TABLES

INTRODUCTION

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T=1 PREMATRIX $\alpha = x$ exponent of c

α, β, γ FOR FREQUENCIES OR TIME

MATRIX PART 2

$n := -1 \qquad p := -3..6 \qquad q := -3..6$

$al_{p,q} := 0.5\cdot(5\cdot n - p + 3\cdot q) \quad bl_{p,q} := 0.5\cdot(-n + p - q) \quad gl_{p,q} := 0.5\cdot(-n - p - q)$

$x := -6..6 \qquad y := -6..6$

$A_{x,y} := 0.5\cdot(-5 - 0.5\cdot x + 1.5\cdot y) \quad B_{x,y} := 0.5\cdot(1 + 0.5\cdot x - 0.5\cdot y) \quad G_{x,y} := 0.5\cdot(1 - 0.5\cdot x - 0.5\cdot y)$

α β TABLE for C^{α} γ

b (R)

A =

a (M) \ b	-3	-2	-1	0	1	2	3
-6	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2	2.75	3.5
-5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75	2.5	3.25
-4	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5	2.25	3
-3	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2	2.75
-2	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75	2.5
-1	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5	2.25
0	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2
1	-7.25	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75
2	-7.5	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5
3	-7.75	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25
4	-8	-7.25	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1
5	-8.25	-7.5	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75
6	-8.5	-7.75	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5

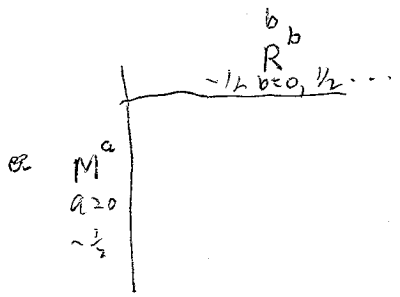
PREMATRIX FOR [T]

exponent of c

$x \sim a$

$y \sim b$

$n \sim w$



$R = \frac{3}{2}$ $\quad \alpha = 0$

$M = -\frac{1}{2}$ $\quad \beta = -0.5$

$\gamma = 0$

$\sqrt{\frac{R^3}{GM}} = T$

$A(6) = 0.5[c(u - 3v - 5w - a + 3b + 5e) +$
$G(-u + v + w + a - b - e) +$
$h(u + v + w - a - b - e)]$

$\rightarrow$ $0.5[c(-5 - a + 3b) +$
$G(1 + a - b) +$
$h(1 - a - b)]$

$aM + bR + eT + A(6) = uM + vR + wT$

$v = v = 0 \quad w = 1$

T=1 PREMATRIX β = y exponent of G

α, β, γ, For frequencies or Time

MATRIX PART 2

$n := -1$ $p := -3..6$ $q := -3..6$

$al_{p,q} := 0.5\cdot(5\cdot n - p + 3\cdot q)$ $bl_{p,q} := 0.5\cdot(-n + p - q)$ $gl_{p,q} := 0.5\cdot(-n - p - q)$

$x := -6..6$ $y := -6..6$

$A_{x,y} := 0.5\cdot(-5 - 0.5\cdot x + 1.5\cdot y)$ $B_{x,y} := 0.5\cdot(1 + 0.5\cdot x - 0.5\cdot y)$ $G_{x,y} := 0.5\cdot(1 - 0.5\cdot x - 0.5\cdot y)$

M

B =

		-3	-2	-1	R	1	2	3
		-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
-3	-6	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25	-2.5
	-5	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25
-2	-4	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2
	-3	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75
-1	-2	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5
	-1	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25
	0	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1
	1	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75
1	2	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5
	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25
2	4	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0
	5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25
3	6	3.5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5

T=1 PREMATRIX $\gamma = z$ exponent of t

α, β, γ For frequencies or time

MATRIX PART 2

$n := -1 \qquad p := -3..6 \qquad q := -3..6$

$al_{p,q} := 0.5 \cdot (5 \cdot n - p + 3 \cdot q) \quad bl_{p,q} := 0.5 \cdot (-n + p - q) \quad gl_{p,q} := 0.5 \cdot (-n - p - q)$

$x := -6..6 \qquad y := -6..6$

$A_{x,y} := 0.5 \cdot (-5 - 0.5 \cdot x + 1.5 \cdot y) \quad B_{x,y} := 0.5 \cdot (1 + 0.5 \cdot x - 0.5 \cdot y) \quad G_{x,y} := 0.5 \cdot (1 - 0.5 \cdot x - 0.5 \cdot y)$

R

M

G =

		-3	-2	-1		1	2	3
		-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
-3	-6	3.5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5
	-5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25
-2	-4	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0
	-3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25
-1	-2	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5
	-1	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75
	0	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1
	1	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25
1	2	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5
	3	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75
2	4	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2
	5	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25
3	6	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25	-2.5

PRE MATRICES FOR [T]

M \ R	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
-6	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2	2.75	3.5
-5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75	2.5	3.25
-4	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5	2.25	3
-3	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2	2.75
-2	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75	2.5
-1	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5	2.25
0	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25	2
1	-7.25	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1	1.75
2	-7.5	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75	1.5
3	-7.75	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5	1.25
4	-8	-7.25	-6.5	-5.75	-5	-4.25	-3.5	-2.75	-2	-1.25	-0.5	0.25	1
5	-8.25	-7.5	-6.75	-6	-5.25	-4.5	-3.75	-3	-2.25	-1.5	-0.75	0	0.75
6	-8.5	-7.75	-7	-6.25	-5.5	-4.75	-4	-3.25	-2.5	-1.75	-1	-0.25	0.5

M \ R	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
-6	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25	-2.5
-5	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25
-4	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2
-3	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75
-2	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5
-1	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25
0	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1
1	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75
2	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5
3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25
4	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0
5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25
6	3.5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5

M \ R	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
-6	3.5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5
-5	3.25	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25
-4	3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0
-3	2.75	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25
-2	2.5	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5
-1	2.25	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75
0	2	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1
1	1.75	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25
2	1.5	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5
3	1.25	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75
4	1	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2
5	0.75	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25
6	0.5	0.25	0	-0.25	-0.5	-0.75	-1	-1.25	-1.5	-1.75	-2	-2.25	-2.5

NUMMATRIX1.MCD INPUTS M OUTPUT = T JANUARY 1, 2002

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$ $mo := -4.662199$ $lo := -32.791545$ $to := -43.268366$

$mp := -23.776602$ $re := -12.550068$ $md := 15.579278$ $ms := 35.820755$ $mu := 56.062232$

$u := 0$ $v := 0$ $w := 1$ $a := -5 .. 5$ $b := -5 .. 5$ $e := 0$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b + 5\cdot e)\cdot c + (-u + v + w + a - b - e)\cdot G + (u + v + w - a - b - e)\cdot h\right)$$

$Mn := md$

$$T_{a,b} := (a\cdot Mn) + B_{a,b}$$

$T =$

	-2	-1	0	1	2	3
-5	-210.058851	-177.267303	-144.475756	-111.684208	-78.892661	-46.101113
-4	-189.817374	-157.025826	-124.234278	-91.442731	-58.651184	-25.859636
-3	-169.575896	-136.784348	-103.992801	-71.201254	-38.409706	-5.618158
-2	-149.334418	-116.542871	-83.751323	-50.959776	-18.168229	14.623319
-1	-129.092941	-96.301394	-63.509846	-30.718298	2.073249	34.864796
0	-108.851464	-76.059916	-43.268368	-10.476821	22.314726	55.106274
1	-88.609986	-55.818438	-23.026891	9.764657	42.556204	75.347752
2	-68.368508	-35.576961	-2.785413	30.006134	62.797682	95.589229
3	-48.127031	-15.335484	17.456064	50.247611	83.039159	115.830706
4	-27.885553	4.905994	37.697542	70.489089	103.280636	136.072184
5	-7.644076	25.147472	57.939019	90.730566	123.522114	156.313661

↑
TIMES

NUMMATRIX1.MCD INPUTS M OUTPUT = ~~T~~ R NOVEMBER 13, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$ $mo := -4.662199$ $lo := -32.791545$ $to := -43.268366$

$mp := -23.776602$ $re := -12.550068$ $md := 15.579278$ $ms := 35.820755$ $mu := 56.062232$

$u := 0$ $v := 0$ $w := 1$ $a := -5 .. 5$ $b := -5 .. 5$ $e := 1$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b + 5\cdot e)\cdot c + (-u + v + w + a - b - e)\cdot G + (u + v + w - a - b - e)\cdot h\right)$$

$Mn := md$

$$T_{a,b} := (a\cdot Mn) + B_{a,b}$$

$T =$

	-2	-1	0	1	2	3
-5	-166.790482	-133.998935	-101.207387	-68.41584	-35.624292	-2.832745
-4	-146.549005	-113.757457	-80.96591	-48.174363	-15.382815	17.408732
-3	-126.307527	-93.51598	-60.724433	-27.932885	4.858663	37.65021
-2	-106.06605	-73.274502	-40.482955	-7.691407	25.10014	57.891687
-1	-85.824573	-53.033025	-20.241478	12.55007	45.341617	78.133165
0	-65.583095	-32.791547	0	32.791547	65.583095	98.374642
1	-45.341617	-12.55007	20.241478	53.033025	85.824573	118.61612
2	-25.10014	7.691407	40.482955	73.274502	106.06605	138.857597
3	-4.858663	27.932885	60.724433	93.51598	126.307527	159.099075
4	15.382815	48.174363	80.96591	113.757457	146.549005	179.340553
5	35.624292	68.41584	101.207387	133.998935	166.790482	199.58203

↑ sizes ↑ $(\kappa\mu s)^k$

$e = 1$ time → size

NUMMATRIX1.MCD INPUTS M OUTPUT = T JANUARY 1, 2002

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$u := 0$ $v := 0$ $w := 1$ $a := -5 .. 5$ $b := -5 .. 5$ $e := 0$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b + 5\cdot e)\cdot c + (-u + v + w + a - b - e)\cdot G + (u + v + w - a - b - e)\cdot h\right)$$

$Mn := md$

$$T_{a,b} := (a\cdot Mn - to) + B_{a,b}$$

$T =$

	-2	-1	0	1	2	3
-5	-166.790485	-133.998938	-101.20739	-68.415842	-35.624295	-2.832747
-4	-146.549007	-113.75746	-80.965913	-48.174365	-15.382818	17.40873
-3	-126.30753	-93.515983	-60.724435	-27.932887	4.85866	37.650208
-2	-106.066052	-73.274505	-40.482957	-7.69141	25.100137	57.891685
-1	-85.824575	-53.033028	-20.24148	12.550067	45.341615	78.133162
0	-65.583098	-32.79155	$-2.5\cdot10^{-6}$	32.791545	65.583092	98.37464
1	-45.34162	-12.550072	20.241475	53.033023	85.82457	118.616118
2	-25.100142	7.691405	40.482953	73.2745	106.066048	138.857595
3	-4.858665	27.932883	60.72443	93.515978	126.307525	159.099073
4	15.382813	48.17436	80.965908	113.757455	146.549002	179.34055
5	35.62429	68.415838	101.207385	133.998932	166.79048	199.582027

size (a μ s) b

Planck

$e = 0$ with $-t_o$ i.e. $e = 1 \rightarrow$ planck or $-t_o \rightarrow$ planck

Same as $e = 1$ without $-t_o$

NUMMATRIX1.MCD INPUTS M OUTPUT = T JANUARY 1, 2002

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$ $mo := -4.662199$ $lo := -32.791545$ $to := -43.268366$

$mp := -23.776602$ $re := -12.550068$ $md := 15.579278$ $ms := 35.820755$ $mu := 56.062232$

$u := 0$ $v := 0$ $w := 1$ $a := -5 .. 5$ $b := -5 .. 5$ $e := 1$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b + 5\cdot e)\cdot c + (-u + v + w + a - b - e)\cdot G + (u + v + w - a - b - e)\cdot h\right)$$

$Mn := md$

$$T_{a,b} := (a\cdot Mn - to) + B_{a,b}$$

$T =$

	-2	-1	0	1	2	3
-5	-123.522116	-90.730569	-57.939021	-25.147474	7.644074	40.435621
-4	-103.280639	-70.489092	-37.697544	-4.905997	27.885551	60.677098
-3	-83.039162	-50.247614	-17.456067	15.335481	48.127029	80.918576
-2	-62.797684	-30.006137	2.785411	35.576959	68.368506	101.160053
-1	-42.556207	-9.764659	23.026888	55.818436	88.609983	121.401531
0	-22.314729	10.476819	43.268366	76.059913	108.851461	141.643009
1	-2.073251	30.718296	63.509844	96.301391	129.092939	161.884486
2	18.168226	50.959773	83.751321	116.542868	149.334416	182.125964
3	38.409704	71.201251	103.992799	136.784346	169.575894	202.367441
4	58.651181	91.442729	124.234276	157.025824	189.817371	222.608918
5	78.892658	111.684206	144.475753	177.267301	210.058849	242.850396

↑

Frequencies

e = 1, with -to inverts, gives frequencies

$K = \frac{\hbar c}{R^2}$ $W = \frac{C^7 R^3}{G^2 \hbar}$

FORCES ^{2}

STRONG	GRAV	PLANCK
$\frac{C^8 R^2}{G^3 M^2}$	$\frac{GM^2}{R^2}$	$\frac{C^4}{G}$

$F = \frac{GM^2}{R^2}$ $K \cdot W = P^2$

$S \cdot G = P^2$

$M^{1/2}$ \ $R^{1/2}$	−4	−3	−2	−1	0	+1	+2	+3	+4
+4	~~GRAVITY~~ GRAVITY $\frac{G^2M^4}{R^4}$ •	← F^2							
+3		$\frac{GM^3c^2}{R^3}$		$\frac{M^3C^5}{R\hbar}$		F(1,3)			
+2	$\frac{M^2G\hbar c}{R^4}$		~~Grav~~ centrif $\frac{M^2C^4}{R^2}$ •		CORIOLIS $\frac{M^2C^7}{G\hbar}$ •				
+1		$\frac{Mc^3\hbar}{R^3}$		$\frac{MC^6}{RG}$	[illegible]	$\frac{RMc^9}{G^2\hbar}$			
0	COULOMB $\frac{\hbar^2c^3}{R^4}$ •		$\frac{\hbar C^5}{GR^2}$		PLANCK $\frac{C^8}{G^2}$		$\frac{R^2C^{11}}{G^3\hbar}$	F → not F^2	weak? $\frac{C^7R^2}{G^2\hbar}$
−1		$\frac{\hbar^2C^4}{MR^3G}$		$\frac{\hbar C^7}{G^2RM}$		$\frac{RC^{10}}{MG^3}$			
−2	$\frac{\hbar^3C^3}{R^4M^2G}$				COUNTER CORIOLIS		counter centrifugal		
−3				F(−1,−3)					
−4								F → not F^2	STRONG → $\frac{C^8R^2}{G^3M^3}$

K ← (Coulomb) G=0 axis

W ← (weak)

↖ $\hbar = 0$ axis

$F(1,3) \cdot F(-1,-3) = P^2$

$R^{1/2}$

The $\sqrt{\ }$ of the cell values are [Forces]: $\left[\frac{MR}{T^2}\right]$

The values are F^2 $\left[\frac{M^2R^2}{T^4}\right]$

* by assumption of symmetry with gravity

$\frac{GM^2}{R^2} = F_{t^2} = $ grav

$\frac{Mc^2}{R} = F_{t^2} = $ cent

$\frac{R}{M}\frac{C^6}{G^2} = F_{T^2} = ?$

Strong is an "asymptotic" force $\propto R^n$ $n = ?$

SYMMETRIES

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

$S = \frac{c^8 R^3}{G^5 M^2}$

$P = \frac{cH}{G}$

$K = \frac{Hc}{R^2}$

$W = \frac{c^7 R^2}{G^2 H}$

$S = G$
$S = P$
$G = P$
$\Rightarrow \frac{GM}{c^2} = R_s$, Schwarzschild Radius

$W = K$
$W = P$
$K = P$
$\Rightarrow \frac{GH}{c^3} = l_0^2$ (Planck radius)^2

$\frac{M}{m_0} = \frac{R_s}{l_0}$

$\frac{K}{P} = \left(\frac{l_0}{R}\right)^2$

$\frac{W}{P} = \left(\frac{R}{l_0}\right)^2$

$\frac{\text{Grav}}{\text{E for}} = \frac{R_s^2}{R^2}$

$\frac{\text{Strong}}{\text{E for}} = \left(\frac{R}{R_s}\right)^2$

$\frac{\text{E Force}}{\text{strong}} = \left(\frac{R_s}{R}\right)^2$

ELECTRIC FORCES relate R with l_0
Gravitational Forces relate R with R_s
Mass relates R_s and l_0

S, N

TABLE OF VALUES OF $N^x n^y$

$N = \sqrt{S}$, where S is the ratio of coulomb to gravitational force;

$n = \sqrt{(\alpha\mu)}$, where α is the fine structure constant and μ is the ratio of baryon mass to electron mass.

All entries are $\log_{10}$ of cgs values.

	n^{-4}	n^{-3}	n^{-2}	n^{-1}	n^0	n	n^2	n^3	n^4
N^4	76.457612	77.021149	77.548686	78.148223	78.711760	79.275297	79.838834	80.402371	80.965908
N^3	56.779672	57.343209	57.906746	58.470283	59.033820	59.597357	60.160894	60.724431	61.287968
N^2	37.101732	37.665269	38.228806	38.792343	39.355880	39.919417	40.482954	41.046491	41.610028
N	17.423792	17.987329	18.550866	19.114403	19.677940	20.241477	20.805014	21.368551	21.932088
N^0	-2.254148	-1.690611	-1.127074	-0.563537	0	0.563537	1.127074	1.690611	2.254148
N^{-1}	-21.932088	-21.368551	-20.805014	-20.241477	-19.677940	-19.114403	-18.550866	-17.987329	-17.423792
N^{-2}	-41.610028	-41.046491	-40.482954	-39.919417	-39.355880	-38.792343	-38.228806	-37.665269	-37.101732
N^{-3}	-61.287968	-60.724431	-60.160894	-59.597357	-59.033820	-58.470283	-57.906746	-57.343209	-56.779672
N^{-4}	-80.965908	-80.402371	-79.838834	-79.275297	-78.711760	-78.148223	-77.548686	-77.021149	-76.457612

April 30, 1999

PLNK2BN2.WPD

$\sqrt{\alpha\mu}$ vs $\sqrt{s}$

$n = \sqrt{\alpha\mu}$

$N = \sqrt{s}$

	n^0	n	n^2	n^3	n^4	n^5	n^6	n^7	n^8	n^9
N^{11}	216.45734	217.020877	217.584414	218.147951	218.711488	219.275025	219.838562	220.402099	220.965636	221.529173
N^{10}	196.7794	197.342937	197.906474	198.470011	199.033548	199.597085	200.160622	200.724159	201.287696	201.851233
N^9	177.10146	177.664997	178.228534	178.792071	179.355608	179.919145	180.482682	181.046219	181.609756	182.173293
N^8	157.42352	157.987057	158.550594	159.114131	159.677668	160.241205	160.804742	161.368279	161.931816	162.495353
N^7	137.74558	138.309117	138.872654	139.436191	139.999728	140.563265	141.126802	141.690339	142.253876	142.817413
N^6	118.06764	118.631177	119.194714	119.758251	120.321788	120.885325	121.448862	122.012399	122.575936	123.139473
N^5	98.3897	98.953237	99.516774	100.080311	100.643848	101.207385	101.770922	102.334459	102.897996	103.461533
N^4	78.71176	79.275297	79.838834	80.402371	80.965908	81.529445	82.092982	82.656519	83.220056	83.783593
N^3	59.03382	59.597357	60.160894	60.724431	61.287968	61.851505	62.415042	62.978579	63.542116	64.105653
N^2	39.35588	39.919417	40.482954	41.046491	41.610028	42.173565	42.737102	43.300639	43.864176	44.427713
N	19.67794	20.241477	20.805014	21.368551	21.932088	22.495625	23.059162	23.622699	24.186236	24.749773
N^0	0	0.563537	1.127074	1.690611	2.254148	2.817685	3.381222	3.944759	4.508296	5.071833

N^{-1}	-19.67794	-19.114403	-18.550866	-17.987329	-17.423792	-16.860255	-16.296718	-15.733181	-15.169644	-14.606107
N^{-2}	-39.35588	-38.792343	-38.228806	-37.665269	-37.101732	-36.538195	-35.974658	-35.411121	-34.847584	-34.284047
N^{-3}	-59.03382	-58.470283	-57.906746	-57.343209	-56.779672	-56.216135	-55.652598	-55.089061	-54.525524	-53.961987
N^{-4}	-78.71176	-78.148223	-77.584686	-77.021149	-76.457612	-75.894075	-75.330538	-74.767001	-74.203464	-73.639927
N^{-5}	-98.3897	-97.826163	-97.262626	-96.699089	-96.135552	-95.572015	-95.008478	-94.444941	-93.881404	-93.317867
N^{-6}	-118.06764	-117.504103	-116.940566	-116.377029	-115.813492	-115.249955	-114.686418	-114.122881	-113.559344	-112.995807
N^{-7}	-137.74558	-137.182043	-136.618506	-136.054969	-135.491432	-134.927895	-134.364358	-133.800821	-133.237284	-132.673747
N^{-8}	-157.42352	-156.859983	-156.296446	-155.732909	-155.169372	-154.605835	-154.042298	-153.478761	-152.915224	-152.351687
N^{-9}	-177.10146	-176.537923	-175.974386	-175.410849	-174.847312	-174.283775	-173.720238	-173.156701	-172.593164	-172.029627
N^{-10}	-196.7794	-196.215863	-195.652326	-195.088789	-194.525252	-193.961715	-193.398178	-192.834641	-192.271104	-191.707567
N^{-11}	-216.45734	-215.893803	-215.330266	-214.766729	-214.203192	-213.639655	-213.076118	-212.512581	-211.949044	-211.385507
N^{-12}	-236.13528	-235.571743	-235.008206	-234.444669	-233.881132	-233.317595	-232.754058	-232.190521	-231.626984	-231.063447

TABLE OF VALUES OF $N^x \mu^y$

$N = \sqrt{S}$, where S is the ratio of coulomb to gravitational force;
and μ is the ratio of baryon mass to electron mass.
All entries are $\log_{10}$ of cgs values.

	μ^{-3}	μ^{-2}	μ^{-1}	μ^0	μ	μ^2	μ^3
N^4	68.920033	72.183942	75.447851	78.711760	81.975669	85.239578	88.503487
N^3	49.242093	52.506002	55.769911	59.033820	62.297729	65.561638	68.825547
N^2	29.564153	32.828062	36.091971	39.355880	42.689789	45.883698	49.147607
N	9.886213	13.150122	16.414031	19.677940	22.941849	26.205758	29.469667
N^0	-9.791727	-6.527818	-3.263909	0	3.263909	6.527818	9.791727
N^{-1}	-29.469667	-26.205758	-22.941849	-19.677940	-16.414031	-13.150122	-9.886213
N^{-2}	-49.147607	-45.883698	-42.689789	-39.355880	-36.091971	-32.828062	-29.564153
N^{-3}	-68.825547	-65.561638	-62.297729	-59.033820	-55.769911	-52.506002	-49.242093
N^{-4}	-88.503487	-85.239578	-81.975669	-78.711760	-75.447851	-72.183942.	-68.920033

STAR FRAMES PART I

THE SCHWARZSCHILD FRAME

The values in these tables are the positions allowed for neutron stars .

TABLE I [values are $\log_{10}$]

	maximum	mean	minimum
MASS	$\alpha\mu S\ m_o = 35.820755$	$S\ m_o = 34.693681$	$(S/\alpha\mu)\ m_o = 33.566607$
RADIUS	$\alpha\mu S\ l_o = 7.691409$	$S\ l_o = 6.564335$	$(S/\alpha\mu)\ l_o = 5.437261$

M^* = max mass, $M\sim$ = mean mass, M_* = min mass

R^* = max radius, $R\sim$ = mean radius, R_* = min radius

$m_o/l_o = c^2/G = 28.129346$; $m_o l_o = \hbar/c = -37.453745$; $S^2\hbar/c = 41.258015$

TABLE II

$M^*/R^* = m_o/l_o = c^2/G = 28.129346$	$M^*R^* = (\alpha\mu)^2\ S^2\ \hbar/c = 2.254148\ S^2\ \hbar/c$
on Schwarzschild bound	$= 80.965908\ \hbar/c = 43.512163$
$M^*/R\sim = \alpha\mu\ m_o/l_o = 1.127074\ c^2/G$	$M^*R\sim = \alpha\mu\ S^2\ \hbar/c = 1.127074\ S^2\ \hbar/c$
in 2nd quadrant, $= 29.256420$	$= 79.838835\ \hbar/c = 42.385090$
$M^*/R_* = (\alpha\mu)^2\ m_o/l_o = 2.254148\ c^2/G$	$M^*R_* = S^2\ \hbar/c = 1\ S^2\ \hbar/c$
in 2nd quadrant, $= 30.383495$	$= 78.711760\ \hbar/c = 41.258015$
$M\sim/R^* = (\alpha\mu)^{-1}\ m_o/l_o = -1.127074\ c^2/G$	$M\sim R^* = \alpha\mu\ S^2\ \hbar/c = 1.127074\ S^2\ \hbar/c$
in 1st quadrant, $= 27.002272$	$= 79.838835\ \hbar/c = 42.385090$
$M\sim/R\sim = m_o/l_o = c^2/G = 28.129346$	$M\sim R\sim = S^2\ \hbar/c = 1\ S^2\ \hbar/c$
on Schwarzschild bound	$= 78.711760\ \hbar/c = 41.258015$
$M\sim/R_* = \alpha\mu\ m_o/l_o = 1.127074\ c^2/G$	$M\sim R_* = (\alpha\mu)^{-1}\ S^2\ \hbar/c = -1.127074\ S^2\ \hbar/c$
in 2nd quadrant, $= 29.256420$	$= 77.584687\ \hbar/c = 40.130942$
$M_*/R^* = (\alpha\mu)^{-2}\ m_o/l_o = -2.254148\ c^2/G$	$M_*R^* = S^2\ \hbar/c = 1\ S^2\ \hbar/c$
in 1st quadrant, $= 25.875198$	$= 78.711760\ \hbar/c = 41.258015$
$M_*/R\sim = (\alpha\mu)^{-1}\ m_o/l_o = -1.127074\ c^2/G$	$M_*R\sim = (\alpha\mu)^{-1}\ S^2\ \hbar/c = -1.127074\ S^2\ \hbar/c$
in 1st quadrant, $= 27.002272$	$= 77.584687\ \hbar/c = 40.130942$
$M_*/R_* = m_o/l_o = c^2/G = 28.129346$	$M_*R_* = (\alpha\mu)^{-2}\ S^2\ \hbar/c = -2.254148\ S^2\ \hbar/c$
on Schwarzschild bound	$= 76.457612\ \hbar/c = 39.003867$

STARFRM2.WPD APRIL 23, 2000

STAR FRAMES PART II

THE MAIN SEQUENCE FRAME

The values in these tables are the positions allowed for normal stars .

TABLE I [values are $\log_{10}$] $[\alpha^2 = -4.273670]$

	maximum	mean	minimum
MASS	$\alpha\mu S\ m_o = 35.820755$	$S\ m_o = 34.693681$	$(S/\alpha\mu)\ m_o = 33.566607$
RADIUS	$(\alpha\mu S)\ l_o/\alpha^2 = 11.965079$	$S\ l_o/\alpha^2 = 10.838005$	$(S/\alpha\mu)\ l_o/\alpha^2 = 9.710331$

M^* = max mass, $M\sim$ = mean mass, M_* = min mass

R^* = max radius, $R\sim$ = mean radius, R_* = min radius

$\alpha^2\ m_o/l_o = \alpha^2\ c^2/G = 23.855676$; $m_o l_o/\alpha^2 = \hbar/c\alpha^2 = -33.180075$; $S^2\hbar/c\alpha^2 = 45.531685$

TABLE II

$M^*/R^* = \alpha^2\ m_o/l_o = \alpha^2\ c^2/G = 23.855676$	$M^*R^* = (\alpha\mu)^2\ S^2\ \hbar/c\alpha^2 = 2.254148\ S^2\ \hbar/c\alpha^2$
on the α^2 bound	$80.965909\ \hbar/c\alpha^2 = 47.785834$
$M^*/R\sim = \alpha^2\ \alpha\mu\ m_o/l_o = 1.127074\ \alpha^2\ c^2/G$	$M^*R\sim = \alpha\mu\ S^2\ \hbar/c\alpha^2 = 1.127074\ S^2\ \hbar/c\alpha^2$
above α^2 bound $= 24.982750$	$= 79.838835\ \hbar/c\alpha^2 = 46.658759$
$M^*/R_* = \alpha^2\ (\alpha\mu)^2\ m_o/l_o = 2.254148\ \alpha^2\ c^2/G$	$M^*R_* = S^2\ \hbar/c\alpha^2 = 1\ S^2\ \hbar/c\alpha^2$
above α^2 bound $= 25.728602$	$= 78.711760\ \hbar/c\alpha^2 = 45.531685$
$M\sim/R^* = \alpha^2\ (\alpha\mu)^{-1}\ m_o/l_o = -1.127074\ \alpha^2\ c^2/G$	$M\sim R^* = \alpha\mu\ S^2\ \hbar/c\alpha^2 = 1.127074\ S^2\ \hbar/c\alpha^2$
below α^2 bound $= 22.728602$	$= 79.838835\ \hbar/c\alpha^2 = 46.658759$
$M\sim/R\sim = \alpha^2\ m_o/l_o = \alpha^2\ c^2/G = 23.855676$	$M\sim R\sim = S^2\ \hbar/c\alpha^2 = 1\ S^2\ \hbar/c\alpha^2$
on the α^2 bound	$= 78.711760\ \hbar/c\alpha^2 = 45.531685$
$M\sim/R_* = \alpha^2\ \alpha\mu\ m_o/l_o = 1.127074\ \alpha^2\ c^2/G$	$M\sim R_* = (\alpha\mu)^{-1}\ S^2\ \hbar/c\alpha^2 = -1.127074\ S^2\ \hbar/c\alpha^2$
above α^2 bound $= 24.982750$	$= 77.584687\ \hbar/c\alpha^2 = 44.404611$
$M_*/R^* = \alpha^2\ (\alpha\mu)^{-2}\ m_o/l_o = -2.254148\ \alpha^2\ c^2/G$	$M_*R^* = S^2\ \hbar/c\alpha^2 = 1\ S^2\ \hbar/c\alpha^2$
below α^2 bound $= 21.601528$	$= 78.711760\ \hbar/c\alpha^2 = 45.531685$
$M_*/R\sim = \alpha^2\ (\alpha\mu)^{-1}\ m_o/l_o = -1.127074\ \alpha^2\ c^2/G$	$M_*R\sim = (\alpha\mu)^{-1}\ S^2\ \hbar/c\alpha^2 = -1.127074\ S^2\ \hbar/c\alpha^2$
below α^2 bound $= 22.728602$	$= 77.584687\ \hbar/c\alpha^2 = 44.404611$
$M_*/R_* = \alpha^2\ m_o/l_o = \alpha^2\ c^2/G = 23.855676$	$M_*R_* = (\alpha\mu)^{-2}\ S^2\ \hbar/c\alpha^2 = -2.254148\ S^2\ \hbar/c\alpha^2$
on the α^2 bound	$= 76.457612\ \hbar/c\alpha^2 = 43.277537$

STARFRM3.WPD APRIL 23, 2000

STAR FRAMES PART III

THE SUN

The values in these tables are the observed and frame positions for the sun.

TABLE I [values are $\log_{10}$]

SOLAR	Observed	Frame	Frame Value
MASS 1	33.298657 g	$(S/\alpha\mu)\ m_o$	33.566607 g
MASS 2	33.298657 g	$(S/\alpha\mu)\ \alpha^{1/8}\ m_o$	33.299503 g
RADIUS 1	10.842302 cm	$(\alpha\mu S/\alpha^2)\ l_o$	11.965079 cm
RADIUS 2	10.842302 cm	$(S/\alpha^2)\ l_o$	10.838005 cm

Δ Frame Mass 1 - Frame Mass 2 = 0.267104 = $\alpha^{1/8}$

Δ Frame Mass 1 - Observed Solar Mass = 0.267950

Δ Frame Mass 2 - Observed Solar Mass = 0.000846 ~ antilog 1.0018 or 2 parts per thousand

Δ Frame Radius 1 - Frame Radius 2 = 1.127074 = $\alpha\mu$

Δ Frame Radius 1 - Observed Solar Radius = 1.122777

Δ Frame Radius 2 - Observed Solar Radius = 0.004297 ~ antilog 1.009 or 9 parts per thousand

We conclude the Solar Mass = $(S/\alpha\mu)\ \alpha^{1/8}\ m_o$ and the Solar Radius = $(\alpha\mu)^{-1}/\alpha^2\ (\alpha\mu S)\ l_o$ conforming to $(S/\alpha\mu)^n m_o$ for mass and $(\alpha\mu S)^n l_o$ for size.

TABLE II

Observed Solar	Frame Value (2)
M/R = 22.456355	M/R = 22.461498
MR = 44.140959	MR = 44.137508

The α^2 boundary = $\alpha^2\ m_o/l_o = \alpha^2\ c^2/G = 23.855676$; $S^2\hbar/c\alpha^2 = 45.531685$

Observed differences:

Δ Solar M/R and α^2 boundary = $\log_{10}(1.399321)$ or 25.079623

Δ Solar MR and $S^2\hbar/c\alpha^2$ = $\log_{10}(1.390726)$ or 24.588158

The mean density of the sun is: (M/V)

$\rho = \log_{10}(0.149662)$ g/cm^3 or 1.411 g/cm^3

The mass of the sun is given exactly by:

$$M = 1 + (\alpha\mu)^{-17/8}\ S\ m_o = 1 + 32.298648 = 33.298648$$

probably surely a numerical coincidence.

STARFRM4.WPD APRIL 25, 2000

STAR FRAMES PART IV

FRAME DENSITIES

All values are $\log_{10}$ values. Densities are given as M/R^3;
To convert to Mass/spherical Volume, subtract 0.622089; [$M/R^3 - 0.622089 = M/V$]
Density of the Planck particle: $m_o/l_o^3 = c^5/\hbar G^2 = 93.712439$ g/cm^3
Density of a proton: $m_p/r_e^3 = 13.873602$ g/cm^3

NEUTRON STARS	M^*	M~	M_*
R^*	12.746528 SL	11.619454 1Q	10.492380 1Q
R~	16.127747 2Q	15.000673 SL	13.873599 1Q
R_*	19.508972 2Q	18.381898 2Q	17.254824 SL

SL = on the Schwarzschild bound; 1Q = in first quadrant; 2Q = in second quadrant
Note: The $M_*/R\sim^3$ density is identical with that of the proton. This suggests that the proper equations for mass and radius of a neutron star are $(S/\alpha\mu)m_o$ and $S\, l_o$ respectively.
[However, the proton uses $(\alpha\mu/S)^{1/2}\, m_o$ and $(\alpha\mu S)^{1/2}\, l_o$ respectively.]

" α^2 " STARS	M^*	M~	M_*
R^*	−0.074482 ON	−1.201556 B	−2.328630 B
R~	3.306740 A	2.179666 ON	1.052592 B
R_*	6.689762 A	5.562688 A	4.535077 ON

ON = on the α^2 bound; A = above the α^2 bound; B = below the α^2 bound
Note: For the sun $M/R^3 = 0.771751$, which differs from $M_*/R\sim^3$ by a factor of about 2.
The solar $M/V = 0.149662$ or antilog 1.411 g/cm^3

UNIVERSE	M^*	M~	M_*
R^*	- 27.736426	- 29.427037 X	- 31.117648 X
R~	- 22.664593 C	- 24.355204 C	- 26.045815 C
R_*	- 17.592760 C	- 19.283371 C	- 20.973982 C

In an homogeneous isotropic model, the critical density is $\rho_c = 3H_o^2/8\pi G$. If the present density is ρ_o and $\Omega_o = \rho_o/\rho_c$, then the universe will expand forever if $\Omega_o < 1$ or will collapse if $\Omega_o > 1$.
Taking H_o as 71.977 km/s/mpc, [$T_U = 17.456065$], $\rho_o = -27.736426$ g/cm$^3 \equiv \rho_c$ if the mass of the universe is given by M^* and the radius by R^*. In the above table X means if this is ρ_o, the universe will expand forever, and C means with this value of ρ_o the universe will collapse. If the present density = the critical density [$\Omega_o = 1$], then the universe is stable. (neither slowing nor speeding)

For an Einstein-DeSitter Model with $\Omega_o = 1$ and $\Lambda = 0$, the universe is flat

COSMFRM1.WPD APRIL 28, 2000

COSMIC FRAME PART I

THE HUBBLE UNIVERSE FRAME The values in these tables are the allowed positions.

TABLE I [values are $\log_{10}$] $[\alpha^2 = -4.273670]$

	maximum	mean	minimum
MASS	$(\alpha\mu S)^{3/2}\, m_o = 56.062232$	$S^{3/2}\, m_o = 54.371621$	$(S/\alpha\mu)^{3/2}\, m_o = 52.681010$
RADIUS	$(\alpha\mu S)^{3/2}\, l_o = 27.932886$	$S^{3/2}\, l_o = 26.242275$	$(S/\alpha\mu)^{3/2}\, l_o = 24.551664$
TIME	$(\alpha\mu S)^{3/2}\, t_o = 17.456065$	$S^{3/2}\, t_o = 15.765454$	$(S/\alpha\mu)^{3/2}\, t_o = 14.074843$

M^* = max mass, $M\sim$ = mean mass, M_* = min mass

R^* = max radius, $R\sim$ = mean radius, R_* = min radius

TABLE II $[S^3 m_o l_o = 80.613896]$

$M^*/R^* = m_o/l_o = c^2/G = 28.129346$	$M^*R^* = (\alpha\mu)^3 S^3 m_o l_o = (\alpha\mu)^3 S^3 \hbar/c =$
on the Schwarzschild bound	$= 83.995118$
$M^*/R\sim = (\alpha\mu)^{3/2} m_o/l_o = 29.819957$	$M^*R\sim = (\alpha\mu)^{3/2} S^3 m_o l_o = 82.304507$
in the second quadrant	
$M^*/R_* = (\alpha\mu)^3 m_o/l_o = 31.510568$	$M^*R_* = S^3 m_o l_o = 80.613896$
in the second quadrant	
$M\sim/R^* = (\alpha\mu)^{-3/2} m_o/l_o = 26.438735$	$M\sim R^* = (\alpha\mu)^{3/2} S^3 m_o l_o = 82.304507$
in the first quadrant	
$M\sim/R\sim = m_o/l_o = c^2/G = 28.129346$	$M\sim R\sim = S^3 m_o l_o = 80.613896$
on the Schwarzschild bound	
$M\sim/R_* = (\alpha\mu)^{3/2} m_o/l_o = 29.819957$	$M\sim R_* = (\alpha\mu)^{-3/2} S^3 m_o l_o = 78.923285$
in the second quadrant	
$M_*/R^* = (\alpha\mu)^{-3} m_o/l_o = 24.748124$	$M_*R^* = S^3 m_o l_o = 80.613896$
in the first quadrant	
$M_*/R\sim = (\alpha\mu)^{-3/2} m_o/l_o = 26.438735$	$M_*R\sim = (\alpha\mu)^{-3/2} S^3 m_o l_o = 78.923285$
in the first quadrant	
$M_*/R_* = m_o/l_o = c^2/G = 28.129346$	$M_*R_* = (\alpha\mu)^{-3} S^3 m_o l_o = 77.232674$
on the Schwarzschild bound	

Cordarelli: p414
obsolete

assumed

log

	c	q	e		c	q	e
c	1	2.980057^{9}	6.241506^{18}	c	0	9.474225	+18.795289
q	3.355641^{-10}	1	2.094425^{+9}	q	-9.474225	0	9.321065 ← derived
e	1.602177^{-19}	4.774589^{-10}	1	e	-18.795289	-9.321065	0
c	1	2.997925^{9}	6.241506^{18}	c	0	9.476821	+18.795289
q	3.335641^{-10}	1	2.081942^{9}	q	-9.476821	0	9.318468
e	1.602177^{-19}	4.803208	1	e	-18.795289	-9.318468	0
c	1	2.998141^{9}	6.241506^{18}	c	0	9.476852	+18.795289
q	3.333540^{-10}	1	2.081944^{9}	q	-9.476852	0	9.318469
e	1.602177^{-19}	4.803203^{-10}	1	e	-18.795289	-9.318469	0

Use → ~~preferred~~

TIME TABLE I MAXIMUM VALUES

$\Delta M = (\alpha\mu S)^{1/2}$, $\Delta R = (\alpha\mu S)^{1/2}$

	$t = R/c$	$\Delta(t,T)$	$T = GM/c^3$	$\Delta(T,\tau)$	$\tau = (G\rho)^{-1/2}$	$\Delta(\tau,t)$
PLANCK	-43.268366	0	-43.268366	0	-43.268366	0
Δ(PL,B)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(\alpha\mu)^{1/2}$ S	
BARYON	–23.026889	S	–62.382770 ✓	$S^{3/2}$	–43.348949	$S^{1/2}$
Δ(B,D)	0		S		$S^{1/2}$	
DARK	–23.026889	0	–23.026893 ✓	0	–23.026887 ✓	0
Δ(D,*)	$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$	
STAR	–2.785412	0	–2.785412	0	–2.785412 ✓	0
Δ(*,U)	$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$	
UNIVERSE	+17.456065	0	+17.456065	0	+17.456065	0
Δ(U,K)	$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$		$(\alpha\mu S)^{1/2}$	
KOSMOS	+37.697542	0	+37.697542	0	+37.697542	0

$19.114404 = (S/\alpha\mu)^{1/2}$ $19.677940 = S^{1/2}$ $20.241477 = (\alpha\mu S)^{1/2}$

$39.355881 = S$ $39.919417 = (\alpha\mu)^{1/2} S$ $59.033821 = S^{3/2}$

TIME TABLE II MEAN VALUES

$\Delta M = S^{1/2}$; $\Delta R = S^{1/2}$

	$t = R/c$	$\Delta(t,T)$	$T = GM/c^3$	$\Delta(T,\tau)$	$\tau = (G\rho)^{-1/2}$	$\Delta\tau,t)$
PLANCK	-43.268366	0	-43.268366	0	-43.268366	0
Δ(PL,B)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(\alpha\mu)^{1/2}$ S	
BARYON	–23.026889	S	–62.382770	$S^{3/2}$	–3.348949	$S^{1/2}$
Δ(B,D)	$(\alpha\mu)^{1/2}$		$S/(\alpha\mu)^{1/2}$		$(\alpha\mu S)^{1/2}$	
DARK	–23.590427	0	–23.590427	0	–23.590427	0
Δ(D,*)	$S^{1/2}$		$S^{1/2}$		$S^{1/2}$	
STAR	–3.912486	0	–3.912486	0	–3.912486	0
Δ(*,U)	$S^{1/2}$		$S^{1/2}$		$S^{1/2}$	
UNIVERSE	+15.765454	0	+15.765454	0	+15.765454	0
Δ(U,K)	$S^{1/2}$		$S^{1/2}$		$S^{1/2}$	
KOSMOS	+35.443394	0	+35.443394	0	+35.443394	0

$19.114404 = (S/\alpha\mu)^{1/2}$ $19.677940 = S^{1/2}$ $20.241477 = (\alpha\mu S)^{1/2}$

$39.355881 = S$ $39.919417 = (\alpha\mu)^{1/2} S$ $59.033821 = S^{3/2}$

$0.563537 = (\alpha\mu)^{1/2}$ $38.792043 = S/(\alpha\mu)^{1/2}$

TIME TABLE III MINIMUM VALUES

$\Delta M = (5/\alpha\mu)^{1/2}$; $\Delta R = (5/\alpha\mu)^{1/2}$

	t = R/c	$\Delta(t,T)$	$T = GM/c^3$	$\Delta(T,\tau)$	$\tau = (G\rho)^{-1/2}$	$\Delta\tau,t)$
PLANCK	-43.268366	0	-43.268366	0	-43.268366	0
Δ(PL,B)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(\alpha\mu)^{1/2}$ S	
BARYON	–23.026889	S	–62.382770	$S^{3/2}$	–3.348949	$S^{1/2}$
Δ(B,D)	$\alpha\mu$		$S / (\alpha\mu)$		$\alpha\mu\ S^{1/2}$	
DARK	–24.153963	0	–24.153963	0	–24.153963	0
Δ(D,*)	$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$	
STAR	–5.039560	0	–5.039560	0	–5.039560	0
Δ(*,U)	$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$	
UNIVERSE	+14.074843	0	+14.074843	0	+14.074843	0
Δ(U,K)	$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(S/\alpha\mu)^{1/2}$	
KOSMOS	+33.189246	0	+33.189246	0	+33.189246	0

19.114404 = $(S/\alpha\mu)^{1/2}$ 19.677940 = $S^{1/2}$ 20.241477 = $(\alpha\mu S)^{1/2}$

39.355881 = S 39.919417 = $(\alpha\mu)^{1/2}$ S 59.033821 = $S^{3/2}$

1.127074 = $\alpha\mu$ 38.228807 = $S / (\alpha\mu)$ 20.805014 = $\alpha\mu\ S^{1/2}$

TIME TABLE IV MIXED VALUES

$\Delta M = (S/\alpha\mu)^{1/2}$; $\Delta R = (\alpha\mu S)^{1/2}$

	$t = R/c$	$\Delta_{(t,T)}$	$T = GM/c^3$	$\Delta(T,\tau)$	$\tau = (G\rho)^{-1/2}$	$\Delta(\tau,t)$
PLANCK	-43.268366	0	-43.268366	0	-43.268366	0
Δ(PL,B)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$(\alpha\mu)^{1/2}$ S	
BARYON	–23.026889	S	–62.382770	$S^{3/2}$	–3.348949	$S^{1/2}$
Δ(B,D)	0		S / ($\alpha\mu$)		$(S/\alpha\mu)^{1/2}$	
DARK	–23.026889	$\alpha\mu$	–24.153963	$(\alpha\mu)^{3/2}$	–22.463352	$(\alpha\mu)^{1/2}$
Δ(D,*)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$\alpha\mu\ S^{1/2}$	
STAR	–2.785412	$(\alpha\mu)^2$	–5.039560	$(\alpha\mu)^3$	–1.658338	$\alpha\mu$
Δ(*,U)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$\alpha\mu\ S^{1/2}$	
UNIVERSE	+17.456065	$(\alpha\mu)^3$	+14.074843	$(\alpha\mu)^{9/2}$	+19.146677	$(\alpha\mu)^{3/2}$
Δ(U,K)	$(\alpha\mu S)^{1/2}$		$(S/\alpha\mu)^{1/2}$		$\alpha\mu\ S^{1/2}$	
KOSMOS	+37.697542	$(\alpha\mu)^4$	+33.189246	$(\alpha\mu)^6$	+39.951691	$(\alpha\mu)^2$

19.114404 = $(S/\alpha\mu)^{1/2}$ 19.677940 = $S^{1/2}$ 20.241477 = $(\alpha\mu S)^{1/2}$

39.355881 = S 39.919417 = $(\alpha\mu)^{1/2}$ S 59.033821 = $S^{3/2}$

1.127074 = $\alpha\mu$ 38.228807 = S / ($\alpha\mu$) 20.805014 = $\alpha\mu\ S^{1/2}$

FUNDAMENTAL CONSTANTS

FUNDAMENTAL CONSTANTS TABLES

$\alpha := -2.136834640$

$\mu := 3.263908796$ $a := 0.140884268$ $= \sqrt[8]{\alpha\mu}$

$s := 39.355880203$

$n := 1, 2 .. 20$ $f(a) := n \cdot a$ $m := 21, 22 .. 40$ $g(a) := m \cdot a$

n	f(a)		m	g(a)	
1	0.140884268	$1/8$	21	2.958569628	
2	0.281768536		22	3.099453896	
3	0.422652804		23	3.240338164	
4	0.563537072	$= \sqrt{\alpha\mu}$	24	3.381222432	$-(\alpha\mu)^3$
5	0.70442134		25	3.5221067	
6	0.845305608		26	3.662990968	
7	0.986189876		27	3.803875236	
8	1.127074144	$= \alpha\mu$	28	3.944759504	
9	1.267958412		29	4.085643772	
10	1.40884268		30	4.22652804	
11	1.549726948		31	4.367412308	
12	1.690611216	$= (\alpha\mu)^{3/2}$	32	4.508296576	
13	1.831495484		33	4.649180844	
14	1.972379752		34	4.790065112	
15	2.11326402		35	4.93094938	
16	2.254148288	$(\alpha\mu)^2$	36	5.071833648	
17	2.395032556		37	5.212717916	
18	2.535916824		38	5.353602184	
19	2.676801092		39	5.494486452	
20	2.81768536		40	5.63537072	

5,776 255

$\alpha\mu$

$\alpha\mu = 1.127074$

$\div 8 \quad .140884$

$a := 1.127074$ $= \alpha\mu$

$n := 1, 2 .. 18$

$m := 16, 17 .. 30$

$f(n) := \frac{a}{n}$

f(n) =	n =
1.127074	1
0.563537	2
0.375691333	3
0.2817685	4
0.2254148	5
0.187845667	6
0.161010571	7
0.14088425	8
0.125230444	9
0.1127074	10
0.102461273	11
0.093922833	12
0.086698	13
0.080505286	14
0.075138267	15
0.070442125	16
0.066298471	17
0.062615222	18

f(m) =	m =
0.070442125	16
0.066298471	17
0.062615222	18
0.059319684	19
0.0563537	20
0.05367019	21
0.051230636	22
0.049003217	23
0.046961417	24
0.04508296	25
0.043349	26
0.041743481	27
0.040252643	28
0.038864621	29
0.037569133	30

FUNDAMENTAL CONSTANTS TABLES

α

$\alpha := -2.136834640$

$\mu := 3.263908796$

$s := 30.355880203$

$b := \frac{\alpha}{32}$ $\quad \frac{\alpha}{32} = -0.066776083 = \sqrt[32]{\alpha}$

$\alpha^{3/2} = -3.145252$

$n := 1, 2 .. 20$ $\quad f(b) := n \cdot b$ $\quad m := 21, 22 .. 40$ $\quad g(b) := m \cdot b$

n	f(b)		m	g(b)	
1	-0.066776083		21	-1.402297733	
2	-0.133552165		22	-1.469073815	
3	-0.200328248		23	-1.535849897	
4	-0.26710433	$\alpha^{1/8}$	24	-1.60262598	
5	-0.333880413		25	-1.669402063	
6	-0.400656495		26	-1.736178145	
7	-0.467432578		27	-1.802954227	
8	-0.53420866	$\alpha^{1/4}$	28	-1.86973031	
9	-0.600984743		29	-1.936506393	
10	-0.667760825		30	-2.003282475	
11	-0.734536908		31	-2.070058557	
12	-0.80131299		32	-2.13683464	$= \alpha$
13	-0.868089073		33	-2.203610723	
14	-0.934865155		34	-2.270386805	
15	-1.001641237		35	-2.337162887	
16	-1.06841732	$\sqrt{\alpha}$	36	-2.40393897	
17	-1.135193403		37	-2.470715053	
18	-1.201969485		38	-2.537491135	
19	-1.268745567		39	-2.604267217	
20	-1.33552165		40	-2.6710433	

$a := 4.273670 \quad = -\alpha^2$

$n := 1, 2 .. 18$

$m := 16, 17 .. 33$

$f(n) := \frac{a}{n}$

f(n) =	n =
4.27367	1
2.136835	2
1.424556667	3
1.0684175	4
0.854734	5
0.712278333	6
0.610524286	7
0.53420875	8
0.474852222	9
0.427367	10
0.388515455	11
0.356139167	12
0.328743846	13
0.305262143	14
0.284911333	15
0.267104375	16
0.251392353	17
0.237426111	18

f(m) =	m =
0.267104375	16
0.251392353	17
0.237426111	18
0.22493	19
0.2136835	20
0.203508095	21
0.194257727	22
0.185811739	23
0.178069583	24
0.1709468	25
0.164371923	26
0.158284074	27
0.152631071	28
0.147367931	29
0.142455667	30
0.137860323	31
0.133552187	32
0.129505152	33

FUNDAMENTAL CONSTANTS TABLES μ

$\alpha := -2.136834640$

$\mu := 3.263908796$ $\quad c := \frac{\mu}{16} = \sqrt[16]{\mu}$

$s := 39.355880203$

$c = 0.2039943$

$n := 1, 2 .. 16$ $\quad f(c) := n \cdot c$ $\quad m := 17, 18 .. 32$ $\quad g(c) := m \cdot c$

n	f(c)		m	g(c)	
1	0.2039943		17	3.467903096	
2	0.407988599		18	3.671897395	
3	0.611982899		19	3.875891695	
4	0.815977199		20	4.079885995	
5	1.019971499		21	4.283880295	
6	1.223965799		22	4.487874595	
7	1.427960098		23	4.691868894	
8	1.631954398	$\sqrt{\mu}$	24	4.895863194	$\mu^{3/2}$
9	1.835948698		25	5.099857494	
10	2.039942997		26	5.303851793	
11	2.243937297		27	5.507846093	
12	2.447931597		28	5.711840393	
13	2.651925897		29	5.915834693	
14	2.855920197		30	6.119828992	
15	3.059914496		31	6.323823292	
16	3.263908796	$= \mu$	32	6.527817592	μ^2

FUNDAMENTAL CONSTANTS TABLES $\frac{\mu}{\alpha}$

$\alpha := -2.136834640$

$\mu := 3.263908796$ $\quad \mu - \alpha = 5.400743436 \quad = \frac{\mu}{\alpha}$

$s := 39.355880203$ $\quad d := \frac{\mu - \alpha}{32} \quad d = 0.168773232$

$n := 1, 2 .. 16$ $\quad f(d) := n \cdot d$ $\quad m := 17, 18 .. 32$ $\quad g(d) := m \cdot d$

n	f(d)		m	g(d)	
1	0.168773232	$(M/\alpha)^{1/32}$	17	2.86914495	
2	0.337546465		18	3.037918183	
3	0.506319697		19	3.206691415	
4	0.675092929	$1/16$	20	3.375464647	
5	0.843866162		21	3.54423788	
6	1.012639394		22	3.713011112	
7	1.181412627		23	3.881784345	
8	1.350185859	$1/8$	24	4.050557577	$3/4$
9	1.518959091		25	4.219330809	
10	1.687732324	$3/16$	26	4.388104042	
11	1.856505556		27	4.556877274	
12	2.025278789	$1/4$	28	4.725650507	
13	2.194052021		29	4.894423739	
14	2.362825253		30	5.063196971	
15	2.531598486		31	5.231970204	
16	2.700371718	$= \sqrt{\frac{\mu}{\alpha}}$	32	5.400743436	$= \frac{\mu}{\alpha}$

5.569516

TABLE OF HARMONICS AND SUBHARMONICS OF Tu

$n := 1, 2 .. 30$

$a := 8.728032$

$f(n) := n \cdot a$

$r := 16, 17 .. 40$

$h(r) := r \cdot a$

$j(n) := \frac{a}{n}$

f(n) =	n =
8.728032	1
17.456064	2
26.184096	3
34.912128	4
43.64016	5
52.368192	6
61.096224	7
69.824256	8
78.552288	9
87.28032	10
96.008352	11
104.736384	12
113.464416	13
122.192448	14
130.92048	15
139.648512	16
148.376544	17
157.104576	18

h(r) =	r =
139.648512	16
148.376544	17
157.104576	18
165.832608	19
174.56064	20
183.288672	21
192.016704	22
200.744736	23
209.472768	24
218.2008	25
226.928832	26
235.656864	27
244.384896	28
253.112928	29
261.84096	30
270.568992	31
279.297024	32
288.025056	33

j(n) =	n =
8.728032	1
4.364016	2
2.909344	3
2.182008	4
1.7456064	5
1.454672	6
1.246861714	7
1.091004	8
0.969781333	9
0.8728032	10
0.793457455	11
0.727336	12
0.671387077	13
0.623430857	14
0.5818688	15
0.545502	16
0.513413647	17
0.484890667	18

Table of harmonics of to

$t_0 := -43.268366$ sec

$n := 1, 2 .. 30$

$a := 10.8170915$

$f(n) := n \cdot a$

$m := 16, 17 .. 30$

$g(m) := m \cdot a$

f(n) =	n =
10.8170915	1
21.634183	2
32.4512745	3
43.268366	4
54.0854575	5
64.902549	6
75.7196405	7
86.536732	8
97.3538235	9
108.170915	10
118.9880065	11
129.805098	12
140.6221895	13
151.439281	14
162.2563725	15
173.073464	16
183.8905555	17
194.707647	18

g(m) =	m =
173.073464	16
183.8905555	17
194.707647	18
205.5247385	19
216.34183	20
227.1589215	21
237.976013	22
248.7931045	23
259.610196	24
270.4272875	25
281.244379	26
292.0614705	27
302.878562	28
313.6956535	29
324.512745	30

$(\alpha\mu s)^{1/4}$:

$a := 10.120739$

$n := 1, 2 .. 72$

$A(n) := n \cdot a$

$A(n)$ =

1/4	10.120739
1/2	20.241478
3/4	30.362217
1	40.482956
	50.603695
3/2	60.724434
	70.845173
2	80.965912
	91.086651
	101.20739
	111.328129
3	121.448868
	131.569607
	141.690346
	151.811085
4	161.931824
	172.052563
9/2	182.173302
19/4	192.294041
5	202.41478

$\sqrt{\frac{s}{\alpha\mu}}$:

$b := 19.114403$

$m := 1, 2 .. 72$

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

$B(m)$ =

1/2	19.114403
1	38.228806
	57.343209
2	76.457612
	95.572015
3	114.686418
	133.800821
4	152.915224
9/2	172.029627
	191.14403
	210.258433
	229.372836
	248.487239
	267.601642
	286.716045
	305.830448
	324.944851
	344.059254
	363.173657
10	382.28806

$(\alpha\mu s)^{1/4}$

$s := 20, 21 .. 40$

$C(s) := s \cdot a$

$C(s)$ =

5	202.41478
21/4	212.535519
11/2	222.656258
	232.776997
6	242.897736
	253.018475
	263.139214
	273.259953
7	283.380692
	293.501431
	303.62217
	313.742909
8	323.863648
	333.984387
	344.105126
	354.225865
9	364.346604
	374.467343
	384.588082
	394.708821

$\sqrt{\frac{s}{\alpha\mu}}$

$t := 20, 21 .. 40$

$D(t) := t \cdot b$

$D(t)$ =

10	382.28806
	401.402463
	420.516866
	439.631269
	458.745672
	477.860075
	496.974478
	516.088881
	535.203284
	554.317687
15	573.43209
	592.546493
	611.660896
	630.775299
	649.889702
	669.004105
	688.118508
	707.232911
19	726.347314
	745.461717

a := 35.820755 = $\alpha\mu S m_0$ $(\log_{10})$

b := 33.298657 = $M_\odot$ "

d := 0.1408843 = $(\alpha\mu)^{1/8}$ "

n := 0, 1 .. 20

f(n) := a − n·d g(n) := f(n) − b h(n) := $10^{g(n)}$ j(n) := n·d

n =	f(n) =	g(n) =	h(n) =	j(n) =	
0	35.820755	2.522098	332.734627503	0	
1	35.6798707	2.3812137	240.554618775	0.1408843	
2	35.5389864	2.2403294	173.911940119	0.2817686	
3	35.3981021	2.0994451	125.731790435	0.4226529	
4	35.2572178	1.9585608	90.899354669	0.5635372	$4/2\ (\alpha\mu)^{1/2}$
5	35.1163335	1.8176765	65.716813946	0.7044215	
6	34.9754492	1.6767922	47.510784329	0.8453058	
7	34.8345649	1.5359079	34.348509795	0.9861901	
8	34.6936806	1.3950236	24.832680449	1.1270744	$1 = \alpha\mu$
9	34.5527963	1.2541393	17.953093802	1.2679587	
10	34.411912	1.113255	12.979411454	1.408843	
11	34.2710277	0.9723707	9.383626218	1.5497273	
12	34.1301434	0.8314864	6.784008759	1.6906116	$1\frac{1}{2}(\alpha\mu)^{3/4}$
13	33.9892591	0.6906021	4.90458313	1.8314959	
14	33.8483748	0.5497178	3.545829101	1.9723802	
15	33.7074905	0.4088335	2.563501052	2.1132645	
16	33.5666062	0.2679492	1.853314826	2.2541488	$2\ \alpha\mu^2$
17	33.4257219	0.1270649	1.339876901	2.3950331	$2\ 1/8 = \frac{17}{8}$

m := 16, 17 .. 40

m =	f(m) =	g(m) =	h(m) =	j(
16	33.5666062	0.2679492	1.853314826	
17	33.4257219	0.1270649	1.339876901	
18	33.2848376	-0.0138194	0.968680595	
19	33.1439533	-0.1547037	0.70031963	
20	33.003069	-0.295588	0.506304748	
21	32.8621847	-0.4364723	0.366039286	
22	32.7213004	-0.5773566	0.264632634	
23	32.5804161	-0.7182409	0.19131944	
24	32.4395318	-0.8591252	0.138316758	
25	32.2986475	-1.0000095	0.099997813	
26	32.1577632	-1.1408938	0.072294657	
27	32.0168789	-1.2817781	0.052266317	
28	31.8759946	-1.4226624	0.037786581	
29	31.7351103	-1.5635467	0.027318277	
30	31.594226	-1.704431	0.019750086	
31	31.4533417	-1.8453153	0.01427857	
32	31.3124574	-1.9861996	0.010322869	

a := 35.820755 = MAX = $\alpha_M S\, m_0$

b := 33.298657 = $M_\odot$

ALL $\log_{10}$

d := 0.1408843 = $(\alpha_M)^{1/8}$

$(\alpha_M)^n S m_0$

n := 0, 1 .. 20

f(n) := a − n·d g(n) := f(n) − b h(n) := $10^{g(n)}$

exponent of α_M n	f(n) = MASS	g(n) =		n =	h(n) = SOLAR MASSES	
$\alpha_M S m_0$ → 1	35.820755	2.522098		0	332.734627503	
7/8	35.6798707	2.3812137		1	240.554618775	
3/4	35.5389864	2.2403294		2	173.911940119	
	35.3981021	2.0994451		3	125.731790435	
1/2	35.2572178	1.9585608		4	90.899354669	
	35.1163335	1.8176765		5	65.716813946	
1/4	34.9754492	1.6767922		6	47.510784329	
	34.8345649	1.5359079		7	34.348509795	
$S m_0$ → 0	34.6936806	1.3950236		8	24.832680449	
	34.5527963	1.2541393		9	17.953093802	
-1/4	34.411912	1.113255		10	12.979411454	
	34.2710277	0.9723707		11	9.383626218	
-1/2	34.1301434	0.8314864		12	6.784008759	~ 7
	33.9892591	0.6906021		13	4.90458313	
-3/4	33.8483748	0.5497178		14	3.545829101	
	33.7074905	0.4088335		15	2.563501052	
$(\alpha_M)^{-1} m_0$ → -1	33.5666062	0.2679492	⊙	16	1.853314826	
	33.4257219	0.1270649		17	1.339876901	

m := 16, 17 .. 40

	f(m) =	g(m) =	m =	h(m) =	
$(\alpha_M)^{-1} m_0$ → -1	33.5666062	0.2679492	16	1.853314826	
-9/8	33.4257219	0.1270649	17	1.339876901	
-5/4	33.2848376	-0.0138194	18	0.968680595	~ ⊙
-11/8	33.1439533	-0.1547037	19	0.70031963	
	33.003069	-0.295588	20	0.506304748	
	32.8621847	-0.4364723	21	0.366039286	
	32.7213004	-0.5773566	22	0.264632634	
	32.5804161	-0.7182409	23	0.19131944	
	32.4395318	-0.8591252	24	0.138316758	~ ~ 1/7
	32.2986475	-1.0000095	25	0.099997813	
	32.1577632	-1.1408938	26	0.072294657	
	32.0168789	-1.2817781	27	0.052266317	
	31.8759946	-1.4226624	28	0.037786581	
	31.7351103	-1.5635467	29	0.027318277	
	31.594226	-1.704431	30	0.019750086	
	31.4533417	-1.8453153	31	0.01427857	
	31.3124574	-1.9861996	32	0.010322869	

MASS

FUNDAMENTAL CONSTANTS MASS

$M = \frac{c^3}{G} T$ $\quad T = T(M, R)$

$c := 10.476819225$ $\quad mo := -4.662200853$ $\quad am := 1.127074156$ $\quad re := -12.550068116$

$G := -7.175705560$ $\quad lo := -32.791544864$ $\quad S := 39.355877804$ $\quad mb := -23.776601910$

$h := -26.976926492$ $\quad to := -43.268364089$ $\quad B1 := 0.5 \cdot (am + S)$ $\quad A1 := 0.5 \cdot (am - S)$

$n := -1$ $\quad p := -6 .. 6$ $\quad q := -6 .. 6$ $\quad k := -1$ $\quad M := k \cdot A1 + mo$ $\quad R := k \cdot B1 + lo$

$Y := 3 \cdot c - G$ $\quad Y = 38.6061632$ $\quad M = 14.452201$ $\quad R = -53.0330208$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $\quad V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $\quad W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $\quad Z_{p,q} := Y + T_{p,q}$ BARYON

$Z =$

	-6	-5	-4	-3	-2	-1
-6	-1.2809784	-11.4017164	-21.5224544	-31.6431924	-41.7639303	-51.8846683
-5	8.2762225	-1.8445155	-11.9652535	-22.0859914	-32.2067294	-42.3274674
-4	17.8334234	7.7126854	-2.4080525	-12.5287905	-22.6495285	-32.7702665
-3	27.3906244	17.2698864	7.1491484	-2.9715896	-13.0923276	-23.2130656
-2	36.9478253	26.8270873	16.7063493	6.5856113	-3.5351267	-13.6558647
-1	46.5050262	36.3842882	26.2635502	16.1428122	6.0220742	-4.0986638
0	56.0622271	45.9414891	35.8207511	25.7000131	15.5792751	5.4585371
1	65.619428	55.49869	45.377952	35.257214	25.136476	15.015738
2	75.1766289	65.0558909	54.9351529	44.8144149	34.693677	24.572939
3	84.7338298	74.6130918	64.4923538	54.3716159	44.2508779	34.1301399
4	94.2910307	84.1702927	74.0495548	63.9288168	53.8080788	43.6873408
5	103.8482316	93.7274937	83.6067557	73.4860177	63.3652797	53.2445417
6	113.4054326	103.2846946	93.1639566	83.0432186	72.9224806	62.8017426

FORCES

01/04/05

2 "levels" (space) of forces

$\sqrt{\ }$ and $(\ )'$

eg $\sqrt{\frac{R}{M}\frac{C^{10}}{G^3}}$ ~~w~~ $\frac{R}{M}\frac{C^6}{G^2}$

$\frac{R}{M}\;\frac{R^{10}}{T^{10}}\;\frac{M^3T^6}{R^9}$

$\frac{M^2R^3}{T^4}$

$\sqrt{\ } = \frac{MR}{T^2}$

The ratios Grav/elec

$\frac{GM^2}{\hbar c} = \left(\frac{M}{m_0}\right)^2$

i.e. the force ratio = the mass in Planck units squared

$\frac{-23}{-4} = -19 \quad -38$

Find all the forces
All solution not just one
—F. Zwicky

Are the $\sqrt{\ }$ expression repulsive contractive attractive

Forces Restrain $m_0 \nearrow P$

P as fulcrum

and the

no c nor G	no h with G+c
$\frac{\hbar^2}{MR^3}$	$\frac{M^3G^2}{R^3C^2}$

both $\frac{1}{R^3}$

$\Rightarrow M = m_0$

Note: Gravity - Coulomb both $\propto \frac{1}{R^2}$

no c nor h has G	no G has c+h
$\frac{GM^2}{R^2}$	$\frac{\hbar c}{R^2}$

$\Rightarrow M = m_0$

no G nor h	no c
$\frac{Mc^3}{R}$	$\frac{M^5G^2}{R\hbar^2}$ has both h

both $\frac{1}{R}$

$\Rightarrow M = m_0$

PLANCK PARTICLE

FUNDAMENTAL CONSTANTS MASS

$M = \frac{C^2}{G} T$

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $B1_J := 0.5 \cdot (am + S)$ $A1_K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 0$ $M := k \cdot A1_K + mo$ $R := k \cdot B1_J + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -4.6622009$ $R = -32.7915449$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ P

$Z =$

	-3	-2	-1	0	1	2
-6	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
-5	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
-4	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
-3	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
-2	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
-1	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
0	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
1	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
2	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
3	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
4	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
5	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009
6	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009	-4.6622009

BARYON (1)

FUNDAMENTAL CONSTANTS MASS

$M = \frac{C^2}{G} T$

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $BI := 0.5 \cdot (am + S)$ $AI := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot AI + mo$ $R := k \cdot BI + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -23.7766027$ $R = -12.5500689$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$

$Z =$

	-6	-5	-4	-3	-2
-6	-8.0434233	2.0773147	12.1980527	22.3187906	32.4395286
-5	-17.6006242	-7.4798862	2.6408517	12.7615897	22.8823277
-4	-27.1578251	-17.0370872	-6.9163492	3.2043888	13.3251268
-3	-36.7150261	-26.5942881	-16.4735501	-6.3528121	3.7679259
-2	-46.272227	-36.151489	-26.030751	-15.910013	-5.789275
-1	-55.8294279	-45.7086899	-35.5879519	-25.4672139	-15.3464759
0	-65.3866288	-55.2658908	-45.1451528	-35.0244148	-24.9036768
1	-74.9438297	-64.8230917	-54.7023537	-44.5816157	-34.4608777
2	-84.5010306	-74.3802926	-64.2595546	-54.1388166	-44.0180787
3	-94.0582315	-83.9374935	-73.8167555	-63.6960176	-53.5752796
4	-103.6154324	-93.4946944	-83.3739565	-73.2532185	-63.1324805
5	-113.1726334	-103.0518954	-92.9311574	-82.8104194	-72.6896814
6	-122.7298343	-112.6090963	-102.4883583	-92.3676203	-82.2468823

BARYON (1)

FUNDAMENTAL CONSTANTS MASS

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

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $B1 := 0.5 \cdot (am + S)$ $A1 := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot A1 + mo$ $R := k \cdot B1 + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -23.7766027$ $R = -12.5500689$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ DM

$Z =$

	-2	-1	0	1	2	3
-6	32.4395286	42.5602666	52.6810046	62.8017426	72.9224806	83.0432186
-5	22.8823277	33.0030657	43.1238037	53.2445417	63.3652797	73.4860177
-4	13.3251268	23.4458648	33.5666028	43.6873408	53.8080788	63.9288168
-3	3.7679259	13.8886639	24.0094019	34.1301399	44.2508779	54.3716159
-2	-5.789275	4.331463	14.452201	24.572939	34.6936769	44.8144149
-1	-15.3464759	-5.2257379	4.8950001	15.015738	25.136476	35.257214
0	-24.9036768	-14.7829388	-4.6622009	5.4585371	15.5792751	25.7000131
1	-34.4608777	-24.3401398	-14.2194018	-4.0986638	6.0220742	16.1428122
2	-44.0180787	-33.8973407	-23.7766027	-13.6558647	-3.5351267	6.5856113
3	-53.5752796	-43.4545416	-33.3338036	-23.2130656	-13.0923276	-2.9715896
4	-63.1324805	-53.0117425	-42.8910045	-32.7702665	-22.6495285	-12.5287905
5	-72.6896814	-62.5689434	-52.4482054	-42.3274674	-32.2067294	-22.0859914
6	-82.2468823	-72.1261443	-62.0054063	-51.8846683	-41.7639303	-31.6431924

BARYON (1)

FUNDAMENTAL CONSTANTS MASS

$M = \frac{c^3}{\sigma} T$

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $Bf := 0.5 \cdot (am + S)$ $Af := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot Af + mo$ $R := k \cdot Bf + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -23.7766027$ $R = -12.5500689$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ DM

$Z =$

	2	3	4	5	6
-6	72.9224806	83.0432186	93.1639566	103.2846946	113.4054326
-5	63.3652797	73.4860177	83.6067557	93.7274937	103.8482316
-4	53.8080788	63.9288168	74.0495548	84.1702927	94.2910307
-3	44.2508779	54.3716159	64.4923538	74.6130918	84.7338298
-2	34.6936769	44.8144149	54.9351529	65.0558909	75.1766289
-1	25.136476	35.257214	45.377952	55.49869	65.619428
0	15.5792751	25.7000131	35.8207511	45.9414891	56.0622271
1	6.0220742	16.1428122	26.2635502	36.3842882	46.5050262
2	-3.5351267	6.5856113	16.7063493	26.8270873	36.9478253
3	-13.0923276	-2.9715896	7.1491484	17.2698864	27.3906243
4	-22.6495285	-12.5287905	-2.4080525	7.7126854	17.8334234
5	-32.2067294	-22.0859914	-11.9652535	-1.8445155	8.2762225
6	-41.7639303	-31.6431924	-21.5224544	-11.4017164	-1.2809784

NR

FUNDAMENTAL CONSTANTS MASS

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

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $Bl := 0.5 \cdot (am + S)$ $Al := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot Al + mo$ $R := k \cdot Bl + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -42.8910045$ $R = 7.6914071$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$

$Z =$

	-6	-5	-4	-3	-2
-6	-11.4246458	8.8168302	29.0583062	49.2997821	69.5412581
-5	-30.5390476	-10.2975716	9.9439043	30.1853803	50.4268563
-4	-49.6534494	-29.4119735	-9.1704975	11.0709785	31.3124545
-3	-68.7678513	-48.5263753	-28.2848993	-8.0434233	12.1980527
-2	-87.8822531	-67.6407771	-47.3993011	-27.1578251	-6.9163492
-1	-106.9966549	-86.7551789	-66.5137029	-46.272227	-26.030751
0	-126.1110567	-105.8695808	-85.6281048	-65.3866288	-45.1451528
1	-145.2254586	-124.9839826	-104.7425066	-84.5010306	-64.2595546
2	-164.3398604	-144.0983844	-123.8569084	-103.6154324	-83.3739565
3	-183.4542622	-163.2127862	-142.9713102	-122.7298343	-102.4883583
4	-202.568664	-182.327188	-162.0857121	-141.8442361	-121.6027601
5	-221.6830659	-201.4415899	-181.2001139	-160.9586379	-140.7171619
6	-240.7974677	-220.5559917	-200.3145157	-180.0730397	-159.8315638

N☆ (1)

FUNDAMENTAL CONSTANTS MASS

$M = \frac{C^3 T}{G}$

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $B1_j := 0.5 \cdot (am + S)$ $A1_k := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot A1_k + mo$ $R := k \cdot B1_j + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -42.8910045$ $R = 7.6914071$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ N☆

$Z =$

	-2	-1	0	1	2
-6	69.5412581	89.7827341	110.0242101	130.2656861	150.507162
-5	50.4268563	70.6683323	90.9098083	111.1512842	131.3927602
-4	31.3124545	51.5539305	71.7954064	92.0368824	112.2783584
-3	12.1980527	32.4395286	52.6810046	72.9224806	93.1639566
-2	-6.9163492	13.3251268	33.5666028	53.8080788	74.0495548
-1	-26.030751	-5.789275	14.452201	34.6936769	54.9351529
0	-45.1451528	-24.9036768	-4.6622009	15.5792751	35.8207511
1	-64.2595546	-44.0180787	-23.776602	-3.5351267	16.7063493
2	-83.3739565	-63.1324805	-42.8910045	-22.6495285	-2.4080525
3	-102.4883583	-82.2468823	-62.0054063	-41.7639303	-21.5224544
4	-121.6027601	-101.3612841	-81.1198081	-60.8783322	-40.6368562
5	-140.7171619	-120.475686	-100.23421	-79.992734	-59.751258
6	-159.8315638	-139.5900878	-119.3486118	-99.1071358	-78.8656598

N ☆ (1)

FUNDAMENTAL CONSTANTS MASS

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

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $BJ := 0.5 \cdot (am + S)$ $AI := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot AI + mo$ $R := k \cdot BJ + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -42.8910045$ $R = 7.6914071$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ N ☆

$Z =$

	2	3	4	5	6
-6	150.507162	170.748638	190.990114	211.23159	231.473066
-5	131.3927602	151.6342362	171.8757122	192.1171882	212.3586641
-4	112.2783584	132.5198344	152.7613104	173.0027863	193.2442623
-3	93.1639566	113.4054326	133.6469085	153.8883845	174.1298605
-2	74.0495548	94.2910307	114.5325067	134.7739827	155.0154587
-1	54.9351529	75.1766289	95.4181049	115.6595809	135.9010568
0	35.8207511	56.0622271	76.3037031	96.545179	116.786655
1	16.7063493	36.9478253	57.1893012	77.4307772	97.6722532
2	-2.4080525	17.8334234	38.0748994	58.3163754	78.5578514
3	-21.5224544	-1.2809784	18.9604976	39.2019736	59.4434496
4	-40.6368562	-20.3953802	-0.1539042	20.0875718	40.3290477
5	-59.751258	-39.509782	-19.2683061	0.9731699	21.2146459
6	-78.8656598	-58.6241839	-38.3827079	-18.1412319	2.1002441

U -(2.0)

FUNDAMENTAL CONSTANTS MASS

$M = \frac{c^3}{B} T_6$

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $B_j := 0.5 \cdot (am + S)$ $A_k := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot A_k + mo$ $R := k \cdot B_j + lo$

$Y := 3 \cdot c - G$ $Y = 38.6061632$ $M = -62.0054063$ $R = 27.9328831$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $Z_{p,q} := Y + T_{p,q}$ UNIVERSE

$Z =$

	-2	-1	0	1	2
-6	106.6429876	137.0052016	167.3674156	197.7296295	228.0918435
-5	77.9713849	108.3335989	138.6958128	169.0580268	199.4202408
-4	49.2997822	79.6619961	110.0242101	140.3864241	170.748638
-3	20.6281794	50.9903934	81.3526074	111.7148213	142.0770353
-2	-8.0434233	22.3187906	52.6810046	83.0432186	113.4054326
-1	-36.7150261	-6.3528121	24.0094019	54.3716159	84.7338298
0	-65.3866288	-35.0244148	-4.6622009	25.7000131	56.0622271
1	-94.0582315	-63.6960176	-33.3338036	-2.9715896	27.3906244
2	-122.7298343	-92.3676203	-62.0054063	-31.6431924	-1.2809784
3	-151.401437	-121.039223	-90.6770091	-60.3147951	-29.9525811
4	-180.0730397	-149.7108258	-119.3486118	-88.9863978	-58.6241839
5	-208.7446425	-178.3824285	-148.0202145	-117.6580006	-87.2957866
6	-237.4162452	-207.0540312	-176.6918173	-146.3296033	-115.9673893

Stellar Masses

$O := 35.820751$ $n := 0..17$

$d := 0.140884 = \frac{a}{8}$ $a := 1.127074$ $m := 17..34$

$S(n) := O - n \cdot d$ $U(m) := O - m \cdot d$

n =	S(n) =
0	35.820751
1	35.679867
2	35.538983
3	35.398099
4	35.257215
5	35.116331
6	34.975447
7	34.834563
8	34.693679
9	34.552795
10	34.411911
11	34.271027
12	34.130143
13	33.989259
14	33.848375
15	33.707491
16	33.566607
17	33.425723

m =	U(m) =
17	33.425723
18	33.284839
19	33.143955
20	33.003071
21	32.862187
22	32.721303
23	32.580419
24	32.439535
25	32.298651
26	32.157767
27	32.016883
28	31.875999
29	31.735115
30	31.594231
31	31.453347
32	31.312463
33	31.171579
34	31.030695

$\log \odot = 33.298635$ g

log 60

Solar luminosity 3.845×10^{33} watts

$\log L_\odot = 33.584896$ watts

Solar system 2.2669×10^{30} g

Cox p 293

$\odot$ 1.9891×10^{33} g

Total 1.99177×10^{33} g

log 33.299239 g

mass loss/watt = ?

ENERGY

PLANCK PARTICLE

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 0$ $M := k \cdot K + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -4.662201$ $R = -32.791545$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3	4
-6	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
-5	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
-4	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
-3	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
-2	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
-1	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
0	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
1	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
2	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
3	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
4	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
5	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438
6	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438	16.291438

$k = -1$ (1)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := -1$ $M := k \cdot K + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 14.452201$ $R = -53.033021$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	-20.810292	-30.93103	-41.051768	-51.172506	-61.293244	-71.413982
-5	-11.253091	-21.373829	-31.494567	-41.615305	-51.736043	-61.856781
-4	-1.69589	-11.816628	-21.937366	-32.058104	-42.178842	-52.29958
-3	7.861311	-2.259427	-12.380165	-22.500903	-32.621641	-42.742379
-2	17.418512	7.297774	-2.822964	-12.943702	-23.06444	-33.185178
-1	26.975713	16.854975	6.734237	-3.386501	-13.507239	-23.627977
0	36.532914	26.412176	16.291438	6.1707	-3.950038	-14.070776
1	46.090114	35.969376	25.848639	15.727901	5.607163	-4.513575
2	55.647315	45.526577	35.405839	25.285101	15.164363	5.043625
3	65.204516	55.083778	44.96304	34.842302	24.721564	14.600826
4	74.761717	64.640979	54.520241	44.399503	34.278765	24.158027
5	84.318918	74.19818	64.077442	53.956704	43.835966	33.715228
6	93.876119	83.755381	73.634643	63.513905	53.393167	43.272429

k = -1 (2)

ENERGIES FROM FREQUENCIES.

c := 10.476819225 mo := -4.662200853 am := 1.127074156 re := -12.550068116

G := -7.175705560 lo := -32.791544864 S := 39.355877804 mb := -23.776601910

h := -26.976926492 to := -43.268364089 J := 0.5·(am + S) K := 0.5·(am − S)

n := -1 p := -6.. 6 q := -6.. 6 k := -1 M := k·J + mo R := k·K + lo

U := 0.5·(-c + G − h + 2·M) V := 0.5·(3·c − G − h + 2·R) W := 0.5·(-5·c + G + h)

$T_{p,q}$:= 0.5·p·U + 0.5·q·V + W M = -24.903677 R = -13.677143

$E_{p,q}$:= (0.5·p·U + 0.5·q·V + W) + 5·c − G

E =

	-2	-1	0	1	2	3
-6	57.901464	67.458665	77.015866	86.573066	96.130267	105.687468
-5	47.780726	57.337927	66.895128	76.452328	86.009529	95.56673
-4	37.659988	47.217189	56.77439	66.33159	75.888791	85.445992
-3	27.53925	37.096451	46.653652	56.210852	65.768053	75.325254
-2	17.418512	26.975713	36.532914	46.090114	55.647315	65.204516
-1	7.297774	16.854975	26.412176	35.969376	45.526577	55.083778
0	-2.822964	6.734237	16.291438	25.848639	35.405839	44.96304
1	-12.943702	-3.386501	6.1707	15.727901	25.285101	34.842302
2	-23.06444	-13.507239	-3.950038	5.607163	15.164363	24.721564
3	-33.185178	-23.627977	-14.070776	-4.513575	5.043625	14.600826
4	-43.305916	-33.748715	-24.191514	-14.634313	-5.077113	4.480088
5	-53.426654	-43.869453	-34.312252	-24.755051	-15.197851	-5.64065
6	-63.547392	-53.990191	-44.43299	-34.875789	-25.318589	-15.761388

k = -1 (3)

ENERGIES FROM FREQUENCIES.

c := 10.476819225 mo := -4.662200853 am := 1.127074156 re := -12.550068116

G := -7.175705560 lo := -32.791544864 S := 39.355877804 mb := -23.776601910

h := -26.976926492 to := -43.268364089 J := 0.5·(am + S) K := 0.5·(am − S)

n := -1 p := -6.. 6 q := -6.. 6 k := -1 M := k·K + mo R := k·K + lo

U := 0.5·(-c + G − h + 2·M) V := 0.5·(3·c − G − h + 2·R) W := 0.5·(-5·c + G + h)

$T_{p,q}$:= 0.5·p·U + 0.5·q·V + W M = 14.452201 R = -13.677143

$E_{p,q}$:= (0.5·p·U + 0.5·q·V + W) + 5·c − G

E =

	-2	-1	0	1	2	3
-6	-60.16617	-50.608969	-41.051768	-31.494567	-21.937366	-12.380165
-5	-50.608969	-41.051768	-31.494567	-21.937366	-12.380165	-2.822964
-4	-41.051768	-31.494567	-21.937366	-12.380165	-2.822964	6.734237
-3	-31.494567	-21.937366	-12.380165	-2.822964	6.734237	16.291438
-2	-21.937366	-12.380165	-2.822964	6.734237	16.291438	25.848639
-1	-12.380165	-2.822964	6.734237	16.291438	25.848639	35.405839
0	-2.822964	6.734237	16.291438	25.848639	35.405839	44.96304
1	6.734237	16.291438	25.848639	35.405839	44.96304	54.520241
2	16.291438	25.848639	35.405839	44.96304	54.520241	64.077442
3	25.848639	35.405839	44.96304	54.520241	64.077442	73.634643
4	35.405839	44.96304	54.520241	64.077442	73.634643	83.191844
5	44.96304	54.520241	64.077442	73.634643	83.191844	92.749045
6	54.520241	64.077442	73.634643	83.191844	92.749045	102.306246

k = -1 (4)

ENERGIES FROM FREQUENCIES.

c := 10.476819225 mo := -4.662200853 am := 1.127074156 re := -12.550068116

G := -7.175705560 lo := -32.791544864 S := 39.355877804 mb := -23.776601910

h := -26.976926492 to := -43.268364089 J := 0.5·(am + S) K := 0.5·(am − S)

n := -1 p := -6.. 6 q := -6.. 6 k := -1 M := k·J + mo R := k·J + lo

U := 0.5·(-c + G − h + 2·M) V := 0.5·(3·c − G − h + 2·R) W := 0.5·(-5·c + G + h)

$T_{p,q}$:= 0.5·p·U + 0.5·q·V + W M = -24.903677 R = -53.033021

$E_{p,q}$:= (0.5·p·U + 0.5·q·V + W) + 5·c − G

E =

	-2	-1	0	1	2	3
-6	97.257342	87.136604	77.015866	66.895128	56.77439	46.653652
-5	87.136604	77.015866	66.895128	56.77439	46.653652	36.532914
-4	77.015866	66.895128	56.77439	46.653652	36.532914	26.412176
-3	66.895128	56.77439	46.653652	36.532914	26.412176	16.291438
-2	56.77439	46.653652	36.532914	26.412176	16.291438	6.1707
-1	46.653652	36.532914	26.412176	16.291438	6.1707	-3.950038
0	36.532914	26.412176	16.291438	6.1707	-3.950038	-14.070776
1	26.412176	16.291438	6.1707	-3.950038	-14.070776	-24.191514
2	16.291438	6.1707	-3.950038	-14.070776	-24.191514	-34.312252
3	6.1707	-3.950038	-14.070776	-24.191514	-34.312252	-44.43299
4	-3.950038	-14.070776	-24.191514	-34.312252	-44.43299	-54.553728
5	-14.070776	-24.191514	-34.312252	-44.43299	-54.553728	-64.674466
6	-24.191514	-34.312252	-44.43299	-54.553728	-64.674466	-74.795204

B (1)

THIS SHOWS THE SAME ENERGIES result from $\hbar 21$ as from $\frac{c^3}{G}T$

ENERGIES FROM FREQUENCIES.

c := 10.476819225 mo := -4.662200853 am := 1.127074156 re := -12.550068116

G := -7.175705560 lo := -32.791544864 S := 39.355877804 mb := -23.776601910

h := -26.976926492 to := -43.268364089 J := 0.5·(am + S) K := 0.5·(am − S)

n := -1 p := -6.. 6 q := -6.. 6 k := 1 M := k·K + mo R := k·J + lo

U := 0.5·(-c + G − h + 2·M) V := 0.5·(3·c − G − h + 2·R) W := 0.5·(-5·c + G + h)

$T_{p,q}$:= 0.5·p·U + 0.5·q·V + W M = -23.776603 R = -12.550069

$E_{p,q}$:= -(0.5·p·U + 0.5·q·V + W) + h

M_0c^2 BARYON $\frac{GM^2}{R}$

E =

	-2	-1	0	1	2	3
-6	-20.810292	-30.93103	-41.051768	-51.172506	-61.293244	-71.413982
-5	-11.253091	-21.373829	-31.494567	-41.615305	-51.736043	-61.856781
-4	-1.69589	-11.816628	-21.937366	-32.058104	-42.178842	-52.29958
-3	7.861311	-2.259427	-12.380165	-22.500903	-32.621641	-42.742379
-2	17.418512	7.297774	-2.822964	-12.943702	-23.06444	-33.185178
-1	26.975713	16.854975	6.734237	-3.386501	-13.507239	-23.627977
0	36.532914	26.412176	16.291438	6.1707	-3.950038	-14.070776
1	46.090114	35.969376	25.848639	15.727901	5.607163	-4.513575
2	55.647315	45.526577	35.405839	25.285101	15.164363	5.043625
3	65.204516	55.083778	44.96304	34.842302	24.721564	14.600826
4	74.761717	64.640979	54.520241	44.399503	34.278765	24.158027
5	84.318918	74.19818	64.077442	53.956704	43.835966	33.715228
6	93.876119	83.755381	73.634643	63.513905	53.393167	43.272429

$\frac{c4R}{G}$ $\frac{\hbar c^3}{GM}$ $\frac{\hbar c}{R}$ ρ

4 permutations of J and K for R and M

k = 1, 2, 3

B (1)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot K + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -23.776603$ $R = -12.550069$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

E =

	-2	-1	0	1	2	3
-6	53.393167	63.513905	73.634643	83.755381	93.876119	103.996857
-5	43.835966	53.956704	64.077442	74.19818	84.318918	94.439656
-4	34.278765	44.399503	54.520241	64.640979	74.761717	84.882455
-3	24.721564	34.842302	44.96304	55.083778	65.204516	75.325254
-2	15.164363	25.285101	35.405839	45.526577	55.647315	65.768053
-1	5.607163	15.727901	25.848639	35.969376	46.090114	56.210852
0	-3.950038	6.1707	16.291438	26.412176	36.532914	46.653652
1	-13.507239	-3.386501	6.734237	16.854975	26.975713	37.096451
2	-23.06444	-12.943702	-2.822964	7.297774	17.418512	27.53925
3	-32.621641	-22.500903	-12.380165	-2.259427	7.861311	17.982049
4	-42.178842	-32.058104	-21.937366	-11.816628	-1.69589	8.424848
5	-51.736043	-41.615305	-31.494567	-21.373829	-11.253091	-1.132353
6	-61.293244	-51.172506	-41.051768	-30.93103	-20.810292	-10.689554

Baryon (2)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5\cdot(am + S)$ $K := 0.5\cdot(am - S)$

$n := -1$ $p := -6..6$ $q := -6..6$ $k := 1$ $M := k\cdot J + mo$ $R := k\cdot K + lo$

$U := 0.5\cdot(-c + G - h + 2\cdot M)$ $V := 0.5\cdot(3\cdot c - G - h + 2\cdot R)$ $W := 0.5\cdot(-5\cdot c + G + h)$

$T_{p,q} := 0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W$ $M = 15.579275$ $R = -51.905947$

$E_{p,q} := -(0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W) + h$

$E =$

	-2	-1	0	1	2	3
-6	57.901464	67.458665	77.015866	86.573066	96.130267	105.687468
-5	47.780726	57.337927	66.895128	76.452328	86.009529	95.56673
-4	37.659988	47.217189	56.77439	66.33159	75.888791	85.445992
-3	27.53925	37.096451	46.653652	56.210852	65.768053	75.325254
-2	17.418512	26.975713	36.532914	46.090114	55.647315	65.204516
-1	7.297774	16.854975	26.412176	35.969376	45.526577	55.083778
0	-2.822964	6.734237	16.291438	25.848639	35.405839	44.96304
1	-12.943702	-3.386501	6.1707	15.727901	25.285101	34.842302
2	-23.06444	-13.507239	-3.950038	5.607163	15.164363	24.721564
3	-33.185178	-23.627977	-14.070776	-4.513575	5.043625	14.600826
4	-43.305916	-33.748715	-24.191514	-14.634313	-5.077113	4.480088
5	-53.426654	-43.869453	-34.312252	-24.755051	-15.197851	-5.64065
6	-63.547392	-53.990191	-44.43299	-34.875789	-25.318589	-15.761388

p

baryon (3)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot K + mo$ $R := k \cdot K + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -23.776603$ $R = -51.905947$

$E_{p,q} := -(0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + h$

$E =$

	-2	-1	0	1	2	3
-6	-60.16617	-50.608969	-41.051768	-31.494567	-21.937366	-12.380165
-5	-50.608969	-41.051768	-31.494567	-21.937366	-12.380165	-2.822964
-4	-41.051768	-31.494567	-21.937366	-12.380165	-2.822964	6.734237
-3	-31.494567	-21.937366	-12.380165	-2.822964	6.734237	16.291438
-2	-21.937366	-12.380165	-2.822964	6.734237	16.291438	25.848639
-1	-12.380165	-2.822964	6.734237	16.291438	25.848639	35.405839
0	-2.822964	6.734237	16.291438	25.848639	35.405839	44.96304
1	6.734237	16.291438	25.848639	35.405839	44.96304	54.520241
2	16.291438	25.848639	35.405839	44.96304	54.520241	64.077442
3	25.848639	35.405839	44.96304	54.520241	64.077442	73.634643
4	35.405839	44.96304	54.520241	64.077442	73.634643	83.191844
5	44.96304	54.520241	64.077442	73.634643	83.191844	92.749045
6	54.520241	64.077442	73.634643	83.191844	92.749045	102.306246

p energy

Baryon (4) DM

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579275$ $R = -12.550069$

$E_{p,q} := -(0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + h$ $\frac{c^4 R}{G}$ Mc^2 (4) $\frac{GM^2}{R}$

$E =$

	-2	-1	0	1	2	3
-6	97.257342	87.136604	77.015866	66.895128	56.77439	46.653652
-5	87.136604	77.015866	66.895128	56.77439	46.653652	36.532914
-4	77.015866	66.895128	56.77439	46.653652	36.532914	26.412176
-3	66.895128	56.77439	46.653652	36.532914	26.412176	16.291438
-2	56.77439	46.653652	36.532914	26.412176	16.291438	6.1707
-1	46.653652	36.532914	26.412176	16.291438	6.1707	-3.950038
0	36.532914	26.412176	16.291438	6.1707	-3.950038	-14.070776
1	26.412176	16.291438	6.1707	-3.950038	-14.070776	-24.191514
2	16.291438	6.1707	-3.950038	-14.070776	-24.191514	-34.312252
3	6.1707	-3.950038	-14.070776	-24.191514	-34.312252	-44.43299
4	-3.950038	-14.070776	-24.191514	-34.312252	-44.43299	-54.553728
5	-14.070776	-24.191514	-34.312252	-44.43299	-54.553728	-64.674466
6	-24.191514	-34.312252	-44.43299	-54.553728	-64.674466	-74.795204

p

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

B (1)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5\cdot(am + S)$ $K := 0.5\cdot(am - S)$

$n := -1$ $p := -6..6$ $q := -6..6$ $k := 1$ $M := k\cdot K + mo$ $R := k\cdot J + lo$

$U := 0.5\cdot(-c + G - h + 2\cdot M)$ $V := 0.5\cdot(3\cdot c - G - h + 2\cdot R)$ $W := 0.5\cdot(-5\cdot c + G + h)$

$T_{p,q} := 0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W$ $M = -23.776603$ $R = -12.550069$

$E_{p,q} := (0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W) + 5\cdot c - G$

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

$E =$ $\frac{\hbar c}{R}$ P $\frac{c^4 R}{G}$

	-3	-2	-1	0	1	2
-6	43.272429	53.393167	63.513905	73.634643	83.755381	93.876119
-5	33.715228	43.835966	53.956704	64.077442	74.19818	84.318918
-4	24.158027	34.278765	44.399503	54.520241	64.640979	74.761717
-3	14.600826	24.721564	34.842302	44.96304	55.083778	65.204516
-2	5.043625	15.164363	25.285101	35.405839	45.526577	55.647315
-1	-4.513575	5.607163	15.727901	25.848639	35.969376	46.090114
0	-14.070776	-3.950038	6.1707	16.291438	26.412176	36.532914
1	-23.627977	-13.507239	-3.386501	6.734237	16.854975	26.975713
2	-33.185178	-23.06444	-12.943702	-2.822964	7.297774	17.418512
3	-42.742379	-32.621641	-22.500903	-12.380165	-2.259427	7.861311
4	-52.29958	-42.178842	-32.058104	-21.937366	-11.816628	-1.69589
5	-61.856781	-51.736043	-41.615305	-31.494567	-21.373829	-11.253091
6	-71.413982	-61.293244	-51.172506	-41.051768	-30.93103	-20.810292

$\frac{GM^2}{R}$ Mc^2

13 (2)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot K + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579275$ $R = -51.905947$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

E =

	-2	-1	0	1	2	3
-6	-25.318589	-34.875789	-44.43299	-53.990191	-63.547392	-73.104593
-5	-15.197851	-24.755051	-34.312252	-43.869453	-53.426654	-62.983855
-4	-5.077113	-14.634313	-24.191514	-33.748715	-43.305916	-52.863117
-3	5.043625	-4.513575	-14.070776	-23.627977	-33.185178	-42.742379
-2	15.164363	5.607163	-3.950038	-13.507239	-23.06444	-32.621641
-1	25.285101	15.727901	6.1707	-3.386501	-12.943702	-22.500903
0	35.405839	25.848639	16.291438	6.734237	-2.822964	-12.380165
1	45.526577	35.969376	26.412176	16.854975	7.297774	-2.259427
2	55.647315	46.090114	36.532914	26.975713	17.418512	7.861311
3	65.768053	56.210852	46.653652	37.096451	27.53925	17.982049
4	75.888791	66.33159	56.77439	47.217189	37.659988	28.102787
5	86.009529	76.452328	66.895128	57.337927	47.780726	38.223525
6	96.130267	86.573066	77.015866	67.458665	57.901464	48.344263

B (3)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5\cdot(am + S)$ $K := 0.5\cdot(am - S)$

$n := -1$ $p := -6..6$ $q := -6..6$ $k := 1$ $M := k\cdot K + mo$ $R := k\cdot K + lo$

$U := 0.5\cdot(-c + G - h + 2\cdot M)$ $V := 0.5\cdot(3\cdot c - G - h + 2\cdot R)$ $W := 0.5\cdot(-5\cdot c + G + h)$

$T_{p,q} := 0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W$ $M = -23.776603$ $R = -51.905947$

$E_{p,q} := (0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W) + 5\cdot c - G$

E =

	-2	-1	0	1	2	3
-6	92.749045	83.191844	73.634643	64.077442	54.520241	44.96304
-5	83.191844	73.634643	64.077442	54.520241	44.96304	35.405839
-4	73.634643	64.077442	54.520241	44.96304	35.405839	25.848639
-3	64.077442	54.520241	44.96304	35.405839	25.848639	16.291438
-2	54.520241	44.96304	35.405839	25.848639	16.291438	6.734237
-1	44.96304	35.405839	25.848639	16.291438	6.734237	-2.822964
0	35.405839	25.848639	16.291438	6.734237	-2.822964	-12.380165
1	25.848639	16.291438	6.734237	-2.822964	-12.380165	-21.937366
2	16.291438	6.734237	-2.822964	-12.380165	-21.937366	-31.494567
3	6.734237	-2.822964	-12.380165	-21.937366	-31.494567	-41.051768
4	-2.822964	-12.380165	-21.937366	-31.494567	-41.051768	-50.608969
5	-12.380165	-21.937366	-31.494567	-41.051768	-50.608969	-60.16617
6	-21.937366	-31.494567	-41.051768	-50.608969	-60.16617	-69.723371

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579275$ $R = -12.550069$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	-64.674466	-54.553728	-44.43299	-34.312252	-24.191514	-14.070776
-5	-54.553728	-44.43299	-34.312252	-24.191514	-14.070776	-3.950038
-4	-44.43299	-34.312252	-24.191514	-14.070776	-3.950038	6.1707
-3	-34.312252	-24.191514	-14.070776	-3.950038	6.1707	16.291438
-2	-24.191514	-14.070776	-3.950038	6.1707	16.291438	26.412176
-1	-14.070776	-3.950038	6.1707	16.291438	26.412176	36.532914
0	-3.950038	6.1707	16.291438	26.412176	36.532914	46.653652
1	6.1707	16.291438	26.412176	36.532914	46.653652	56.77439
2	16.291438	26.412176	36.532914	46.653652	56.77439	66.895128
3	26.412176	36.532914	46.653652	56.77439	66.895128	77.015866
4	36.532914	46.653652	56.77439	66.895128	77.015866	87.136604
5	46.653652	56.77439	66.895128	77.015866	87.136604	97.257342
6	56.77439	66.895128	77.015866	87.136604	97.257342	107.37808

Vk (1)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot K + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -42.891005$ $R = 7.691407$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	90.494897	110.736373	130.977849	151.219325	171.4608	191.702276
-5	71.380495	91.621971	111.863447	132.104923	152.346399	172.587875
-4	52.266093	72.507569	92.749045	112.990521	133.231997	153.473473
-3	33.151691	53.393167	73.634643	93.876119	114.117595	134.359071
-2	14.037289	34.278765	54.520241	74.761717	95.003193	115.244669
-1	-5.077113	15.164363	35.405839	55.647315	75.888791	96.130267
0	-24.191514	-3.950038	16.291438	36.532914	56.77439	77.015866
1	-43.305916	-23.06444	-2.822964	17.418512	37.659988	57.901464
2	-62.420318	-42.178842	-21.937366	-1.69589	18.545586	38.787062
3	-81.53472	-61.293244	-41.051768	-20.810292	-0.568816	19.67266
4	-100.649122	-80.407646	-60.16617	-39.924694	-19.683218	0.558258
5	-119.763523	-99.522048	-79.280572	-59.039096	-38.79762	-18.556144
6	-138.877925	-118.636449	-98.394973	-78.153497	-57.912021	-37.670545

N ☆ (2)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot K + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820751$ $R = -71.020349$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	-66.928615	-86.043016	-105.157418	-124.27182	-143.386222	-162.500624
-5	-46.687139	-65.80154	-84.915942	-104.030344	-123.144746	-142.259148
-4	-26.445663	-45.560065	-64.674466	-83.788868	-102.90327	-122.017672
-3	-6.204187	-25.318589	-44.43299	-63.547392	-82.661794	-101.776196
-2	14.037289	-5.077113	-24.191514	-43.305916	-62.420318	-81.53472
-1	34.278765	15.164363	-3.950038	-23.06444	-42.178842	-61.293244
0	54.520241	35.405839	16.291438	-2.822964	-21.937366	-41.051768
1	74.761717	55.647315	36.532914	17.418512	-1.69589	-20.810292
2	95.003193	75.888791	56.77439	37.659988	18.545586	-0.568816
3	115.244669	96.130267	77.015866	57.901464	38.787062	19.67266
4	135.486145	116.371743	97.257342	78.14294	59.028538	39.914136
5	155.727621	136.613219	117.498817	98.384416	79.270014	60.155612
6	175.969097	156.854695	137.740293	118.625892	99.51149	80.397088

11 4 (3)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot K + mo$ $R := k \cdot K + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -42.891005$ $R = -71.020349$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

E =

	-2	-1	0	1	2	3
-6	169.206652	150.09225	130.977849	111.863447	92.749045	73.634643
-5	150.09225	130.977849	111.863447	92.749045	73.634643	54.520241
-4	130.977849	111.863447	92.749045	73.634643	54.520241	35.405839
-3	111.863447	92.749045	73.634643	54.520241	35.405839	16.291438
-2	92.749045	73.634643	54.520241	35.405839	16.291438	-2.822964
-1	73.634643	54.520241	35.405839	16.291438	-2.822964	-21.937366
0	54.520241	35.405839	16.291438	-2.822964	-21.937366	-41.051768
1	35.405839	16.291438	-2.822964	-21.937366	-41.051768	-60.16617
2	16.291438	-2.822964	-21.937366	-41.051768	-60.16617	-79.280572
3	-2.822964	-21.937366	-41.051768	-60.16617	-79.280572	-98.394973
4	-21.937366	-41.051768	-60.16617	-79.280572	-98.394973	-117.509375
5	-41.051768	-60.16617	-79.280572	-98.394973	-117.509375	-136.623777
6	-60.16617	-79.280572	-98.394973	-117.509375	-136.623777	-155.738179

N ★ (4)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820751$ $R = 7.691407$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	-145.64037	-125.398894	-105.157418	-84.915942	-64.674466	-44.43299
-5	-125.398894	-105.157418	-84.915942	-64.674466	-44.43299	-24.191514
-4	-105.157418	-84.915942	-64.674466	-44.43299	-24.191514	-3.950038
-3	-84.915942	-64.674466	-44.43299	-24.191514	-3.950038	16.291438
-2	-64.674466	-44.43299	-24.191514	-3.950038	16.291438	36.532914
-1	-44.43299	-24.191514	-3.950038	16.291438	36.532914	56.77439
0	-24.191514	-3.950038	16.291438	36.532914	56.77439	77.015866
1	-3.950038	16.291438	36.532914	56.77439	77.015866	97.257342
2	16.291438	36.532914	56.77439	77.015866	97.257342	117.498817
3	36.532914	56.77439	77.015866	97.257342	117.498817	137.740293
4	56.77439	77.015866	97.257342	117.498817	137.740293	157.981769
5	77.015866	97.257342	117.498817	137.740293	157.981769	178.223245
6	97.257342	117.498817	137.740293	157.981769	178.223245	198.464721

v – (1)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot K + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -62.005406$ $R = 27.932883$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

$E =$

	-2	-1	0	1	2	3
-6	127.596626	157.95884	188.321054	218.683268	249.045482	279.407696
-5	98.925023	129.287237	159.649451	190.011665	220.373879	250.736093
-4	70.253421	100.615635	130.977849	161.340063	191.702276	222.06449
-3	41.581818	71.944032	102.306246	132.66846	163.030674	193.392888
-2	12.910215	43.272429	73.634643	103.996857	134.359071	164.721285
-1	-15.761388	14.600826	44.96304	75.325254	105.687468	136.049682
0	-44.43299	-14.070776	16.291438	46.653652	77.015866	107.37808
1	-73.104593	-42.742379	-12.380165	17.982049	48.344263	78.706477
2	-101.776196	-71.413982	-41.051768	-10.689554	19.67266	50.034874
3	-130.447799	-100.085585	-69.723371	-39.361157	-8.998943	21.363271
4	-159.119401	-128.757187	-98.394973	-68.032759	-37.670545	-7.308331
5	-187.791004	-157.42879	-127.066576	-96.704362	-66.342148	-35.979934
6	-216.462607	-186.100393	-155.738179	-125.375965	-95.013751	-64.651537

U -(2)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot K + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 56.062227$ $R = -90.13475$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

E =

	-2	-1	0	1	2	3
-6	-108.538641	-137.210243	-165.881846	-194.553449	-223.225052	-251.896654
-5	-78.176427	-106.84803	-135.519632	-164.191235	-192.862838	-221.53444
-4	-47.814213	-76.485816	-105.157418	-133.829021	-162.500624	-191.172226
-3	-17.451999	-46.123602	-74.795204	-103.466807	-132.13841	-160.810013
-2	12.910215	-15.761388	-44.43299	-73.104593	-101.776196	-130.447799
-1	43.272429	14.600826	-14.070776	-42.742379	-71.413982	-100.085585
0	73.634643	44.96304	16.291438	-12.380165	-41.051768	-69.723371
1	103.996857	75.325254	46.653652	17.982049	-10.689554	-39.361157
2	134.359071	105.687468	77.015866	48.344263	19.67266	-8.998943
3	164.721285	136.049682	107.37808	78.706477	50.034874	21.363271
4	195.083499	166.411896	137.740293	109.068691	80.397088	51.725485
5	225.445713	196.77411	168.102507	139.430905	110.759302	82.087699
6	255.807927	227.136324	198.464721	169.793119	141.121516	112.449913

U - (3)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5\cdot(am + S)$ $K := 0.5\cdot(am - S)$

$n := -1$ $p := -6..6$ $q := -6..6$ $k := 3$ $M := k\cdot K + mo$ $R := k\cdot K + lo$

$U := 0.5\cdot(-c + G - h + 2\cdot M)$ $V := 0.5\cdot(3\cdot c - G - h + 2\cdot R)$ $W := 0.5\cdot(-5\cdot c + G + h)$

$T_{p,q} := 0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W$ $M = -62.005406$ $R = -90.13475$

$E_{p,q} := (0.5\cdot p\cdot U + 0.5\cdot q\cdot V + W) + 5\cdot c - G$

E =

	-2	-1	0	1	2	3
-6	245.664259	216.992657	188.321054	159.649451	130.977849	102.306246
-5	216.992657	188.321054	159.649451	130.977849	102.306246	73.634643
-4	188.321054	159.649451	130.977849	102.306246	73.634643	44.96304
-3	159.649451	130.977849	102.306246	73.634643	44.96304	16.291438
-2	130.977849	102.306246	73.634643	44.96304	16.291438	-12.380165
-1	102.306246	73.634643	44.96304	16.291438	-12.380165	-41.051768
0	73.634643	44.96304	16.291438	-12.380165	-41.051768	-69.723371
1	44.96304	16.291438	-12.380165	-41.051768	-69.723371	-98.394973
2	16.291438	-12.380165	-41.051768	-69.723371	-98.394973	-127.066576
3	-12.380165	-41.051768	-69.723371	-98.394973	-127.066576	-155.738179
4	-41.051768	-69.723371	-98.394973	-127.066576	-155.738179	-184.409782
5	-69.723371	-98.394973	-127.066576	-155.738179	-184.409782	-213.081384
6	-98.394973	-127.066576	-155.738179	-184.409782	-213.081384	-241.752987

U - (2)

ENERGIES FROM FREQUENCIES.

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 56.062227$ $R = 27.932883$

$E_{p,q} := (0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W) + 5 \cdot c - G$

E =

	-2	-1	0	1	2	3
-6	-226.606274	-196.24406	-165.881846	-135.519632	-105.157418	-74.795204
-5	-196.24406	-165.881846	-135.519632	-105.157418	-74.795204	-44.43299
-4	-165.881846	-135.519632	-105.157418	-74.795204	-44.43299	-14.070776
-3	-135.519632	-105.157418	-74.795204	-44.43299	-14.070776	16.291438
-2	-105.157418	-74.795204	-44.43299	-14.070776	16.291438	46.653652
-1	-74.795204	-44.43299	-14.070776	16.291438	46.653652	77.015866
0	-44.43299	-14.070776	16.291438	46.653652	77.015866	107.37808
1	-14.070776	16.291438	46.653652	77.015866	107.37808	137.740293
2	16.291438	46.653652	77.015866	107.37808	137.740293	168.102507
3	46.653652	77.015866	107.37808	137.740293	168.102507	198.464721
4	77.015866	107.37808	137.740293	168.102507	198.464721	228.826935
5	107.37808	137.740293	168.102507	198.464721	228.826935	259.189149
6	137.740293	168.102507	198.464721	228.826935	259.189149	289.551363

TIMES, FREQUENCY

PLANCK FREQUENCY

FUNDAMENTAL CONSTANTS Part 2 FREQUENCY

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $Bl := 0.5 \cdot (am + S)$ $Al := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 0$ $M := k \cdot Al + mo$ $R := k \cdot Bl + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = -4.66220085$ $R = -32.79154486$

P

T =

	-2	-1	0	1	2
-6	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
-5	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
-4	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
-3	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
-2	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
-1	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
0	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
1	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
2	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
3	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
4	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
5	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409
6	-43.26836409	-43.26836409	-43.26836409	-43.26836409	-43.26836409

BARYON ①
TIMES

FUNDAMENTAL CONSTANTS [Revised]

$c := 10.476819225$ $mo := -4.662200853$ $am := 1.127074156$ $re := -12.550068116$

$G := -7.175705560$ $lo := -32.791544864$ $S := 39.355877804$ $mb := -23.776601910$

$h := -26.976926492$ $to := -43.268364089$ $B1_j := 0.5 \cdot (am + S)$ $A1_k := 0.5 \cdot (am - S)$

$n := -1$ $p := -3 .. 3$ $q := -3 .. 3$ $k := 1$ $M := k \cdot A1_k + mo$ $R := k \cdot B1_j + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot re)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := p \cdot U + q \cdot V + W$ $M = -23.7766027$ $R = -12.5500689$

BARYON

p \ q	-3	-2	-1	0	1	2	3
-3	-46.6495889	-26.4081121	-6.1666354	14.0748414	34.3163181	54.5577949	74.799271
-2	-65.7639907	-45.5225139	-25.2810372	-5.0395604	15.2019163	35.4433931	55.684869
-1	-84.8783925	-64.6369158	-44.395439	-24.1539623	-3.9124855	16.3289912	36.570468
0	-103.9927943	-83.7513176	-63.5098408	-43.2683641	-23.0268873	-2.7854106	17.456066
1	-123.1071962	-102.8657194	-82.6242427	-62.3827659	-42.1412892	-21.8998124	-1.658335
2	-142.221598	-121.9801212	-101.7386445	-81.4971677	-61.255691	-41.0142142	-20.772737
3	-161.3359998	-141.0945231	-120.8530463	-100.6115696	-80.3700928	-60.1286161	-39.887139

T =

CONFREO

DM
FTIMPES

FUNDAMENTAL CONSTANTS

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -3 .. 3$ $q := -3 .. 3$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot re)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := p \cdot U + q \cdot V + W$ $M = 15.579278$ $R = -12.549979$

DM

p =

-3
-2
-1
0
1
2
3

$$T = \begin{bmatrix} -164.717232 & -144.475754 & -124.234276 & -103.992798 & -83.75132 & -63.509842 & -43.268364 \\ -144.475755 & -124.234277 & -103.992799 & -83.751321 & -63.509843 & -43.268365 & -23.026887 \\ -124.234278 & -103.9928 & -83.751322 & -63.509844 & -43.268366 & -23.026888 & -2.78541 \\ -103.992801 & -83.751323 & -63.509845 & -43.268367 & -23.026889 & -2.785411 & 17.456067 \\ -83.751324 & -63.509846 & -43.268368 & -23.02689 & -2.785412 & 17.456066 & 37.697544 \\ -63.509847 & -43.268369 & -23.026891 & -2.785413 & 17.456065 & 37.697543 & 57.939021 \\ -43.26837 & -23.026892 & -2.785414 & 17.456064 & 37.697542 & 57.93902 & 78.180498 \end{bmatrix}$$

DM (1) (0)
TIMES

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot re)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$

M = 15.579278 R = -12.549979

DM

T =

	-6	-5	-4	-3	-2
-6	-164.717232	-154.596493	-144.475754	-134.355015	-124.234276
-5	-154.5964935	-144.4757545	-134.3550155	-124.2342765	-114.1135375
-4	-144.475755	-134.355016	-124.234277	-114.113538	-103.992799
-3	-134.3550165	-124.2342775	-114.1135385	-103.9927995	-93.8720605
-2	-124.234278	-114.113539	-103.9928	-93.872061	-83.751322
-1	-114.1135395	-103.9928005	-93.8720615	-83.7513225	-73.6305835
0	-103.992801	-93.872062	-83.751323	-73.630584	-63.509845
1	-93.8720625	-83.7513235	-73.6305845	-63.5098455	-53.3891065
2	-83.751324	-73.630585	-63.509846	-53.389107	-43.268368
3	-73.6305855	-63.5098465	-53.3891075	-43.2683685	-33.1476295
4	-63.509847	-53.389108	-43.268369	-33.14763	-23.026891
5	-53.3891085	-43.2683695	-33.1476305	-23.0268915	-12.9061525
6	-43.26837	-33.147631	-23.026892	-12.906153	-2.785414

DM
TIMES 2

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot re)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$

M = 15.579278 R = -12.549979

DM

T =

	-2	-1	0	1	2
-6	-124.234276	-114.113537	-103.992798	-93.872059	-83.75132
-5	-114.1135375	-103.9927985	-93.8720595	-83.7513205	-73.6305815
-4	-103.992799	-93.87206	-83.751321	-73.630582	-63.509843
-3	-93.8720605	-83.7513215	-73.6305825	-63.5098435	-53.3891045
-2	-83.751322	-73.630583	-63.509844	-53.389105	-43.268366
-1	-73.6305835	-63.5098445	-53.3891055	-43.2683665	-33.1476275
0	-63.509845	-53.389106	-43.268367	-33.147628	-23.026889
1	-53.3891065	-43.2683675	-33.1476285	-23.0268895	-12.9061505
2	-43.268368	-33.147629	-23.02689	-12.906151	-2.785412
3	-33.1476295	-23.0268905	-12.9061515	-2.7854125	7.3353265
4	-23.026891	-12.906152	-2.785413	7.335326	17.456065
5	-12.9061525	-2.7854135	7.3353255	17.4560645	27.5768035
6	-2.785414	7.335325	17.456064	27.576803	37.697542

DM
TIMES 3

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot re)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579278$ $R = -12.549979$

DM t τ

T =

	2	3	4	5	6
-6	-83.75132	-73.630581	-63.509842	-53.389103	-43.268364
-5	-73.6305815	-63.5098425	-53.3891035	-43.2683645	-33.1476255
-4	-63.509843	-53.389104	-43.268365	-33.147626	-23.026887
-3	-53.3891045	-43.2683655	-33.1476265	-23.0268875	-12.9061485
-2	-43.268366	-33.147627	-23.026888	-12.906149	-2.78541
-1	-33.1476275	-23.0268885	-12.9061495	-2.7854105	7.3353285
0	-23.026889	-12.90615	-2.785411	7.335328	17.456067
1	-12.9061505	-2.7854115	7.3353275	17.4560665	27.5768055
2	-2.785412	7.335327	17.456066	27.576805	37.697544
3	7.3353265	17.4560655	27.5768045	37.6975435	47.8182825
4	17.456065	27.576804	37.697543	47.818282	57.939021
5	27.5768035	37.6975425	47.8182815	57.9390205	68.0597595
6	37.697542	47.818281	57.93902	68.059759	78.180498

DM TIMES Planck Units

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579278$ $R = -12.549979$

$Z_{p,q} := T_{p,q} - to$

DM P

$Z =$

	-6	-5	-4	-3	-2	-1
-6	-121.449132	-111.328349	-101.207565	-91.086781	-80.965998	-70.845214
-5	-111.328394	-101.20761	-91.086826	-80.966043	-70.845259	-60.724476
-4	-101.207655	-91.086871	-80.966088	-70.845304	-60.724521	-50.603738
-3	-91.086916	-80.966133	-70.845349	-60.724566	-50.603782	-40.482999
-2	-80.966178	-70.845394	-60.724611	-50.603827	-40.483044	-30.362261
-1	-70.845439	-60.724656	-50.603873	-40.483089	-30.362306	-20.241522
0	-60.724701	-50.603918	-40.483134	-30.362351	-20.241567	-10.120784
1	-50.603962	-40.483179	-30.362396	-20.241612	-10.120829	$-4.5 \cdot 10^{-5}$
2	-40.483224	-30.362441	-20.241657	-10.120874	$-9 \cdot 10^{-5}$	10.120694
3	-30.362486	-20.241702	-10.120919	$-1.35 \cdot 10^{-4}$	10.120649	20.241432
4	-20.241747	-10.120964	$-1.8 \cdot 10^{-4}$	10.120604	20.241387	30.36217
5	-10.121008	$-2.25 \cdot 10^{-4}$	10.120559	20.241342	30.362126	40.482909
6	$-2.7 \cdot 10^{-4}$	10.120513	20.241297	30.36208	40.482864	50.603647

DM TIMES
Planck
Units

(21)

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579278$ $R = -12.549979$

$Z_{p,q} := T_{p,q} - to$

DM R

$Z =$

	-3	-2	-1	0	1	2
-6	-91.086781	-80.965998	-70.845214	-60.724431	-50.603647	-40.482864
-5	-80.966043	-70.845259	-60.724476	-50.603693	-40.482909	-30.362126
-4	-70.845304	-60.724521	-50.603738	-40.482954	-30.362171	-20.241387
-3	-60.724566	-50.603782	-40.482999	-30.362216	-20.241432	-10.120649
-2	-50.603827	-40.483044	-30.362261	-20.241477	-10.120694	$9 \cdot 10^{-5}$
-1	-40.483089	-30.362306	-20.241522	-10.120739	$4.5 \cdot 10^{-5}$	10.120829
0	-30.362351	-20.241567	-10.120784	0	10.120784	20.241567
1	-20.241612	-10.120829	$-4.5 \cdot 10^{-5}$	10.120739	20.241522	30.362305
2	-10.120874	$-9 \cdot 10^{-5}$	10.120694	20.241477	30.36226	40.483044
3	$-1.35 \cdot 10^{-4}$	10.120649	20.241432	30.362215	40.482999	50.603782
4	10.120604	20.241387	30.36217	40.482954	50.603738	60.724521
5	20.241342	30.362126	40.482909	50.603693	60.724476	70.845259
6	30.36208	40.482864	50.603647	60.724431	70.845214	80.965998

DM TIMES Planck Units (3)

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 1$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 15.579278$ $R = -12.549979$

$Z_{p,q} := T_{p,q} - to$

DM P

$Z =$

	1	2	3	4	5	6
-6	-50.603647	-40.482864	-30.362081	-20.241297	-10.120513	$2.7 \cdot 10^{-4}$
-5	-40.482909	-30.362126	-20.241342	-10.120559	$2.25 \cdot 10^{-4}$	10.121008
-4	-30.362171	-20.241387	-10.120604	$1.8 \cdot 10^{-4}$	10.120964	20.241747
-3	-20.241432	-10.120649	$1.35 \cdot 10^{-4}$	10.120919	20.241702	30.362485
-2	-10.120694	$9 \cdot 10^{-5}$	10.120874	20.241657	30.362441	40.483224
-1	$4.5 \cdot 10^{-5}$	10.120829	20.241612	30.362395	40.483179	50.603962
0	10.120784	20.241567	30.36235	40.483134	50.603918	60.724701
1	20.241522	30.362305	40.483089	50.603873	60.724656	70.845439
2	30.36226	40.483044	50.603827	60.724611	70.845394	80.966178
3	40.482999	50.603782	60.724566	70.845349	80.966133	91.086917
4	50.603738	60.724521	70.845304	80.966088	91.086872	101.207655
5	60.724476	70.845259	80.966043	91.086827	101.20761	111.328394
6	70.845214	80.965998	91.086782	101.207565	111.328349	121.449132

NR (4)
TIMES

FUNDAMENTAL CONSTANTS

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -3 .. 3$ $q := -3 .. 3$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := p \cdot U + q \cdot V + W$

M = 35.820755 R = 7.691498

NR

p =

p
-3
-2
-1
0
1
2
3

$$T = \begin{bmatrix} -286.166361 & -245.683317 & -205.200273 & -164.717229 & -124.234185 & -83.751141 & -43.268097 \\ -245.683407 & -205.200363 & -164.717319 & -124.234275 & -83.751231 & -43.268187 & -2.785143 \\ -205.200453 & -164.717409 & -124.234365 & -83.751321 & -43.268277 & -2.785233 & 37.697811 \\ -164.717499 & -124.234455 & -83.751411 & -43.268367 & -2.785323 & 37.697721 & 78.180765 \\ -124.234545 & -83.751501 & -43.268457 & -2.785413 & 37.697631 & 78.180675 & 118.663719 \\ -83.751591 & -43.268547 & -2.785503 & 37.697541 & 78.180585 & 118.663629 & 159.146673 \\ -43.268637 & -2.785593 & 37.697451 & 78.180495 & 118.663539 & 159.146583 & 199.629627 \end{bmatrix}$$

NA TIMES 01

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820755$ $R = 7.691498$

NA

T =

	-6	-5	-4	-3	-2	-1
-6	-286.166361	-265.924839	-245.683317	-225.441795	-205.200273	-184.958751
-5	-265.924884	-245.683362	-225.44184	-205.200318	-184.958796	-164.717274
-4	-245.683407	-225.441885	-205.200363	-184.958841	-164.717319	-144.475797
-3	-225.44193	-205.200408	-184.958886	-164.717364	-144.475842	-124.23432
-2	-205.200453	-184.958931	-164.717409	-144.475887	-124.234365	-103.992843
-1	-184.958976	-164.717454	-144.475932	-124.23441	-103.992888	-83.751366
0	-164.717499	-144.475977	-124.234455	-103.992933	-83.751411	-63.509889
1	-144.476022	-124.2345	-103.992978	-83.751456	-63.509934	-43.268412
2	-124.234545	-103.993023	-83.751501	-63.509979	-43.268457	-23.026935
3	-103.993068	-83.751546	-63.510024	-43.268502	-23.02698	-2.785458
4	-83.751591	-63.510069	-43.268547	-23.027025	-2.785503	17.456019
5	-63.510114	-43.268592	-23.02707	-2.785548	17.455974	37.697496
6	-43.268637	-23.027115	-2.785593	17.455929	37.697451	57.938973

N ☆ TIMES (2)

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820755$ $R = 7.691498$

N ☆

$T =$

	-2	-1	0	1	2	3
-6	-205.200273	-184.958751	-164.717229	-144.475707	-124.234185	-103.992663
-5	-184.958796	-164.717274	-144.475752	-124.23423	-103.992708	-83.751186
-4	-164.717319	-144.475797	-124.234275	-103.992753	-83.751231	-63.509709
-3	-144.475842	-124.23432	-103.992798	-83.751276	-63.509754	-43.268232
-2	-124.234365	-103.992843	-83.751321	-63.509799	-43.268277	-23.026755
-1	-103.992888	-83.751366	-63.509844	-43.268322	-23.0268	-2.785278
0	-83.751411	-63.509889	-43.268367	-23.026845	-2.785323	17.456199
1	-63.509934	-43.268412	-23.02689	-2.785368	17.456154	37.697676
2	-43.268457	-23.026935	-2.785413	17.456109	37.697631	57.939153
3	-23.02698	-2.785458	17.456064	37.697586	57.939108	78.18063
4	-2.785503	17.456019	37.697541	57.939063	78.180585	98.422107
5	17.455974	37.697496	57.939018	78.18054	98.422062	118.663584
6	37.697451	57.938973	78.180495	98.422017	118.663539	138.905061

N ☆ TIMES (3)

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$

M = 35.820755 R = 7.691498

N ☆ t ~

T =

	1	2	3	4	5	6
-6	-144.475707	-124.234185	-103.992663	-83.751141	-63.509619	-43.268097
-5	-124.23423	-103.992708	-83.751186	-63.509664	-43.268142	-23.02662
-4	-103.992753	-83.751231	-63.509709	-43.268187	-23.026665	-2.785143
-3	-83.751276	-63.509754	-43.268232	-23.02671	-2.785188	17.456334
-2	-63.509799	-43.268277	-23.026755	-2.785233	17.456289	37.697811
-1	-43.268322	-23.0268	-2.785278	17.456244	37.697766	57.939288
0	-23.026845	-2.785323	17.456199	37.697721	57.939243	78.180765
1	-2.785368	17.456154	37.697676	57.939198	78.18072	98.422242
2	17.456109	37.697631	57.939153	78.180675	98.422197	118.663719
3	37.697586	57.939108	78.18063	98.422152	118.663674	138.905196
4	57.939063	78.180585	98.422107	118.663629	138.905151	159.146673
5	78.18054	98.422062	118.663584	138.905106	159.146628	179.38815
6	98.422017	118.663539	138.905061	159.146583	179.388105	199.629627

N ☆
TIMES
Planck Units

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820755$ $R = 7.691498$

$Z_{p,q} := T_{p,q} - to$

N ☆ P

$Z =$

	-6	-5	-4	-3	-2	-1
-6	-242.897994	-222.656472	-202.41495	-182.173428	-161.931906	-141.690384
-5	-222.656517	-202.414995	-182.173473	-161.931951	-141.690429	-121.448907
-4	-202.41504	-182.173518	-161.931996	-141.690474	-121.448952	-101.20743
-3	-182.173563	-161.932041	-141.690519	-121.448997	-101.207475	-80.965953
-2	-161.932086	-141.690564	-121.449042	-101.20752	-80.965998	-60.724476
-1	-141.690609	-121.449087	-101.207565	-80.966043	-60.724521	-40.482999
0	-121.449132	-101.20761	-80.966088	-60.724566	-40.483044	-20.241522
1	-101.207655	-80.966133	-60.724611	-40.483089	-20.241567	$-4.5 \cdot 10^{-5}$
2	-80.966178	-60.724656	-40.483134	-20.241612	$-9 \cdot 10^{-5}$	20.241432
3	-60.724701	-40.483179	-20.241657	$-1.35 \cdot 10^{-4}$	20.241387	40.482909
4	-40.483224	-20.241702	$-1.8 \cdot 10^{-4}$	20.241342	40.482864	60.724386
5	-20.241747	$-2.25 \cdot 10^{-4}$	20.241297	40.482819	60.724341	80.965863
6	$-2.7 \cdot 10^{-4}$	20.241252	40.482774	60.724296	80.965818	101.20734

N ☆ TIMES P (2)

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ M = 35.820755 R = 7.691498

$Z_{p,q} := T_{p,q} - to$

N ☆

Z =

	-2	-1	0	1	2	3
-6	-161.931906	-141.690384	-121.448862	-101.20734	-80.965818	-60.724296
-5	-141.690429	-121.448907	-101.207385	-80.965863	-60.724341	-40.482819
-4	-121.448952	-101.20743	-80.965908	-60.724386	-40.482864	-20.241342
-3	-101.207475	-80.965953	-60.724431	-40.482909	-20.241387	$1.35 \cdot 10^{-4}$
-2	-80.965998	-60.724476	-40.482954	-20.241432	$9 \cdot 10^{-5}$	20.241612
-1	-60.724521	-40.482999	-20.241477	$4.5 \cdot 10^{-5}$	20.241567	40.483089
0	-40.483044	-20.241522	0	20.241522	40.483044	60.724566
1	-20.241567	$-4.5 \cdot 10^{-5}$	20.241477	40.482999	60.724521	80.966043
2	$-9 \cdot 10^{-5}$	20.241432	40.482954	60.724476	80.965998	101.20752
3	20.241387	40.482909	60.724431	80.965953	101.207475	121.448997
4	40.482864	60.724386	80.965908	101.20743	121.448952	141.690474
5	60.724341	80.965863	101.207385	121.448907	141.690429	161.931951
6	80.965818	101.20734	121.448862	141.690384	161.931906	182.173428

N ★ TIMES (B) P

FUNDAMENTAL CONSTANTS PART 3
Planck Units

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 2$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 35.820755$ $R = 7.691498$

$Z_{p,q} := T_{p,q} - to$

N ★

$Z =$

	1	2	3	4	5	6
-6	-101.20734	-80.965818	-60.724296	-40.482774	-20.241252	$2.7 \cdot 10^{-4}$
-5	-80.965863	-60.724341	-40.482819	-20.241297	$2.25 \cdot 10^{-4}$	20.241747
-4	-60.724386	-40.482864	-20.241342	$1.8 \cdot 10^{-4}$	20.241702	40.483224
-3	-40.482909	-20.241387	$1.35 \cdot 10^{-4}$	20.241657	40.483179	60.724701
-2	-20.241432	$9 \cdot 10^{-5}$	20.241612	40.483134	60.724656	80.966178
-1	$4.5 \cdot 10^{-5}$	20.241567	40.483089	60.724611	80.966133	101.207655
0	20.241522	40.483044	60.724566	80.966088	101.20761	121.449132
1	40.482999	60.724521	80.966043	101.207565	121.449087	141.690609
2	60.724476	80.965998	101.20752	121.449042	141.690564	161.932086
3	80.965953	101.207475	121.448997	141.690519	161.932041	182.173563
4	101.20743	121.448952	141.690474	161.931996	182.173518	202.41504
5	121.448907	141.690429	161.931951	182.173473	202.414995	222.656517
6	141.690384	161.931906	182.173428	202.41495	222.656472	242.897994

U – (1)
TIMES

FUNDAMENTAL CONSTANTS

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -3 .. 3$ $q := -3 .. 3$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := p \cdot U + q \cdot V + W$ $M = 56.062232$ $R = 27.932975$

UNIVERSE
0

p =

p
-3
-2
-1
0
1
2
3

$T =$

-407.615223	-346.890702	-286.166181	-225.44166	-164.717139	-103.992618	-43.268097
-346.890792	-286.166271	-225.44175	-164.717229	-103.992708	-43.268187	17.456334
-286.166361	-225.44184	-164.717319	-103.992798	-43.268277	17.456244	78.180765
-225.44193	-164.717409	-103.992888	-43.268367	17.456154	78.180675	138.905196
-164.717499	-103.992978	-43.268457	-17.456064	78.180585	138.905106	199.629627
-103.993068	-43.268547	17.455974	78.180495	138.905016	199.629537	260.354058
-43.268637	17.455884	78.180405	138.904926	199.629447	260.353968	321.078489

U -(4)
TIMES

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ M = 56.062232 R = 27.932975

UNIVERSE

T =

	-6	-5	-4	-3	-2
-6	-407.615223	-377.2529625	-346.890702	-316.5284415	-286.166181
-5	-377.2530075	-346.890747	-316.5284865	-286.166226	-255.8039655
-4	-346.890792	-316.5285315	-286.166271	-255.8040105	-225.44175
-3	-316.5285765	-286.166316	-255.8040555	-225.441795	-195.0795345
-2	-286.166361	-255.8041005	-225.44184	-195.0795795	-164.717319
-1	-255.8041455	-225.441885	-195.0796245	-164.717364	-134.3551035
0	-225.44193	-195.0796695	-164.717409	-134.3551485	-103.992888
1	-195.0797145	-164.717454	-134.3551935	-103.992933	-73.6306725
2	-164.717499	-134.3552385	-103.992978	-73.6307175	-43.268457
3	-134.3552835	-103.993023	-73.6307625	-43.268502	-12.9062415
4	-103.993068	-73.6308075	-43.268547	-12.9062865	17.455974
5	-73.6308525	-43.268592	-12.9063315	17.455929	47.8181895
6	-43.268637	-12.9063765	17.455884	47.8181445	78.180405

U = (2)
TIMES

FUNDAMENTAL CONSTANTS Part 2

c := 10.476821 mo := -4.662199 am := 1.127074 re := -12.550068

G := -7.175705 lo := -32.791456 S := 39.355880 mb := -23.776602

h := -26.976924 to := -43.268367 J := 0.5·(am + S) K := 0.5·(am − S)

n := -1 p := -6.. 6 q := -2.. 2 k := 3 M := k·J + mo R := k·J + lo

U := 0.5·(-c + G − h + 2·M) V := 0.5·(3·c − G − h + 2·R) W := 0.5·(-5·c + G + h)

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$

M = 56.062232 R = 27.932975

UNIVERSE

		-2	-1	0	1	2
-3	-6	-286.166181	-255.8039205	-225.44166	-195.0793995	-164.717139
-5/2	-5	-255.8039655	-225.441705	-195.0794445	-164.717184	-134.3549235
-2	-4	-225.44175	-195.0794895	-164.717229	-134.3549685	-103.992708
-3/2	-3	-195.0795345	-164.717274	-134.3550135	-103.992753	-73.6304925
-1	-2	-164.717319	-134.3550585	-103.992798	-73.6305375	-43.268277
T = 1/2	-1	-134.3551035	-103.992843	-73.6305825	-43.268322	-12.9060615
	0	-103.992888	-73.6306275	-43.268367	-12.9061065	17.456154
1/2	1	-73.6306725	-43.268412	-12.9061515	17.456109	47.8183695
1	2	-43.268457	-12.9061965	17.456064	47.8183245	78.180585
3/2	3	-12.9062415	17.456019	47.8182795	78.18054	108.5428005
2	4	17.455974	47.8182345	78.180495	108.5427555	138.905016
5/2	5	47.8181895	78.18045	108.5427105	138.904971	169.2672315
3	6	78.180405	108.5426655	138.904926	169.2671865	199.629447

do q = 1.. 6

q = -6 -1

U – 39
TIMES

FUNDAMENTAL CONSTANTS Part 2

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ M = 56.062232 R = 27.932975

UNIVERSE

$T =$

	2	3	4	5	6
-6	-164.717139	-134.3548785	-103.992618	-73.6303575	-43.268097
-5	-134.3549235	-103.992663	-73.6304025	-43.268142	-12.9058815
-4	-103.992708	-73.6304475	-43.268187	-12.9059265	17.456334
-3	-73.6304925	-43.268232	-12.9059715	17.456289	47.8185495
-2	-43.268277	-12.9060165	17.456244	47.8185045	78.180765
-1	-12.9060615	17.456199	47.8184595	78.18072	108.5429805
0	17.456154	47.8184145	78.180675	108.5429355	138.905196
1	47.8183695	78.18063	108.5428905	138.905151	169.2674115
2	78.180585	108.5428455	138.905106	169.2673665	199.629627
3	108.5428005	138.905061	169.2673215	199.629582	229.9918425
4	138.905016	169.2672765	199.629537	229.9917975	260.354058
5	169.2672315	199.629492	229.9917525	260.354013	290.7162735
6	199.629447	229.9917075	260.353968	290.7162285	321.078489

U - 4 TIMES Planck Units

FUNDAMENTAL CONSTANTS PART 3

PLANCK UNITS

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 56.062232$ $R = 27.932975$

$Z_{p,q} := T_{p,q} - to$

UNIVERSE P

$Z =$

	-6	-5	-4	-3	-2	-1
-6	-364.346856	-333.984595	-303.622335	-273.260074	-242.897814	-212.535553
-5	-333.98464	-303.62238	-273.260119	-242.897859	-212.535598	-182.173338
-4	-303.622425	-273.260164	-242.897904	-212.535643	-182.173383	-151.811122
-3	-273.260209	-242.897949	-212.535688	-182.173428	-151.811168	-121.448907
-2	-242.897994	-212.535733	-182.173473	-151.811213	-121.448952	-91.086691
-1	-212.535778	-182.173518	-151.811257	-121.448997	-91.086736	-60.724476
0	-182.173563	-151.811302	-121.449042	-91.086781	-60.724521	-30.362261
1	-151.811348	-121.449087	-91.086826	-60.724566	-30.362306	$-4.5 \cdot 10^{-5}$
2	-121.449132	-91.086871	-60.724611	-30.362351	$-9 \cdot 10^{-5}$	30.36217
3	-91.086916	-60.724656	-30.362395	$-1.35 \cdot 10^{-4}$	30.362126	60.724386
4	-60.724701	-30.36244	$-1.8 \cdot 10^{-4}$	30.36208	60.724341	91.086602
5	-30.362486	$-2.25 \cdot 10^{-4}$	30.362035	60.724296	91.086556	121.448817
6	$-2.7 \cdot 10^{-4}$	30.361991	60.724251	91.086512	121.448772	151.811033

U - TIMES Planck Units

FUNDAMENTAL CONSTANTS PART 3

PLANCK UNITS

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 56.062232$ $R = 27.932975$

$Z_{p,q} := T_{p,q} - to$

UNIVERSE D

$Z =$

	-2	-1	0	1	2	3
-6	-242.897814	-212.535553	-182.173293	-151.811033	-121.448772	-91.086511
-5	-212.535598	-182.173338	-151.811077	-121.448817	-91.086556	-60.724296
-4	-182.173383	-151.811122	-121.448862	-91.086601	-60.724341	-30.36208
-3	-151.811168	-121.448907	-91.086646	-60.724386	-30.362126	$1.35 \cdot 10^{-4}$
-2	-121.448952	-91.086691	-60.724431	-30.362171	$9 \cdot 10^{-5}$	30.362351
-1	-91.086736	-60.724476	-30.362216	$4.5 \cdot 10^{-5}$	30.362305	60.724566
0	-60.724521	-30.362261	0	30.36226	60.724521	91.086782
1	-30.362306	$-4.5 \cdot 10^{-5}$	30.362215	60.724476	91.086737	121.448997
2	$-9 \cdot 10^{-5}$	30.36217	60.724431	91.086692	121.448952	151.811213
3	30.362126	60.724386	91.086647	121.448907	151.811168	182.173428
4	60.724341	91.086602	121.448862	151.811122	182.173383	212.535643
5	91.086556	121.448817	151.811077	182.173338	212.535598	242.897859
6	121.448772	151.811033	182.173293	212.535553	242.897814	273.260074

U - (2)
TIMES
Planck
Unit

PLANCK
UNITS

FUNDAMENTAL CONSTANTS PART 3

$c := 10.476821$ $mo := -4.662199$ $am := 1.127074$ $re := -12.550068$

$G := -7.175705$ $lo := -32.791456$ $S := 39.355880$ $mb := -23.776602$

$h := -26.976924$ $to := -43.268367$ $J := 0.5 \cdot (am + S)$ $K := 0.5 \cdot (am - S)$

$n := -1$ $p := -6 .. 6$ $q := -6 .. 6$ $k := 3$ $M := k \cdot J + mo$ $R := k \cdot J + lo$

$U := 0.5 \cdot (-c + G - h + 2 \cdot M)$ $V := 0.5 \cdot (3 \cdot c - G - h + 2 \cdot R)$ $W := 0.5 \cdot (-5 \cdot c + G + h)$

$T_{p,q} := 0.5 \cdot p \cdot U + 0.5 \cdot q \cdot V + W$ $M = 56.062232$ $R = 27.932975$

$Z_{p,q} := T_{p,q} - to$

UNIVERSE P

$Z =$

	1	2	3	4	5	6
-6	-151.811033	-121.448772	-91.086511	-60.724251	-30.361991	$2.7 \cdot 10^{-4}$
-5	-121.448817	-91.086556	-60.724296	-30.362035	$2.25 \cdot 10^{-4}$	30.362486
-4	-91.086601	-60.724341	-30.36208	$1.8 \cdot 10^{-4}$	30.36244	60.724701
-3	-60.724386	-30.362126	$1.35 \cdot 10^{-4}$	30.362395	60.724656	91.086917
-2	-30.362171	$9 \cdot 10^{-5}$	30.362351	60.724611	91.086871	121.449132
-1	$4.5 \cdot 10^{-5}$	30.362305	60.724566	91.086827	121.449087	151.811348
0	30.36226	60.724521	91.086782	121.449042	151.811302	182.173563
1	60.724476	91.086737	121.448997	151.811257	182.173518	212.535778
2	91.086692	121.448952	151.811213	182.173473	212.535733	242.897994
3	121.448907	151.811168	182.173428	212.535688	242.897949	273.260209
4	151.811122	182.173383	212.535643	242.897904	273.260164	303.622425
5	182.173338	212.535598	242.897859	273.260119	303.62238	333.98464
6	212.535553	242.897814	273.260074	303.622335	333.984595	364.346856

GEN MATRIX

ZEROTIME.MCE OCTOBER 27, 2001

THE c,G,h MATRIX

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$ $mp := -23.776602$

$mo := -4.662199$ $lo := -32.791545$ $to := -43.268364$ $re := -12.550068$

$a := 1$ $b := 2$

$x(a,b) := \frac{(a-3\cdot b)}{2}$ $y(a,b) := \frac{(b-a)}{2}$ $z(a,b) := \frac{(a+b)}{2}$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$ $A(x,y,z) := x\cdot c + y\cdot G + z\cdot h$

$A(2,-1,0) = 28.129348$ $A(-1,0,1) = -37.453747$ $A(0,-1,2) = -46.778146$

$B(4,-1) = 14.1427495$	$B(4,0) = -18.648798$	$B(4,1) = -51.4403455$	$B(4,2) = -84.231893$
$B(3,-1) = 18.804949$	$B(3,0) = -13.9865985$	$B(3,1) = -46.778146$	$B(3,2) = -79.5696935$
$B(2,-1) = 23.4671485$	$B(2,0) = -9.324399$	$B(2,1) = -42.1159465$	$B(2,2) = -74.907494$
$B(1,-1) = 28.129348$	$B(1,0) = -4.6621995$	$B(1,1) = -37.453747$	$B(1,2) = -70.2452945$
$B(0,-1) = 32.7915475$	$B(0,0) = 0$	$B(0,1) = -32.7915475$	$B(0,2) = -65.583095$
$B(-1,-1) = 37.453747$	$B(-1,0) = 4.6621995$	$B(-1,1) = -28.129348$	$B(-1,2) = -60.9208955$
$B(-2,-1) = 42.1159465$	$B(-2,0) = 9.324399$	$B(-2,1) = -23.4671485$	$B(-2,2) = -56.258696$
$B(-3,-1) = 46.778146$	$B(-3,0) = 13.9865985$	$B(-3,1) = -18.804949$	$B(-3,2) = -51.5964965$
$B(-4,-1) = 51.4403455$	$B(-4,0) = 18.648798$	$B(-4,1) = -14.1427495$	$B(-4,2) = -46.934297$

This is the B-Matrix for Direct i.e. $u=v=w=0$

FORMULAE

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$ $mp := -23.776602$

$mo := -4.662199$ $lo := -32.791545$ $to := -43.268364$ $re := -12.550068$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $A(x, y, z) := x \cdot c + y \cdot G + z \cdot h$

$$x(a, b) := \frac{(a - 3 \cdot b)}{2} \qquad y(a, b) := \frac{(b - a)}{2} \qquad z(a, b) := \frac{(a + b)}{2}$$

$$B(a, b) := 0.5 \cdot (a - 3 \cdot b) \cdot c + 0.5 \cdot (b - a) \cdot G + 0.5 \cdot (a + b) \cdot h$$

$$M_{a,b} := \frac{(0.5 \cdot (a - 3 \cdot b) \cdot c + 0.5 \cdot (b - a) \cdot G + 0.5 \cdot (a + b) \cdot h - b \cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5 \cdot (a - 3 \cdot b) \cdot c + 0.5 \cdot (b - a) \cdot G + 0.5 \cdot (a + b) \cdot h - a \cdot Mn)}{b}$$

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

Inputs mp, re

$a := -5 .. 5$ $b := -5 .. 5$

$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$

$$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$$

b R

B =

	-3	-2	-1	0	1	2
-5	121.68564	88.894092	56.102545	23.310997	-9.48055	-42.272098
-4	117.02344	84.231893	51.440345	18.648798	-14.142749	-46.934297
-3	112.361241	79.569693	46.778146	13.986599	-18.804949	-51.596497
-2	107.699041	74.907494	42.115946	9.324399	-23.467149	-56.258696
-1	103.036842	70.245294	37.453747	4.662199	-28.129348	-60.920896
0	98.374642	65.583095	32.791547	0	-32.791547	-65.583095
1	93.712443	60.920896	28.129348	-4.662199	-37.453747	-70.245294
2	89.050243	56.258696	23.467149	-9.324399	-42.115946	-74.907494
3	84.388044	51.596497	18.804949	-13.986599	-46.778146	-79.569693
4	79.725844	46.934297	14.142749	-18.648798	-51.440345	-84.231893
5	75.063645	42.272098	9.48055	-23.310997	-56.102545	-88.894092

M a

This table gives the values of $f(c, G, h) = B$ as function of $M^a R^b$

i.e. $M = \sqrt[a]{\frac{B}{R^b}}$

and $R = \sqrt[b]{\frac{B}{M^a}}$

R = 0.555556 K

OK

GENMATRX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := 1 .. 5$ $b := -5 .. 5$

$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$

$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a}$ b $R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$

M =

	-3	-2	-1	0	1	2
-5	0	0	0	0	0	0
-4	0	0	0	0	0	0
-3	0	0	0	0	0	0
-2	0	0	0	0	0	0
-1	0	0	0	0	0	0
0	0	0	0	0	0	0
1	-56.062239	-35.82076	-15.57928	-4.662199	-24.903679	-45.145159
2	25.70002	15.57928	5.45854	-4.662199	-14.782939	-24.903679
3	15.57928	8.83212	2.08496	-4.6622	-11.409359	-18.156519
4	10.51891	5.45854	0.39817	-4.662199	-9.722569	-14.782939
5	7.482688	3.434392	-0.613904	-4.662199	-8.710495	-12.758791

a

$M = \sqrt[a]{\frac{B}{R^b}}$

INPUT Re

R = 0.555556 K

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := 1 .. 5$

$$B_{a,b} := 0.5\left(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h\right)$$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

b

R =

a	0	1	2	3	4	5
-5	0	-128.36356	-80.577554	-64.648885	-56.684551	-51.90595
-4	0	-109.249157	-71.020353	-58.277417	-51.90595	-48.08307
-3	0	-90.134755	-61.463151	-51.90595	-47.127349	-44.260189
-2	0	-71.020353	-51.90595	-45.534482	-42.348749	-40.437308
-1	0	-51.90595	-42.348749	-39.163015	-37.570148	-36.614428
0	0	-32.791547	-32.791547	-32.791548	-32.791547	-32.791548
1	0	-13.677145	-23.234346	-26.42008	-28.012947	-28.968667
2	0	5.437258	-13.677145	-20.048612	-23.234346	-25.145786
3	0	24.55166	-4.119944	-13.677145	-18.455746	-21.322906
4	0	43.666063	5.437258	-7.305677	-13.677145	-17.500025
5	0	62.780465	14.994459	-0.93421	-8.898544	-13.677145

$R = \sqrt[b]{\frac{B}{M^a}}$

INPUT mp

Ok

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Md$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := 1 .. 5$

$$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$$

$$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$$

R =

	0	1	2	3	4	5
-5	0	68.41584	17.812146	0.944248	-7.489701	-12.55007
-4	0	48.174363	7.691407	-5.802911	-12.55007	-16.598365
-3	0	27.932885	-2.429331	-12.55007	-17.610439	-20.646661
-2	0	7.691407	-12.55007	-19.297229	-22.670809	-24.694956
-1	0	-12.55007	-22.670809	-26.044388	-27.731178	-28.743252
0	0	-32.791547	-32.791547	-32.791548	-32.791547	-32.791548
1	0	-53.033025	-42.912286	-39.538707	-37.851917	-36.839843
2	0	-73.274502	-53.033025	-46.285866	-42.912286	-40.888138
3	0	-93.51598	-63.153764	-53.033025	-47.972656	-44.936434
4	0	-113.757457	-73.274502	-59.780184	-53.033025	-48.98473
5	0	-133.998935	-83.395241	-66.527343	-58.093394	-53.033025

INPUT Md

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rs$ $Mn := Ms$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. -1$ $b := -5 .. 5$

$$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$$

$$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$$

$M =$

	0	1	2	3	4	5
-5	-4.662199	2.983562	10.629324	18.275086	25.920847	33.566609
-4	-4.662199	4.895003	14.452205	24.009407	33.566609	43.123811
-3	-4.6622	8.080737	20.823673	33.566609	46.309545	59.052481
-2	-4.662199	14.452205	33.566609	52.681013	71.795417	90.909822
-1	-4.662199	33.566609	71.795417	110.024226	148.253035	186.481843

INPUT Rs

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Ms$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := 1 .. 5$

$$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$$

$$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$$

R =

	0	1	2	3	4	5
-5	0	158.352485	62.780469	30.92313	14.994461	5.437259
-4	0	120.123678	43.666065	18.180194	5.437259	-2.208502
-3	0	81.894872	24.551662	5.437259	-4.119943	-9.854264
-2	0	43.666065	5.437259	-7.305676	-13.677144	-17.500025
-1	0	5.437259	-13.677144	-20.048612	-23.234346	-25.145786
0	0	-32.791547	-32.791547	-32.791548	-32.791547	-32.791548
1	0	-71.020354	-51.905951	-45.534483	-42.348749	-40.437309
2	0	-109.24916	-71.020354	-58.277418	-51.905951	-48.08307
3	0	-147.477967	-90.134757	-71.020354	-61.463152	-55.728831
4	0	-185.706773	-109.24916	-83.763289	-71.020354	-63.374593
5	0	-223.93558	-128.363564	-96.506225	-80.577556	-71.020354

INPUT M_s

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ru$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := 1 .. 5$ $b := -5 .. 5$

$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$

$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a}$ $R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$

$M =$

	-4	-3	-2	-1	0	1
-5	0	0	0	0	0	0
-4	0	0	0	0	0	0
-3	0	0	0	0	0	0
-2	0	0	0	0	0	0
-1	0	0	0	0	0	0
0	0	0	0	0	0	0
1	224.710626	167.36742	110.024214	52.681007	-4.662199	-62.005406
2	110.024214	81.35261	52.681007	24.009404	-4.662199	-33.333803
3	71.795409	52.681007	33.566605	14.452203	-4.6622	-23.776602
4	52.681007	38.345205	24.009404	9.673602	-4.662199	-18.998001
5	41.212366	29.743724	18.275083	6.806442	-4.662199	-16.130841

Input Ru

$R = 0.555556$ K

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ru$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := -1 .. -5$ $b := -5 .. 5$

$$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$$

$$M_{a,b} := \frac{(B_{a,b} - b\cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a\cdot Mn)}{b}$$

b

M =

a	-3	-2	-1	0	1	2
-5	-39.068123	-27.599482	-16.130841	-4.662199	6.806442	18.275083
-4	-47.669604	-33.333803	-18.998001	-4.662199	9.673602	24.009404
-3	-62.005406	-42.891004	-23.776602	-4.6622	14.452203	33.566605
-2	-90.677009	-62.005406	-33.333803	-4.662199	24.009404	52.681007
-1	-176.691819	-119.348613	-62.005406	-4.662199	52.681007	110.024214

Input R_u

R = 0.555556 K

GENMATRIX2.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Mu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := 1 .. 5$

$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

R =

	0	1	2	3	4	5
-5	0	253.9245	110.566476	62.780468	38.887464	24.551662
-4	0	196.581291	81.894871	43.666065	24.551662	13.08302
-3	0	139.238081	53.223267	24.551662	10.21586	1.614378
-2	0	81.894871	24.551662	5.437259	-4.119943	-9.854264
-1	0	24.551662	-4.119943	-13.677144	-18.455745	-21.322906
0	0	-32.791547	-32.791547	-32.791548	-32.791547	-32.791548
1	0	-90.134757	-61.463152	-51.905951	-47.12735	-44.260189
2	0	-147.477967	-90.134757	-71.020354	-61.463152	-55.728831
3	0	-204.821176	-118.806362	-90.134757	-75.798955	-67.197473
4	0	-262.164385	-147.477967	-109.24916	-90.134757	-78.666115
5	0	-319.507595	-176.149571	-128.363563	-104.470559	-90.134757

INPUT MU

GENMATRIX2.MCD OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Ms$ $u := 1$ $v := 1$ $w := -2$

$a := -5 .. 5$ $b := -5 .. 5$

$B_{a,b} := 0.5\,(-(u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + -(-u + v + w + a - b)\cdot G + -(u + v + w - a - b)\cdot h)$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

b

a	-2	-1	0	1	2	3
-5	39.811103	7.019555	-25.771992	-58.56354	-91.355087	-124.146635
-4	35.148903	2.357355	-30.434192	-63.225739	-96.017287	-128.808835
-3	30.486703	-2.304844	-35.096391	-67.887939	-100.679486	-133.471034
-2	25.824504	-6.967043	-39.758591	-72.550139	-105.341686	-138.133233
-1	21.162305	-11.629243	-44.42079	-77.212338	-110.003885	-142.795433
0	16.500105	-16.291442	-49.08299	-81.874538	-114.666085	-147.457632
1	11.837905	-20.953642	-53.745189	-86.536737	-119.328284	-152.119832
2	7.175706	-25.615841	-58.407389	-91.198937	-123.990484	-156.782031
3	2.513507	-30.278041	-63.069589	-95.861136	-128.652683	-161.444231
4	-2.148693	-34.940241	-67.731788	-100.523335	-133.314883	-166.10643
5	-6.810893	-39.60244	-72.393987	-105.185535	-137.977082	-170.76863

B =

FORCE

Signs wrong

a, b correct

GENMATRIX4.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + (-u + v + w + a - b)\cdot G + (u + v + w - a - b)\cdot h\right)$$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

b

B =

a	-3	-2	-1	0	1	2
-5	-121.68564	-88.894092	-56.102545	-23.310997	9.48055	42.272098
-4	-117.02344	-84.231893	-51.440345	-18.648798	14.142749	46.934297
-3	-112.361241	-79.569693	-46.778146	-13.986599	18.804949	51.596497
-2	-107.699041	-74.907494	-42.115946	-9.324399	23.467149	56.258696
-1	-103.036842	-70.245294	-37.453747	-4.662199	28.129348	60.920896
0	-98.374642	-65.583095	-32.791547	0	32.791547	65.583095
1	-93.712443	-60.920896	-28.129348	4.662199	37.453747	70.245294
2	-89.050243	-56.258696	-23.467149	9.324399	42.115946	74.907494
3	-84.388044	-51.596497	-18.804949	13.986599	46.778146	79.569693
4	-79.725844	-46.934297	-14.142749	18.648798	51.440345	84.231893
5	-75.063645	-42.272098	-9.48055	23.310997	56.102545	88.894092

R = 0.555556 K

SIGNS REVERSED

GENMATRIX4.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := 1 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + (-u + v + w + a - b)\cdot G + (u + v + w - a - b)\cdot h\right)$$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

M =

	-2	-1	0	1	2	3
-5	0	0	0	0	0	0
-4	0	0	0	0	0	0
-3	0	0	0	0	0	0
-2	0	0	0	0	0	0
-1	0	0	0	0	0	0
0	0	0	0	0	0	0
1	-86.021031	-40.679416	4.662199	50.003815	95.34543	140.687046
2	-40.679416	-18.008608	4.662199	27.333007	50.003815	72.674623
3	-25.565544	-10.451672	4.6622	19.776071	34.889943	50.003815
4	-18.008608	-6.673204	4.662199	15.997603	27.333007	38.668411
5	-13.474447	-4.406124	4.662199	13.730523	22.798846	31.867169

R = 0.555556 K

SIGNS REVERSED

GENMATRIX4.MCD

OCTOBER 29, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 1$ $v := 1$ $w := -2$

$a := -5 .. 5$ $b := -5 .. 5$

as derived

$$B_{a,b} := 0.5\left((u - 3\cdot v - 5\cdot w - a + 3\cdot b)\cdot c + (-u + v + w + a - b)\cdot G + (u + v + w - a - b)\cdot h\right)$$

$$M_{a,b} := \frac{\left(B_{a,b} - b\cdot Rn\right)}{a} \qquad b \qquad R_{a,b} := \frac{\left(B_{a,b} - a\cdot Mn\right)}{b}$$

B =

	-2	-1	0	1	2	3
-5	-39.811103	-7.019555	25.771992	58.56354	91.355087	124.146635
-4	-35.148903	-2.357355	30.434192	63.225739	96.017287	128.808835
-3	-30.486703	2.304844	35.096391	67.887939	100.679486	133.471034
-2	-25.824504	6.967043	39.758591	72.550139	105.341686	138.133233
-1	-21.162305	11.629243	44.42079	77.212338	110.003885	142.795433
0	-16.500105	16.291442	49.08299	81.874538	114.666085	147.457632
1	-11.837905	20.953642	53.745189	86.536737	119.328284	152.119832
2	-7.175706	25.615841	58.407389	91.198937	123.990484	156.782031
3	-2.513507	30.278041	63.069589	95.861136	128.652683	161.444231
4	2.148693	34.940241	67.731788	100.523335	133.314883	166.10643
5	6.810893	39.60244	72.393987	105.185535	137.977082	170.76863

FORCE
signs
OK
a + b ok

R = 0.555556 K

SIGNS OK

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (-a + 3 \cdot b - u + 3 \cdot v + 5 \cdot w) + G \cdot (a - b + u - v - w) + h \cdot (-a - b - u - v - w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

B =

	-2	-1	0	1	2	3
-5	-88.894092	-56.102545	-23.310997	9.48055	42.272098	75.063645
-4	-84.231893	-51.440345	-18.648798	14.142749	46.934297	79.725844
-3	-79.569693	-46.778146	-13.986599	18.804949	51.596497	84.388044
-2	-74.907494	-42.115946	-9.324399	23.467149	56.258696	89.050243
-1	-70.245294	-37.453747	-4.662199	28.129348	60.920896	93.712443
0	-65.583095	-32.791547	0	32.791547	65.583095	98.374642
1	-60.920896	-28.129348	4.662199	37.453747	70.245294	103.036842
2	-56.258696	-23.467149	9.324399	42.115946	74.907494	107.699041
3	-51.596497	-18.804949	13.986599	46.778146	79.569693	112.361241
4	-46.934297	-14.142749	18.648798	51.440345	84.231893	117.02344
5	-42.272098	-9.48055	23.310997	56.102545	88.894092	121.68564

signs wrong
or
a & b wrong

GENMATRIX6.MCD OCTOBER 30, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 1$ $v := 1$ $w := -2$

$a := -5 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (-a + 3 \cdot b - u + 3 \cdot v + 5 \cdot w) + G \cdot (a - b + u - v - w) + h \cdot (-a - b - u - v - w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

B =

	-2	-1	0	1	2	3
-5	-137.977082	-105.185535	-72.393987	-39.60244	-6.810893	25.980655
-4	-133.314883	-100.523335	-67.731788	-34.940241	-2.148693	30.642854
-3	-128.652683	-95.861136	-63.069589	-30.278041	2.513507	35.305054
-2	-123.990484	-91.198937	-58.407389	-25.615841	7.175706	39.967253
-1	-119.328284	-86.536737	-53.745189	-20.953642	11.837905	44.629453
0	-114.666085	-81.874538	-49.08299	-16.291442	16.500105	49.291652
1	-110.003885	-77.212338	-44.42079	-11.629243	21.162305	53.953852
2	-105.341686	-72.550139	-39.758591	-6.967043	25.824504	58.616051
3	-100.679486	-67.887939	-35.096391	-2.304844	30.486703	63.278251
4	-96.017287	-63.225739	-30.434192	2.357355	35.148903	67.94045
5	-91.355087	-58.56354	-25.771992	7.019555	39.811103	72.60265

FORCE

Signs wrong

$a \rightarrow -a$

$b \rightarrow -b$

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

b

a B =

	-2	-1	0	1	2	3
-5	88.894092	56.102545	23.310997	-9.48055	-42.272098	-75.063645
-4	84.231893	51.440345	18.648798	-14.142749	-46.934297	-79.725844
-3	79.569693	46.778146	13.986599	-18.804949	-51.596497	-84.388044
-2	74.907494	42.115946	9.324399	-23.467149	-56.258696	-89.050243
-1	70.245294	37.453747	4.662199	-28.129348	-60.920896	-93.712443
0	65.583095	32.791547	0	-32.791547	-65.583095	-98.374642
1	60.920896	28.129348	-4.662199	-37.453747	-70.245294	-103.036842
2	56.258696	23.467149	-9.324399	-42.115946	-74.907494	-107.699041
3	51.596497	18.804949	-13.986599	-46.778146	-79.569693	-112.361241
4	46.934297	14.142749	-18.648798	-51.440345	-84.231893	-117.02344
5	42.272098	9.48055	-23.310997	-56.102545	-88.894092	-121.68564

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$ $u := 1$ $v := 1$ $w := -2$

$a := -5 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

B =

	1	0	− 1	− 2	− 3	−4
5	105.185535	72.393987	39.60244	6.810893	-25.980655	-58.772203
4	100.523335	67.731788	34.940241	2.148693	-30.642854	-63.434402
3	95.861136	63.069589	30.278041	-2.513507	-35.305054	-68.096601
2	91.198937	58.407389	25.615841	-7.175706	-39.967253	-72.758801
1	86.536737	53.745189	20.953642	-11.837905	-44.629453	-77.421001
0	81.874538	49.08299	16.291442	-16.500105	-49.291652	-82.0832
-1	77.212338	44.42079	11.629243	-21.162305	-53.953852	-86.745399
-2	72.550139	39.758591	6.967043	-25.824504	-58.616051	-91.407599
-3	67.887939	35.096391	2.304844	-30.486703	-63.278251	-96.069799
-4	63.225739	30.434192	-2.357355	-35.148903	-67.94045	-100.731998
-5	58.56354	25.771992	-7.019555	-39.811103	-72.60265	-105.394197

Signs correct
a + b wrong
a → −a
FORCE b → −b
and b
backwards

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 54.371621$ $Ms := 34.693681$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 26.242275$ $Rs := 6.564335$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rs$ $Mn := Ms$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. -1$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

M =

	-1	0	1	2	3	4
-5	-12.533376	-4.662199	3.208977	11.080153	18.95133	26.822506
-4	-14.50117	-4.662199	5.176771	15.015742	24.854712	34.693683
-3	-17.780827	-4.6622	8.456428	21.575056	34.693683	47.81231
-2	-24.340141	-4.662199	15.015742	34.693683	54.371624	74.049565
-1	-44.018082	-4.662199	34.693683	74.049565	113.405448	152.76133

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 54.371621$ $Ms := 34.693681$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 26.242275$ $Rs := 6.564335$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Ms$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -5 .. -1$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{\left(B_{a,b} - b \cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a \cdot Mn\right)}{b}$$

$R =$

	-5	-4	-3	-2	-1
-5	-72.147428	-81.986398	-98.384682	-131.181249	-229.57095
-4	-64.276252	-72.147428	-85.266055	-111.503309	-190.215069
-3	-56.405076	-62.308458	-72.147428	-91.825368	-150.859189
-2	-48.5339	-52.469488	-59.028801	-72.147428	-111.503309
-1	-40.662724	-42.630518	-45.910174	-52.469488	-72.147428
0	-32.791548	-32.791547	-32.791548	-32.791547	-32.791547
1	-24.920371	-22.952577	-19.672921	-13.113607	6.564333
2	-17.049195	-13.113607	-6.554294	6.564333	45.920213
3	-9.178019	-3.274637	6.564333	26.242273	85.276094
4	-1.306843	6.564333	19.68296	45.920213	124.631974
5	6.564333	16.403303	32.801587	65.598154	163.987855

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 54.371621$ $Ms := 34.693681$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 26.242275$ $Rs := 6.564335$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ru$ $Mn := Ms$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. -1$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{\left(B_{a,b} - b \cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a \cdot Mn\right)}{b}$$

M =

	-1	0	1	2	3	4
-5	-16.468964	-4.662199	7.144565	18.951329	30.758094	42.564858
-4	-19.420655	-4.662199	10.096256	24.854712	39.613167	54.371623
-3	-24.34014	-4.6622	15.015741	34.693682	54.371623	74.049564
-2	-34.179111	-4.662199	24.854712	54.371623	83.888534	113.405445
-1	-63.696022	-4.662199	54.371623	113.405445	172.439268	231.473091

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 54.371621$ $Ms := 34.693681$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 26.242275$ $Rs := 6.564335$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Mu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -5 .. -1$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{\left(B_{a,b} - b \cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a \cdot Mn\right)}{b}$$

$R =$

	-5	-4	-3	-2	-1
-5	-91.825368	-106.583823	-131.181248	-180.376099	-327.96065
-4	-80.018604	-91.825368	-111.503308	-150.859188	-268.926829
-3	-68.21184	-77.066913	-91.825368	-121.342278	-209.893009
-2	-56.405076	-62.308458	-72.147428	-91.825368	-150.859188
-1	-44.598312	-47.550003	-52.469488	-62.308458	-91.825368
0	-32.791548	-32.791547	-32.791548	-32.791547	-32.791547
1	-20.984783	-18.033092	-13.113607	-3.274637	26.242273
2	-9.178019	-3.274637	6.564333	26.242273	85.276093
3	2.628745	11.483818	26.242273	55.759183	144.309914
4	14.435509	26.242273	45.920213	85.276093	203.343734
5	26.242273	41.000728	65.598153	114.793004	262.377555

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Muu := 56.062232$ $Msu := 35.820755$ $Md := 15.579278$ $mp := -23.776602$

$Ruu := 27.932886$ $Rsu := 7.691409$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rsu$ $Mn := Msu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. -1$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

M =

	-1	0	1	2	3	4
-5	-12.758791	-4.662199	3.434392	11.530983	19.627574	27.724166
-4	-14.782939	-4.662199	5.45854	15.579279	25.700018	35.820757
-3	-18.156518	-4.6622	8.832119	22.326438	35.820757	49.315076
-2	-24.903678	-4.662199	15.579279	35.820757	56.062235	76.303714
-1	-45.145156	-4.662199	35.820757	76.303714	116.78667	157.269627

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Muu := 56.062232$ $Msu := 35.820755$ $Md := 15.579278$ $mp := -23.776602$

$Ruu := 27.932886$ $Rsu := 7.691409$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ruu$ $Mn := Msu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. -1$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

M =

	-1	0	1	2	3	4
-5	-16.807086	-4.662199	7.482687	19.627574	31.772461	43.917347
-4	-19.843308	-4.662199	10.518909	25.700017	40.881126	56.062234
-3	-24.903677	-4.6622	15.579278	35.820756	56.062234	76.303712
-2	-35.024416	-4.662199	25.700017	56.062234	86.424451	116.786667
-1	-65.386633	-4.662199	56.062234	116.786667	177.511101	238.235534

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Muu := 56.062232$ $Msu := 35.820755$ $Md := 15.579278$ $mp := -23.776602$

$Ruu := 27.932886$ $Rsu := 7.691409$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ruu$ $Mn := Msu$ $u := 0$ $v := 0$ $w := 0$

$a := 1 .. 5$ $b := -5 .. 5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{\left(B_{a,b} - b \cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a \cdot Mn\right)}{b}$$

M =

	-5	-4	-3	-2	-1	0
-5	0	0	0	0	0	0
-4	0	0	0	0	0	0
-3	0	0	0	0	0	0
-2	0	0	0	0	0	0
-1	0	0	0	0	0	0
0	0	0	0	0	0	0
1	298.959968	238.235534	177.511101	116.786667	56.062234	-4.662199
2	147.148884	116.786667	86.424451	56.062234	25.700017	-4.662199
3	96.54519	76.303712	56.062234	35.820756	15.579278	-4.6622
4	71.243342	56.062234	40.881126	25.700017	10.518909	-4.662199
5	56.062234	43.917347	31.772461	19.627574	7.482687	-4.662199

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Muu := 56.062232$ $Msu := 35.820755$ $Md := 15.579278$ $mp := -23.776602$

$Ruu := 27.932886$ $Rsu := 7.691409$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Msu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -1 .. -5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{\left(B_{a,b} - b \cdot Rn\right)}{a} \qquad R_{a,b} := \frac{\left(B_{a,b} - a \cdot Mn\right)}{b}$$

R =

	-5	-4	-3	-2	-1
-5	-73.274502	-83.395241	-100.263138	-133.998934	-235.20632
-4	-65.177911	-73.274502	-86.76882	-113.757456	-194.723365
-3	-57.08132	-63.153763	-73.274502	-93.515979	-154.240411
-2	-48.984729	-53.033025	-59.780184	-73.274502	-113.757456
-1	-40.888138	-42.912286	-46.285866	-53.033025	-73.274502
0	-32.791548	-32.791547	-32.791548	-32.791547	-32.791547
1	-24.694957	-22.670809	-19.297229	-12.55007	7.691407
2	-16.598366	-12.55007	-5.802911	7.691407	48.174361
3	-8.501775	-2.429332	7.691407	27.932884	88.657316
4	-0.405184	7.691407	21.185725	48.174361	129.14027
5	7.691407	17.812146	34.680043	68.415839	169.623225

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Muu := 56.062232$ $Msu := 35.820755$ $Md := 15.579278$ $mp := -23.776602$

$Ruu := 27.932886$ $Rsu := 7.691409$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Muu$ $u := 0$ $v := 0$ $w := 0$

$a := -5 .. 5$ $b := -1 .. -5$

$$B_{a,b} := 0.5 \cdot (c \cdot (a - 3 \cdot b + u - 3 \cdot v - 5 \cdot w) + G \cdot (-a + b - u + v + w) + h \cdot (a + b + u + v + w))$$

$$M_{a,b} := \frac{(B_{a,b} - b \cdot Rn)}{a} \qquad R_{a,b} := \frac{(B_{a,b} - a \cdot Mn)}{b}$$

R =

	-5	-4	-3	-2	-1
-5	-93.515979	-108.697087	-133.998933	-184.602626	-336.413705
-4	-81.371093	-93.515979	-113.757456	-154.24041	-275.689274
-3	-69.226206	-78.334871	-93.515979	-123.878195	-214.964842
-2	-57.08132	-63.153763	-73.274502	-93.515979	-154.24041
-1	-44.936434	-47.972655	-53.033025	-63.153763	-93.515979
0	-32.791548	-32.791547	-32.791548	-32.791547	-32.791547
1	-20.646661	-17.61044	-12.55007	-2.429332	27.932884
2	-8.501775	-2.429332	7.691407	27.932884	88.657315
3	3.643111	12.751776	27.932884	58.2951	149.381747
4	15.787998	27.932884	48.174361	88.657315	210.106178
5	27.932884	43.113992	68.415838	119.019531	270.83061

cGh MATRIX, MCD

~~MASSPACE.MCD~~ OCTOBER 27, 2001

c-G-h MATRIX

~~MASS <----> SPACE-RELATIONS~~, T = 0

$c := 10.476821 \qquad G := -7.175706 \qquad h := -26.976926$

This is the B-MATRIX
For the "DIRECT" CASE:
$u = v = w = 0$

$a := -4 .. 4 \qquad b := -4 .. 4$

$x(a,b) := \frac{(a - 3\cdot b)}{2} \qquad y(a,b) := \frac{(b - a)}{2} \qquad z(a,b) := \frac{(a + b)}{2}$

$\Delta = \frac{G}{c^2} = -28.129348$

$B_{a,b} := 0.5\cdot(a - 3\cdot b)\cdot c + 0.5\cdot(b - a)\cdot G + 0.5\cdot(a + b)\cdot h$

$$B = \begin{bmatrix}
149.814988 & 117.023440 & 84.231893 & 51.440345 & 18.648798 & -14.142749 & -46.934297 & -79.725844 & -112.517392 & -4 \\
145.152788 & 112.361241 & 79.569693 & 46.778146 & 13.986599 & -18.804949 & -51.596497 & -84.388044 & -117.179591 & -3 \\
140.490589 & 107.699041 & 74.907494 & 42.115946 & 9.324399 & -23.467149 & -56.258696 & -89.050243 & -121.841791 & -2 \\
135.828390 & 103.036842 & 70.245294 & 37.453747 & 4.662199 & -28.129348 & -60.920896 & -93.712443 & -126.503991 & -1 \\
131.166190 & 98.374642 & 65.583095 & 32.791547 & 0.000000 & -32.791547 & -65.583095 & -98.374642 & -131.166190 & 0 \\
126.503991 & 93.712443 & 60.920896 & 28.129348 & -4.662199 & -37.453747 & -70.245294 & -103.036842 & -135.828390 & +1 \\
121.841791 & 89.050243 & 56.258696 & 23.467149 & -9.324399 & -42.115946 & -74.907494 & -107.699041 & -140.490589 & +2 \\
117.179591 & 84.388044 & 51.596497 & 18.804949 & -13.986599 & -46.778146 & -79.569693 & -112.361241 & -145.152788 & +3 \\
112.517392 & 79.725844 & 46.934297 & 14.142749 & -18.648798 & -51.440345 & -84.231893 & -117.023440 & -149.814988 & +4
\end{bmatrix}$$

$-4 \quad -3 \quad -2 \quad -1 \quad 0 \quad +1 \quad +2 \quad +3 \quad +4$

a

b

$\Delta \longrightarrow m_0 = -4.622199$

$\Delta \longrightarrow l_0 = -32.791547$

$\Delta = \frac{h}{c} = -37.543747$

MASSIZE.MCD OCTOBER 27, 2001

Case: Direct $u = v = w = 0$

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$

$a := -4 .. -1$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$M = \begin{bmatrix} -24.903679 & -19.843309 & -14.782939 & -9.722569 & -4.662199 & 0.39817 & 5.45854 & 10.51891 & 15.57928 \\ -31.650839 & -24.903679 & -18.156519 & -11.409359 & -4.6622 & 2.08496 & 8.83212 & 15.57928 & 22.32644 \\ -45.145159 & -35.024419 & -24.903679 & -14.782939 & -4.662199 & 5.45854 & 15.57928 & 25.70002 & 35.82076 \\ -85.628118 & -65.386638 & -45.145159 & -24.903679 & -4.662199 & 15.57928 & 35.82076 & 56.062239 & 76.303719 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \end{matrix} \quad a$$

$-4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4$

b

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$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$

$a := 1 .. 4$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$M =$

0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0
76.303719	56.062239	35.82076	15.57928	-4.662199	-24.903679	-45.145159	-65.386638	-85.628118	1
35.82076	25.70002	15.57928	5.45854	-4.662199	-14.782939	-24.903679	-35.024419	-45.145159	2
22.32644	15.57928	8.83212	2.08496	-4.6622	-11.409359	-18.156519	-24.903679	-31.650839	3
15.57928	10.51891	5.45854	0.39817	-4.662199	-9.722569	-14.782939	-19.843309	-24.903679	4
-4	-3	-2	-1	0	1	2	3	4	

a

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rd$ $Mn := Mu$

$a := -4 .. -1$ $b := -4 .. 4$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$M = \begin{bmatrix} -24.903679 & -19.843309 & -14.782939 & -9.722569 & -4.662199 & 0.39817 & 5.45854 & 10.51891 & 15.57928 \\ -31.650839 & -24.903679 & -18.156519 & -11.409359 & -4.6622 & 2.08496 & 8.83212 & 15.57928 & 22.32644 \\ -45.145159 & -35.024419 & -24.903679 & -14.782939 & -4.662199 & 5.45854 & 15.57928 & 25.70002 & 35.82076 \\ -85.628118 & -65.386638 & -45.145159 & -24.903679 & -4.662199 & 15.57928 & 35.82076 & 56.062239 & 76.303719 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \end{matrix} \quad a$$

$-4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4$

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rd$ $Mn := Mu$

$a := 1 .. 4$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$M =$

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
76.303719	56.062239	35.82076	15.57928	-4.662199	-24.903679	-45.145159	-65.386638	-85.628118	1
35.82076	25.70002	15.57928	5.45854	-4.662199	-14.782939	-24.903679	-35.024419	-45.145159	2
22.32644	15.57928	8.83212	2.08496	-4.6622	-11.409359	-18.156519	-24.903679	-31.650839	3
15.57928	10.51891	5.45854	0.39817	-4.662199	-9.722569	-14.782939	-19.843309	-24.903679	4
-4	-3	-2	-1	0	1	2	3	4	

a

b

DIAGONALS

15,57928

$-24,903679 + dm = mp$

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rs$ $Mn := Mu$

$a := -4 .. -1$ $b := -4 .. 4$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$M = \begin{bmatrix} -42.891008 & -33.333806 & -23.776604 & -14.219402 & -4.662199 & 4.895003 & 14.452205 & 24.009407 & 33.566609 \\ -55.633944 & -42.891008 & -30.148072 & -17.405136 & -4.6622 & 8.080737 & 20.823673 & 33.566609 & 46.309545 \\ -81.119816 & -62.005412 & -42.891008 & -23.776604 & -4.662199 & 14.452205 & 33.566609 & 52.681013 & 71.795417 \\ -157.577434 & -119.348625 & -81.119816 & -42.891008 & -4.662199 & 33.566609 & 71.795417 & 110.024226 & 148.253035 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \end{matrix}$$

$$\begin{matrix} -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 \end{matrix}$$

a

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Rs$ $Mn := Mu$

$a := 1 .. 4$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$M =$

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
148.253035	110.024226	71.795417	33.566609	-4.662199	-42.891008	-81.119816	-119.348625	-157.577434	1
71.795417	52.681013	33.566609	14.452205	-4.662199	-23.776604	-42.891008	-62.005412	-81.119816	2
46.309545	33.566609	20.823673	8.080737	-4.6622	-17.405136	-30.148072	-42.891008	-55.633944	3
33.566609	24.009407	14.452205	4.895003	-4.662199	-14.219402	-23.776604	-33.333806	-42.891008	4
-4	-3	-2	-1	0	1	2	3	4	

a

b

DIAGONALS
33,566609
-42,891008

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ru$ $Mn := Mu$

$a := -4 .. -1$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$M = \begin{bmatrix} -62.005406 & -47.669604 & -33.333803 & -18.998001 & -4.662199 & 9.673602 & 24.009404 & 38.345205 & 52.681007 \\ -81.119808 & -62.005406 & -42.891004 & -23.776602 & -4.6622 & 14.452203 & 33.566605 & 52.681007 & 71.795409 \\ -119.348613 & -90.677009 & -62.005406 & -33.333803 & -4.662199 & 24.009404 & 52.681007 & 81.35261 & 110.024214 \\ -234.035026 & -176.691819 & -119.348613 & -62.005406 & -4.662199 & 52.681007 & 110.024214 & 167.36742 & 224.710626 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \end{matrix}$$

$$\begin{matrix} -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 \end{matrix}$$

a

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := Ru$ $Mn := Mu$

$a := 1 .. 4$ $b := -4 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$M =$

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0
224.710626	167.36742	110.024214	52.681007	-4.662199	-62.005406	-119.348613	-176.691819	-234.035026	1
110.024214	81.35261	52.681007	24.009404	-4.662199	-33.333803	-62.005406	-90.677009	-119.348613	2
71.795409	52.681007	33.566605	14.452203	-4.6622	-23.776602	-42.891004	-62.005406	-81.119808	3
52.681007	38.345205	24.009404	9.673602	-4.662199	-18.998001	-33.333803	-47.669604	-62.005406	4
-4	-3	-2	-1	0	1	2	3	4	

a

b

DIAGONALS
52,681007
-62,005406

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$

$a := -4 .. 4$ $b := 1 .. 4$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -109.249157 & -71.020353 & -58.277417 & -51.90595 \\ 0 & 0 & 0 & 0 & 0 & -90.134755 & -61.463151 & -51.90595 & -47.127349 \\ 0 & 0 & 0 & 0 & 0 & -71.020353 & -51.90595 & -45.534482 & -42.348749 \\ 0 & 0 & 0 & 0 & 0 & -51.90595 & -42.348749 & -39.163015 & -37.570148 \\ 0 & 0 & 0 & 0 & 0 & -32.791547 & -32.791547 & -32.791548 & -32.791547 \\ 0 & 0 & 0 & 0 & 0 & -13.677145 & -23.234346 & -26.42008 & -28.012947 \\ 0 & 0 & 0 & 0 & 0 & 5.437258 & -13.677145 & -20.048612 & -23.234346 \\ 0 & 0 & 0 & 0 & 0 & 24.55166 & -4.119944 & -13.677145 & -18.455746 \\ 0 & 0 & 0 & 0 & 0 & 43.666063 & 5.437258 & -7.305677 & -13.677145 \end{bmatrix}$$

-4 -3 -2 -1 0 1 2 3 +4 (a)

+1 +2 +3 +4 (b)

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := mp$

$a := -4 .. 4$ $b := -4 .. -1$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} -13.677145 & -7.305677 & 5.437258 & 43.666063 \\ -18.455746 & -13.677145 & -4.119944 & 24.55166 \\ -23.234346 & -20.048612 & -13.677145 & 5.437258 \\ -28.012947 & -26.42008 & -23.234346 & -13.677145 \\ -32.791547 & -32.791548 & -32.791547 & -32.791547 \\ -37.570148 & -39.163015 & -42.348749 & -51.90595 \\ -42.348749 & -45.534482 & -51.90595 & -71.020353 \\ -47.127349 & -51.90595 & -61.463151 & -90.134755 \\ -51.90595 & -58.277417 & -71.020353 & -109.249157 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ +1 \\ +2 \\ +3 \\ +4 \end{matrix} \quad \alpha$$

$-4 \quad -3 \quad -2 \quad -1$

b

$-13.677145 + \alpha M = -12.550068$

$[-3,-1] = [+3,+1]$

$24.551660 + (\alpha M)^3 = 27.932884$

$[-2,-1] = [+2,+1]$

$[-4,-2] = [+4,+2]$

$5.437258 + (\alpha M)^2 = 7.691407$

DIAGONALS

$-13.677145 \searrow$

$-51.905950 \nearrow$

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Md$

$a := -4 .. 4$ $b := 1 .. 4$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 48.174363 & 7.691407 & -5.802911 & -12.55007 \\ 0 & 0 & 0 & 0 & 0 & 27.932885 & -2.429331 & -12.55007 & -17.610439 \\ 0 & 0 & 0 & 0 & 0 & 7.691407 & -12.55007 & -19.297229 & -22.670809 \\ 0 & 0 & 0 & 0 & 0 & -12.55007 & -22.670809 & -26.044388 & -27.731178 \\ 0 & 0 & 0 & 0 & 0 & -32.791547 & -32.791547 & -32.791548 & -32.791547 \\ 0 & 0 & 0 & 0 & 0 & -53.033025 & -42.912286 & -39.538707 & -37.851917 \\ 0 & 0 & 0 & 0 & 0 & -73.274502 & -53.033025 & -46.285866 & -42.912286 \\ 0 & 0 & 0 & 0 & 0 & -93.51598 & -63.153764 & -53.033025 & -47.972656 \\ 0 & 0 & 0 & 0 & 0 & -113.757457 & -73.274502 & -59.780184 & -53.033025 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

0 +1 +2 +3 +4

a

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Md$

$a := -4 .. 4$ $b := -4 .. -1$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} -53.033025 & -59.780184 & -73.274502 & -113.757457 \\ -47.972656 & -53.033025 & -63.153764 & -93.51598 \\ -42.912286 & -46.285866 & -53.033025 & -73.274502 \\ -37.851917 & -39.538707 & -42.912286 & -53.033025 \\ -32.791547 & -32.791548 & -32.791547 & -32.791547 \\ -27.731178 & -26.044388 & -22.670809 & -12.55007 \\ -22.670809 & -19.297229 & -12.55007 & 7.691407 \\ -17.610439 & -12.55007 & -2.429331 & 27.932885 \\ -12.55007 & -5.802911 & 7.691407 & 48.174363 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

$-4 \quad -3 \quad -2 \quad -1$

a

b

$[-4, -2] = [2, -1]$

$[-4, +2] = [-2, +1]$

7.691407

$[3, -1] = [-3, +1]$

27.932885

DIAGONALS

-12.550068 ↗

-53.033025 ↘

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Ms$

$a := -4 .. 4$ $b := 1 .. 4$

$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 120.123678 & 43.666065 & 18.180194 & 5.437259 \\ 0 & 0 & 0 & 0 & 0 & 81.894872 & 24.551662 & 5.437259 & -4.119943 \\ 0 & 0 & 0 & 0 & 0 & 43.666065 & 5.437259 & -7.305676 & -13.677144 \\ 0 & 0 & 0 & 0 & 0 & 5.437259 & -13.677144 & -20.048612 & -23.234346 \\ 0 & 0 & 0 & 0 & 0 & -32.791547 & -32.791547 & -32.791548 & -32.791547 \\ 0 & 0 & 0 & 0 & 0 & -71.020354 & -51.905951 & -45.534483 & -42.348749 \\ 0 & 0 & 0 & 0 & 0 & -109.24916 & -71.020354 & -58.277418 & -51.905951 \\ 0 & 0 & 0 & 0 & 0 & -147.477967 & -90.134757 & -71.020354 & -61.463152 \\ 0 & 0 & 0 & 0 & 0 & -185.706773 & -109.24916 & -83.763289 & -71.020354 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

0 +1 +2 +3 +4

a

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Ms$

$a := -4 .. 4$ $b := -4 .. -1$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} -71.020354 & -83.763289 & -109.24916 & -185.706773 \\ -61.463152 & -71.020354 & -90.134757 & -147.477967 \\ -51.905951 & -58.277418 & -71.020354 & -109.24916 \\ -42.348749 & -45.534483 & -51.905951 & -71.020354 \\ -32.791547 & -32.791548 & -32.791547 & -32.791547 \\ -23.234346 & -20.048612 & -13.677144 & 5.437259 \\ -13.677144 & -7.305676 & 5.437259 & 43.666065 \\ -4.119943 & 5.437259 & 24.551662 & 81.894872 \\ 5.437259 & 18.180194 & 43.666065 & 120.123678 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

$-4 \quad -3 \quad -2 \quad -1$

a

b

$5,437259 + (\alpha\mu)^2 = 7.691407$

$-13.677144 + \alpha\mu = Re$

$[2,-4] = [1,-2] =$

$[-2,+4] = [-1,+2]$

$[3,-2] = 24.551662 + (\alpha\mu)^3 = 27.982884$

$[-3,+2]$

DIAGONALS

RU $-38.228804, -5.437259 \nearrow$

$-38.228809 - 71.020354 \searrow$

$\Delta = 19.114404$

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Mu$

$a := -4 .. 4$ $b := 1 .. 4$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 196.581291 & 81.894871 & 43.666065 & 24.551662 \\ 0 & 0 & 0 & 0 & 0 & 139.238081 & 53.223267 & 24.551662 & 10.21586 \\ 0 & 0 & 0 & 0 & 0 & 81.894871 & 24.551662 & 5.437259 & -4.119943 \\ 0 & 0 & 0 & 0 & 0 & 24.551662 & -4.119943 & -13.677144 & -18.455745 \\ 0 & 0 & 0 & 0 & 0 & -32.791547 & -32.791547 & -32.791548 & -32.791547 \\ 0 & 0 & 0 & 0 & 0 & -90.134757 & -61.463152 & -51.905951 & -47.12735 \\ 0 & 0 & 0 & 0 & 0 & -147.477967 & -90.134757 & -71.020354 & -61.463152 \\ 0 & 0 & 0 & 0 & 0 & -204.821176 & -118.806362 & -90.134757 & -75.798955 \\ 0 & 0 & 0 & 0 & 0 & -262.164385 & -147.477967 & -109.24916 & -90.134757 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ +1 \\ +2 \\ +3 \\ +4 \end{matrix}$$

a

$+1$ $+2$ $+3$ $+4$

b

MASSIZE.MCD OCTOBER 27, 2001

$c := 10.476821$ $G := -7.175706$ $h := -26.976926$

$Mu := 52.681010$ $Ms := 33.566607$ $Md := 15.579278$ $mp := -23.776602$

$Ru := 24.551659$ $Rs := 5.437261$ $Rd := -12.550068$ $re := -12.550068$

$am := 1.127074$ $Rn := re$ $Mn := Mu$

$a := -4 .. 4$ $b := -4 .. -1$

$$B(a,b) := 0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h$$

$$M_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - b\cdot Rn)}{a}$$

$$R_{a,b} := \frac{(0.5\cdot(a-3\cdot b)\cdot c + 0.5\cdot(b-a)\cdot G + 0.5\cdot(a+b)\cdot h - a\cdot Mn)}{b}$$

$$R = \begin{bmatrix} -90.134757 & -109.24916 & -147.477967 & -262.164385 \\ -75.798955 & -90.134757 & -118.806362 & -204.821176 \\ -61.463152 & -71.020354 & -90.134757 & -147.477967 \\ -47.12735 & -51.905951 & -61.463152 & -90.134757 \\ -32.791547 & -32.791548 & -32.791547 & -32.791547 \\ -18.455745 & -13.677144 & -4.119943 & 24.551662 \\ -4.119943 & 5.437259 & 24.551662 & 81.894871 \\ 10.21586 & 24.551662 & 53.223267 & 139.238081 \\ 24.551662 & 43.666065 & 81.894871 & 196.581291 \end{bmatrix} \begin{matrix} -4 \\ -3 \\ -2 \\ -1 \\ 0 \\ +1 \\ +2 \\ +3 \\ +4 \end{matrix}$$

$-4 \quad -3 \quad -2 \quad -1$

a

b

$[3,-4] = 10.215860$

$[-3,+4] = 10.215860$

$= \alpha M = 7.961712$?

$[-1,+3] = [1,-3] = -13.677144$

$+ \alpha M$

$= -12.550068$ ✓

24.551662

$+ (\alpha M)^3$

$= 27.932884$ ✓

$[-2,+3] = [2,-3] = 5.437259$

$+ (\alpha M)^2$

$= 7.691407$ ✓

DIAGONALS

PLU $57.343207 \sim 24.551662$ ↗

PLU $-57.343212 \sim -90.134757$ ↘

LEVEL 1
MATRICES

01/10/24

TABLE FOR T=0 [-43,268366]

Is this ≡ a $\mathbb{P}$ table?

Combinations - independent of time

e.g. $\frac{c^5}{G^2\hbar} = \left[\frac{M}{R^3}\right] = \rho_E$

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

$\frac{c^8}{G^4}$		$\frac{c^5\hbar}{G^3}$		$\frac{c^2\hbar^2}{G^2}$		$\frac{\hbar^3}{cG}$		$\frac{\hbar^4}{c^4}$	4
	$\frac{c^6}{G^3}$		$\frac{c^3\hbar}{G^2}$		$\frac{\hbar^2}{G}$		$\frac{\hbar^3}{c^3}$		3
$\frac{c^7}{G^3\hbar}$		$\frac{c^4}{G^2}$		$\frac{c\hbar}{G}$		$\frac{\hbar^2}{c^2}$		$\frac{G\hbar^3}{c^5}$	2
	$\frac{c^5}{G^2\hbar}$		$\frac{\Delta^2}{G}$	$\frac{c^{1/2}\hbar^{1/2}}{G^{1/2}}$	$\frac{\hbar}{c}$		$\frac{G\hbar^2}{c^4}$		1
$\frac{c^6}{G^2\hbar^2}$		$\frac{c^3}{\hbar G}$		0	$\frac{G^{1/2}\hbar^{1/2}}{c^{3/2}}$	$\frac{G\hbar}{c^3}$	$\frac{G^{3/2}\hbar^{3/2}}{c^{9/2}}$	$\frac{G^2\hbar^2}{c^6}$	0
	$\frac{c^4}{\hbar^2 G}$		$\frac{c}{\hbar}$		$\frac{G}{c^2}$		$\frac{G^2\hbar}{c^5}$		-1
$\frac{c^5}{\hbar^3 G}$		$\frac{c^2}{\hbar^2}$		$\frac{G}{c\hbar}$		$\frac{G^2}{c^4}$		$\frac{G^3\hbar}{c^7}$	-2
	$\frac{c^3}{\hbar^3}$		$\frac{G}{\hbar^2}$		$\frac{G^2}{c^3\hbar}$		$\frac{G^3}{c^6}$		-3
$\frac{c^4}{\hbar^4}$		$\frac{Gc}{\hbar^3}$		$\frac{G^2}{c^2\hbar^2}$		$\frac{G^3}{c^5\hbar}$		$\frac{G^4}{c^8}$	-4
-4	-3	-2	-1	0	1	2	3	4	

M

a

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

b

[R, M]

R

The values give $\mathbb{P}$ quantities as is

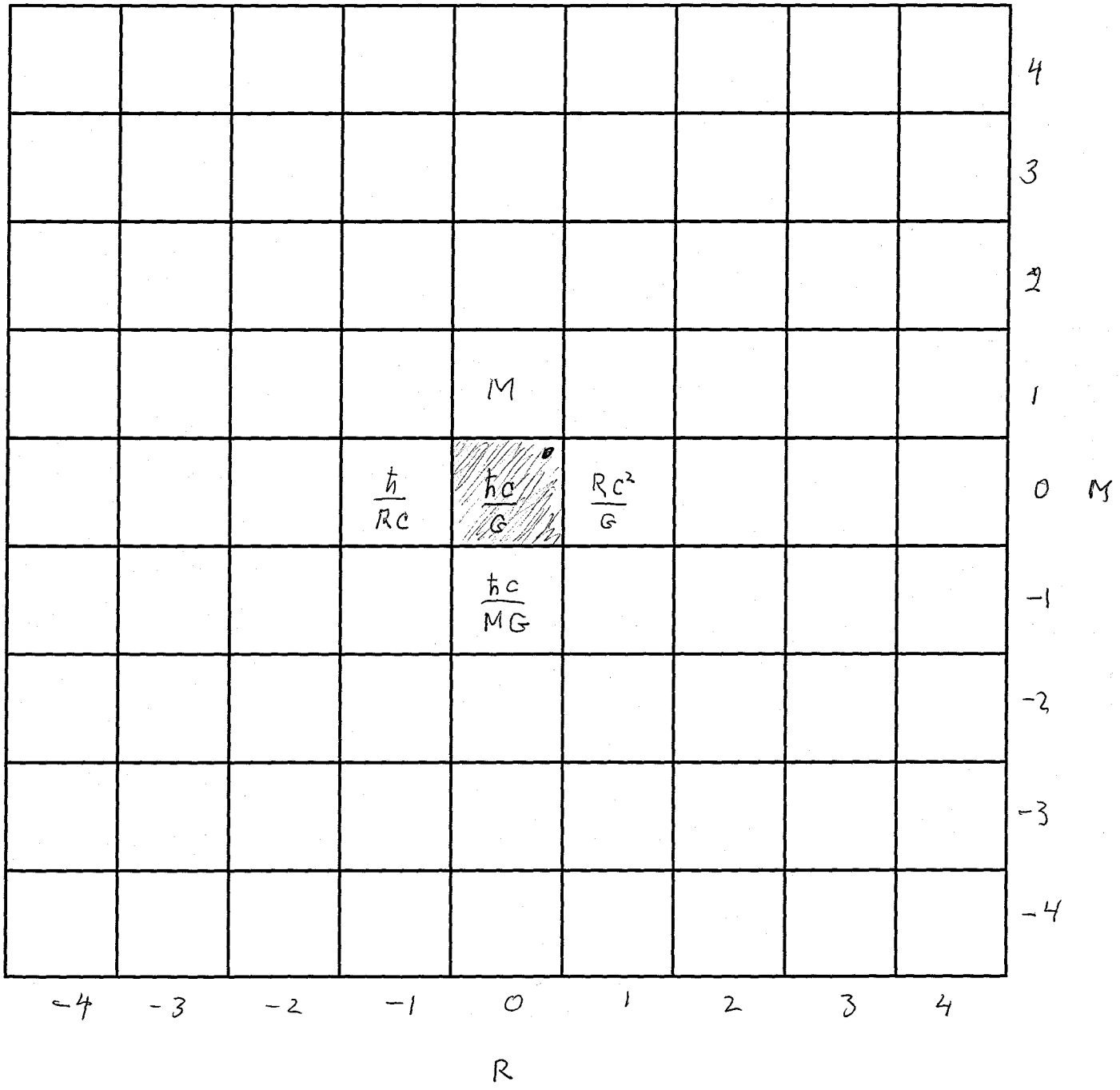
i.e. eg $\frac{c^3}{\hbar G} = \frac{1}{l_0^2}$, $\frac{\hbar}{c} = m_0 l_0$, etc

MATH OPTION

SET ORIGIN OF MATRIX

MASS

Entries have the dimensionality of mass



• = √‾

do an T vs R matrix for M

ENERGY

				$\frac{M^4GC^3}{\hbar}$ •				
			$\frac{M^3GC^2}{R}$ •	$\frac{M^3GC}{\hbar}$	$\frac{RM^3C^5}{\hbar}$ •			
		$\frac{M^2G\hbar C}{R^2}$ •	$\frac{M^2G\hbar}{R}$	M^2C^4 •	$\frac{M^2RC^3}{\hbar}$	$\frac{R^2M^2C^7}{G\hbar}$ •		
	$\frac{MG\hbar^2}{R^3}$ •	$\frac{MG\hbar}{R^2C}$	$\frac{MC^3\hbar}{R}$ •	MC^2	$\frac{RMC^6}{G}$ •	$\frac{R^2MC^7}{G\hbar}$	$\frac{R^3MC^9}{G^2\hbar}$ •	
$\frac{G\hbar^3}{R^4C}$ •	$\frac{G\hbar^2}{R^3C^2}$ •	$\frac{\hbar^2C^2}{R^2}$ •	$\frac{\hbar C}{R}$ •	$\frac{\hbar C^5}{G}$ •	$\frac{RC^4}{G}$	$\frac{R^2C^8}{G^2}$ •	$\frac{R^3C^7}{G^2\hbar}$	$\frac{R^4C^{11}}{G^3\hbar}$ •
	$\frac{\hbar^3C}{R^3M}$ •	$\frac{\hbar^2}{R^2M}$	$\frac{\hbar^2C^4}{RMG}$ •	$\frac{\hbar C^3}{MG}$	$\frac{R\hbar C^7}{MG^2}$ •	$\frac{R^2C^6}{MG^2}$	$\frac{R^3C^{10}}{MG^3}$ •	
		$\frac{\hbar^3C^3}{R^2M^2G}$ •	$\frac{\hbar^2C^2}{RM^2G}$	$\frac{\hbar^2C^6}{M^2G^2}$ •	$\frac{R\hbar C^5}{M^2G^2}$ •	$\frac{R^2\hbar C^9}{M^2G^3}$ •		
			$\frac{\hbar^3C^5}{RM^3G^2}$ •	$\frac{\hbar^2C^4}{M^3G^2}$	$\frac{R\hbar^2C^8}{M^3G^3}$ •			
				$\frac{\hbar^3C^7}{M^4G^3}$ •				

4 3 2 1 0 −1 −2 −3 −4 — M

−4 −3 −2 −1 0 1 2 3 4 — R

• = $\sqrt{\ }$ or $\frac{1}{2}$

Force = $\frac{E}{R}$

The • values are $E^2\left[\frac{M^2R^4}{T^4}\right]$

C
G
T

$\Delta = \frac{1}{2}$, T Matrix

$\{\Delta = \frac{1}{2}\}$

-99.527064

$-13/2$ $+5/2$ $+1/2$		-5 $+2$ 0		$-7/2$ $+3/2$ $-1/2$		-2 $+1$ -1		$-\frac{1}{2}$ $+\frac{1}{2}$ $-3/2$	2
	$-11/2$ $+2$ $+1/2$		-4 $+3/2$ 0		$-5/2$ $+1$ $-\frac{1}{2}$		-1 $+\frac{1}{2}$ -1		$\frac{3}{2}$
-6 $+2$ $+1$		$-9/2$ $+3/2$ $+1/2$		-3 $+1$ 0		$-3/2$ $+\frac{1}{2}$ $-1/2$		0 0 -1	1
	-5 $+\frac{3}{2}$ $+1$		$-7/2$ $+1$ $+\frac{1}{2}$		-2 $+\frac{1}{2}$ 0	$-24.$ 541494	$-\frac{1}{2}$ 0 $-\frac{1}{2}$		$\frac{1}{2}$
$-11/2$ $+3/2$ $+\frac{3}{2}$		-4 $+1$ $+1$	$-13/4$ $3/4$ $3/4$	$-5/2$ $+1/2$ $+1/2$	$-7/4$ $-43\frac{1}{2}48367$ $1/4$	1 0 0	$-1/4$ $-1/4$ $-1/4$	$+1/2$ $-1/2$ $-1/2$	0 M
	$-9/2$ $+1$ $+3/2$		-3 $+\frac{1}{2}$ $+1$		$-3/2$ 0 $+1/2$		0 $-\frac{1}{2}$ 0		$-\frac{1}{2}$
-5 $+1$ $+2$		$-7/2$ $+\frac{1}{2}$ $+3/2$		-2 0 $+1$		$-1/2$ $-1/2$ $+1/2$		$+1$ -1 0	-1
	-4 $+\frac{1}{2}$ $+2$		$-5/2$ 0 $+3/2$		-1 $-\frac{1}{2}$ $+1$		$+1/2$ -1 $+\frac{1}{2}$		$-\frac{3}{2}$
$-9/2$ $+\frac{1}{2}$ $+5/2$	$-118.$ .175862	-3 0 $+2$		$-3/2$ $-\frac{1}{2}$ $+3/2$		0 -1 $+1$		$+3/2$ $-3/2$ $+1/2$	-2
-2	$-\frac{3}{2}$	-1	$-\frac{1}{2}$	0	$\frac{1}{2}$	1	$\frac{3}{2}$	2	~~28170555~~ 12.990327

R

$2, \frac{3}{2}, 1, \frac{1}{2}, 0, -\frac{1}{2}, -1$

$y = 0$ ✓ $+\frac{3}{2}$ ✓

$\frac{1}{2}$ ✓ $+2$ ✓

$+1$ ✓ $+\frac{5}{2}$ ✓

$-\frac{1}{2}$ ✓

-1 ✓ $-\frac{3}{2}$ ✓