagrams

A free neutron will decay by emitting a W-, which produces an electron and an antineutrino.

When a neutrino interacts with a neutron, a W- can be exchanged, transforming the neutron into a proton and producing an electron.
This interaction is the same as the one at left since a W+ going right to left is equivalent to a W- going left to right.
A neutron or proton can interact with a neutrino or antineutrino by the exchange of a Z0.

One of the four fundamental forces, the weak interaction involves the exchange of the intermediate vector bosons, the W and the Z. Since the mass of these particles is on the order of

80 GeV, the uncertainty principle dictates a range of about 10-18 meters which is about .1% of the diameter of a proton. The weak interaction changes one flavor of quark into another. For example, in the neutron decay depicted by the Feynman diagram at left above, one down quark is changed to an up quark, transforming the neutron into a proton.

The primitive vertices in the Feynman diagrams for the weak interaction are of two types, charged and neutral. For leptons they take the following form

The electron is used as an example in these diagrams, but any lepton can be substituted on the incoming side. The exit side (top) will be the same for the neutral vertex, but determined by the charge of the W in the charged vertex. Besides conserving charge, the vertex must conserve lepton number, so the process with the electron can produce an electron neutrino but not a muon neutrino.
The neutral interaction is simpler to conceive, but rarely observed because it competes with the much stronger electromagnetic interaction and is masked by it.

With the charged vertices, one can postulate an interaction like
m, ne -> e, nm and draw a Feynman diagram for it. This interaction is not likely to be oberved because of the incredible difficulty of observing the scattering of neutrinos, but it suggests other interactions which may be obtained by rotating or twisting the diagram.

With a twist of the Feynman diagram above, one can arrive at the interaction responsible for the decay of the muon, so the structures obtained from the primitive vertices can be used to build up a family of interactions. The transformation between the two Feynman diagrams can also be seen as an example of crossing symmetry.
Twisted Feynman diagrams and crossing symmetry

The charged vertices in the weak interaction with quarks take the form

So it is seen that the quark changes its flavor when interacting via the W- or W+. As drawn, this interaction cannot be observed because it implies the isolation of an up quark. Because of quark confinement, isolated quarks are not observed. But rotating the Feynman diagram gives an alternative interaction, shown below for both electron and muon products.

This suggests the weak interaction mechanism for the decay of the pion, which is observed to happen by the muon pathway.

The weak interaction in the electron form at left above is responsible for the decay of the neutron and for beta decay in general.

FORCEVAL.WPD

May 17, 2010

FORCE VALUES

M , L	FORCE	BARYON	PLANCK	DARK	STELLAR	UNIVERSE

PLNK2BN5.WPD MAY 3, 1999

FORCES [ML/T^2]

The Planck Particle:

The gravitational force: $F_{go} = Gm_o^2/l_o^2 = 49.082\,988$

$c^4/G = 49.082\,989$; $\hbar/ct_o^2 = 49.082\,989$

The electric force: $F_{eo} = e_o^2/l_o^2 = 49.082\,988$ $F_{eo} = F_{go} = F_o$

$N = \sqrt{5}$

Note that a Planck Particle's gravitational and electric forces are equal.

Proton:

The gravitational force: $F_{gp} = Gm_p^2/r_e^2 = -29.628\,773$ $\dfrac{F_{go}}{F_{gp}} = N^4$

The electric forces: $F_{ept} = e_{pt}^2/r_e^2 = 9.727\,108$ $\dfrac{F_{eo}}{F_{ept}} = N^2$

$F_{ep\tau} = e_{p\tau}^2/r_e^2 = -29.628\,772$ $\dfrac{F_{eo}}{F_{ep\tau}} = N^4$

Electron:

The gravitational force: $F_{ge} = Gm_e^2/r_e^2 = -36.156\,591$ $\dfrac{F_{go}}{F_{ge}} = N^4\mu^2 = \dfrac{N^4n^4}{\alpha^2}$

The electric forces: $F_{et} = e_{et}^2/r_e^2 = m_er_e/t_e^2 = 6.463\,199$ $\dfrac{F_{eo}}{F_{eet}} = N^2\mu = \dfrac{N^2n^2}{\alpha}$

$F_{e\tau} = e_{e\tau}^2/r_e^2 = G\,m_e^2/r_e^2 = -36.156\,591$ $\dfrac{F_{eo}}{F_{e\tau}} = N^4\mu^2 = \dfrac{N^4n^4}{\alpha^2}$

Note that in the Planck particle, the proton, and the electron, the gravitational and τ-electric forces are equal.

FORCES

TIMEFORCE.WPD July 6, 2005

MORPHOLOGY OF FORCES [PART I]
Sub-case $\hbar = 0$

The first physical notion of time was: time = distance/velocity, $t = L/c$

The next was Keplers: $\text{time}^2 \sim \text{space}^3$, 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 the above values for time in the formula, Force = Mass x Length / Time^2, force can be expressed as:

1) $$\mathbf{F_t} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{1} \cdot \mathbf{C}^2$$ eg centrifugal with c -> v

2) $$\mathbf{F_\tau} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{2} \cdot \mathbf{G}$$ eg gravity

3) $$\mathbf{F_T} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{-1} \cdot \frac{\mathbf{C}^6}{\mathbf{G}^2}$$ eg here strength $\propto$ L, strong force ? $= \left(\frac{GM}{c^2L}\right)^{-1} \frac{c^4}{G}$

4) $$\mathbf{F_{to}} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{0} \cdot \frac{\mathbf{C}^4}{\mathbf{G}}$$ The Planck force

In general,

with $\hbar = 0$, force can be written in the form: $$\mathbf{F} = \left(\frac{\mathbf{M}}{\mathbf{L}}\right)^{\mathbf{a}} \cdot \mathbf{c}^{4-2\mathbf{a}} \cdot \mathbf{G}^{\mathbf{a}-1} = \left(\frac{GM}{c^2L}\right)^{a} \frac{c^4}{G}$$

$$a = 3 \quad F = \left(\frac{M}{L}\right)^3 \left(\frac{G}{c}\right)^2$$

$$\frac{2)}{4)} = \frac{1)}{4)} = \frac{1)}{3)} = \frac{GM}{c^2L} = [0]$$

$$\sqrt{1) \times 2)} = F = \left(\frac{GM}{c^2L}\right)^{3/2} \frac{c^4}{G}$$

$$\sqrt{1) \times 4)} = F = \left(\frac{GM}{c^2L}\right)^{1/2} \frac{c^4}{G}$$

or

$n = 0, \pm 1, \pm 2 \ldots$

$$\text{all forces } F = \left(\frac{GM}{c^2L}\right)^{n/2} \frac{c^4}{G}$$

$$F = \left(\frac{R}{L}\right)^{n/2} \frac{c^4}{G}$$

Gravity $F = G\rho^2 L^4$ · as $L\uparrow$ $\rho\downarrow$

F_v: $42.320140 = (\alpha\mu)^{-1} P = (\alpha\mu)^{-1} \frac{c^4}{G}$

Gravity is a Center focused force as R↑ Freedom↑
point

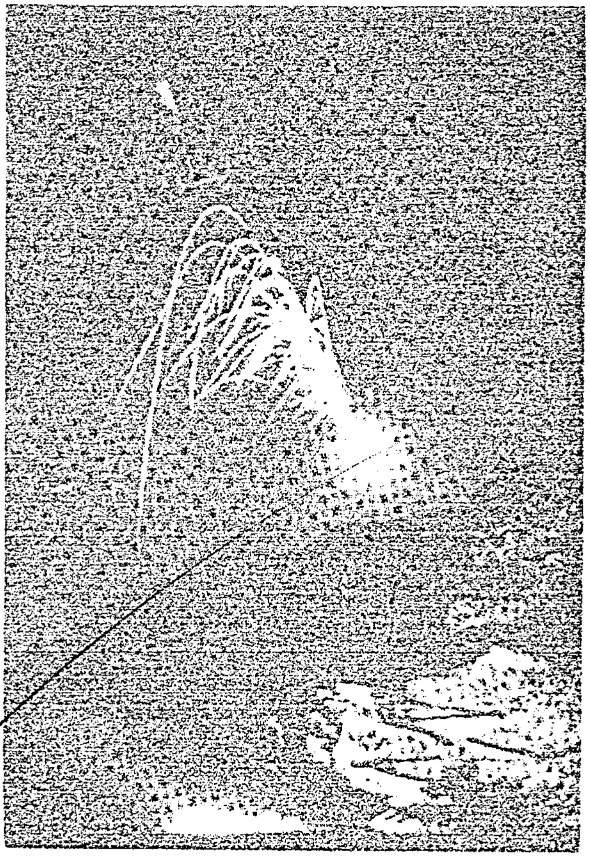
STRONG-FORCE is a SHELL focused force as R↑ freedom↓
Ring

cf Black Hole

THE GREAT ^{r2}"WATERSHED" $\frac{M}{L} = \frac{C^2}{G}$, the Schwarzschild bound

THE ANNIVERSARY OF A HISTORIC FAILURE

by Albert G. Wilson



A test of artificial meteors–December 16, 1946

The pages of *Engineering and Science* magazine provide a historical record of many of the achievements and successes of Caltech researchers—alumni and staff. The dead ends and failures rarely appear in print. Fortunately for publication costs, few people want their failures recorded. However, now and then certain types of failures become historic and deserve a place in the record.

The 17th of December this year marks the 20th anniversary of such a historic failure—the first attempt to launch particles into space with escape velocity. A team of Caltech men headed by Fritz Zwicky, professor of astronomy, in cooperation with Army Ordnance, the Johns Hopkins Applied Physics Laboratory, the Harvard College Observatory, and the New Mexico School of Mines, put together a project in White Sands, New Mexico, combining the hardware components available in 1946 in a way which, theoretically, would launch a few pellets in orbit about the earth or throw them off into interplanetary space. Two marginal devices and one valid motivation made the attempt worthwhile. The devices were the V-2 rocket and the Monroe rifle grenade or "shaped charge." The motivation was to generate a shower of artificial meteors in order to calibrate the luminous efficiency of natural meteors.

The possibility of throwing something up that would not come down again fired the imagination. Although there had been 16 postwar V-2 rocket firings, this was to be first night firing of a V-2 in the United States. In those days the launching of a V-2, with or without an instrument on board, was as much news as the launching of a Gemini today. Dr. Zwicky, who designed the experiment, placed the event in historical context: "We first throw a little something into the skies, then a little more, then a shipload of instruments—then ourselves."

A V-2 rocket was equipped with six 150-gram penolite shaped charges with 30-gram steel inserts. These were set to fire at times after launching that would eject the slugs of molten steel at heights of approximately 50, 65, and 75 kilometers. At these heights the ejection velocities of from 10 to 15 km/sec would place the slugs either in orbit or on

Albert G. Wilson is an associate director at the Douglas Advanced Research Laboratory in Huntington Beach, California, where he is in charge of a laboratory for environmental science. A Caltech alumnus (MS '42, PhD '47) and a staff member of the Mt. Wilson and Palomar Observatories from 1947 to 1953, he was a member of the team which took part in this "historic failure."

NOħ Forces ⇒ Mechanical forces [electrical forces involve ħ]

Based on Newton's P-SPACE forces i.e. $F = \frac{MR}{t^2}$

Using 9 NOħ Times, there are 17 $[T^2]$ ∴ 17 Forces

1) $\frac{RM}{t^2} = \frac{RMc^2}{R^2} = \frac{Mc^2}{R}$ [centrifugal force]

Coriolis

2) $\frac{MR}{Z^2} = \frac{MRC^4}{GMR} = \frac{C^4}{G}$ [Planck force]

3) $\frac{MR}{z^2} = \frac{MRGM}{R^3} = \frac{GM^2}{R^2}$ [Gravity]

4) $\frac{MR}{\overline{\underline{Y}}^2} = \frac{MRC^6}{G^2M^2} = \frac{RC^6}{MG^2}$

5) $\frac{MR}{y^2} = \frac{MRG^2M^2}{R^4C^2} = \left(\frac{M}{R}\right)^3\left(\frac{G}{C}\right)^2$

6) $\frac{MR}{\overline{\underline{X}}^2} = \frac{MRRC^8}{G^3M^3} = \left(\frac{R}{M}\right)^2\frac{C^8}{G^3}$

7) $\frac{MR}{x^2} = \frac{MRG^3M^3}{R^5C^4} = \left(\frac{M}{R}\right)^4\frac{G^3}{C^4}$

8) $\frac{MR}{\overline{\underline{W}}^2} = \frac{MRR^2C^{10}}{G^4M^4} = \left(\frac{R}{M}\right)^3\frac{C^{10}}{G^4}$

9) $\frac{MR}{w^2} = \frac{MRG^4M^4}{R^6C^6} = \left(\frac{M}{R}\right)^5\frac{G^4}{C^6}$

---

10) $\frac{MR}{\overline{\underline{W}}\,\overline{\underline{X}}} = \quad = \left(\frac{R}{M}\right)^{5/2}\frac{C^9}{G^{7/2}}$

11) $\frac{MR}{wx} = \quad = \left(\frac{M}{R}\right)^{9/2}\frac{G^{7/2}}{C^5}$

12) $\frac{MR}{\overline{\underline{X}}\,\overline{\underline{Y}}} = \quad = \left(\frac{R}{M}\right)^{3/2}\frac{C^7}{G^{5/2}}$

13) $\frac{MR}{xy} = \quad = \left(\frac{M}{R}\right)^{7/2}\frac{G^{5/2}}{C^3}$

14) $\frac{MR}{\overline{\underline{X}}\,t} = \quad = \left(\frac{R}{M}\right)^{1/2}\frac{C^5}{G^{3/2}}$

15) $\frac{MR}{xt} = \quad = \left(\frac{M}{R}\right)^{5/2}\frac{G^{3/2}}{C}$

16) $\frac{MR}{Zt} = \quad = \left(\frac{M}{R}\right)^{1/2}\frac{C^3}{G^{1/2}}$

17) $\frac{MR}{zt} = \quad = \left(\frac{M}{R}\right)^{3/2} C\, G^{1/2}$

1) Planck Force↑ vs Gravity↓

$$\frac{C^4}{G} = \frac{GM^2}{L^2} \longrightarrow \frac{M}{L} = \frac{c^2}{G} \text{ balance}$$

2) Planck Force↑ vs Coulomb↓

$$\frac{C^4}{G} = \frac{\hbar c}{L^2} \longrightarrow L^2 = \frac{G\hbar}{C^3} = l_0^2 \quad \text{balance}$$

3) Gravity↓ vs Coulomb↑

$$\frac{GM^3}{L^2} = \frac{hc}{L^2} \longrightarrow \frac{\hbar c}{GM^2} \text{ , a "major" scale factor or "octave"}$$

octave $= S^{1/4} =$ in particular $M^2 = m_e m_p$, $hc = h\alpha c$

Selected octave for Mass $= \left(\frac{S}{\alpha\mu}\right)^{1/4}$ $\qquad \frac{h\alpha c}{G m_p m_e} = S = \alpha^{-23}\mu^{-3}$

1) The Schwartzschild bound

$$\frac{M}{L} < \frac{c^2}{G} \text{ expands} \quad , \quad \frac{M}{L} > \frac{c^2}{G} \text{ contracts (to black hole)}$$

2) The Heisenberg bound

With ML's

$(ML)_U = 80.612\,669$

$(ML)_Q = 26.303\,050$

$(ML)_K = -27.854\,016$

$(ML)_P = -37.453\,745 = \hbar/c$

$\frac{U}{2} - \frac{K}{2} - Q = 27.930293$ [ML] 27.925242

$\delta = 0.006055$

$L_U = 27.932477$ [L]

$\delta = 0.002\,234$

$\frac{M_U}{2} = +26.340096 \quad (ML)_Q = +26.303\,050 = M_Q = \left(\frac{M}{L}\right)_Q$

$L_K^{-1} = L_K = (ML)_K = L_K = -27.845017 \quad L_U = +27.932477 = L_K^{-1}$

$M_Q \doteq \sqrt{M_U} \quad , \quad L_K = \frac{1}{L_U}$

In Q LM, M, $\frac{M}{L}$ are all [M] since $\log L = 0$

In K LM, ~~M~~, $\frac{M}{2}$, L are all $[L^{\pm 1}]$ $\log M = 0$

	M	L	ML	M/L	√M
U	52.680192	27.932477	80.612669	24.747715	26.340096
Q	26.303050	0	26.303050	26.303050	13.151525
K	0	−27.845017	−27.845017	+27.845017	$\sqrt{\frac{ML}{2}}$ −13.922508
P	−4.662404	−32.791341	−37.453745 = h/c	+28.128 ~~547~~ 937 = $\frac{c^2}{G}$	−2.331202

Above based on $\left(\frac{S}{\alpha\mu}\right)^{1/4}$ $(\alpha\mu S)^{1/4}$ $S^{1/4}$ worse

~~Other octaves: try $(\alpha\mu)S^{1/4}$?~~

~~Use 19.114198 for M $= m_p/m_e$~~

~~Use λ_c instead of r_e for $\lambda_c/l_0 = 22.378\,107\,288$~~ ~~$L_U = 34.343$~~

~~$\lambda_c = -10.413\,233\,541$~~ ~~$ML_U =$~~

~~$r_e/l_0 = 20.241$~~

Back to why the shift at Q? from horizontal to vertical

Above Q M_N goes with L_N same sign

Below Q M_N goes with L_N opposite sign

$\frac{Mc^2}{L}$

Forces

$a = -2$
-1
0
1
2

~ times Table of Juxtaposition

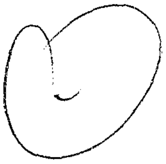
Con $\propto L^n, L^{-n} \quad L^0$
Exp $\propto L^n, L^{-n} \quad L^0$
result in what forms?

AVOGADRO
Defn of mole
Gases
Generalization
Iteration

PRESSURES

Force $\frac{ML}{T^2}$ $\quad ML \cdot \frac{1}{T^2}$

Pressure $\frac{M}{LT^2}$ $\quad \frac{M}{L} \cdot \frac{1}{T^2}$



$\frac{1}{t^2} \quad \frac{1}{T^2} \quad \frac{1}{\tau^2}$

$L = 10.842303$
$M = 33.298685$

Force $M_\odot L_\odot \times \frac{1}{t^2}, \frac{1}{T^2}, \frac{1}{\tau^2}$

$ML = 44.169181$
$M/L = 22.456832$

Pressure $\frac{M_\odot}{L_\odot} \times \frac{1}{t^2}, \frac{1}{T^2}, \frac{1}{\tau}$

$t^3 = 1.096446$

$\odot \quad t = \frac{L}{c} = ~~-9.634518~~$ 0.365482

$t^2 = ~~E19.269036~~$ 0.730964

$T = \frac{GM}{c^3}$ ~~-4.1~~ -5.307073

$T^2 = -10.614146$

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

$\tau^2 = +6.403522$

$\frac{ML}{t^2} = 43.438217 \rightarrow PL \div \frac{c^4}{G} = -5.644361 \div 11.345110$

49.082578

Force

$\frac{ML}{T^2} = 54.783327$ $\quad = +5.700749$

$\delta = 0.056388$
i.e. $\frac{ML}{t^2}$ balances $\frac{ML}{T^2}$

$\frac{ML}{\tau^2} = 37.765659$ $\quad = -11.316919$
11.345110
0.028191

$\frac{M}{L} c^2 = 43.410473$ $\quad -5.672105$

$c := 10.476820703$ $\qquad r := 12.550068214$ $\qquad L := 32.791340829$

$n := 1, 2 .. 10$

$A(n) := n \cdot c$ $\qquad B(n) := n \cdot r$

n =	A(n) =	B(n) =
1	10.476820703	12.550068214
2	20.953641406	25.100136428
3	31.430462109	37.650204642
4	41.907282812	50.200272856
5	52.384103515	62.75034107
6	62.860924218	75.300409284
7	73.337744921	87.850477498
8	83.814565624	100.400545712
9	94.291386327	112.950613926
10	104.76820703	125.50068214

$D(n) := n \cdot L$

D(n) =
32.791340829
65.582681658
98.374022487
131.165363316
163.956704145
196.748044974
229.539385803
262.330726632
295.122067461
327.91340829

FORCE RATIOS ~~see~~ 2005 #28

The T Matrix in $(\alpha\mu)^x S^y$

1° invert $\frac{1}{T}$ $\times$ $\hbar = E$, $\frac{\hbar}{c} = ML$

2° square $\frac{1}{T^2}$

3° $\times$ $\frac{\hbar}{c}$ = $\frac{\hbar}{cT^2}$ = Force

3 Forces

t, τ, T

Planck Gravity 2 are in balance at every level

$T \downarrow \tau^2 \downarrow = t^3 \uparrow$

	$\frac{ML}{t^2}$	$\frac{ML}{\tau^2}$	$\frac{ML}{T^2}$
P	49.082578	49.082578	37.082578 x
B	9.727107	-29.628363	76.438 050 x
$\frac{P}{B}$ =	39.355471	78.710947	-39.355472
	" S	" S^2	S^{-1}

E $\frac{\hbar c}{l_0^2} = \frac{\hbar c}{G\hbar} c^3 = \frac{c^4}{G} =$

= 49,082 578

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

49.082 578 ✓

88.438 049 ✓

-39.355 471

S^{-1}

P $\frac{\hbar c}{l_0^2}$ = 49.082 578

B $\frac{\hbar c}{r_e^2}$ = ~~-41.610 239 764~~

~~= + 8.610 029 151~~

B_{coul} $\frac{\hbar c}{r_e^2}$ = 8.600 033 201

B_{grav} = -29.628 363 799 τ^2

$\frac{B_c}{B_g}$ = 38,228 397 000 = $\frac{S}{\alpha_M}$

$\frac{P}{B}$ = 90.692 818

-41.610 239
-29.628 363
-11.981 876
-41.610 239

$\frac{S c^4}{S^2 G}$:

$\frac{c^4}{GS}$: 9.727107

8.610 029 151
-29.628 363
~~-38.238 390~~
38 238 392

-12.550 068 214
-23.160 136 428

-10.500 103 227
-25.100 136 428
+ 8.600 033 201
-29.628 363 799
38,228 397 000 = $\frac{S}{\alpha_M}$

49,082 578
39,355 472
88,438 050
78,710 942
9.727 108
9 727,06

$\boxed{T\tau^2 = t^3}$

B FORCE
T 88.438 049 546
t 9.727 107 316
τ -29.628 363 799

98,165 156 862

65.211 515 456
11.226 534 090

43,984 981 366
39.355 471
4.629 510

29.171
628
457

8.600 033
43.984 981

29.628
3
88.884
938
446

-124.764 720 064
$\frac{M_{pre}}{T^2}$ = -36.326 670 518
+ 88.438 049 546

29628
59,256

88438
59.256
29.182

-23.776 602 304
-38.605 757 728
-62.382 360 032
2
-124.764 720 064

8.660 033 t^2
9.727 107
-1,127 074 = α_M

8.600 033
76.438 050 T^2 chk
-67.838 017
78.710 942
10.872 925

9.727
29.181
3
87.544
88
76
12

88.438
87.544
894

49
37
12

9,016 592
1.127 074
10.143 666
.563
706

-7.175 295 619
2
-14.350 591 238
62.860 924 218
77.211 515 456

98.165 156 862
29.628 363 799
68.537

58

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

$m_p = -23.776\ 602\ 304$

Ω $-14.219\ 503\ 054$
$m_o = -4.662\ 403\ 804$

Δ : 19.114 198 500

$\frac{\Delta}{2}$ = 9.557099 250

A 4.894 695 446
B 14.451 744 696
C_3 24.008 843 946
D_4 33.565 943 196
E_5 43.123 042 446
F_0 52.680 141 696

$l_o = -32.791\ 340\ 829$

Ω $-22.670\ 704\ 521$
$r_e = -12.550\ 068\ 214$

Δ = 20.241 272 615

$\frac{\Delta}{2}$ = 10.120636 307

−2.429 431 907
7.691 204 400
17.811 840 707
27.932 477 014
38.053 113 321

20.241 272 615
19.114 198 500
1.127 074 115 $= \alpha\mu$

$m_o l_o = \frac{\hbar}{c}$

$M_\Omega \times L_\Omega = -36.890\ 210\ 575$

$= \frac{\hbar}{c} \cdot \sqrt{\alpha\mu}$

$m_p r_e = \frac{\hbar}{c}\ \alpha\mu$

$\frac{m_p r_e}{m_o l_o} = \alpha\mu$

$m_o / l_o = \frac{c^2}{G}$

$m_p / r_e = -11.226\ 534\ 090$

$\frac{M_B \cdot L_C}{M_C L_B} = \sqrt{\alpha_M}$

Astronomical Unit
13.174927
Light Year
17.975932
Pars 18.489352
Mpc. ~~24.498 342~~
24.489352 cm

$\frac{\hbar}{c} = -37.453\ 744\ 633$

$\alpha\mu = 1.127\ 074\ 115$

$\sqrt{\alpha\mu} = 0.563\ 537\ 057$

S 39.355 471 115

$\frac{c^2}{G} = \frac{m_o}{l_o} = 28.128\ 937\ 025$

73

lo grav $\frac{Gm^2}{\ell^2}$

w $\frac{c^4}{G}$

$m_y l_y = -95.923\,414\,249 \simeq \frac{h\sqrt{\alpha\mu}}{c\ S^{3/2}}$ $\qquad m_y/l_y = 10.141\,812\,641$

$m_x l_x = -76.245\,678\,691 \simeq \frac{h\sqrt{\alpha\mu}}{c\ S}$ $\qquad m_x/l_x = 9.578\,275\,583$

$m_o l_o = -37.453\,744\,633 = \hbar/c$ $\qquad m_o/l_o = 28.128\,937\,025 = c^2/G$

$m_\omega l_\omega = -36.890\,207\,576 = (\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_\omega/l_\omega = 8.451\,201\,468 = c^2/G\sqrt{S}$

$m_p r_e = -36.326\,670\,518 = \alpha\mu\ \hbar/c$ $\qquad m_p/r_e = -11.226\,534\,090 = c^2/GS$

$m_a l_a = 2.465\,263\,539 = S\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_a/l_a = 7.324\,127\,353 = c^2/G(\alpha\mu)\sqrt{S}$

$m_b l_b = 22.142\,999\,097 = S^{3/2}\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_b/l_b = 6.760\,590\,295 = c^2/G(\alpha\mu)^{3/2}\sqrt{S}$

$m_c l_c = 41.820\,734\,655 = S^2\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_c/l_c = 6.197\,053\,237 = c^2/G(\alpha\mu)^2\sqrt{S}$

$m_d l_d = 61.498\,470\,212 = S^{5/2}\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_d/l_d = 5.633\,516\,180 = c^2/G(\alpha\mu)^{5/2}\sqrt{S}$

$m_e l_e = 81.176\,205\,770 = S^3\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_e/l_e = 5.069\,979\,122 = c^2/G(\alpha\mu)^3\sqrt{S}$

$m_f l_f = 100.853\,941\,327 = S^{7/2}\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_f/l_f = 4.506\,442\,065 = c^2/G(\alpha\mu)^{7/2}\sqrt{S}$

$m_g l_g = 120.531\,676\,885 = S^4(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_g/l_g = 3.942\,905\,007 = c^2/G(\alpha\mu)^4\sqrt{S}$

$m_h l_h = 140.209\,412\,443 = S^{9/2}\,(\alpha\mu)^{1/2}\ \hbar/c$ $\qquad m_h/l_h = 3.379\,367\,949 = c^2/G(\alpha\mu)^{9/2}\sqrt{S}$

$41.257197597 = m_d l_b$ $\qquad 25.874\,788\,795 = m_d/l_b$
$42.384271712 = m_b l_d$ $\qquad -13.480\,682\,320 = m_b/l_d$
$1.127074115 = \alpha\mu$ $\qquad 39.355\,471\,115 = S$

$51.377833905 = m_d l_c$
$51.941370962 = m_c l_d$
$0.563537057 = (\alpha\mu)^{1/2}$

t^2 Planck t

τ^2 Gravity τ

T^2 ? T

10 24,333 009 355

72,999 028 065

$-0.416\ 559\ 721$

$\times 2$

$-0.833\ 109\ 442$

73.832 147 507

$-0.833\ 109\ 442$

72.999 028 065

Coulomb $\frac{\hbar c}{L^2}$

49.082 578

11.981 256

37.101 322

1.127

38.228

$\delta = \frac{S}{d\mu s}$

29.628 364

7.472 959

37.101 323

FORCES

3 forces in balance at P

At P

Coul bal P
Grav bal Coul
Grav bal P

$\downarrow = \frac{GM^2}{\ell_0^2} = \frac{hc}{\ell_0^2}$

$\uparrow = \frac{e^2}{\ell_0^2} = \frac{hc}{\ell_0^2}$

Grav - Coul = balance at P

∴ balance at $\frac{F\downarrow}{F\uparrow} = 1$

At B

$\downarrow = \frac{G m_p m_e}{r_e^2}$

$\uparrow = \frac{\hbar c \alpha}{r_e^2}$

balance at $\frac{hc\alpha}{G m_p m_e} = S$ $\frac{F\uparrow}{F\downarrow} = S$

$\hbar\alpha c \gg G m_p m_e$ but ∃ Balance?

$\frac{2}{1}$

If $\frac{c^4}{G}$ is ↑, then balance at $\frac{c^4}{G} = \frac{GM^2}{L^2}$ or $\frac{M}{L} = \frac{c^2}{G}$ ✓ P w Grav

also ↑ $\frac{c^4}{G}$ w $\frac{\hbar\alpha c}{r_e^2}\downarrow$ = 6.463 198 528

42.619 379 903 = μS

balance at μS

$\frac{c^4}{G}$ = 49.082 578 431

$\frac{\hbar c}{r_e^2}$ (no α) 40.482 545 230

$\frac{\hbar c}{r_e^2}$ = 8.600 033 201

P w Coulomb

balance at $\alpha\mu S$ ✓

This is the Balance at B

P - Coulomb ‥

With α

Coul w Grav
Balance at S

P w Coul
balance at μS

Grav w P
balance at $\frac{M}{L} = \frac{c^2}{G}$

bal at S, μS, $\alpha\mu S$

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

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

∃? inverse gravity

4 FORCES

$P = \frac{c^4}{G} \uparrow$, $+\frac{\hbar c}{L^2} \uparrow$ like chg

$grav = \frac{GM^2}{L^2}$ $\sim \oplus\frac{\hbar c}{L^2} \downarrow$ unlike

---

AT the Planck level

$\frac{\hbar c}{l_0^2} = \frac{\hbar c}{G\hbar} c^3 = \frac{c^4}{G}$

Coul ↑ = Coul ↓

P ↑ = Grav ↓

$Grav = G\frac{\hbar c}{G} \frac{c^3}{G\hbar} = \frac{c^4}{G}$

At Baryon level

$\frac{\hbar\alpha c}{r_e^2} \uparrow$ $\frac{\hbar\alpha c}{r_e^2} \downarrow$

$\frac{\hbar c}{r_e^2} \Downarrow$ vs $\frac{c^4}{G} \uparrow$

Coul ↓ vs P balance at P $L = l_0$

$\frac{c^4}{G}$ vs $\frac{G m_p m_e}{r_e^2}$

$\Rightarrow \frac{l_0^2}{r_e^2} = 1$

grav

$G\frac{M_1 M_2}{L^2} = P$

$\frac{M_1 M_2}{L^2} = \left(\frac{c^2}{G}\right)^2$

$$
\begin{array}{rr}
m_p & -23.776\,602 \\
m_e & \underline{-27.040\,511} \\
 & \frac{-40.817\,113}{L^2} =
\end{array}
$$

$$
\begin{array}{r}
28.128\,937 \\
\underline{2} \\
56.257874 = \left(\frac{c^2}{G}\right)^2 \\
\underline{40.817\,113} \\
97.074987
\end{array}
$$

balance at $L = -48.537493$

⊕ ①

$$
\begin{array}{r}
33.299 \\
\underline{27.776} \\
\frac{61{,}075}{\Lambda_0^2} = 56.258
\end{array}
$$

$\frac{54}{L^2} = 49$

$$
\begin{array}{r}
61.075 \\
\underline{56.258} \\
4.817
\end{array}
$$

$L = 2.417$ for P balance

$$
\begin{array}{r}
33.3 \\
\underline{7.2} \\
26.1
\end{array}
$$

Centrifugal $\frac{mv^2}{R}$ vs $\frac{GMm}{R^2}$

10^{13} cm/sec

$v^2 = \frac{GM}{R}$

$> c$

FORCES

$F_c \quad \frac{\hbar c}{r_e^2}$ $\qquad \frac{Gm^2}{r_e^2}$

$$\frac{F_c}{F_G} = \frac{S}{\alpha\mu}$$

$$\begin{array}{r} -25.100136 \\ -16.500103 \\ \hline +8.600033 \end{array}$$

$F_e \quad +8.600033$

$F_G = -29.628381$
$\quad\; -29.628371$

$$F_P = \frac{c^4}{G} = 49.082587$$

$$\frac{F_c}{F_P} \doteq 40.482554 = \frac{1}{\alpha\mu S}$$

$\frac{F_{Gr}}{F_P}$ = ~~78.721018~~ $\doteq S^{-2}$

$\doteq -78.710956$

$$\frac{F_c}{F_G} = \frac{S}{\alpha\mu}$$

$$F_c = \frac{\hbar c}{r_e^2} = +8.600033$$

or take $\frac{\hbar \alpha c}{r_e^2}$

$\frac{G m_p m_e}{r_e^2}$

$$\frac{F_c}{F_G} = S$$

$$\frac{F_c}{F_P} = \frac{1}{\alpha\mu S}$$

$$F_G = \frac{G m_p^2}{r_e^2} = -29.628371$$

$$\frac{F_G}{F_P} = S^{-2}$$

$$F_P = \frac{c^4}{G} = 49.082587$$

$$\begin{array}{rl} 49.082587 & P \\ 29.628371 & Gr \\ \hline 78.710958 & = S^2 \end{array}$$

$$\begin{array}{r} 49.082587 \\ 8.600063 \\ \hline 40.482524 \end{array} = \alpha\mu S$$

REDIMEN1.WPD February 4, 2007

THE $Z_{n+2} = 10\,Z_{n+1} + B\,Z_n$ CONSPIRACY THEORY

$$Z_{n+2} = 10\,Z_{n+1} + B\,Z_n \longrightarrow z^2 - 10z - B = 0$$
$$z = 5 \pm \sqrt{(25 - B)} \qquad B \le +25$$

$5 - \sqrt{15}$ =	1.127017	$\alpha + \mu$ =	1.127074
$5 - \sqrt{3}$ =	3.267939	μ =	3.263909
$\sqrt{3} - \sqrt{15}$ =	–2.140933	α =	–2.136835
$5 + \sqrt{15}$ =	8.872983	$10/(\alpha + \mu)$ =	8.872532
$5 + \sqrt{3}$ =	6.732051	$22/\mu$ =	6.740384
$\sqrt{3} + \sqrt{15}$ =	5.605034	$-12/\alpha$ =	5.615782

Special Case 1) $Z_{n+2} = 10\,Z_{n+1} - 10\,Z_n$

$p = 5 - \sqrt{15} = 1.127017$; $q = 5 + \sqrt{15} = 8.872983$

$\alpha + \mu = 1.127074$; $q^2 = 78.729833$

$\delta = 0.000057$; $S^2 = 78.710956$

$\delta = 0.018877$

Special Case 2) $Z_{n+2} = 10\,Z_{n+1} - 22\,Z_n$

$P = 5 - \sqrt{3} = 3.267949$; $Q = 6.732051$

$\mu = 3.263909$;*[1] $\sqrt{3} - \sqrt{15} = -2.140933$

$\delta = 0.004040$; $(\alpha + \mu) - \mu = \alpha = -2.136835$

$\delta = 0.004098$

Special Case 3) $(\sqrt{3} - \sqrt{15})(\sqrt{3} + \sqrt{15}) = -12$

$R = (\sqrt{3} + \sqrt{15}) = 12/(\sqrt{15} - \sqrt{3}) = 5.605033$

$R^2/3 = 10.472132$ **[2]

$c = 10.476821$

$\delta = 0.004689$

---

[1]* The measured value of μ is 3.263 908 788; while $5 - \sqrt{3} - 4/990 = 3.263\,908\,788$ correct to nine decimal places. $\delta = 0.000\,000\,000$

[2]** This "numerical coincidence" involves a pure number vs c, which has the dimensionality of [L/T]. The other approximations are between pure numbers.

FORCE RATIOS

$$\frac{F_a}{F_b} = \frac{Q^a c^{4-2a} G^{a-1}}{Q^b c^{4-2b} G^{b-1}} = \left(\frac{QG}{c^2}\right)^{a-b} \text{ where } Q = \frac{M}{R}$$

$$\frac{F_a}{F_b} = \left(\frac{M}{R}\frac{G}{c^2}\right)^{a-b}$$

a-b range

$5 \; \frac{9}{2} \; 4 \cdots 0 \cdots -4 \; -\frac{9}{2}$

U $\frac{M}{R} = 24.747720$ $\qquad \frac{G}{c^2} = -28.128945$

$\delta = \alpha\mu$ $\qquad \frac{M}{R}\frac{G}{c^2} = -3.381225 = (\alpha\mu)^{-3}$

N★ $\frac{M}{R} = 25.874795$ $\qquad \frac{M}{R}\frac{G}{c^2} = -2.254150 = (\alpha\mu)^{-2}$

$\delta = \alpha\mu$

"DM" $\frac{M}{R} = 27.001870$ $\qquad \frac{M}{R}\frac{G}{c^2} = -1.127074 = (\alpha\mu)^{-1}$

$\delta = \frac{S}{\alpha\mu}$

p $\frac{M}{R} = -11.226534$ $\qquad \frac{M}{R}\frac{G}{c^2} = \delta^{-1} = -39.355478$

$\delta = \mu$

e $\frac{M}{R} = -14.490443$ $\qquad \frac{M}{R}\frac{G}{c^2} = -42.619388 = \frac{1}{S\mu}$

$\delta = 42.619388 = \mu S$

$\mathcal{P}$ $\frac{M}{R} = 28.128945$ $\qquad \frac{M}{R}\frac{G}{c^2} = 0$

U $\left[(\alpha\mu)^{-3}\right]^{-8} = +27.0498$ $\qquad \left[\alpha\mu^{-3}\right]^{-9} = 30.431026 > \frac{c^2}{G}$

★ $\left[(\alpha\mu)^{-2}\right] =$ $\qquad \left[(\alpha\mu)^{-2}\right]^{-13} = 29.303 > \frac{c^2}{G}$

D $(\alpha\mu)^{-1} \times 25 = 28.17685 > \frac{c^2}{G}$

Grav = a = 2

Gr

$\boxed{U}$ $-6.762450 \downarrow$

what b for $\frac{M}{R} > \frac{c^2}{G}$

assuming force ↑ need $+34.891395 \uparrow$

b between 8 and 9

Take a = 2 for Gravity

b to overcome gravity

But which forces are ↑ and which ↓?

FORCETABLE 01 AUG 15, 2007

U

$a := 0, 1 .. 5$

$c := 10.476821$ $G := -7.175303$

$M := 52.680206$ $R := 27.932486$

$F_a := a\cdot(M - R) + c\cdot(4 - 2\cdot a) + G\cdot(a - 1)$

$D_a := a\cdot(R - M) + c\cdot(4 - 2\cdot a) + G\cdot(a - 1)$

a =

0
1
2
3
4
5

$$F = \begin{bmatrix} 49.082587 \\ 45.701362 \\ 42.320137 \\ 38.938912 \\ 35.557687 \\ 32.176462 \end{bmatrix} \qquad D = \begin{bmatrix} 49.082587 \\ -3.794078 \\ -56.670743 \\ -109.547408 \\ -162.424073 \\ -215.300738 \end{bmatrix}$$

FORCE PATTERNS

$$\begin{matrix}\text{coul} \\ \text{Grav}\end{matrix} \quad \frac{\;\frac{\hbar c}{R^2}\;}{\frac{GM^3}{R^2}} = \frac{\hbar c}{GM^2} = \frac{m_0^2}{M^2} \quad \text{if } M = m_p \quad = \frac{S}{\alpha M}$$

$$\frac{\text{Coul}}{\text{Plnk}} \quad \frac{\hbar c}{R^2}\,\frac{G}{c^4} = \frac{\hbar G}{c^3 R^2} = \frac{l_0^2}{R^2}$$

FORCETABLE 02 AUG 15, 2007

$b = 1 .. 10$

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

R

$a := 0, 1 .. 5$

$c := 10.476821$ $G := -7.175303$

$M := -4.662400$ $R := -32.791345$

$$F_a := \frac{a}{2}\cdot(M - R) + c\cdot(4 - 1\cdot a) + G\cdot\left(\frac{a}{2} - 1\right)$$

$$D_a := \frac{a}{2}\cdot(R - M) + c\cdot(4 + 1\cdot a) + G\cdot\overset{(\frac{1}{2}a - 1)}{\cancel{(a - 1)}}\left(-\frac{a}{2} - 1\right)$$

$$a = \begin{array}{|c|}\hline 0 \\ \hline 1 \\ \hline 2 \\ \hline 3 \\ \hline 4 \\ \hline 5 \\ \hline \end{array} \qquad F = \begin{bmatrix} 49.082587 \\ 49.082587 \\ 49.082587 \\ 49.082587 \\ 49.082587 \\ 49.082587 \end{bmatrix} \qquad D = \begin{bmatrix} 49.082587 \\ -7.175303 \\ -63.433193 \\ -119.691083 \\ -175.948973 \\ -232.206863 \end{bmatrix}$$

Times and Force

$$F = \frac{ML}{t^2}$$

Force as function of
the definition of time
(or the time used)

Common time $t = \frac{L}{c}$, $F_0 = \frac{Mc^2}{L}$

Kepler time $\tau^2 = \frac{L^3}{GM}$, $F = \frac{ML}{L^3}GM = \frac{GM^2}{L^2} = F_G$ = Gravity

$\tau^2 = \frac{1}{G\rho}$

Schwartzschild Time $T = \frac{GM}{C^3}$, $F = \frac{MLc^6}{G^2M^2} = \frac{L}{M}\frac{c^6}{G^2} = F_+$

$F_{t_0} = \frac{ML}{t_0^2} = F_1$

PLANCK FORCE $= \frac{c^4}{G} = F_P$

Coulomb Force $= \frac{\hbar c}{L^2} = F_c$

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

Force Fulcrums [Balance values]

	F_0	F_G	F_+	F_P	F_c	F_{t_0}
F_0	–	$\frac{M}{L} = \frac{c^2}{G}$	$\frac{M^2}{L^2} = \frac{c^4}{G^2}$	$\frac{M}{L} = \frac{c^2}{G}$	$\frac{M}{L} = \frac{c}{\hbar}$	
F_G	$\frac{M}{L} = \frac{c^2}{G}$	–	$\frac{M^3}{L^3} = \frac{c^6}{G^3}$	$\frac{M^2}{L^2} = \frac{c^4}{G^2}$	$M^2 = \frac{\hbar c}{G} = m_0^2$	
F_+	$\frac{M^2}{L^2} = \pm\frac{c^4}{G^2}$	$\frac{M^3}{L^3} = \frac{c^6}{G^3}$	–	$\frac{M}{L} = \frac{c^2}{G}$	~~$\tau = t_0$~~ $\frac{M}{L^3} = \rho_P$	
F_P	$\frac{M}{L} = \frac{c^2}{G}$	$\frac{M^2}{L^2} = \frac{c^4}{G^2}$	$\frac{M}{L} = \frac{c^2}{G}$	–	$L^2 = \frac{G\hbar}{c^3} = l_0^2$	
F_c	$\frac{M}{L} = \frac{c}{\hbar}$	$M^2 = \frac{\hbar c}{G} = m_0^2$	~~$\tau = t_0$~~ $\frac{M}{L^3} = \rho_P$	$L^2 = l_0^2$	–	

In essence:

$\frac{M}{L} = \pm\frac{c^2}{G} = \pm 28.128937$

$M = m_0 \quad -4.662404$

$L = l_0 \quad -32.791341$

$\frac{M}{L^3} = 93.711619 = \rho_P$

~~$\frac{1}{G\rho} = \tau = t_0$ or $\rho_\tau = \frac{1}{Gt_0} = 50.443458$~~

redundant

THE FULCRUMS

$\frac{\rho_\tau}{t_0} = G$

WHAT ARE THE ALLOWABLE RATIOS?

scale factors

$\frac{\rho_P}{\rho_\tau} = \frac{1}{t_0}$

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

$\rho_\tau = \rho_P \cdot t_0$

~~$\frac{M}{L} = \pm 28.128937$~~

~~$\frac{M}{L^2} = 11.157261$ or 39.286198~~

~~$\frac{M}{L^3} = 50.443458$~~

~~$\frac{M^2}{L^4} = 78.572395$ or 22.314521~~

(With uncertainty in G " s^2)

F_t @ $M = m_p$
$L = r_e$

$F_t = \frac{L}{M}\frac{c^6}{G^2} = 88.438050$

$\frac{c^4}{G} = F_\ell = 219.082578$

$\overline{39.355472} = S$

@ m_p, r_e

$\frac{F_t}{F_\ell} = S$

$\frac{C^6}{G^2} = 77.211516$

$\frac{r_e}{M_p} = 11.226534$

$\overline{88.438050}$

S is a scale factor

$F_0 \times F_t = F_\ell^2$

$\frac{F_t}{F_0} = \frac{L^2}{M^2}\frac{C^4}{G} = F_\ell \frac{L^2}{M^2}$

$F_t^2 = F_\ell^{'3} \frac{L^2}{M^2}$

Well known that

$\frac{F_c}{F_G} = \frac{S}{\alpha\mu}$ @ mp lvl

$\frac{\rho_\ell}{\rho_u} = 124.828855$

$= (\alpha\mu)^6 8^3$

$\rho_u = -31.117240$

Densities

U -31

$\overline{}$

$+31$

$+62$

ℓ $+93$

Node	acted on by
Quark	Strong Force
Nucleus	Weak Force
Charge	Coulomb Force
Mass	Gravity

Universal Force at all levels

The Planck Force = $\frac{c^4}{G}$

Balances and Boundaries

Coulomb w Planck

$$\frac{\hbar c}{L^2} = \frac{c^4}{G} \Longrightarrow L^2 = \frac{G\hbar}{c^3} = l_0^2$$

i.e. the balance boundary = l_0

-32.791 cm

= min? size

Gravity w Planck switch over along $\frac{m}{L} = \frac{c^2}{G}$

If $\rho\uparrow$, Gr $\downarrow$

$$\frac{Gm^2}{L^2} = \frac{c^4}{G} \Rightarrow \frac{M}{L} = \frac{c^2}{G}, \text{ the Schwarzschild Bound}$$

$\frac{c^2}{G} = 28.129$

If $\frac{M}{L} > \frac{c^2}{G}$ collapse

If $\frac{M}{L} < \frac{c^2}{G}$ expands

Coulomb w Gravity

at proton level
Coulomb > Grav
by 10^{39}

$$\frac{\hbar c}{L^2} = \frac{Gm^2}{L^2} \Rightarrow m^2 = \frac{\hbar c}{G} = m_0^2$$

If $m > m_0$ Gravity dominates

$m_0 = -4.662$ if $m < m_0$ Coulomb dominate

at mo
Coul = Grav

at m^2 714 Gr > coul by 37

∃ a nucleus boundary at Fe, IRON 57 Weak Force w ?

At Wt Fe
= 55.847

< 57 synthesis releases energy ~ SUN

> 57 ~~fragmentation~~ fission releases energy ~ BOMB

---

at the "Dark matter" value $m_D = 14.451795$

$\times 2$

m_D^2 28.903590

G -7.175296

$Gm_D^2 =$ 21.728294

W $\hbar c$ = -16.500103

38.228397 = $\frac{S}{\alpha M}$

$m_p = -23.776602$

$\times 2$

-47.553204

7.175296

-54.728500

16.500103

-38.228397 = $\frac{\alpha M}{S}$

$\boxed{\text{COUL = GRAV at } m = m_0}$

Coul to Grav at proton level

Coul > Grav by $\frac{S}{\alpha M}$

at dark matter level

Grav > Coulomb by $\frac{S}{\alpha M}$

SYMMETRY

switch over at $m_0 = -4.662$ g

Major Balances when force ratio = S

eigen adjustments $(\alpha\mu)^n$

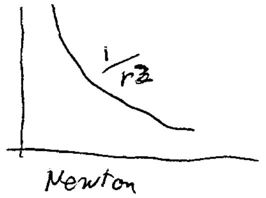
e.g. $\frac{M}{L} = \frac{c^2}{G}$ in Gravity zone

Sun ⊙ $\frac{M_\odot}{L_\odot} \doteq 22.75 < 28.128$ by $\doteq (\alpha\mu)^5$

$\Rightarrow$ ⊙↑ if ∃ on Major Forces

But forces may have "ripples" $\Rightarrow$ eigenvalues

e.g. planets at 10^{26}



Mass and positions of planets not arbitrary

Titius Bode law was a clue to eigenvalues

What would Rubin's gravity look like?

~~Atomic wt. of Fe = 55.847~~

~~$\times c^2$ 20.954~~

~~76.801~~

~~P energy 16.291~~

~~Fe energy in planck units 60.510~~

~~55.847~~

~~4.662 = P mass~~

~~60.509 = Fe mass in P unit~~

~~Note~~

~~Fe energy = Fe mass in planck unit [i.e. dimensionless numbers]~~

~~Big Ratio $\frac{hc}{Gm^2}$~~

Changes occur at ± S from a fulcrum

stabilities at ± αμ ? from a fulcrum ?

$\frac{c^4}{G} = 49.082578$

$\hbar c = -16.500103$

The F_G FORCE $\frac{GM^2}{L^2}$

$@ \ell \quad F_G = \frac{c^4}{G}$

$@ B \quad F_G = S^{-2}\frac{c^4}{G} = -29.628364$

$@ D \quad F_G = (\alpha\mu)^{-2}\frac{c^4}{G} = +46.828430$

$@ \star \quad F_G = (\alpha\mu)^{-4}\frac{c^4}{G} = +44.574282$

$@ V \quad F_G = (\alpha\mu)^{-6}\frac{c^4}{G} = +42.320134$

The Coulomb Force $\frac{\hbar c}{L^3} = F_c$

$@ \ell \quad F_c = \frac{c^4}{G} = \frac{\hbar c}{\ell_0^2}$

$@ B \quad F_c = \frac{\hbar c}{r_0^2} = 8.600033 = (\alpha\mu S)^{-1}\frac{c^4}{G}$

$@ D \quad F_c = \quad = 8.600033 = (\alpha\mu S)^{-1}\frac{c^4}{G}$

$@ \star \quad F_c = \quad = -31.882511 = (\alpha\mu S)^{-2}\frac{c^4}{G}$

$@ V \quad F_c \quad = -72.365057 = (\alpha\mu S)^{-3}\frac{c^4}{G}$

$\frac{F_c}{F_G}$

$@ \ell \quad 1$

Symmetry [

$@ B \quad \frac{(\alpha\mu S)^{-1}}{S^{-2}} = (\alpha\mu)^{-1}S = 38.228397$

$@ D \quad \frac{(\alpha\mu S)^{-1}}{(\alpha\mu)^{-2}} = (\alpha\mu)S^{-1} = -38.228397$

$@ \star \quad \frac{(\alpha\mu S)^{-2}}{\alpha\mu^{-4}} = (\alpha\mu)^2 S^{-2} = -76.456794$

$@ V \quad \frac{(\alpha\mu S)^{-3}}{(\alpha\mu)^{-6}} = (\alpha\mu)^3 S^{-3} = -114.685191$

FORCE $F_0 = \frac{M}{L}c^2$

$@ \ell \quad F_0 = \frac{c^4}{G} = +49.082578$

$@ B \quad F_0 = S^{-1}\frac{c^4}{G} = +9.727107$

$@ D \quad F_0 = (\alpha\mu)^{-1}\frac{c^4}{G} = +47.955504$

$@ \star \quad F_0 = (\alpha\mu)^{-2}\frac{c^4}{G} = +46.828430$

$@ V \quad F_0 = (\alpha\mu)^{-3}\frac{c^4}{G} = +45.701356$

Netanyahu also made one significant addition to "A Clean Break." The paper's authors were concerned primarily with Syria and Saddam Hussein's Iraq, but Netanyahu saw a greater threat elsewhere. "The most dangerous of these regimes is Iran," he said.

Ten years later, "A Clean Break" looks like nothing less than a playbook for U.S.-Israeli foreign policy during the Bush-Cheney era. Many of the initiatives outlined in the paper have been implemented—removing Saddam from power, setting aside the "land for peace" formula to resolve the Israeli-Palestinian conflict, attacking Hezbollah in Lebanon—all with disastrous results.

Nevertheless, neoconservatives still advocate continuing on the path Netanyahu staked out in his speech and taking the fight to Iran. As they see it, the Iraqi debacle is not the product of their failed policies. Rather, it is the result of America's failure to think big. "It's a mess, isn't it?" says Meyrav Wurmser, who now serves as director of the Center for Middle East Policy at the Hudson Institute. "My argument has always been that this war is senseless if you don't give it a regional context."

She isn't alone. One neocon after another has made the same plea: Iraq was the beginning, not the end. Writing in *The Weekly Standard* last spring, Reuel Marc Gerecht, a fellow at the American Enterprise Institute, made the neocon case for bombing Iran's nuclear sites. Brushing away criticism that a pre-emptive attack would cause anti-Americanism within Iran, Gerecht asserted that it "would actually accelerate internal debate" in a way that would be "painful for the ruling clergy." As for imperiling the U.S. mission in Iraq, Gerecht argued that Iran "can't really hurt us there." Ultimately, he concluded, "we may have to fight a war—perhaps sooner rather than later—to stop such evil men from obtaining the worst weapons we know."

More recently, Netanyahu himself, who may yet return to power in Israel, went as far as to frame the issue in terms of the Holocaust. "Iran is Germany, and it's 1938," he said during a CNN interview in November. "Except that this Nazi regime that is in Iran ... wants to dominate the world, annihilate the Jews, but also annihilate America."

Like the campaign to overthrow Saddam, the crusade for regime change in Iran got under way in the immediate aftermath of 9/11. One of the first shots came in *The Wall Street Journal* in November 2001, when Eliot Cohen, a member of the neoconservative Project for the New American Century (PNAC), declared, "The overthrow of the first theocratic revolutionary Muslim state [Iran] and its replacement by a moderate or secular government ... would be no less important a victory in this war than the annihilation of bin Laden."

Then, as now, the U.S. had no official diplomatic communications with Iran, but a series of back-channel meetings from 2001 to 2003 put unofficial policy initiatives into action. The man who initiated these meetings was Michael Ledeen, an Iran specialist, neocon firebrand, and Freedom Scholar at the American Enterprise Institute. During the Iran-contra investigations of the late 80s, Ledeen won notoriety for having introduced President Ronald Reagan's chief intriguer, Oliver North, to Manucher Ghorbanifar, an Iranian arms dealer and con man.

Ghorbanifar helped set up the first meetings, in Rome in December 2001. Among those attending were Harold Rhode, a protégé of Ledeen's, and Larry Franklin, of the Office of Special Plans, the Pentagon bureau that manipulated pre-war intelligence on Iraq. (Franklin has since pleaded guilty to passing secrets to Israel and has been sentenced to 12 years in prison.) Ghorbanifar reportedly arranged an additional meeting in Rome in June 2002. This one was attended by a high-level U.S. official and dissidents from Egypt and Iraq. Then, in June 2003, just three months after the invasion of Iraq, Franklin and Rhode met secretly with Ghorbanifar in Paris at

The $\frac{ML}{t_0^2}$ Force $= F_1$ $\qquad t_0^2 = -86.536322 \qquad S = 39.355471$

$\frac{c^2}{G} = 28.128$

@ P $\quad M = m_0,\ L = l_0 \quad F_1 = \frac{c^4}{G} \quad = \quad \frac{c^4}{G} = 49.082578 \quad \frac{m_0}{l_0} = \frac{c^2}{G}$

49.082578

@ B $\quad M = M_p = -23.776602 \quad F_1 = \alpha\mu \frac{c^4}{G} \quad M_p r_e = -36.326670 \quad \frac{m_p}{r_e} = S^{-1}\frac{c^2}{G}$

$L = r_e = -12.550068 \quad m_p/r_e = -11.226534$

50.209652

@ D $\quad 88.438049 \quad F_1 = S\frac{c^4}{G} \quad M_D L_D = 1.901727 \quad \frac{M_D}{L_D} = (\alpha\mu)^{-1}\frac{c^2}{G}$

$M_D/L_D = 27.001863$

@ ☆ $\quad 127.798520 \quad F_1 = S^2\frac{c^4}{G} \quad M_☆ L_☆ = 41.257197 \quad \frac{M_☆}{L_☆} = (\alpha\mu)^{-2}\frac{c^2}{G}$

$M_☆/L_☆ = 25.874789$

@ U $\quad 167.148991 \quad F_1 = S^3\frac{c^4}{G} \quad M_U L_U = 80.612669 \quad \frac{M_U}{L_U} = (\alpha\mu)^{-3}\frac{c^2}{G}$

$M_U/L_U = 24.747715$

The F_+ Force $= \frac{L}{M}\frac{c^6}{G^2} \qquad \frac{c^6}{G^2} = 77.211516$

$\frac{ML}{T^2}$ when $T = \frac{GM}{c^3}$ Schwarzschild fn

@ P $\quad \frac{l_0}{m_0} = \frac{G}{c^2}, \quad F_+ = \frac{c^4}{G} \qquad F_+ = F_1$

@ B $\quad \frac{r_e}{m_p} = 11.226534, \quad F_+ = 88.438050 = S\frac{c^4}{G} \qquad F_+ = S F_1$

@ D $\quad \frac{L_D}{M_D} = -27.001863, \quad F_+ = 50.209653 = \alpha\mu\frac{c^4}{G} \qquad F_+ = \alpha\mu F_1$

@ ☆ $\quad \frac{L_☆}{M_☆} = -25.874789, \quad F_+ = 51.336727 = (\alpha\mu)^2\frac{c^4}{G} \qquad F_+ = (\alpha\mu)^2 F_1$

@ U $\quad \frac{L_U}{M_U} = -24.747715, \quad F_+ = 52.463801 = (\alpha\mu)^3\frac{c^4}{G} \qquad F_+ = (\alpha\mu)^3 F_1$

yet another gathering that was not approved by the Pentagon.

According to Ledeen, Ghorbanifar and his sources produced valuable information at the 2001 meetings about Iranian plans for attacking U.S. forces in Afghanistan. But it is also likely that there was some discussion of de-stabilizing Iran. As the *Washington Monthly* reported, the meetings raised the possibility "that a rogue faction at the Pentagon was trying to work outside normal U.S. foreign policy channels to advance a 'regime-change' agenda."

Also in attendance at the first meetings, according to administration sources who spoke to Warren P. Strobel, of Knight Ridder Newspapers, were representatives of the Mujahideen e-Khalq, or MEK, an urban-guerrilla group that practiced a brand of revolutionary Marxism heavily influenced by Mao Zedong and Che Guevara.

Having expertly exploited phony intelligence promoted by the Iraqi National Congress (I.N.C.), a dubious exile group run by the convicted embezzler Ahmad Chalabi, the neocons were now pursuing an alliance with an even shadier collection of exiles. According to a 2003 report by the State Department, "During the 1970s, the MEK killed US military personnel and US civilians working on defense projects in Tehran.... The MEK detonated bombs in the head office of the Islamic Republic Party and the Premier's office, killing some 70 high-ranking Iranian officials.... In 1991, it assisted the Government of Iraq in suppressing the Shia and Kurdish uprisings in southern Iraq and the Kurdish uprisings in the north." In other words, the MEK was a terrorist group—one that took its orders from Saddam Hussein.

To hear some neocons tell it, though, the MEK militants weren't terrorists—they were America's best hope in Iran. In January 2004, Richard Perle was the guest speaker at a fundraiser sponsored by the MEK, although he later claimed to have been unaware of the connection. And in a speech before the National Press Club in late 2005, Raymond Tanter, of the Washington Institute for Near East Policy, recommended that the Bush administration use the MEK and its political arm, the National Council of Resistance of Iran (N.C.R.I.), as an insurgent militia against Iran. "The National Council of Resistance of Iran and the Mujahedeen-e Khalq are not only the best source for intelligence on Iran's potential violations of the nonproliferation regime. The NCRI and MEK are also a possible ally of the West in bringing about regime change in Tehran," he said.

Tanter went as far as to suggest that the U.S. consider using tactical nuclear weapons against Iran. "One military option is the Robust Nuclear Earth Penetrator, which may have the capability to destroy hardened deeply buried targets. That is, bunker-busting bombs could destroy tunnels and other underground facilities." He granted that the Non-Proliferation Treaty bans the use of nuclear weapons against non-nuclear states, such as Iran, but added that "the United States has sold Israel bunker-busting bombs, which keeps the military option on the table." In other words, the U.S. can't nuke Iran, but Israel, which never signed the treaty and maintains an unacknowledged nuclear arsenal, can.

Shortly after the invasion of Iraq, when the U.S. mission there seemed accomplished or at least accomplishable, Iran came to fear that it would be next in the crosshairs. To stave off that possibility, Iran's leadership, including Supreme Leader Ayatollah Ali Khamenei, began to assemble a negotiating package. Suddenly, everything was on the table—Iran's nuclear program, policy toward Israel, support of Hamas and Hezbollah, and control over al-Qaeda operatives captured since the U.S. went to war in Afghanistan.

This comprehensive proposal, which diplomats took to calling "the grand bargain," was sent to Washington on May 2, 2003, just before a meeting in Geneva between Iran's U.N. ambassador, Javad Zarif, and neocon Zalmay Khalilzad, then a senior director at the National Security Council. (Khalilzad went on to become the U.S.

$t_0^2 = -86.536322$ $\frac{c^6}{G^2} = 77.211516$

$\hbar c = -16.500103$

THE SUN $M = 33.299$ $\frac{M}{L} = 22.45670$

$L = 10.84230$ $ML = 44.14130$

		cf ☆	standard ☆	δ(⊙ - ☆)
$F_1 = \frac{ML}{t_0^2} =$	130.677622	$\frac{\delta^2 c^4}{G}$	= 127.793520	+2.884102
$F_+ = \frac{L}{M}\frac{c^6}{G^2} =$	54.75482	~~51.336727~~	= 51.336727	+3.418089
$F_G = \frac{GM^2}{L^2} =$	37.73810		44.574428	-6.835618
$F_c = \frac{hc}{L^2} =$	-38.184703	~~31.882511~~	-31.882511	-6.602192
$F_0 = \frac{M}{L}c^2 =$	43.410341		46.828430	-3.418089
$\frac{F_c}{F_G} =$	-75.922808		-76.456794	+0.533986

	⊙	☆	δ (⊙ - ☆)	
M	33.299	33.565993	-0.267	$\sim (\alpha\mu)^{1/4}$
L	10.84230	7.691204	3.1571	
$\frac{M}{L}$	22.45670	$25.874789 = (\alpha\mu)^{-2}\frac{c^2}{G}$	-3.41809	$\sim (\alpha\mu)^3$
ML	44.141300	$41.257198 = \delta^2\frac{\hbar}{c}$	+2.8841	
ρ	0.7721	10.492380	-9.720	

critics said would happen have happened. [The president's neoconservative advisers] are effectively saying, 'Invade Iran. Then everyone will see how smart we are.' But after you've lost x number of times at the roulette wheel, do you double-down?"

By now, the story of how neoconservatives hijacked American foreign policy is a familiar one. With Vice President Dick Cheney and Rumsfeld leading the way, neocons working out of the office of the vice president and the Department of Defense orchestrated a spectacular disinformation operation, asserting that Saddam Hussein's weapons of mass destruction posed a grave and immediate threat to the U.S. Veteran analysts who disagreed were circumvented. Dubious information from known fabricators was hyped. Forged documents showing phony yellowcake-uranium sales to Iraq were promoted.

What's less understood is that the same tactics have been in play with Iran. Once again, neocon ideologues have been flogging questionable intelligence about W.M.D. Once again, dubious Middle East exile groups are making the rounds in Washington—this time urging regime change in Syria and Iran. Once again, heroic new exile leaders are promising freedom.

Meanwhile, a series of recent moves by the military have lent credence to widespread reports that the U.S. is secretly preparing for a massive air attack against Iran. (No one is suggesting a ground invasion.) First came the deployment order of U.S. Navy ships to the Persian Gulf. Then came high-level personnel shifts signaling a new focus on naval and air operations rather than the ground combat that predominates in Iraq. In his January 10 speech, Bush announced that he was sending Patriot missiles to the Middle East to defend U.S. allies—presumably from Iran. And he pointedly asserted that Iran was "providing material support for attacks on American troops," a charge that could easily evolve into a casus belli.

"It is absolutely parallel," says Philip Giraldi, a former C.I.A. counterterrorism specialist. "They're using the same dance steps—demonize the bad guys, the pretext of diplomacy, keep out of negotiations, use proxies. It is Iraq redux."

The neoconservatives have had Iran in their sights for more than a decade. On July 8, 1996, Benjamin Netanyahu, Israel's newly elected prime minister and the leader of its right-wing Likud Party, paid a visit to the neoconservative luminary Richard Perle in Washington, D.C. The subject of their meeting was a policy paper that Perle and other analysts had written for an Israeli-American think tank, the Institute for Advanced Strategic Political Studies. Titled "A Clean Break: A New Strategy for Securing the Realm," the paper contained the kernel of a breathtakingly radical vision for a new Middle East. By waging wars against Iraq, Syria, and Lebanon, the paper asserted, Israel and the U.S. could stabilize the region. Later, the neoconservatives argued that this policy could democratize the Middle East.

"It was the beginning of thought," says Meyrav Wurmser, an Israeli-American policy expert, who co-signed the paper with her husband, David Wurmser, now a top Middle East adviser to Dick Cheney. Other signers included Perle and Douglas Feith, the undersecretary of defense for policy during George W. Bush's first term. "It was the seeds of a new vision."

Netanyahu certainly seemed to think so. Two days after meeting with Perle, the prime minister addressed a joint session of Congress with a speech that borrowed from "A Clean Break." He called for the "democratization" of terrorist states in the Middle East and warned that peaceful means might not be sufficient. War might be unavoidable.

FREQUENCY and Force

Force is $\propto$ number of dotons / unit time

clock rate determines length of time unit

and clock rate is $\propto$ to ? $\frac{M}{L}$, $\frac{M}{L^2}$, $\frac{M}{C^3}$ .. ? ML

Pulsing increases dotons/hr
cars

What stop light red/green switch rate maximizes cars/hr?
frequency

appologies to J.A. Wheeler quote

f(M) tells clock rate to run

Clock rate tells links how strong to be
force

Basic Problem: stability of Aggregate

collapse stable expand

Fulcrum

Verge

IS $\mathcal{E} \sim \frac{C^4}{G}$ ↑ the Dark Energy?

	M	L
B	-23	-12
$\bar{B}$	-23	-50
$\mathcal{E}$	-4	-32
D	+14	
$\bar{D}$	+14	

own purpose in the ceremony that is called me. I understand that people want to know themselves and live in harmony and balance with the creation. And I hope that people realize that therein lies the answer to their dilemma. Who better to turn to, to know yourself, than your own self? And who better to address that question to than God, and not a capitalist spiritual thief that is only out to make a buck (in this case, a half million bucks)? The answer does not lie in a thief that steals, appropriates and defaces other people's sacred ceremonies and practices and then sells it as his own. That path only leads to nothingness. Because once he's done twisting and turning a sacred ceremony into his own image, it has nothing left to offer - and that's what he's selling.

The Indian ceremony is not a profit-making tool. The ceremony is not a toy to be played with. It is a way that has brought generations of ancestors and relations through the blood, death, genocide and tears of Euro-American devastation, colonialism and imperialism during the past 500 years.

Our sacred ceremonies are what we Indian folks pray about and try to pass along to our children in a respectful and careful manner. We tell them about the power of love and try to show it to them in our daily lives. We tell them where our ceremonies come from and that they are sacred and meant to continue through the generations. The ceremony is love, therefore, it has power. And power of that kind does not mix with greed.

Our ceremonies are part of life and love for Native Americans, an important part of this continent before capitalism was brought here by mercantilists and thieves in their lust for land and gold. And now that the land and gold of this beautiful and sacred mother earth has been devastated by the occupiers and their greed. They seem to want our very souls next. The only way to stop this is if people decide to stop doing this on their own. Each and every one of us has a built-in moral compass, and in every situation we always know that we have a choice. We usually know which is the right choice and which is not.

TIMATRX0.WPD $S = \frac{L^2 c^8}{G^3 M^2}$ $W = \frac{\hbar c^5}{G^2 M^2}$ November 8, 2009

TIME TABLE: T=T(G,M,L,ħ,c)

[T] = 1

M\L	0	0.5	+1	1.5	+2	+2.5	+3
+3							
+2.5							
+2							
+1.5		S		W			
+1							
+1/2				P		E	
0							
-1/2						G	
-1	P	X					
-3/2	S	$\frac{M}{L} = \frac{c^2}{G}$	X	~~$L = \ell_0$~~			
-2	W	$M = m_0$	$L = \ell_0$	X			
-5/2	E	$L = \ell_0$	$L^2 = R\ell_0$	$\frac{M}{L} = \frac{c^3}{G}$	X		
-3	G	$\frac{M}{L} = \frac{c^2}{G}$	$\frac{M}{L} = \frac{c^2}{G}$	$\frac{M}{L} = \frac{m_0}{R}$	$M = m_0$	X	

P S W E G

J - B

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

P ≠ S
etc

② $M = m_0$
② $L = \ell_0$

$\frac{M}{L} = \frac{c^2}{G}$ ④

$L^2 = R\ell_0$ $\frac{M}{L} = \frac{m_0}{R}$ "

$\frac{M}{L}$ " $= \frac{L}{\ell_0}\frac{c^3}{G}$ $\frac{M}{L} = \frac{m_0}{M}\frac{c^2}{G}$

$\frac{M_D}{r_e} = (\alpha\mu)^{-1}\frac{c^2}{G}$

$\frac{M_\pi}{L_\pi} = (\alpha\mu)^{-2}\frac{c^2}{G}$

$\frac{M_U}{L_U} = (\alpha\mu)^{-3}\frac{c^2}{G}$

☆

$M = 33.565995$ $ML = 41.257200 = S^2 \frac{\hbar}{c}$

$L = 7.691205$ $\frac{M}{L} = 25.874790 = \frac{1}{(\alpha\mu)^2} \frac{c^2}{G}$

FIVE FORCES

FORCTRIX2.WPD

~~TIMATRX0.WPD~~

November 8, 2009

STAR LEVEL FORCE ~~TIME~~ **TABLE: T=T(G,M,L,ħ,c)**

[T] = 1

a M\L b	~~-0.5~~ $\frac{3}{2}$	~~0~~ 1	~~+0.5~~	~~1.0~~	~~+1.5~~	~~2~~	~~2.5~~	2
+3								
+2.5								
+2		+		+				
+1.5				−				
+1	L^2c^8/G^3M^2 S		$c^5\hbar/G^2M^2$ W		$c^2\hbar^3/GM^2L^2$ J	+ −		− 2
+0.5						+		− 1
0			c^4/G	▨	$\hbar c/L^2$ E			M = 0
-0.5		▨			$\frac{M}{L^2}\sqrt{cG\hbar}$ T'			+ 1
-1			$M^2c^3/\hbar$		GM^2/L^2 GR			+ 2
-1.5								
-2								
-2.5								
-3								

h = 1

h = 0

+2 +1 0 ~~+1~~ -1 ~~+2~~ -2

L

FORCE
COORDINATE
PATCH

~~E W~~ S, W, E, G
S W W E G
W ~~W~~ E G
E W G

FORCE

$f(M, R, c, \hbar, G)$

	+3	+2	+1	R=0	−1	−2	−3	−4	−5	−6	
+2						$\frac{GM^2}{R^2}$ 5					
+1			$\frac{MR}{t_0^2}$ e 1		$\frac{M}{R}c^2$ 4		$\frac{MG\hbar}{R^3c}$ 7		$\frac{MG^2\hbar^2}{R^5c^4}$ 9		
M=0				$\frac{c^4}{G}$ 2		$\frac{\hbar c}{R^2}$ 6		$\frac{G\hbar^2}{R^4c^2}$ 8			
−1			$\frac{Rc^6}{MG^2}$ 10		$\frac{\hbar c^3}{GMR}$ 3						

DIAG: W

Forces on diagonal W when balanced with $\frac{c^4}{G} \rightarrow \frac{M}{R} = \pm\frac{c^2}{G}$

At what values of M and R does each force $= \frac{c^4}{G}$?

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

6 For coulomb $R = \pm l_0$

1 $t_0^2 = \frac{G\hbar}{c^5}$ For $\frac{MR}{t_0}$, $MR = m_0 l_0$

#7 $\tau_0^2 = \frac{R^3}{MG}$

#9 $\frac{GM}{R^5} = \frac{c^2}{l_0^4}$

strong R^{-u}
$u = ?$

FORCES

TABLE FOR $\left[\frac{MR}{T^2}\right]$

$\frac{M^5G^2}{R\hbar^2}$

Univ expansion $\propto R^x, T^y$
$x = ?$
if accelerating T^y $y = ?$

$\frac{M^4G^3}{R^4c^4}$		$\frac{M^4G^2}{R^2\hbar c}$		$\frac{GM^4c^2}{\hbar^2}$		$\frac{M^4c^5R^2}{\hbar^3}$		$\frac{M^4R^4c^8}{G\hbar^4}$	+4
	$\frac{M^3G^2}{R^3c^2}$		$\frac{GM^3c}{R\hbar}$		$\frac{RM^3c^4}{\hbar^2}$		$\frac{M^3R^3c^7}{G\hbar^3}$		+3
$\frac{M^3\hbar G^2}{R^4c^3}$		Grav $\boxed{\frac{GM_1^2}{R^2}}$		$\frac{c^3M^2}{\hbar}$		$\frac{M^2R^2c^6}{G\hbar^2}$		$\frac{M^2c^9}{R^4G^2\hbar^3}$	+2
	$\frac{MG\hbar}{R^3c}$		centrifugal $\boxed{\frac{Mc^2}{R}}$	CORIOLIS $M\sqrt{\frac{c^7}{G\hbar}}$	Coriolis? $\frac{RMc^5}{G\hbar}$		$\frac{R^3Mc^8}{G^2\hbar^2}$		+1
$\frac{G\hbar^2}{R^4c^2}$		elec $\boxed{\frac{\hbar c}{R^2}}$		$\frac{c^4}{G}$		$\frac{c^7R^2}{G^2\hbar}$		$\frac{R^4c^{10}}{G^3\hbar^2}$	0 M
	$\frac{\hbar^2}{MR^3}$		$\frac{\hbar c^3}{GMR}$		$\frac{Rc^6}{MG^2}$		$\frac{R^3c^9}{MG^3\hbar}$		-1
$\frac{\hbar^3}{M^2R^4c}$		$\frac{\hbar^2c^2}{GM^2R^2}$		$\frac{\hbar c^5}{G^2M^2}$		$\frac{R^2c^8}{M^2G^3}$		$\frac{R^4c^{11}}{M^2G^4\hbar}$	-2
	$\frac{\hbar^3c}{GM^3R^3}$		$\frac{\hbar^2c^4}{M^3RG^2}$		$\frac{R\hbar c^7}{M^3G^3}$		$\frac{R^3c^{10}}{M^3G^4}$		-3
$\frac{\hbar^4}{GM^4R^4}$		$\frac{\hbar^3c^3}{G^2M^4R^2}$		$\frac{\hbar^2c^6}{M^4G^3}$		$\frac{R^3\hbar c^9}{M^4G^4}$		$\frac{R^4c^{12}}{M^4G^5}$	-4
-4	-3	-2	-1	0	+1	+2	+3	+4	

R

G=0 AXIS

c=0 AXIS

~~$\hbar c$~~ $\hbar = 0$ AXIS

These forces are all $\left[\frac{MR}{T^2}\right]$

$$\boxed{\text{General Formula} \quad F = M^aR^bc^{\frac{3b-a+8}{2}}G^{\frac{a-b-2}{2}}\hbar^{\frac{-a-b}{2}}}$$

Make an M-N Matrix

E 2
F 1

F MATRIX → E MATRIX
SHIFT 1 square to right
i.e. ×R

Instead of Dark Matter?
What force?

FREQUENCY INTERACTIONS
$\equiv$ FORCE INTERACTIONS

$\frac{GM}{C^3} = \sqrt{\frac{GML}{C^4}}$ Frequency Resonance = Equilibrium of Force

FORCE FORMULAS

$T \quad \frac{ML}{G^2M^2}c^6 = \frac{L}{M}\frac{c^6}{G^2}$

$t_0 \quad \sqrt{\frac{\hbar G}{c^5}} = \frac{c^4}{G}$

$\not{K} \quad \frac{ML}{\hbar^2}M^2c^4 = \frac{M^3Lc^4}{\hbar^2}$

$Z \quad \frac{G\hbar}{Lc^4} \quad \frac{ML}{G^2\hbar^2}L^2c^8 = \frac{ML^3c^8}{G^2\hbar^2}$

$w \quad \frac{MLc^4}{GML} = \frac{c^4}{G}$

$t \quad \frac{MLc^2}{L^2} = \frac{Mc^2}{L}$

$\tau \quad \frac{MLGM}{L^3} = \frac{GM^2}{L^2}$

49.082578
11.981256
37.101322
39.355471
2.254149

$Z\star$ −83,750706
2
−167,501412
41,257200
208,758612
200,504462
2,254150

$Z_\star = S^4\frac{c^4}{G}(\alpha_M)^2$

$\frac{S}{(\alpha_M)^2} = \frac{c^4}{BG} \quad B = \frac{c^4}{G}(\alpha_M)^2S^{-1}$

37

$B = \frac{c^4}{G}\alpha_M{}^2S^{-1}$

$K\star$ −81,496560
2
−162,993120
41,257200
204,250320

K $\quad$ P $\quad$ B $\quad$ D $\quad$ $\star$ $\quad$ U

B
+11,981256
$\frac{c^4}{G}(\alpha_M)^2S^{-1}$

204,250320

B
−24,153963
2
−48,307926
−36,326670
KB + 11,981256

$\frac{c^4}{G}S^{-1}$

49.082578
39.355471
9,727107
B 11,981256 = $\frac{c^4}{G}S^{-1}(\alpha_M)^2$
2254149

KU −100,610759
2
−201,221518
80,612672 +
+281,834190
49
232

49.082578
78
127
150 $\quad S^4\frac{c^4}{G}$
49
05

B
90.692196

$S^{-1}\frac{c^4}{G}$

Z −63,509433
2
−127,018866
−36,326670
+90,692196

$\frac{c^4}{G}(\alpha_M)^2S$

S^6 = 236,132827
49,082578
285,215305
281,834190
3381115

157,421884
49.082578
~~2~~06,504462
204,250320
2,254142

49
39
88

49,082578
39.355471
88,438049
90,692196 $\quad$ B
2,254147

$\frac{c^4}{G}S^{+1} = 88 = B\,\alpha_M{}^{-2}$

$S^6\frac{c^4}{G}(\alpha_M)^{-3}$

$K\star = S^4\frac{c^4}{G}(\alpha_M)^{-2}$

$\frac{c^4}{G}S(\alpha_M)^2$

Z_U −103,991979
2
−207,983958
80,612672
288,596830
285,215
2,381

FORCE SYMMETRIES

		a	b	a		b		
ELECTRIC FORCE π	$\frac{\hbar c}{L^2}$	$\frac{1}{2}$	$\frac{3}{2}$	$+\frac{1}{2}$	$\Delta = 1$	3/2	$\Delta = 0$	⊃ both ħ and c, ⊅ noC
GRAVITY τ	$\frac{GM^2}{L^2}$	$-\frac{1}{2}$	$\frac{3}{2}$	$-\frac{1}{2}$		3/2		⊅ h nor c, ⊃ G
t		0	1					⊃ c, ⊅G, ⊅ h

Exponents of c, G, h and invariant from T → F

− F

~~same as T~~

F		T	T ⊃ conten				T exponent of		
			C	ħ	G		C	ħ	G
0 −2	πElectric	$\frac{1}{2}, \frac{3}{2}$	1	1	0		1	1	0
5 −1	δ	−2,, 1	0	1	1		0	−2	+2
−1 1	T	1,0	1	0	1		6	0	−2
0 0	ψ	$\frac{1}{2}$ $\frac{1}{2}$	1	0	1	ψ	4	0	−1
2 −2	Gravity τ	$-\frac{1}{2}, \frac{3}{2}$	0	0	1		0	0	1
−1 −3	φ	1 2	0	1	0		0	2	0
1 −1	t σ w	0, 1	1	0	0		2	0	0

			a b			F a b		
no C	no ħ	no G	no C	no h	no G	No C	No h	No G
−2 +2	6 −2	1 1	−2 1	1 0	$\frac{1}{2}$ $\frac{3}{2}$	5 −1	−1 1	0 −2
0 +1	4 −1	0 2	$-\frac{1}{2}$ $\frac{3}{2}$	$\frac{1}{2}$ $\frac{1}{2}$	1 2	2 −2	0 0	−1 −3
2 0	0 1	2 0	1 2	$-\frac{1}{2}$ 0 1 3/2	[illegible]	−1 −3	2 −2	1 −1
							1 −1	−2
0	4	2	−1	1	2	4	0	−4
1	3	2	1	1	3	0	0	0
2	1	2	3	1	1	−4	0	
				2			0	