On some Ramanujan's equations: mathematical connections with various equations concerning some sectors of Particle Physics and Black Hole/Wormhole Physics. III

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Abstract

In this paper we have described the mathematical connections between various Ramanujan's equations (class invariants) and some expressions of various topics of Particle Physics and Black Hole/Wormhole Physics

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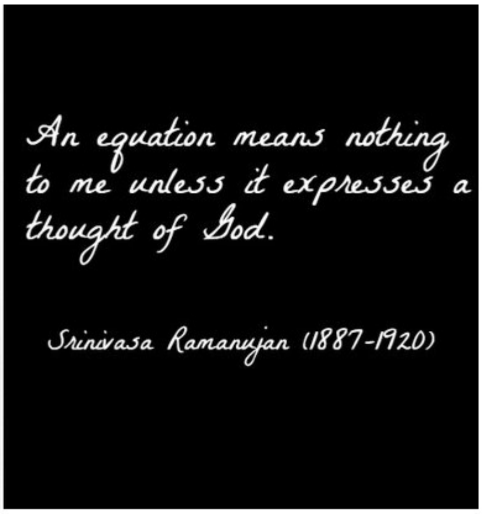


(N.O.A – Pics. from the web)

From:

Wormholes in generalized hybrid metric-Palatini gravity obeying the matter null energy condition everywhere - *Joao Luis Rosa, Jose P. S. Lemos, and Francisco S. N. Lobo* **-** arXiv:1808.08975v1 [gr-qc] 27 Aug 2018,

Now, we have that:

Eq. (19), (20), and (21), we obtain the energy density, the radial pressure, and the tangential pressure as

$$\rho = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(24 - 31\frac{r_0^2}{r^2}\right), \tag{42}$$

$$p_r = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(16 - 13\frac{r_0^2}{r^2}\right), \tag{43}$$

$$p_t = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(-32 + 39\frac{r_0^2}{r^2}\right), \tag{44}$$

respectively.

From

$$\rho = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(24 - 31\frac{r_0^2}{r^2}\right)$$

$$p_r = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(16 - 13\frac{r_0^2}{r^2}\right)$$

$$p_t = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(-32 + 39\frac{r_0^2}{r^2}\right)$$

for

$\zeta_0 = -10.96$; $r_0 = 2\sqrt{10/11} = 1.90693$ $V_0 = -42$.

M = 13.12806e+39, r = 1.94973e+13 we obtain:

From the above expressions, we obtain:

$$\rho = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(24 - 31\frac{r_0^2}{r^2}\right)$$

(1.90693^2) / (((2*(1.94973e+13)^6*(-42)*0.006))) * (((24-31*(1.90693^2)/((1.94973e+13)^2))))

Input interpretation:

$$\frac{1.90693^2}{2\,(1.94973\times 10^{13})^6\times(-42)\times 0.006}\left(24-31\times\frac{1.90693^2}{(1.94973\times 10^{13})^2}\right)$$

Result:

$-3.152124502393692812260221722005958164890727218390153... \times 10^{-78}$

-3.15212450239369...*10^{-78}

$$p_r = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(16 - 13\frac{r_0^2}{r^2}\right)$$

(1.90693^2) / (((2*(1.94973e+13)^6*(-42)*0.006))) * (((16-13*(1.90693^2)/((1.94973e+13)^2))))

Input interpretation:

$$\frac{1.90693^2}{2\,(1.94973\times 10^{13})^6\times(-42)\times 0.006}\left(16-13\times\frac{1.90693^2}{(1.94973\times 10^{13})^2}\right)$$

Result:

$-2.101416334929128541506814490969367158531995710971960... \times 10^{-78}$

-2.10141633492912854...*10^{-78}

$$p_t = \frac{r_0^2}{2r^6 V_0 \kappa^2}\left(-32 + 39\frac{r_0^2}{r^2}\right)$$

(1.90693^2) / (((2*(1.94973e+13)^6*(-42)*0.006))) * (((-32+39*(1.90693^2)/((1.94973e+13)^2))))

Input interpretation:

$$\frac{1.90693^2}{2\,(1.94973\times 10^{13})^6\times(-42)\times 0.006}\left(-32+39\times\frac{1.90693^2}{(1.94973\times 10^{13})^2}\right)$$

Result:

$4.202832669858257083013628965606107930299255550215118 3\ldots \times 10^{-78}$

$4.202832669858257\ldots * 10^{-78}$

The sum of the three results is:

(-3.15212450239369*10^-78) + (-2.10141633492912854*10^-78) + (4.202832669858257*10^-78)

Input interpretation:

$-3.15212450239369 \times 10^{-78} - 2.10141633492912854 \times 10^{-78} + 4.202832669858257 \times 10^{-78}$

Result:

$-1.05070816746456154 \times 10^{-78}$

$-1.05070816746456154 * 10^{-78}$

The difference is:

(-3.15212450239369*10^-78) - (-2.10141633492912854*10^-78) - (4.202832669858257*10^-78)

Input interpretation:

$-3.15212450239369 \times 10^{-78} - -2.10141633492912854 \times 10^{-78} - 4.202832669858257 \times 10^{-78}$

Result:

$-5.25354083732281846 \times 10^{-78}$

$-5.2535408373 * 10^{-78}$

We have also:

$$\rho + p_r = \frac{2r_0^2}{r^6 V_0 \kappa^2}\left(10 - 11\frac{r_0^2}{r^2}\right), \qquad (45)$$

$$\rho + p_t = \frac{4r_0^2}{r^6 V_0 \kappa^2}\left(-1 + \frac{r_0^2}{r^2}\right). \qquad (46)$$

From the (45), we obtain:

2*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((10-11*(1.90693^2)/((1.94973e+13)^2))))

Input interpretation:

$$2 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^6 \times (-42) \times 0.006} \left(10 - 11 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^2}\right)$$

Result:

$-5.2535408373228213537670362129753253234227229293621 14\ldots \times 10^{-78}$

$-5.25354083732\ldots * 10^{-78}$

From the (46), we obtain:

4*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((-1+(1.90693^2)/((1.94973e+13)^2))))

Input interpretation:

$$4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^6 \times (-42) \times 0.006} \left(-1 + \frac{1.90693^2}{(1.94973 \times 10^{13})^2}\right)$$

Result:

$1.0507081674645642707534072436001497654085283318249645\ldots \times 10^{-78}$

$1.050708167464564 27\ldots * 10^{-78}$

from which:

(((4*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((-1+(1.90693^2)/((1.94973e+13)^2)))))))^1/373

Input interpretation:

$$\sqrt[373]{4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^6 \times (-42) \times 0.006} \left(-1 + \frac{1.90693^2}{(1.94973 \times 10^{13})^2}\right)}$$

Result:

0.6179343...

0.6179343… result that is a very good approximation to the value of the golden ratio conjugate 0,618033988749...

and:

1/((((((4*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((-1+(1.90693^2)/ ((1.94973e+13)^2)))))))^1/373)))

Input interpretation:

$$\frac{1}{\sqrt[373]{4\times\frac{1.90693^2}{(1.94973\times10^{13})^6\times(-42)\times0.006}\left(-1+\frac{1.90693^2}{(1.94973\times10^{13})^2}\right)}}$$

Result:

1.618295...

1.618295... result that is a very good approximation to the value of the golden ratio 1,618033988749...

From the ratio from (45) and (46), we have also:

-[2*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((10-11*(1.90693^2)/ ((1.94973e+13)^2))))] / [4*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((-1+(1.90693^2)/ ((1.94973e+13)^2))))]

Input interpretation:

$$-\frac{2\times\frac{1.90693^2}{(1.94973\times10^{13})^6\times(-42)\times0.006}\left(10-11\times\frac{1.90693^2}{(1.94973\times10^{13})^2}\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^6\times(-42)\times0.006}\left(-1+\frac{1.90693^2}{(1.94973\times10^{13})^2}\right)}$$

Result:

4.99999999999999999999999999952171081759584742264267340093 30...

4.999999999....≈ 5

from which:

[-[2*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((10-11*(1.90693^2)/ ((1.94973e+13)^2))))] /[4*(1.90693^2) / ((((1.94973e+13)^6*(-42)*0.006))) * (((-1+(1.90693^2)/ ((1.94973e+13)^2))))]]^3

Input interpretation:

$$\left(-\frac{2\times\frac{1.90693^2}{(1.94973\times 10^{13})^6\times(-42)\times 0.006}\left(10-11\times\frac{1.90693^2}{(1.94973\times 10^{13})^2}\right)}{4\times\frac{1.90693^2}{(1.94973\times 10^{13})^6\times(-42)\times 0.006}\left(-1+\frac{1.90693^2}{(1.94973\times 10^{13})^2}\right)}\right)^3$$

Result:

124.999999999999999999999999641283113196885566982005051042 9...

124.99999999…≈ 125

and:

[1/2((([-[2*(1.90693^2)/((((1.9497e+13)^6*(-42)*0.006))) (((10-11*(1.90693^2)/((1.9497e+13)^2))))] /[4*(1.90693^2)/((((1.9497e+13)^6*(-42)*0.006))) (((-1+(1.90693^2)/ ((1.9497e+13)^2))))]]^3+3)))]^2

Input interpretation:

$$\left(\frac{1}{2}\left(\left(-\frac{2\times\frac{1.90693^2}{(1.9497\times 10^{13})^6\times(-42)\times 0.006}\left(10-11\times\frac{1.90693^2}{(1.9497\times 10^{13})^2}\right)}{4\times\frac{1.90693^2}{(1.9497\times 10^{13})^6\times(-42)\times 0.006}\left(-1+\frac{1.90693^2}{(1.9497\times 10^{13})^2}\right)}\right)^3+3\right)\right)^2$$

Result:

4095.99999999999999999999999770414127341411700450354731943 09...

4095.99999999….≈ 4096

(((([1/2((([-[2(1.9069^2)/((((1.9497e+13)^6 (-42)0.006))) (((10-11(1.9069^2)/((1.9497e+13)^2))))] /[4(1.9069^2)/((((1.9497e+13)^6 (-42)0.006))) (((-1+(1.9069^2)/((1.9497e+13)^2))))]]^3+3)))]^2))))^1/2

Input interpretation:

$$\sqrt{\left(\frac{1}{2}\left(\left(-\frac{2\times\frac{1.9069^2}{(1.9497\times 10^{13})^6\times(-42)\times 0.006}\left(10-11\times\frac{1.9069^2}{(1.9497\times 10^{13})^2}\right)}{4\times\frac{1.9069^2}{(1.9497\times 10^{13})^6\times(-42)\times 0.006}\left(-1+\frac{1.9069^2}{(1.9497\times 10^{13})^2}\right)}\right)^3+3\right)\right)^2}$$

Result:

63.99999999999999999999999982064168048215986420689922093301...

63.9999999....≈ 64

Now, we have:

the line element at the surface Σ and outside it is

$$ds^2 = -\left(\frac{1-\frac{2M}{r}-\frac{V_0(\varphi_e-\psi_e)r^2}{6}}{1-\frac{2M}{r_\Sigma}-\frac{V_0(\varphi_e-\psi_e)r_\Sigma^2}{6}}\right)e^{\zeta_0}dt^2 + \qquad (66)$$

$$+\left(1-\frac{2M}{r}-\frac{V_0\left(\varphi_e-\psi_e\right)r^2}{6}\right)^{-1}dr^2+r^2d\Omega^2\,,$$

$$r\geq r_\Sigma\,, \qquad (67)$$

and

$$[K]=\frac{1}{r_\Sigma}\left[\frac{r_0\zeta_0}{2r_\Sigma}\sqrt{1-\left(\frac{r_0}{r_\Sigma}\right)^2}-\sqrt{1-\left(\frac{r_0}{r_\Sigma}\right)^4}\right.$$

$$\left.-\sqrt{1-\left(\frac{r_0}{r_\Sigma}\right)^5}+\frac{2-\frac{3M}{r_\Sigma}+\frac{r_0^2}{2r_\Sigma^2}}{\sqrt{1-\frac{2M}{r_\Sigma}+\frac{r_0^2}{6r_\Sigma^2}}}\right]=0\,. \qquad (74)$$

of the free parameters are $\zeta_0=-10.96$, $M=1$, the throat is at $r_0=2\sqrt{10/11}=1.907$, $\psi_0=1$, $\psi_1=0$, $V_0=-42$, and the matching surface is at $r_\Sigma=2$. The metric fields $\zeta(r)$ and $b(r)$ are asymptotically AdS, and a thin shell of matter is perceptibly present at the matching surface $r_\Sigma=2$ (more properly at $r_\Sigma=2M$ in our solution, and here we put $M=1$), thus outside

From the above data, we obtain from (74):

1/2 ((((((1.907*-10.96)/4*(1-(1.907/2)^2)^1/2-(1-(1.907/2)^4)^1/2-(1-(1.907/2)^5)^1/2+(2-3/2+(1.907^2)/(2*2^2))/(1-2(13.12806e+13)/2+(1.907^2)/(6*2^2))^1/2)))))

Input:

$$\frac{1}{2}\left(\left(\frac{1}{4}(1.907\times(-10.96))\right)\sqrt{1-\left(\frac{1.907}{2}\right)^2}-\sqrt{1-\left(\frac{1.907}{2}\right)^4}-\sqrt{1-\left(\frac{1.907}{2}\right)^5}+\frac{2-\frac{3}{2}+\frac{1.907^2}{2\times2^2}}{\sqrt{1-\frac{2}{2}+\frac{1.907^2}{6\times2^2}}}\right)$$

Result:

0.000354984245465581426559927406802318322121150629066455452...

0.000354984245...

Or:

for $\zeta_0 = -10.96$, $r_0 = 2\sqrt{10/11} = 1.90693$

M = 13.12806e+39, r = 1.94973e+13 , we obtain:

1/1.94973e+13[(((((1.907*-10.96)/(2(1.94973e+13))*(-1))))) + ((2-(3*13.12806e+39)/(1.94973e+13))+(1.907^2)/(2*(1.94973e+13)^2))/(1-2(13.12806e+39)/(1.94973e+13)+(1.907^2)/(6*(1.94973e+13)^2))^1/2]

Input interpretation:

$$\frac{1}{1.94973\times10^{13}}\left(\frac{1.907\times(-10.96)}{2\times1.94973\times10^{13}}\times(-1)+\frac{\left(2-\frac{3\times13.12806\times10^{39}}{1.94973\times10^{13}}\right)+\frac{1.907^2}{2(1.94973\times10^{13})^2}}{\sqrt{1-2\times\frac{13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.907^2}{6(1.94973\times10^{13})^2}}}\right)$$

Result:

$2.74905\ldots\times10^{-26}+$
$2.82322\ldots\, i$

Polar coordinates:

$r = 2.82322$ (radius), $\theta = 90°$ (angle)

2.82322

from which:

-(47/(34+5))i+[1/1.9497e+13[(((((1.907*-10.96)/(-2(1.9497e+13)))))) + ((2-(3*13.128e+39)/(1.9497e+13))+(1.907^2)/(2*(1.9497e+13)^2))/(1-2(13.128e+39)/(1.9497e+13)+(1.907^2)/(6*(1.9497e+13)^2))^1/2]]

Input interpretation:

$$-\frac{47}{34+5}\,i + \frac{1}{1.9497\times 10^{13}}\left(-\frac{1.907\times(-10.96)}{2\times 1.9497\times 10^{13}} + \frac{\left(2-\frac{3\times 13.128\times 10^{39}}{1.9497\times 10^{13}}\right)+\frac{1.907^2}{2\,(1.9497\times 10^{13})^2}}{\sqrt{1-2\times\frac{13.128\times 10^{39}}{1.9497\times 10^{13}}+\frac{1.907^2}{6\,(1.9497\times 10^{13})^2}}}\right)$$

i is the imaginary unit

Result:

$2.74913... \times 10^{-26} +$
$1.61815... \, i$

Polar coordinates:

$r = 1.61815$ (radius), $\theta = 90°$ (angle)

1.61815 result that is a very good approximation to the value of the golden ratio 1,618033988749...

Note that:

golden ratio*i+(47/(34+5))i

Input:

$$\phi\, i + \frac{47}{34+5}\, i$$

ϕ is the golden ratio

i is the imaginary unit

Result:

$$i\,\phi + \frac{47\, i}{39}$$

Decimal approximation:

2.823162193878099976409715039493843245925437384933967990340... i

Polar coordinates:

$r \approx 2.82316$ (radius), $\theta = 90°$ (angle)

2.82316

Alternate forms:

$$\frac{1}{78} i \left(133 + 39\sqrt{5}\right)$$

$$i \left(\phi + \frac{47}{39}\right)$$

$$\frac{1}{39} i (39\phi + 47)$$

Alternative representations:

$$\phi i + \frac{i\,47}{34+5} = \frac{47 i}{39} + 2 i \sin(54°)$$

$$\phi i + \frac{i\,47}{34+5} = -2 i \cos(216°) + \frac{47 i}{39}$$

$$\phi i + \frac{i\,47}{34+5} = \frac{47 i}{39} - 2 i \sin(666°)$$

We have the following Ramanujan expression for obtain the golden ratio:

(((((1/(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))-(9.9929022507071872307053630412945712274243697626525 5 × 10^-7428) -(1.0156731238678143887477757629564691789882352909878 4 × 10^-7427))))))^1/5

Input interpretation:

$$\left(1 \middle/ \left(\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5 + 5\, e^{\left(-\sqrt{5}\,\pi\right)^5}\right) - \frac{9.99290225070718723070536304129457122742436976265255}{10^{7428}} - \frac{1.01567312386781438874777576295646917898823529098784}{10^{7427}}\right)\right)^{\wedge}(1/5)$$

Result:

1.6180339887498948482045868343656381177203091798057628621 35...

$\phi \approx 1.61803398874989484820458683436563811772030917980576286213 5$

$\Phi + 1 \approx 1.618033988749894848204586834365638117720309179805762862135$

$\frac{1}{\Phi} \approx 1.618033988749894848204586834365638117720309179805762862135$

Or:

((((1/(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))+(1.6382898797095665677239458827012056245798314722584 × 10^-7429)))^1/5

Input interpretation:

$$\sqrt[5]{\frac{1}{\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\,e^{\left(-\sqrt{5}\,\pi\right)^5}\right)+\frac{1.6382898797095665677239458827012056245798314722584}{10^{7429}}}}$$

Result:

1.618033988749894848204586834365638117720309179805762862135...

1.618033988749894848204586834365638117720309179805762862135

Possible closed forms:

$\phi \approx 1.61803398874989484820458683436563811772030917980576286213544862$

$\Phi + 1 \approx$
$1.61803398874989484820458683436563811772030917980576286213544862$

$\frac{1}{\Phi} \approx 1.61803398874989484820458683436563811772030917980576286213544862$

ϕ is the golden ratio

Φ is the golden ratio conjugate

We have the following mathematical connection:

$$-\frac{47}{34+5}i+\frac{1}{1.9497\times10^{13}}\left(-\frac{1.907\times(-10.96)}{2\times1.9497\times10^{13}}+\frac{\left(2-\frac{3\times13.128\times10^{39}}{1.9497\times10^{13}}\right)+\frac{1.907^2}{2(1.9497\times10^{13})^2}}{\sqrt{1-2\times\frac{13.128\times10^{39}}{1.9497\times10^{13}}+\frac{1.907^2}{6(1.9497\times10^{13})^2}}}\right)$$

1.61815

$$\sqrt[5]{\frac{1}{\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5e^{\left(-\sqrt{5}\,\pi\right)^5}\right)+\frac{1.6382898797095665677239458827012056245798314722584}{10^{7429}}}}$$

1.6180339887498948482045868343656381177203091798057628621 35

Thence:

$$\left[-\frac{47}{34+5}i+\frac{1}{1.9497\times10^{13}}\left(-\frac{1.907\times(-10.96)}{2\times1.9497\times10^{13}}+\frac{\left(2-\frac{3\times13.128\times10^{39}}{1.9497\times10^{13}}\right)+\frac{1.907^2}{2(1.9497\times10^{13})^2}}{\sqrt{1-2\times\frac{13.128\times10^{39}}{1.9497\times10^{13}}+\frac{1.907^2}{6(1.9497\times10^{13})^2}}}\right)\right]=1.61815\Rightarrow$$

$$\Rightarrow\left[\sqrt[5]{\frac{1}{\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5e^{\left(-\sqrt{5}\,\pi\right)^5}\right)+\frac{1.6382898797095665677239458827012056245798314722584}{10^{7429}}}}\right]=$$

$= 1.6180339887498948482 04$

$1.61815 \approx 1.618033988 =$ golden ratio

Now, we have that:

$$[K_0^0] = \frac{r_0 \zeta_0}{2r_\Sigma^2}\sqrt{1-\frac{r_0^2}{r_\Sigma^2}} + \frac{\frac{r_0^2}{r_\Sigma} - 6M}{6r_\Sigma^2\sqrt{1-\frac{2M}{r_\Sigma}+\frac{r_0^2}{6r_\Sigma^2}}}. \quad (71)$$

for $\zeta_0 = -10.96$; $r_0 = 2\sqrt{10/11} = 1.90693$

M = 13.12806e+39, r = r_Σ = 1.94973e+13 , we obtain:

(1.90693*(-10.96))/(2(1.94973e+13)^2)*(((1-(1.90693^2)/((1.94973e+13)^2)))^1/2 + ((1.90693^2)/(1.94973e+13))-(6*(13.12806e+39))*1/[
6*(1.94973e+13)^2*(((((1-
(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]

(1.90693*(-10.96))/(2(1.94973e+13)^2)*((1-(1.90693^2)/((1.94973e+13)^2)))^1/2 + ((1.90693^2)/(1.94973e+13))-(6*(13.12806e+39))

Input interpretation:

$$\frac{1.90693\times(-10.96)}{2\,(1.94973\times10^{13})^2}\sqrt{1-\frac{1.90693^2}{(1.94973\times10^{13})^2}} + \frac{1.90693^2}{1.94973\times10^{13}} - 6\times13.12806\times10^{39}$$

Result:

$-7.876835999999999999999999999999999999999999999999... \times 10^{40}$

$-7.876835999...*10^{40}$

(-7.87683599 × 10^40)*1/[6*(1.94973e+13)^2*(((1-
(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]

Input interpretation:

$$-7.87683599\times10^{40}\times\frac{1}{6\,(1.94973\times10^{13})^2\sqrt{1-\frac{2\times13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.90693^2}{6(1.94973\times10^{13})^2}}}$$

Result:

$0.941074...\, i$

Polar coordinates:

$r = 0.941074$ (radius), $\theta = 90°$ (angle)

0.941074

from which:

(((((-7.87683599 × 10^40)/[6*(1.94973e+13)^2*(((1-(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]))))^1/64

Input interpretation:

$$\sqrt[64]{-\frac{7.87683599\times 10^{40}}{6\left(1.94973\times 10^{13}\right)^2\sqrt{1-\frac{2\times 13.12806\times 10^{39}}{1.94973\times 10^{13}}+\frac{1.90693^2}{6\left(1.94973\times 10^{13}\right)^2}}}}$$

Result:

$0.9987506\ldots +$
$0.02451795\ldots\, i$

Polar coordinates:

$r = 0.999051$ (radius), $\theta = 1.40625°$ (angle)

0.999051 result very near to the value of the following Rogers-Ramanujan continued fraction:

$$\frac{e^{-\frac{\pi}{\sqrt{5}}}}{\frac{\sqrt{5}}{1+\sqrt[5]{\sqrt{\varphi^5\sqrt[4]{5^3}}-1}}-\varphi+1}=1-\cfrac{e^{-\pi\sqrt{5}}}{1+\cfrac{e^{-2\pi\sqrt{5}}}{1+\cfrac{e^{-3\pi\sqrt{5}}}{1+\cfrac{e^{-4\pi\sqrt{5}}}{1+\ldots}}}}\approx 0.9991104684$$

and:

2log base 0.9990515[(((((i*-(-7.87683599 × 10^40)/[6*(1.94973e+13)^2*(((1-(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]))))]-Pi+1/golden ratio

Input interpretation:

$$2\log_{0.9990515}\left(\left(i\left(-\frac{-7.87683599\times10^{40}}{6\,(1.94973\times10^{13})^2\sqrt{1-\frac{2\times13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.90693^2}{6\,(1.94973\times10^{13})^2}}}\right)\right)\right)-\pi+\frac{1}{\phi}$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

ϕ is the golden ratio

Result:

125.479...

125.479… result very near to the Higgs boson mass 125.18 GeV

2log base 0.9990515[(((((i*-(-7.87683599 × 10^40)/[6*(1.94973e+13)^2*(((1-(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]))))]+8+golden ratio

Input interpretation:

$$2\log_{0.9990515}\left(\left(i\left(-\frac{-7.87683599\times10^{40}}{6\,(1.94973\times10^{13})^2\sqrt{1-\frac{2\times13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.90693^2}{6\,(1.94973\times10^{13})^2}}}\right)\right)\right)+8+\phi$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

ϕ is the golden ratio

Result:

137.621...

137.621… result practically equal to the golden angle value 137.5

2log base 0.9990515[(((((i*-(-7.87683599 × 10^40)/[6*(1.94973e+13)^2*(((1-(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]))))] +11+1/golden ratio

Input interpretation:

$$2\log_{0.9990515}\left(\left(i\left(-\frac{-7.87683599\times10^{40}}{6\,(1.94973\times10^{13})^2\sqrt{1-\frac{2\times13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.90693^2}{6\,(1.94973\times10^{13})^2}}}\right)\right)\right)+11+\frac{1}{\phi}$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

ϕ is the golden ratio

Result:

139.621...

139.621… result practically equal to the rest mass of Pion meson 139.57 MeV

27*log base 0.9990515[(((((i*-(-7.87683599 × 10^40)/[6*(1.94973e+13)^2*(((1-(2*(13.12806e+39))/((1.94973e+13))+(1.90693^2)/(6*(1.94973e+13)^2))))^1/2]))))] +1

Input interpretation:

$$27\log_{0.9990515}\left(\left(i\left(-\frac{-7.87683599\times10^{40}}{6\,(1.94973\times10^{13})^2\sqrt{1-\frac{2\times13.12806\times10^{39}}{1.94973\times10^{13}}+\frac{1.90693^2}{6\,(1.94973\times10^{13})^2}}}\right)\right)\right)+1$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

Result:

1729.03...

1729.03...

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

With regard 27 (From Wikipedia):

*"The fundamental group of the complex form, compact real form, or any algebraic version of E_6 is the cyclic group **Z**/3**Z**, and its outer automorphism group is the cyclic group **Z**/2**Z**. Its fundamental representation is 27-dimensional (complex), and a basis is given by the 27 lines on a cubic surface. The dual representation, which is inequivalent, is also 27-dimensional. In particle physics, E_6 plays a role in some grand unified theories".*

and again:

(27 log(0.9990515, (i (-(-7.87683599×10^40)))/(6 (1.94973×10^13)^2 sqrt(1 - (2 13.12806×10^39)/(1.94973×10^13) + 1.90693^2/(6 (1.94973×10^13)^2)))) + 1)^(1/15)

Input interpretation:

$$\sqrt[15]{27 \log_{0.9990515}\left(\frac{i\left(-\left(-7.87683599\times 10^{40}\right)\right)}{6\left(1.94973\times 10^{13}\right)^2 \sqrt{1-\frac{2\times 13.12806\times 10^{39}}{1.94973\times 10^{13}}+\frac{1.90693^2}{6\left(1.94973\times 10^{13}\right)^2}}}\right)+1}$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

Result:

1.643817346898998754390794286147616625111556020183173634676...

$1.643817346898... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

(27 log(0.9990515, (i (-(-7.87683599×10^40)))/(6 (1.94973×10^13)^2 sqrt(1 - (2 13.12806×10^39)/(1.94973×10^13) + 1.90693^2/(6 (1.94973×10^13)^2)))) + 1)^(1/15) -(21+5)1/10^3

Input interpretation:

$$\sqrt[15]{27 \log_{0.9990515}\left(\frac{i\left(-\left(-7.87683599\times 10^{40}\right)\right)}{6\left(1.94973\times 10^{13}\right)^2 \sqrt{1-\frac{2\times 13.12806\times 10^{39}}{1.94973\times 10^{13}}+\frac{1.90693^2}{6\left(1.94973\times 10^{13}\right)^2}}}\right)+1} - (21+5)\times\frac{1}{10^3}$$

$\log_b(x)$ is the base- b logarithm

i is the imaginary unit

Result:

1.617817346898998754390794286147616625111556020183173634676...

1.617817346898… result that is a very good approximation to the value of the golden ratio 1,618033988749...

Now, we have that:

Then, σ and p are given by

$$\sigma = \frac{4r_0^2}{\kappa^2 V_0 r_\Sigma^5}\left(1 - \frac{1}{4} r_\Sigma \left[K_0^0\right]\right), \qquad (72)$$

$$p = -\frac{4r_0^2}{\kappa^2 V_0 r_\Sigma^5}\left(1 + \frac{1}{8} r_\Sigma \left[K_0^0\right]\right), \qquad (73)$$

For K = 0.941074 V_0 = -42

$\zeta_0 = -10.96$, $r_0 = 2\sqrt{10/11} = 1.90693$

M = 13.12806e+39, r = r_Σ = 1.94973e+13 , we obtain:

4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))

Input interpretation:

$$4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^5 \times (-42) \times 0.006}\left(1 - \frac{1}{4}(1.94973 \times 10^{13} \times 0.941074)\right)$$

Result:

$9.397121453891056508322094166398846597781305516057521 4... \times 10^{-53}$

$9.39712145389…*10^{-53}$

-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074))))

Input interpretation:

$$-4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)$$

Result:

$4.6985607269486011500140731105428473599776441949350642... \times 10^{-53}$

4.69856072694…*10^-53

We note that the ratio between the two results is:

(((4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))))) / (((-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074)))))))

Input interpretation:

$$-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}$$

Result:

1.9999999999998691984191924378378871462016694888973494180351...

1.9999999... ≈ 2 result practically equal to the graviton spin

and:

[(4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))) / (-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074)))))]^7+11-2+1/2

Input interpretation:

$$\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7+11-2+\frac{1}{2}$$

Result:

137.49999999941400891798327124213241981505158193761225766 66...

137.49999... ≈ 137.5 result practically equal to the golden angle value 137.5

[(4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))) / (-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074)))))]^7+11+0.618034

Input interpretation:

$$\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7+11+0.618034$$

Result:

139.61803399941400891798327124213241981505158193761225766 66...

139.618033999… result practically equal to the rest mass of Pion meson 139.57 MeV

[(4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))) / (-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074)))))]^7-Pi+0.618034

Input interpretation:

$$\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7-\pi+0.618034$$

Result:

125.476...

125.476… result very near to the Higgs boson mass 125.18 GeV

27*1/2*[(4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))) / (-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074)))))]^7+1

Input interpretation:

$$27\times\frac{1}{2}\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7+1$$

Result:

1728.99999999208912039277416176878766750319635615776547850 0...

1728.9999… ≈ 1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

and again:

ln(((27*1/2[(4(1.9069^2)/((((1.9497e+13)^5(-42)*0.006)))(((1-1/4((1.9497e+13)0.941074)))))/(-4(1.9069^2)/((((1.9497e+13)^5(-42)*0.006)))(((1+1/8((1.9497e+13)0.941074)))))]^7+1)))^1/3-(0.322+0.013)

Input interpretation:

$$\sqrt[3]{\log\left(27\times\frac{1}{2}\left(-\frac{4\times\frac{1.9069^2}{(1.9497\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.9497\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.9069^2}{(1.9497\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.9497\times10^{13}\times0.941074\right)\right)}\right)^7+1\right)}-(0.322+0.013)$$

log(x) is the natural logarithm

Result:

1.61854...

1.61854… result that is a very good approximation to the value of the golden ratio 1,618033988749...

[ln(((27*1/2[(4(1.9069^2)/(((1.9497e+13)^5(-42)*0.006))((1-1/4((1.9497e+13)0.941))))/(-4(1.9069^2)/(((1.9497e+13)^5(-42)*0.006))((1+1/8((1.9497e+13)0.941))))]^7+1)))^1/3-(0.199+0.08181636)]/10^27

where 199 is a Lucas number and 0.08181636 is the value of the following sum of two Ramanujan mock theta functions: 0,9243408 (i) - 1,00615716 (ii) = **-0,08181636**

Mock ϑ-functions (of 7th order)

$$\text{(i)} \quad 1+\frac{q}{1-q^2}+\frac{q^4}{(1-q^3)(1-q^4)}+\frac{q^9}{(1-q^4)(1-q^5)(1-q^6)}+\cdots$$

$$\text{(ii)} \quad \frac{q}{1-q}+\frac{q^4}{(1-q^2)(1-q^3)}+\frac{q^9}{(1-q^3)(1-q^4)(1-q^5)}+\cdots$$

$$\text{(iii)} \quad \frac{1}{1-q}+\frac{q^2}{(1-q^2)(1-q^3)}+\frac{q^6}{(1-q^3)(1-q^4)(1-q^5)}+\cdots$$

Input interpretation:

$$\frac{1}{10^{27}}\left(\sqrt[3]{\log\left(27\times\frac{1}{2}\left(-\frac{4\times\frac{1.9069^2}{(1.9497\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}(1.9497\times10^{13}\times0.941)\right)}{4\times\frac{1.9069^2}{(1.9497\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}(1.9497\times10^{13}\times0.941)\right)}\right)^7+1\right)}-(0.199+0.08181636)\right)$$

$\log(x)$ is the natural logarithm

Result:

$1.67272\ldots\times10^{-27}$

1.67272…*10^{-27} result practically equal to the proton mass

and performing the following integrals, we obtain:

int [12[(4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006))*(((1-1/4((1.94973e+13)0.941074))))) / (-4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006))*(((1+1/8((1.94973e+13)0.941074)))))]^7+29]x

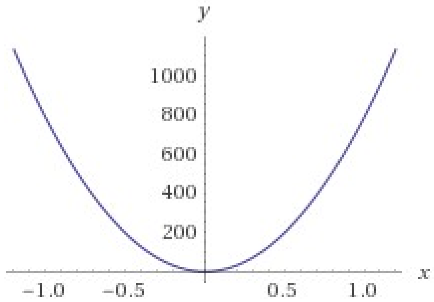
Indefinite integral:

$$\int \left(12 \left(\frac{4 \times 1.90693^2 \left(1 - \frac{1}{4}\, 1.94973 \times 10^{13}\, 0.941074\right)}{\frac{\left((1.94973 \times 10^{13})^5 (-42) 0.006\right)\left(-4 \times 1.90693^2 \left(1 + \frac{1}{8}\, 1.94973 \times 10^{13}\, 0.941074\right)\right)}{(1.94973 \times 10^{13})^5 (-42) 0.006}}\right)^7 + 29\right) x \, dx =$$

$782.5\, x^2 + \text{constant}$

782.5 (for x = 1) result practically equal to the rest mass of Omega meson 782.65

Plot of the integral:



(x from −1.2 to 1.2)

Alternate form assuming x is real:

$782.5\, x^2 + 0 + \text{constant}$

1/(2Pi) int [12[(4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006)))*(((1-1/4((1.94973e+13)0.941074))))) / (-4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006)))*(((1+1/8((1.94973e+13)0.941074)))))]^7+29]x

Input interpretation:

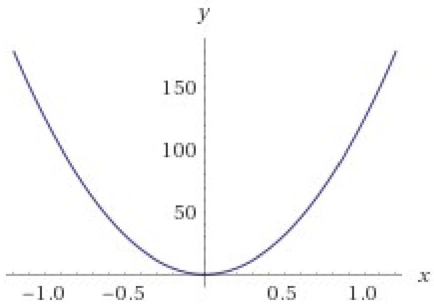
$$\frac{1}{2\pi} \int \left(12 \left(-\left(\left(4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^5 \times (-42) \times 0.006} \left(1 - \frac{1}{4} (1.94973 \times 10^{13} \times 0.941074)\right)\right) \Big/ \left(4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^5 \times (-42) \times 0.006} \left(1 + \frac{1}{8} (1.94973 \times 10^{13} \times 0.941074)\right)\right)\right)\right)^7 + 29\right) x \, dx$$

Result:

$124.539\, x^2$

124.539 (for x = 1) result very near to the Higgs boson mass 125.18 GeV

Plot:



(x from -1.2 to 1.2)

Alternate form assuming x is real:

$124.539\,x^2 + 0$

1/(Pi+256/10^2) int [12[(4(1.90693^2)/((((1.94973e+13)^5 (-42)0.006)))(((1-1/4((1.94973e+13)0.941074)))))/(-4(1.90693^2)/((((1.94973e+13)^5 (-42)0.006)))(((1+1/8((1.94973e+13)0.941074)))))]^7+29]x

Input interpretation:

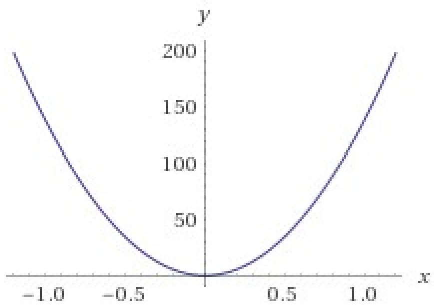
$$\frac{1}{\pi + \frac{256}{10^2}} \int \left(12\left(-\left(\left(4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^5 \times (-42) \times 0.006} \left(1 - \frac{1}{4}\,(1.94973 \times 10^{13} \times 0.941074)\right)\right) \Big/ \left(4 \times \frac{1.90693^2}{(1.94973 \times 10^{13})^5 \times (-42) \times 0.006} \left(1 + \frac{1}{8}\,(1.94973 \times 10^{13} \times 0.941074)\right)\right)\right)\right)^7 + 29\right) x\, dx$$

Result:

$137.242\,x^2$

137.242 (for x = 1) result practically equal to the golden angle value 137.5

Plot:



(x from -1.2 to 1.2)

Alternate form assuming x is real:

$137.242 x^2 + 0$

We obtain also:

[27*1/2*[(4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1-1/4*((1.94973e+13)*0.941074))))) / (-4*(1.90693^2) / ((((1.94973e+13)^5*(-42)*0.006)))*(((1+1/8*((1.94973e+13)*0.941074))))))]^7+1]^1/15

Input interpretation:

$$\sqrt[15]{27\times\frac{1}{2}\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7+1}$$

Result:

1.643815228748226722275820309871744734726052239752646039423...

$1.643815228748\ldots \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934\ldots$

and:

[27*1/2[(4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006)))*(((1-1/4((1.94973e+13)0.941074))))) / (-4(1.90693^2) / ((((1.94973e+13)^5 (-42)0.006)))*(((1+1/8((1.94973e+13)0.941074))))))]^7+1]^1/15-0.026

Input interpretation:

$$\sqrt[15]{27\times\frac{1}{2}\left(-\frac{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1-\frac{1}{4}\left(1.94973\times10^{13}\times0.941074\right)\right)}{4\times\frac{1.90693^2}{(1.94973\times10^{13})^5\times(-42)\times0.006}\left(1+\frac{1}{8}\left(1.94973\times10^{13}\times0.941074\right)\right)}\right)^7+1}-0.026$$

Result:

1.617815228748226722275820309871744734726052239752646039423...

1.617815228748... result that is a very good approximation to the value of the golden ratio 1,618033988749...

Now, we have that:

$$ds^2 = -\left(1 - \frac{2GM}{c^2 r} - \frac{\Lambda_{\rm ext}}{3} r^2\right) c^2\, dt^2 + \frac{dr^2}{\left(1 - \frac{2GM}{c^2 r} - \frac{\Lambda_{\rm ext}}{3} r^2\right)}$$
$$+ r^2 \left(d\theta^2 + \sin^2\theta\, d\phi^2\right). \quad (40)$$

(ii) The Schwarzschild-de Sitter spacetime, $\Lambda_{\rm ext} > 0$

Equation (40) with $\Lambda_{\rm ext} > 0$ represents a black hole in asymptotically de Sitter space. If $0 < 9\Lambda_{\rm ext}(GMc^{-2})^2 < 1$, the factor $f(r) = (1 - \frac{2GM}{c^2 r} - \frac{\Lambda_{\rm ext}}{3} r^2)$ is zero at two positive values of r, corresponding to two real positive roots. Defining

$$A = \left(\frac{3c^4}{8\Lambda_{\rm ext} G^2 M^2}\right)^{1/3} \sqrt[3]{-1 + \sqrt{1 - \frac{c^4}{9\Lambda_{\rm ext} G^2 M^2}}}, \quad (42)$$

$$B = \left(\frac{3c^4}{8\Lambda_{\rm ext} G^2 M^2}\right)^{1/3} \sqrt[3]{-1 - \sqrt{1 - \frac{c^4}{9\Lambda_{\rm ext} G^2 M^2}}}, \quad (43)$$

the solutions are given by

$$r_b = \frac{2GM}{c^2}\left(-\frac{A+B}{2} - \frac{A-B}{2}\sqrt{-3}\right), \quad (44)$$

$$r_c = \frac{2GM}{c^2}(A+B). \quad (45)$$

When $\Lambda_{\rm ext}(GM/c^2)^2 \ll 1$ (see appendix A for details), one gets

$$r_b = \frac{2GM}{c^2}\left[1 + \frac{4}{3}\Lambda_{\rm ext}\left(\frac{GM}{c^2}\right)^2\right], \quad (46)$$

$$r_c = \sqrt{\frac{3}{\Lambda_{\rm ext}}}\left(1 - \frac{GM}{c^2}\sqrt{\frac{\Lambda_{\rm ext}}{3}}\right). \quad (47)$$

From

$$A = \left(\frac{3c^4}{8\Lambda_{\rm ext} G^2 M^2}\right)^{1/3} \sqrt[3]{-1 + \sqrt{1 - \frac{c^4}{9\Lambda_{\rm ext} G^2 M^2}}},$$

for c = 299792458, $\Lambda_{\rm ext}$ = 1.1056e-52, G = 6.6743e-11 and M = 13.12806e+39, we obtain:

((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((((((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))))^1/3

Input interpretation:

$$\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\ \sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}$$

Result:

$4.22412\ldots\times 10^{12}$ +
$2.43880\ldots\times 10^{12}\,i$

Polar coordinates:

$r = 4.8776\times 10^{12}$ (radius), $\theta = 30.°$ (angle)

$4.8776*10^{12}$

From

$$B \;=\; \left(\frac{3c^4}{8\Lambda_{\rm ext}G^2M^2}\right)^{1/3}\ \sqrt[3]{-1-\sqrt{1-\frac{c^4}{9\Lambda_{\rm ext}G^2M^2}}}\,,$$

we obtain:

((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((((((-1-sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))))^1/3

Input interpretation:

$$\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\ \sqrt[3]{-1-\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}$$

Result:

$4.22412\ldots \times 10^{12} -$
$2.43880\ldots \times 10^{12}\, i$

Polar coordinates:

$r = 4.8776 \times 10^{12}$ (radius), $\theta = -30.°$ (angle)

$4.8776*10^{12}$ Practically the same result as above.

Thence, multiplying by 2, we obtain A + B:

2[((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((((((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))))^1/3]

Input interpretation:

$$2\left(\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\ \sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}\right)$$

Result:

$8.44825\ldots \times 10^{12} +$
$4.87760\ldots \times 10^{12}\, i$

Polar coordinates:

$r = 9.7552 \times 10^{12}$ (radius), $\theta = 30.°$ (angle)

$9.7552*10^{12}$

From which:

[2[((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((((((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))))^1/3]]^1/62

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\ \sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}\right)\right)^{\wedge}(1/62)$$

Result:

1.619900... +
0.01368061... i

Polar coordinates:

$r = 1.61996$ (radius), $\theta = 0.483871°$ (angle)

1.61996 result that is a very good approximation to the value of the golden ratio 1,618033988749...

or:

[2[((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((((((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))))))))^1/3]]^1/63+11/10^3

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\ \sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}\right)\right)^{\wedge}(1/63)+\frac{11}{10^3}$$

Result:

1.618546... +
0.01336077... i

Polar coordinates:

$r = 1.6186$ (radius), $\theta = 0.472954°$ (angle)

1.6186 result that is a very good approximation to the value of the golden ratio 1,618033988749...

We have also:

[2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]^0.166666- 8-0.47

where 0.47 = 47 / 10^2 (47 is a Lucas number) and 0.166666... is equal to 1/3

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3\,(3\times10^8)^4}{(8\times1.1056\times10^{-52})\,(6.6743\times10^{-11})^2\,(13.12806\times10^{39})^2}}\ \sqrt[3]{-1+\sqrt{1-\frac{(3\times10^8)^4}{(9\times1.1056\times10^{-52})\,(6.6743\times10^{-11})^2\,(13.12806\times10^{39})^2}}}\right)\right)^{0.166666}-8-0.47$$

Result:

137.179... +
12.7426... i

Polar coordinates:

$r = 137.77$ (radius), $\theta = 5.30699°$ (angle)

137.77 result practically equal to the golden angle value 137.5

Or:

(([2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]))^1/6 - 8 -0.47

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3(3\times10^8)^4}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}\sqrt[3]{-1+\sqrt{1-\frac{(3\times10^8)^4}{(9\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}}\right)\right)^{\wedge}(1/6)-8-0.47$$

Result:

137.182... +
12.7429... i

Polar coordinates:

$r = 137.773$ (radius), $\theta = 5.307°$ (angle)

137.773 result practically equal to the golden angle value 137.5

and:

(([2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]))^1/6 – 7

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3(3\times10^8)^4}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}\sqrt[3]{-1+\sqrt{1-\frac{(3\times10^8)^4}{(9\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}}\right)\right)^{\wedge}(1/6)-7$$

Result:

138.652... +
12.7429... i

Polar coordinates:

$r = 139.237$ (radius), $\theta = 5.25105°$ (angle)

139.237 result practically equal to the rest mass of Pion meson 139.57 MeV

(([2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]))^1/6 - 18-golden ratio^2

Input interpretation:

$$\left(2\left(\sqrt[3]{\frac{3(3\times10^{8})^{4}}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^{2}(13.12806\times10^{39})^{2}}}\sqrt[3]{-1+\sqrt{1-\frac{(3\times10^{8})^{4}}{(9\times1.1056\times10^{-52})(6.6743\times10^{-11})^{2}(13.12806\times10^{39})^{2}}}}\right)\right)\text{^}(1/6)-18-\phi^{2}$$

ϕ is the golden ratio

Result:

125.034... +
12.7429... i

Polar coordinates:

$r = 125.682$ (radius), $\theta = 5.81923°$ (angle)

125.682 result very near to the Higgs boson mass 125.18 GeV

27*1/2(((([2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]))^1/6 -18))-Pi

Input interpretation:

$$27\times\frac{1}{2}\left(\left(\left(2\left(\sqrt[3]{\frac{3(3\times10^{8})^{4}}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^{2}(13.12806\times10^{39})^{2}}}\left(-1+\sqrt{(1-(3\times10^{8})^{4}/((9\times1.1056\times10^{-52})(6.6743\times10^{-11})^{2}(13.12806\times10^{39})^{2}))}\right)\text{^}(1/3)\right)\right)\text{^}(1/6)-18\right)-\pi$$

Result:

1720.16... +
172.029... i

Polar coordinates:

$r = 1728.74$ (radius), $\theta = 5.71102°$ (angle)

1728.74

or:

27*1/2(((([2[((3*(3e+8)^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))^1/3*[-1+sqrt((1-(((((3e+8)^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))]^1/3]]))^1/6 -18))-2.71828

Input interpretation:

$$27\times\frac{1}{2}\left(\left(\left(2\left(\sqrt[3]{\frac{3(3\times10^8)^4}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}\left(-1+\sqrt{(1-(3\times10^8)^4/((9\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2))}\right)\hat{}(1/3)\right)\right)\right)\hat{}(1/6)-18\right)-2.71828$$

Result:

1720.59... +
172.029... i

Polar coordinates:

$r = 1729.17$ (radius), $\theta = 5.70963°$ (angle)

1729.17

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Now:

Possible closed forms:

$100\sqrt{299} \approx 1729.161646$

$-441\sqrt{2}\, b_4(2) \approx 1729.1753650$

$\frac{55041\pi}{100} \approx 1729.164012$

$\frac{396165}{e^2 \pi^3} \approx 1729.169323$

$\frac{9 e^5}{4 \log^5(2) \log^2(3)} \approx 1729.1740813$

$e^{3-2/e+2e+2/\pi-2\pi} \pi^{2+e} \approx 1729.1711327$

From

$\frac{396165}{e^2 \pi^3} \approx 1729.169323$

we obtain:

ln(((((396165/(e^2 π^3)))-10^3)))^1/3-(21+5) 1/10^2+3*1/10^3

Input:

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - (21+5)\times\frac{1}{10^2} + 3\times\frac{1}{10^3}$$

$\log(x)$ is the natural logarithm

Exact result:

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 1000\right)} - \frac{257}{1000}$$

Decimal approximation:

1.618010344119830694078484452802092842957577828240226732345...

1.6180103441198… result that is a very good approximation to the value of the golden ratio 1,618033988749...

Alternate forms:

$$\frac{1000 \sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 1000\right)} - 257}{1000}$$

$$\sqrt[3]{-2 - 3 \log(\pi) + \log(5 (79233 - 200 e^2 \pi^3))} - \frac{257}{1000}$$

$$\frac{1000 \sqrt[3]{-2 + \log(5) - 3 \log(\pi) + \log(79233 - 200 e^2 \pi^3)} - 257}{1000}$$

Alternative representations:

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = \sqrt[3]{\log_e\left(-10^3 + \frac{396165}{e^2 \pi^3}\right)} - \frac{26}{10^2} + \frac{3}{10^3}$$

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = \sqrt[3]{\log(a) \log_a\left(-10^3 + \frac{396165}{e^2 \pi^3}\right)} - \frac{26}{10^2} + \frac{3}{10^3}$$

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = \sqrt[3]{-\mathrm{Li}_1\left(1 + 10^3 - \frac{396165}{e^2 \pi^3}\right)} - \frac{26}{10^2} + \frac{3}{10^3}$$

Series representations:

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = -\frac{257}{1000} + \sqrt[3]{\log\left(77\left(-13 + \frac{5145}{e^2 \pi^3}\right)\right) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{77\left(-13+\frac{5145}{e^2 \pi^3}\right)}\right)^k}{k}}$$

$$\sqrt[3]{\log\left(\frac{396165}{e^2 \pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = -\frac{257}{1000} + \sqrt[3]{2 i \pi \left\lfloor \frac{\arg\left(-1000 + \frac{396165}{e^2 \pi^3} - x\right)}{2 \pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{(-1)^k \left(-1000 + \frac{396165}{e^2 \pi^3} - x\right)^k x^{-k}}{k}}$$

for $x < 0$

$$\sqrt[3]{\log\left(\frac{396\,165}{e^2\,\pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = -\frac{257}{1000} + \sqrt[3]{2\,i\,\pi\left\lfloor\frac{\pi - \arg\left(\frac{1}{z_0}\right) - \arg(z_0)}{2\,\pi}\right\rfloor + \log(z_0) - \sum_{k=1}^{\infty}\frac{(-1)^k\left(-1000 + \frac{396165}{e^2\,\pi^3} - z_0\right)^k z_0^{-k}}{k}}$$

Integral representations:

$$\sqrt[3]{\log\left(\frac{396\,165}{e^2\,\pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = -\frac{257}{1000} + \sqrt[3]{\int_1^{-1000+\frac{396\,165}{e^2\,\pi^3}} \frac{1}{t}\,dt}$$

$$\sqrt[3]{\log\left(\frac{396\,165}{e^2\,\pi^3} - 10^3\right)} - \frac{21+5}{10^2} + \frac{3}{10^3} = -\frac{257}{1000} + \frac{\sqrt[3]{-i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{\left(-1001+\frac{396165}{e^2\,\pi^3}\right)^{-s}\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}}{\sqrt[3]{2\,\pi}} \quad \text{for } -1 < \gamma < 0$$

From (46) and (47), we obtain:

$$r_b = \frac{2GM}{c^2}\left[1 + \frac{4}{3}\Lambda_{\text{ext}}\left(\frac{G\,M}{c^2}\right)^2\right],$$
$$r_c = \sqrt{\frac{3}{\Lambda_{\text{ext}}}}\left(1 - \frac{GM}{c^2}\sqrt{\frac{\Lambda_{\text{ext}}}{3}}\right).$$

For c = 299792458, Λ_{ext} = 1.1056e-52, G = 6.6743e-11 and M = 13.12806e+39 , we obtain:

(2*6.6743e-11*13.12806e+39)/(3e+8)^2 * (((((1+4/3*(1.1056e-52)*((6.6743e-11*13.12806e+39)/(3e+8)^2)^2)))

Input interpretation:

$$\frac{2\times 6.6743\times 10^{-11}\times 13.12806\times 10^{39}}{(3\times 10^{8})^2}\left(1+\frac{4}{3}\times 1.1056\times 10^{-52}\left(\frac{6.6743\times 10^{-11}\times 13.12806\times 10^{39}}{(3\times 10^{8})^2}\right)^2\right)$$

Result:

$1.9471246857333333333333333360538918008041437232684794 4\ldots\times 10^{13}$

1.9471246857333…*10^13

and:

(3/(1.1056e-52))^1/2*((((1-((6.6743e-11*13.12806e+39)/(3e+8)^2))))*((((1.1056e-52)/3)^1/2)))

Input interpretation:

$$\sqrt{\frac{3}{1.1056\times 10^{-52}}}\left(\left(1-\frac{6.6743\times 10^{-11}\times 13.12806\times 10^{39}}{(3\times 10^{8})^2}\right)\sqrt{\frac{1.1056\times 10^{-52}}{3}}\right)$$

Result:

$-9.7356234286656666666666666666666666666666666666666\ldots\times 10^{12}$

-9.735623428665666...*10^12

From the following ratio between the two results, we obtain:

(1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)

Input interpretation:

$$-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}$$

Result:

$-2.0000000000002054105743358734439104675553769609460701818 2\ldots$

-2 result equal to the graviton spin with minus sign

From which:

(((1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)))^6

Input interpretation:

$$\left(-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}\right)^6$$

Result:

64.0000000003943883027249782767178153043267668312361298414...

64

and:

2(((1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)))^6 + 7 + golden ratio^2

Input interpretation:

$$2\left(-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}\right)^6+7+\phi^2$$

ϕ is the golden ratio

Result:

137.6180339888288...

137.6180339888288… result practically equal to the golden angle value 137.5

2(((1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)))^6 + 7 + golden ratio^3

Input interpretation:

$$2\left(-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}\right)^6+7+\phi^3$$

ϕ is the golden ratio

Result:

139.2360679775787...

139.2360679775787... result practically equal to the rest mass of Pion meson 139.57 MeV

2(((1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)))^6 - Pi + 1/golden ratio

Input interpretation:

$$2\left(-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}\right)^{6}-\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

125.4764413352390...

125.476441335239... result very near to the Higgs boson mass 125.18 GeV

27*(((((1.9471246857333333 × 10^13) / (-9.7356234286656666 × 10^12)))^6))+1

Input interpretation:

$$27\left(-\frac{1.9471246857333333\times 10^{13}}{9.7356234286656666\times 10^{12}}\right)^{6}+1$$

Result:

1729.0000000010648484173574413471381013216822704443375505771...

1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

and again:

((((27*(((((1.94712468573 × 10^13) / (-9.73562342866 × 10^12)))^6))+1))))^1/15 - (21+5) 1/10^3

Input interpretation:

$$\sqrt[15]{27\left(-\frac{1.94712468573\times 10^{13}}{9.73562342866\times 10^{12}}\right)^{6}+1}-(21+5)\times\frac{1}{10^{3}}$$

Result:

1.617815228748053139601228337209585701809813539180470570595...

1.6178152287… result that is a very good approximation to the value of the golden ratio 1,618033988749...

We have also that dividing:

$$\frac{\frac{2\times 6.6743\times 10^{-11}\times 13.12806\times 10^{39}}{(3\times 10^{8})^2}}{\left(1+\frac{4}{3}\times 1.1056\times 10^{-52}\left(\frac{6.6743\times 10^{-11}\times 13.12806\times 10^{39}}{(3\times 10^{8})^2}\right)^2\right)}$$

$1.9471246857333333333333333605389180080414372326847944\ldots\times 10^{13}$

by

$$\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\;\sqrt[3]{-1-\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}$$

$r = 4.8776\times 10^{12}$ (radius), $\theta = -30.°$ (angle)

we obtain:

(1.9471246857333e+13)/ [((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))^1/3]

Input interpretation:

$$(1.9471246857333\times 10^{13})\Big/\left(\sqrt[3]{\frac{3\times 299\,792\,458^4}{(8\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}\;\sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times 1.1056\times 10^{-52})(6.6743\times 10^{-11})^2\,(13.12806\times 10^{39})^2}}}\right)$$

Result:

3.45715... −
1.99599... i

Polar coordinates:

$r = 3.99197$ (radius), $\theta = -30.°$ (angle)

3.99197

And dividing:

$$\sqrt{\frac{3}{1.1056\times10^{-52}}}\left(\left(1-\frac{6.6743\times10^{-11}\times13.12806\times10^{39}}{(3\times10^{8})^2}\right)\sqrt{\frac{1.1056\times10^{-52}}{3}}\right)$$

$-9.735623428665666666666666666666666666666666666666... \times 10^{12}$

by

$$\sqrt[3]{\frac{3\times299\,792\,458^4}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}\sqrt[3]{-1-\sqrt{1-\frac{299\,792\,458^4}{(9\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}}$$

$r = 4.8776\times10^{12}$ (radius), $\theta = -30.°$ (angle)

we obtain:

(-9.7356234286656e+12)/[((((((3*299792458^4)/(((8*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2)))))))^1/3*((-1+sqrt((((1-((((299792458^4)/(((9*1.1056e-52)*(6.6743e-11)^2(13.12806e+39)^2))))))))))))^1/3]

Input interpretation:

$$-\left((9.7356234286656\times10^{12})\Big/\left(\sqrt[3]{\frac{3\times299\,792\,458^4}{(8\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}\sqrt[3]{-1+\sqrt{1-\frac{299\,792\,458^4}{(9\times1.1056\times10^{-52})(6.6743\times10^{-11})^2(13.12806\times10^{39})^2}}}\right)\right)$$

Result:

$-1.72858\ldots +$
$0.997993\ldots i$

Polar coordinates:

$r = 1.99599$ (radius), $\theta = 150.°$ (angle)

$1.99599 \approx 2$ result practically equal to the graviton spin

From the difference between the two results, we obtain:

(3.99197-1.99599)

Input interpretation:

$3.99197 - 1.99599$

Result:

1.99598

1.99598

Possible closed forms:

$$\sqrt{\frac{247}{62}} \approx 1.995963668$$

$$\log\left(\frac{1}{2}\left(6e + e^2 + (\pi - 6)\pi\right)\right) \approx 1.995978105$$

From the result of the difference (closed form)

$$\log\left(\frac{1}{2}\left(6e + e^2 + (\pi - 6)\pi\right)\right) \approx 1.995978105$$

we obtain:

2(((log(1/2 (6 e + e^2 + (π - 6) π)))))^6-1

Input:

$$2\log^6\left(\frac{1}{2}\left(6e + e^2 + (\pi - 6)\pi\right)\right) - 1$$

$\log(x)$ is the natural logarithm

Decimal approximation:

125.4633359511961552446188043526188035573296255814272482170...

125.46333595… result very near to the Higgs boson mass 125.18 GeV

Alternate forms:

$$2 \log^6\left(\frac{1}{2} (e (6+e) + (\pi-6) \pi)\right) - 1$$

$$2 (\log(6 e + e^2 + (\pi-6)\pi) - \log(2))^6 - 1$$

$$-1 + 2 \log^6(2) + 2 \log^6(6 e + e^2 - 6\pi + \pi^2) - 12 \log^5(2) \log(6 e + e^2 - 6\pi + \pi^2) - 12 \log(2) \log^5(6 e + e^2 - 6\pi + \pi^2) - 40 \log^3(2) \log^3(6 e + e^2 - 6\pi + \pi^2) + 30 \log^4(2) \log^2(6 e + e^2 - 6\pi + \pi^2) + 30 \log^2(2) \log^4(6 e + e^2 - 6\pi + \pi^2)$$

Alternative representations:

$$2 \log^6\left(\frac{1}{2} (6 e + e^2 + (\pi-6)\pi)\right) - 1 = -1 + 2 \log_e^6\left(\frac{1}{2} (6 e + (-6+\pi)\pi + e^2)\right)$$

$$2 \log^6\left(\frac{1}{2} (6 e + e^2 + (\pi-6)\pi)\right) - 1 = -1 + 2 \left(\log(a) \log_a\left(\frac{1}{2} (6 e + (-6+\pi)\pi + e^2)\right)\right)^6$$

$$2 \log^6\left(\frac{1}{2} (6 e + e^2 + (\pi-6)\pi)\right) - 1 = -1 + 2 \left(-\text{Li}_1\left(1 + \frac{1}{2} (-6 e - (-6+\pi)\pi - e^2)\right)\right)^6$$

Series representations:

$$2 \log^6\left(\frac{1}{2} (6 e + e^2 + (\pi-6)\pi)\right) - 1 = -1 + 2 \left(\log\left(-1 + \frac{1}{2} (6 e + e^2 + (-6+\pi)\pi)\right) - \sum_{k=1}^{\infty} \frac{\left(-\frac{2}{-2+6e+e^2-6\pi+\pi^2}\right)^k}{k}\right)^6$$

$$2 \log^6\left(\frac{1}{2} (6 e + e^2 + (\pi-6)\pi)\right) - 1 = -1 + 2 \left(2 i \pi \left\lfloor \frac{\arg\left(\frac{1}{2} (6 e + e^2 + (-6+\pi)\pi) - x\right)}{2\pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k (6 e + e^2 + (-6+\pi)\pi - 2x)^k x^{-k}}{k}\right)^6 \quad \text{for } x < 0$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)-1 = -1+2\left(2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor + \log(z_0)-\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2z_0\right)^k z_0^{-k}}{k}\right)^6$$

Integral representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)-1 = -1+2\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)-1 = -1-\frac{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)^{-s}\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^6}{32\pi^6}$$

for $-1<\gamma<0$

and:

2(((log(1/2 (6 e + e^2 + (π - 6) π)))))^6+11

Input:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11$$

$\log(x)$ is the natural logarithm

Decimal approximation:

137.4633359511961552446188043526188035573296255814272482170...

137.46333595… result practically equal to the golden angle value 137.5

Alternate forms:

$$11+2\log^6\left(\frac{1}{2}\left(e(6+e)+(\pi-6)\pi\right)\right)$$

$$11+2\left(\log\left(6e+e^2+(\pi-6)\pi\right)-\log(2)\right)^6$$

$$11+2\log^6(2)+2\log^6(6e+e^2-6\pi+\pi^2)-12\log^5(2)\log(6e+e^2-6\pi+\pi^2)-12\log(2)\log^5(6e+e^2-6\pi+\pi^2)-40\log^3(2)\log^3(6e+e^2-6\pi+\pi^2)+30\log^4(2)\log^2(6e+e^2-6\pi+\pi^2)+30\log^2(2)\log^4(6e+e^2-6\pi+\pi^2)$$

Alternative representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\log_e^6\left(\frac{1}{2}\left(6e+(-6+\pi)\pi+e^2\right)\right)$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(\log(a)\log_a\left(\frac{1}{2}\left(6e+(-6+\pi)\pi+e^2\right)\right)\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(-\mathrm{Li}_1\left(1+\frac{1}{2}\left(-6e-(-6+\pi)\pi-e^2\right)\right)\right)^6$$

Series representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(\log\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)-\sum_{k=1}^{\infty}\frac{\left(-\frac{2}{-2+6e+e^2-6\pi+\pi^2}\right)^k}{k}\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(2i\pi\left\lfloor\frac{\arg\left(\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2x\right)^k x^{-k}}{k}\right)^6 \quad \text{for } x<0$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2z_0\right)^k z_0^{-k}}{k}\right)^6$$

Integral representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11=11+2\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+11 = 11-\frac{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)^{-s}\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^6}{32\pi^6}$$
for $-1<\gamma<0$

2(((log(1/2 (6 e + e^2 + (π - 6) π)))))^6+13

Input:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13$$

log(x) is the natural logarithm

Decimal approximation:

139.4633359511961552446188043526188035573296255814272482170...

139.46333595… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$13+2\log^6\left(\frac{1}{2}\left(e(6+e)+(\pi-6)\pi\right)\right)$$

$$13+2\left(\log\left(6e+e^2+(\pi-6)\pi\right)-\log(2)\right)^6$$

$$13+2\log^6(2)+2\log^6\left(6e+e^2-6\pi+\pi^2\right)-12\log^5(2)\log\left(6e+e^2-6\pi+\pi^2\right)-12\log(2)\log^5\left(6e+e^2-6\pi+\pi^2\right)-40\log^3(2)\log^3\left(6e+e^2-6\pi+\pi^2\right)+30\log^4(2)\log^2\left(6e+e^2-6\pi+\pi^2\right)+30\log^2(2)\log^4\left(6e+e^2-6\pi+\pi^2\right)$$

Alternative representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\log_e^6\left(\frac{1}{2}\left(6e+(-6+\pi)\pi+e^2\right)\right)$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(\log(a)\log_a\left(\frac{1}{2}\left(6e+(-6+\pi)\pi+e^2\right)\right)\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(-\mathrm{Li}_1\left(1+\frac{1}{2}\left(-6e-(-6+\pi)\pi-e^2\right)\right)\right)^6$$

Series representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(\log\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)-\sum_{k=1}^{\infty}\frac{\left(-\frac{2}{-2+6e+e^2-6\pi+\pi^2}\right)^k}{k}\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(2i\pi\left\lfloor\frac{\arg\left(\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2x\right)^k x^{-k}}{k}\right)^6 \quad \text{for } x<0$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2z_0\right)^k z_0^{-k}}{k}\right)^6$$

Integral representations:

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13+2\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6$$

$$2\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+13 = 13-\frac{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)^{-s}\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^6}{32\pi^6} \quad \text{for } -1<\gamma<0$$

27*(((log(1/2 (6 e + e^2 + (π - 6) π)))))^6+(21+Pi-golden ratio^2+1/4)

Input:

$$27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Exact result:

$$-\phi^2 + \frac{85}{4} + \pi + 27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right)$$

Decimal approximation:

1729.028594005987994192611915309267712790426805568837193889...

1729.028594005…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Alternate forms:

$$-\phi^2 + \frac{85}{4} + \pi + 27 \log^6\left(\frac{1}{2} \left(e (6 + e) + (\pi - 6) \pi\right)\right)$$

$$\frac{79}{4} - \frac{\sqrt{5}}{2} + \pi + 27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right)$$

$$\frac{1}{4} \left(79 - 2 \sqrt{5}\right) + \pi + 27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right)$$

Alternative representations:

$$27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) = 21 + \pi + \frac{1}{4} - \phi^2 + 27 \log_e^6\left(\frac{1}{2} \left(6 e + (-6 + \pi) \pi + e^2\right)\right)$$

$$27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) = 21 + \pi + \frac{1}{4} - \phi^2 + 27 \left(\log(a) \log_a\left(\frac{1}{2} \left(6 e + (-6 + \pi) \pi + e^2\right)\right)\right)^6$$

$$27 \log^6\left(\frac{1}{2} \left(6 e + e^2 + (\pi - 6) \pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) = 21 + \pi + \frac{1}{4} - \phi^2 + 27 \left(-\text{Li}_1\left(1 + \frac{1}{2} \left(-6 e - (-6 + \pi) \pi - e^2\right)\right)\right)^6$$

Series representations:

$$27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) =$$
$$\frac{85}{4} - \phi^2 + \pi + 27\left(\log\left(-1 + \frac{1}{2}\left(6 e + e^2 + (-6 + \pi)\pi\right)\right) - \sum_{k=1}^{\infty} \frac{\left(-\frac{2}{-2 + 6 e + e^2 - 6\pi + \pi^2}\right)^k}{k}\right)^6$$

$$27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) =$$
$$\frac{85}{4} - \phi^2 + \pi + 27\left(2 i \pi \left\lfloor \frac{\arg\left(\frac{1}{2}\left(6 e + e^2 + (-6 + \pi)\pi\right) - x\right)}{2\pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k \left(6 e + e^2 + (-6 + \pi)\pi - 2 x\right)^k x^{-k}}{k}\right)^6 \quad \text{for } x < 0$$

$$27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) =$$
$$\frac{85}{4} - \phi^2 + \pi + 27\left(2 i \pi \left\lfloor \frac{\pi - \arg\left(\frac{1}{z_0}\right) - \arg(z_0)}{2\pi} \right\rfloor + \log(z_0) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k \left(6 e + e^2 + (-6 + \pi)\pi - 2 z_0\right)^k z_0^{-k}}{k}\right)^6$$

Integral representations:

$$27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) =$$
$$\frac{85}{4} - \phi^2 + \pi + 27\left(\int_1^{\frac{1}{2}\left(6 e + e^2 + (-6 + \pi)\pi\right)} \frac{1}{t}\, dt\right)^6$$

$$27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right) =$$
$$\frac{85}{4} - \phi^2 + \pi - \frac{27\left(\int_{-i\infty + \gamma}^{i\infty + \gamma} \frac{\left(-1 + \frac{1}{2}\left(6 e + e^2 + (-6 + \pi)\pi\right)\right)^{-s} \Gamma(-s)^2\, \Gamma(1 + s)}{\Gamma(1 - s)}\, ds\right)^6}{64 \pi^6} \quad \text{for } -1 < \gamma < 0$$

((((27*(((log(1/2 (6 e + e^2 + (π - 6) π)))))^6+(21+Pi-golden ratio^2+1/4)))))^1/15-(29-3) 1/10^3

Input:

$$\sqrt[15]{27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right)} - (29 - 3) \times \frac{1}{10^3}$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Exact result:

$$\sqrt[15]{-\phi^2 + \frac{85}{4} + \pi + 27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right)} - \frac{13}{500}$$

Decimal approximation:

1.617817041083401032228911515905750743175142696031835014892...

1.61781704108… result that is a very good approximation to the value of the golden ratio 1,618033988749...

Alternate forms:

$$\sqrt[15]{-\phi^2 + \frac{85}{4} + \pi + 27 \log^6\left(\frac{1}{2}\left(e(6 + e) + (\pi - 6)\pi\right)\right)} - \frac{13}{500}$$

$$\sqrt[15]{\frac{1}{4}\left(79 - 2\sqrt{5}\right) + \pi + 27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right)} - \frac{13}{500}$$

$$\sqrt[15]{\frac{85}{4} - \frac{1}{4}\left(1 + \sqrt{5}\right)^2 + \pi + 27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right)} - \frac{13}{500}$$

Alternative representations:

$$\sqrt[15]{27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right)} - \frac{29 - 3}{10^3} = -\frac{26}{10^3} + \sqrt[15]{21 + \pi + \frac{1}{4} - \phi^2 + 27 \log_e^6\left(\frac{1}{2}\left(6 e + (-6 + \pi)\pi + e^2\right)\right)}$$

$$\sqrt[15]{27 \log^6\left(\frac{1}{2}\left(6 e + e^2 + (\pi - 6)\pi\right)\right) + \left(21 + \pi - \phi^2 + \frac{1}{4}\right)} - \frac{29 - 3}{10^3} = -\frac{26}{10^3} + \sqrt[15]{21 + \pi + \frac{1}{4} - \phi^2 + 27 \left(\log(a) \log_a\left(\frac{1}{2}\left(6 e + (-6 + \pi)\pi + e^2\right)\right)\right)^6}$$

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=$$
$$-\frac{26}{10^3}+\sqrt[15]{21+\pi+\frac{1}{4}-\phi^2+27\left(-\text{Li}_1\left(1+\frac{1}{2}\left(-6e-(-6+\pi)\pi-e^2\right)\right)\right)^6}$$

Series representations:

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=$$
$$-\frac{13}{500}+\left(\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+\right.$$
$$\left.27\left(\log\left(-1+\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)\right)-\sum_{k=1}^{\infty}\frac{\left(-\frac{2}{-2+6e+e^2-6\pi+\pi^2}\right)^k}{k}\right)^6\right)\hat{}\,(1/15)$$

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=-\frac{13}{500}+$$
$$\left(\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(2i\pi\left\lfloor\frac{\arg\left(\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)-x\right)}{2\pi}\right\rfloor+\log(x)-\right.\right.$$
$$\left.\left.\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2x\right)^k x^{-k}}{k}\right)^6\right)\hat{}\,(1/15)\quad\text{for } x<0$$

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=$$
$$-\frac{13}{500}+\left(\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\right.\right.$$
$$\left.\left.\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(6e+e^2+(-6+\pi)\pi-2z_0\right)^k z_0^{-k}}{k}\right)^6\right)\hat{}\,(1/15)$$

Integral representations:

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=$$
$$-\frac{13}{500}+\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6}$$

$$\sqrt[15]{27\log^6\left(\frac{1}{2}\left(6e+e^2+(\pi-6)\pi\right)\right)+\left(21+\pi-\phi^2+\frac{1}{4}\right)}-\frac{29-3}{10^3}=$$

$$-\frac{13}{500}+\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi-\frac{27\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\left(\frac{2}{-2+6e+e^2+(-6+\pi)\pi}\right)^s\Gamma(-s)^2\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^6}{64\pi^6}}$$

for $-1<\gamma<0$

We note that, from the following integral representation, we obtain:

-13/500 + (85/4 - (1 + Sqrt[5])^2/4 + Pi + 27 Integrate[t^(-1), {t, 1, (6 E + E^2 + (-6 + Pi) Pi)/2}]^6)^(1/15)

Input:

$$-\frac{13}{500}+\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6}$$

Result:

$$\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(\log\left(6e+e^2+(\pi-6)\pi\right)-\log(2)\right)^6}-\frac{13}{500}\approx 1.61782$$

1.61782 result that is a very good approximation to the value of the golden ratio 1,618033988749...

Computation result:

$$-\frac{13}{500}+\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(\int_1^{\frac{1}{2}\left(6e+e^2+(-6+\pi)\pi\right)}\frac{1}{t}\,dt\right)^6}=$$

$$\sqrt[15]{\frac{85}{4}-\frac{1}{4}\left(1+\sqrt{5}\right)^2+\pi+27\left(\log\left(6e+e^2+(\pi-6)\pi\right)-\log(2)\right)^6}-\frac{13}{500}$$

Alternate forms:

$$\sqrt[15]{\frac{79}{4}-\frac{\sqrt{5}}{2}+\pi+27\log^6\left(\frac{2}{e(6+e)+(\pi-6)\pi}\right)}-\frac{13}{500}$$

$$\sqrt[15]{\frac{79}{4}-\frac{\sqrt{5}}{2}+\pi+27\log^6\left(\frac{2}{6e+e^2+(\pi-6)\pi}\right)}-\frac{13}{500}$$

$$\sqrt[15]{\frac{1}{4}\left(79-2\sqrt{5}\right)+\pi+27\left(\log\left(6e+e^{2}+(\pi-6)\pi\right)-\log(2)\right)^{6}}-\frac{13}{500}$$

From:

TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY Volume 349, Number 6, June 1997, Pages 2125{2173 S 0002-9947(97)01738-8 **RAMANUJAN'S CLASS INVARIANTS, KRONECKER'S LIMIT FORMULA, AND MODULAR EQUATIONS** - *BRUCE C. BERNDT, HENG HUAT CHAN, AND LIANG - CHENG ZHANG*

We have that:

RAMANUJAN'S CLASS INVARIANTS 2149

Theorem 5.4.

$$G_{553}=\left(\sqrt{\frac{100+11\sqrt{79}}{4}}+\sqrt{\frac{96+11\sqrt{79}}{4}}\right)^{1/2}\times\left(\sqrt{\frac{143+16\sqrt{79}}{2}}+\sqrt{\frac{141+16\sqrt{79}}{2}}\right)^{1/2}.$$

From:

$$G_{553}=\left(\sqrt{\frac{100+11\sqrt{79}}{4}}+\sqrt{\frac{96+11\sqrt{79}}{4}}\right)^{1/2}\times\left(\sqrt{\frac{143+16\sqrt{79}}{2}}+\sqrt{\frac{141+16\sqrt{79}}{2}}\right)^{1/2}$$

We note that:

141 – 4 = 137;   141 – 2 = 139;   141 – 7 = 134; 143 – 18 = 125; 143 – 4 = 139;

143 – 76 – 3 = 64; 143 – 11 – 4 = 128

Now, we have:

sqrt((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2)))))

Input:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\ \sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}$$

Result:

$$\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}$$

Decimal approximation:

18.264223159284078234931159770831404001454811548931446390 87...

18.264223159284…

Alternate forms:

$$\frac{1}{4}\sqrt{\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)2}$$

$$\sqrt{\boxed{\text{root of } x^8-334x^7+138x^6+496x^5+127x^4+496x^3+138x^2-334x+1 \text{ near } x=333.582}}$$

$$\frac{\sqrt{\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)}}{2^{3/4}}$$

Minimal polynomial:

$$x^{16}-334x^{14}+138x^{12}+496x^{10}+127x^8+496x^6+138x^4-334x^2+1$$

From which, we obtain:

sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2((x+4)+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))) = 18.264223159284

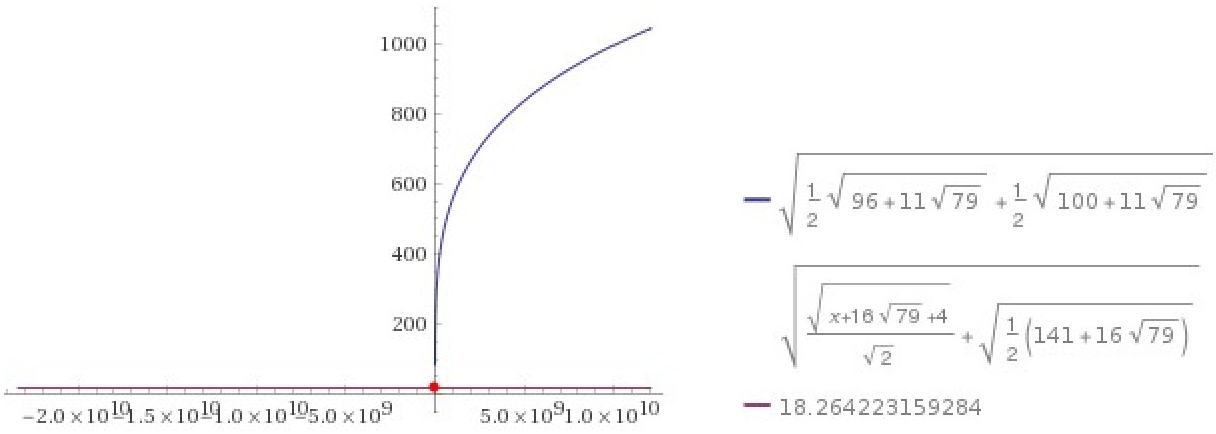
Input interpretation:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\ \sqrt{\sqrt{\frac{1}{2}\left((x+4)+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Result:

$$\sqrt{\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\ \sqrt{\frac{\sqrt{x+16\sqrt{79}+4}}{\sqrt{2}}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Plot:



Solution:

$x = 139.0000000000$

139 result very near to the rest mass of Pion meson 139.57 MeV

sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2(143+16sqrt79)))^1/2 + ((1/2((x+4)+16sqrt79)))^1/2))))) = 18.264223159284

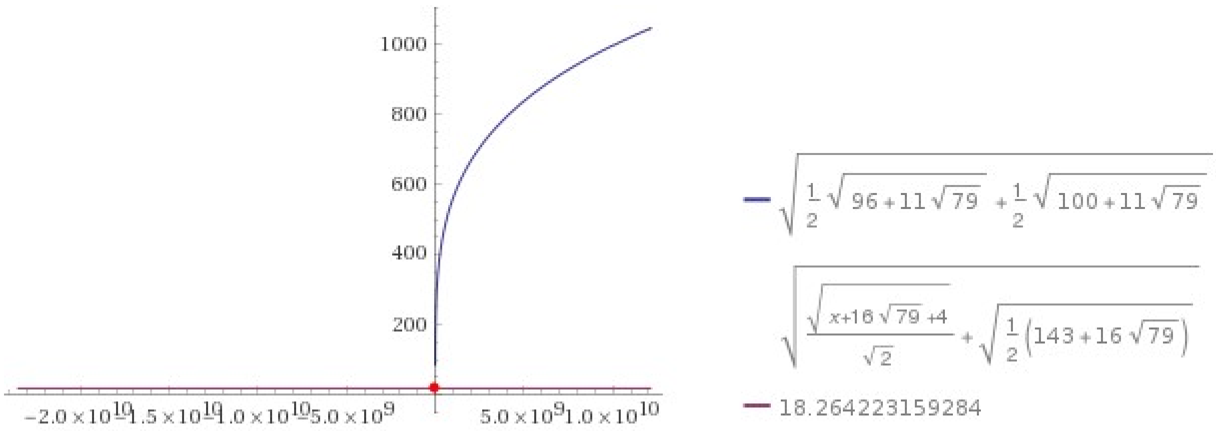
Input interpretation:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\,\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left((x+4)+16\sqrt{79}\right)}} = 18.264223159284$$

Result:

$$\sqrt{\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\,\sqrt{\frac{\sqrt{x+16\sqrt{79}+4}}{\sqrt{2}}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}} = 18.264223159284$$

Plot:



Solution:

$x = 137.0000000000$

137 result very near to the golden angle value 137.5

sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2((x+18)+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))) = 18.264223159284

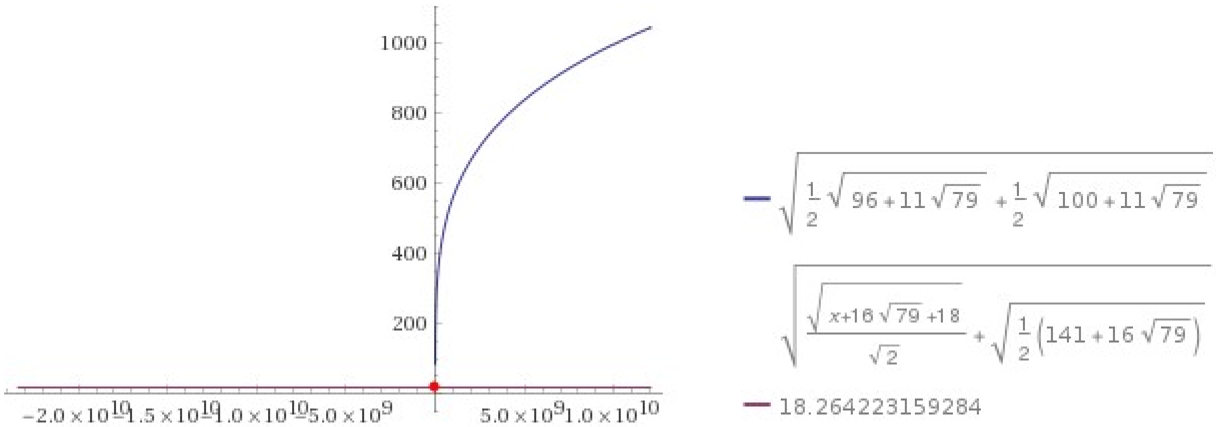
Input interpretation:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left((x+18)+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Result:

$$\sqrt{\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{\frac{\sqrt{x+16\sqrt{79}+18}}{\sqrt{2}}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Plot:



Solution:

$x = 125.0000000000$

125 result very near to the Higgs boson mass 125.18 GeV

sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) *
sqrt(((((((1/2((x+11+4)+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))) =
18.264223159284

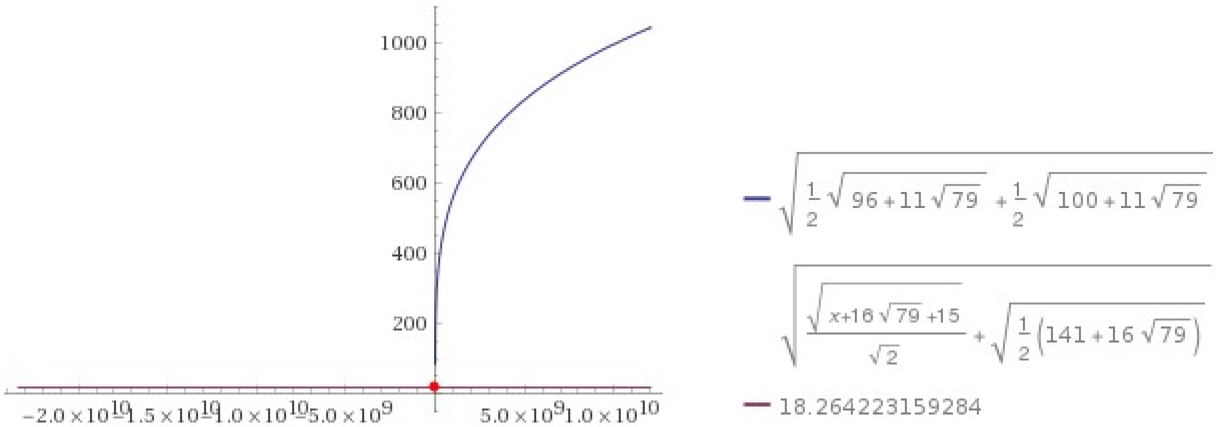
Input interpretation:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\,\sqrt{\sqrt{\frac{1}{2}\left((x+11+4)+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Result:

$$\sqrt{\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\,\sqrt{\frac{\sqrt{x+16\sqrt{79}+15}}{\sqrt{2}}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}} = 18.264223159284$$

Plot:



Solution:

$x = 128.0000000000$

128 = 64*2

24*4*sqrt((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))) -24

Input:

$$24\times 4\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-24$$

Result:

$$96\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}-24$$

Decimal approximation:

1729.365423291271510553391337999814784139661908697418853524...

1729.3654232912…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Alternate forms:

$$24\left(\sqrt{2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)}-1\right)$$

$$24\left(2\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}-1\right)$$

$$\sqrt{\left(\boxed{\begin{array}{l}\text{root of } x^8 - 3\,073\,536\,x^7 - 680\,804\,352\,x^6 + 407\,319\,940\,694\,016\,x^5 + \\ \quad 2\,072\,068\,941\,731\,069\,952\,x^4 + 36\,407\,598\,471\,753\,467\,166\,720\,x^3 + \\ \quad 144\,116\,931\,477\,607\,041\,164\,378\,112\,x^2 - \\ \quad 1\,754\,863\,398\,660\,094\,215\,867\,296\,907\,264\,x - \\ \quad 999\,820\,261\,783\,845\,363\,474\,700\,808\,749\,056 \text{ near } x = 3.07371\times10^6\end{array}} + 576\right)} - 24$$

Minimal polynomial:

$$x^{16} + 384\,x^{15} - 3\,009\,024\,x^{14} - 1\,026\,514\,944\,x^{13} - 149\,019\,181\,056\,x^{12} - 12\,078\,599\,897\,088\,x^{11} - 186\,912\,469\,942\,272\,x^{10} + 79\,809\,519\,474\,966\,528\,x^9 + 11\,139\,400\,543\,229\,706\,240\,x^8 + 845\,455\,300\,038\,330\,679\,296\,x^7 + 75\,854\,671\,334\,524\,185\,477\,120\,x^6 + 6\,263\,097\,910\,682\,549\,175\,189\,504\,x^5 + 406\,765\,656\,037\,755\,285\,651\,062\,784\,x^4 + 17\,861\,614\,552\,038\,435\,392\,682\,196\,992\,x^3 - 1\,422\,817\,988\,535\,687\,593\,024\,569\,737\,216\,x^2 - 84\,233\,443\,135\,684\,522\,361\,630\,251\,548\,672\,x - 999\,820\,261\,783\,845\,363\,474\,700\,808\,749\,056$$

Note that the previous obtained results 3.99197 and 1.99599 can be calculate also as follows:

sqrt((((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2)))))*1/(Pi^2)-Pi+5+((10Pi)/(144-(21+8)-2^2))

Input:

$$\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\ \sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\times\frac{1}{\pi^2}-\pi+5+\frac{10\,\pi}{144-(21+8)-2^2}$$

Result:

$$5+\frac{1}{\pi^2}\left(\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}\right)-\frac{101\,\pi}{111}$$

Decimal approximation:

3.991986420404937063776120654524447454564967851921287091550...

3.99198642…

Property:

$$5+\frac{1}{\pi^2}\left(\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}\right)-\frac{101\pi}{111}$$ is a transcendental number

Alternate forms:

$$\frac{1}{444\pi^2}\left(111\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}-404\pi^3+2220\pi^2\right)$$

$$\frac{\sqrt{\left(\text{root of } x^8-334x^7+138x^6+496x^5+127x^4+496x^3+138x^2-334x+1 \text{ near } x=333.582\right)}}{\pi^2}+5-\frac{101\pi}{111}$$

$$\frac{1}{222\pi^2}\left(111\sqrt[4]{2}\sqrt{\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)}+1110\pi^2-202\pi^3\right)$$

Series representations:

$$\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}=$$

$$-\frac{1}{111\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\binom{\frac{1}{2}}{k_1}\binom{\frac{1}{2}}{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}=$$

$$-\frac{1}{111\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}=$$

$$-\frac{1}{111\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{z_0}^2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}-z_0\right)^{k_1}\left(\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}-z_0\right)^{k_2}z_0^{-k_1-k_2}\right)$$

for not $((z_0\in\mathbb{R}$ and $-\infty<z_0\leq 0))$

and:

1/2*[sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2)))))*1/(Pi^2)-Pi+5+((10Pi)/(144-(21+8)-2^2))]

Input:

$$\frac{1}{2}\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\times\frac{1}{\pi^2}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}\right)$$

Result:

$$\frac{1}{2}\left(5+\frac{1}{\pi^2}\left(\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}\right)-\frac{101\pi}{111}\right)$$

Decimal approximation:

1.9959932102024685318880603272622237272824839259606435457 75…

1.9959932102024…

Property:

$$\frac{1}{2}\left(5+\frac{1}{\pi^2}\left(\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}\right)-\frac{101\,\pi}{111}\right)$$ is a transcendental number

Alternate forms:

$$\frac{1}{888\,\pi^2}\left(111\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}-404\,\pi^3+2220\,\pi^2\right)$$

$$\frac{1}{2}\left(\frac{\sqrt{\left(\text{root of } x^8-334x^7+138x^6+496x^5+127x^4+496x^3+138x^2-334x+1 \text{ near } x=333.582\right)}}{\pi^2}+5-\frac{101\,\pi}{111}\right)$$

$$\frac{1}{444\,\pi^2}\left(111\sqrt[4]{2}\sqrt{\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)}+1110\,\pi^2-202\,\pi^3\right)$$

Series representations:

$$\frac{1}{2}\left(\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}\right)=-\frac{1}{222\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\binom{\frac{1}{2}}{k_1}\binom{\frac{1}{2}}{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$\frac{1}{2}\left(\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\pi+5+\frac{10\pi}{144-(21+8)-2^2}\right)=-\frac{1}{222\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$\frac{1}{2}\left(\frac{1}{\pi^2}\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\right.$$
$$\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-$$
$$\left.\pi+5+\frac{10\pi}{144-(21+8)-2^2}\right)=$$
$$-\frac{1}{222\pi^2}\left(-555\pi^2+101\pi^3-111\sqrt{z_0}^2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\right.$$
$$\left(-\frac{1}{2}\right)_{k_2}\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}-z_0\right)^{k_1}$$
$$\left.\left(\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}-z_0\right)^{k_2}z_0^{-k_1-k_2}\right)$$

for not $((z_0\in\mathbb{R}$ and $-\infty<z_0\leq 0))$

We have also:

(((sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))))))*7-golden ratio^2

Input:

$$\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\right)\times 7-\phi^2$$

ϕ is the golden ratio

Result:

$$7\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}-\phi^2$$

Decimal approximation:

125.23152812623865279631353156145418989246337166271436187 40...

125.23152812… result very near to the Higgs boson mass 125.18 GeV

Alternate forms:

$$\frac{1}{4}\left(7\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}-2\sqrt{5}-6\right)$$

$$-\frac{3}{2}-\frac{\sqrt{5}}{2}+\frac{7\sqrt{\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)}}{2^{3/4}}$$

$$\frac{1}{2}\left(-3-\sqrt{5}+7\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}\right)$$

Minimal polynomial:

$$x^{32}+48x^{31}-31636x^{30}-1457100x^{29}+237166742x^{28}+10852454928x^{27}+208860647870x^{26}+2337693848412x^{25}+14775812816990x^{24}+6307193998080x^{23}-996322876073062x^{22}-12564289768747956x^{21}-95663943751479376x^{20}-546657809493104400x^{19}-2667680177341822618x^{18}-12737292429118825908x^{17}-40304890833149917147x^{16}+249786177215940781104x^{15}+5862929052424482294722x^{14}+58105016393009246507616x^{13}+377241781521632616442154x^{12}+1717214912105840646352272x^{11}+4765105784230154872703300x^{10}+624025314623628992038296x^{9}-129765910557785247105213188x^{8}-1119302309232351909211629552x^{7}-6278500908795317168727094320x^{6}-24873269293786680872257459104x^{5}-11751902441974234930156182576x^{4}+212792483072384314482547751040x^{3}+472465687895454912557715860544x^{2}+238353981758302812406312748544x-309925067387877390106459584$$

Series representations:

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\phi^2=$$

$$-\phi^2+7\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\binom{\frac{1}{2}}{k_1}\binom{\frac{1}{2}}{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\phi^2=$$

$$-\phi^2+7\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}$$
$$\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}-\phi^2=$$
$$-\phi^2+7\sqrt{z_0}^2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}$$
$$\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}-z_0\right)^{k_1}$$
$$\left(\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}-z_0\right)^{k_2}z_0^{-k_1-k_2}$$
$$\text{for not } ((z_0\in\mathbb{R} \text{ and } -\infty<z_0\leq 0))$$

(((sqrt((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))))))*7+7+Pi-1/golden ratio

Input:

$$\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\right)\times 7+7+\pi-\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$-\frac{1}{\phi}+7+7\sqrt{\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)}+\pi$$

Decimal approximation:

137.3731207798284460347761749447336927766605410620894676949...

137.3731207798… result practically equal to the golden angle value 137.5

Property:

$$7+7\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}-\frac{1}{\phi}+\pi \text{ is a transcendental number}$$

Alternate forms:

$$\frac{1}{4}\left(7\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}-2\sqrt{5}+4\pi+30\right)$$

$$7-\frac{2}{1+\sqrt{5}}+7\sqrt{\left(\left(\frac{1}{2}\left(\frac{11}{\sqrt{2}}+\sqrt{\frac{79}{2}}\right)+\frac{1}{2}\sqrt{96+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}+\pi$$

$$-\frac{1}{\phi}+7+\frac{1}{2\sqrt[4]{2}}7\sqrt{\left(\left(11+\sqrt{79}+\sqrt{96-7i\sqrt{7}}+\sqrt{i\left(7\sqrt{7}+-96i\right)}\right)\left(\sqrt{141-7i\sqrt{7}}+2\left(4\sqrt{2}+\sqrt{\frac{79}{2}}+\frac{1}{2}\sqrt{i\left(7\sqrt{7}+-141i\right)}\right)\right)\right)}+\pi$$

Series representations:

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+7+\pi-\frac{1}{\phi}=$$
$$\frac{1}{\phi}\left(-1+7\phi+\phi\pi+7\phi\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\binom{\frac{1}{2}}{k_1}\binom{\frac{1}{2}}{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+7+\pi-\frac{1}{\phi}=$$
$$\frac{1}{\phi}\left(-1+7\phi+\phi\pi+7\phi\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+7+\pi-\frac{1}{\phi}=$$

$$\frac{1}{\phi}\left(-1+7\phi+\phi\pi+7\phi\sqrt{z_0}^{\,2}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}-z_0\right)^{k_1}\left(\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}-z_0\right)^{k_2}z_0^{-k_1-k_2}\right)$$

for not $((z_0\in\mathbb{R}$ and $-\infty<z_0\leq 0))$

(((sqrt((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))))))*7+11+1/golden ratio

Input:

$$\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\right)\times 7+11+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+11+7\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}$$

Decimal approximation:

139.4675961037384424927227052301854661279039900223258875982...

139.4675961… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{1}{4}\left(7\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}+2\sqrt{5}+42\right)$$

$$\frac{1}{\frac{1}{2}+\frac{\sqrt{5}}{2}}+\frac{1}{2}\left(22+7\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}\right)$$

$$11+\frac{2}{1+\sqrt{5}}+7\sqrt{\left(\left(\frac{1}{2}\left(\frac{11}{\sqrt{2}}+\sqrt{\frac{79}{2}}\right)+\frac{1}{2}\sqrt{96+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}$$

Series representations:

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+11+\frac{1}{\phi}=$$
$$\frac{1}{\phi}\left(1+11\phi+7\phi\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\binom{\frac{1}{2}}{k_1}\binom{\frac{1}{2}}{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+11+\frac{1}{\phi}=$$

$$\frac{1}{\phi}\left(1+11\phi+7\phi\sqrt{-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}}\sqrt{-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(-1+\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)^{-k_1}\left(-1+\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}\right)^{-k_2}\right)$$

$$7\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}+11+\frac{1}{\phi}=$$

$$\frac{1}{\phi}\left(1+11\phi+7\phi\sqrt{z_0}^{\,2}\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{1}{k_1!\,k_2!}(-1)^{k_1+k_2}\left(-\frac{1}{2}\right)_{k_1}\left(-\frac{1}{2}\right)_{k_2}\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}-z_0\right)^{k_1}\left(\frac{\sqrt{141+16\sqrt{79}}}{\sqrt{2}}+\frac{\sqrt{143+16\sqrt{79}}}{\sqrt{2}}-z_0\right)^{k_2}z_0^{-k_1-k_2}\right)$$

for not $((z_0\in\mathbb{R}$ and $-\infty<z_0\leq 0))$

27*1/2[(((sqrt((((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt((((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))))))*7]+3

Input:

$$27\times\frac{1}{2}\left(\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\right)\times 7\right)+3$$

Result:

$$3+\frac{189}{2}\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}$$

Decimal approximation:

1728.969088552345393200994598343567678137479691374021683937...

1728.969088… ≈ 1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Alternate forms:

$$\frac{3}{8}\left(63\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}+8\right)$$

$$\frac{3}{4}\left(4+63\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}\right)$$

$$\sqrt{\left(\boxed{\begin{array}{l}\text{root of } 65\,536\,x^8 - 195\,469\,737\,984\,x^7 + 708\,935\,963\,516\,928\,x^6 + \\ \quad 23\,188\,693\,014\,014\,459\,904\,x^5 + 53\,977\,040\,057\,780\,708\,343\,552\,x^4 + \\ \quad 1\,848\,128\,420\,658\,239\,848\,652\,912\,640\,x^3 + \\ \quad 4\,636\,999\,926\,972\,921\,966\,676\,201\,966\,752\,x^2 - \\ \quad 99\,062\,188\,277\,056\,454\,835\,036\,935\,352\,263\,736\,x + \\ \quad 1\,758\,938\,720\,002\,985\,773\,527\,380\,052\,529\,514\,409 \text{ near } x = 2.97896\times10^6\end{array}} + 9\right)} + 3$$

Minimal polynomial:

$$\begin{array}{l}65\,536\,x^{16} - 3\,145\,728\,x^{15} - 195\,403\,677\,696\,x^{14} + \\ \quad 8\,208\,936\,271\,872\,x^{13} + 561\,166\,787\,026\,944\,x^{12} - \\ \quad 24\,043\,972\,005\,494\,784\,x^{11} + 23\,562\,652\,012\,612\,780\,032\,x^{10} - \\ \quad 698\,691\,474\,503\,260\,176\,384\,x^9 + 62\,338\,687\,419\,214\,090\,632\,960\,x^8 - \\ \quad 1\,345\,569\,559\,694\,305\,507\,141\,632\,x^7 + 1\,859\,937\,757\,117\,567\,609\,201\,090\,560\,x^6 - \\ \quad 33\,313\,128\,049\,735\,116\,784\,201\,469\,952\,x^5 + \\ \quad 4\,836\,667\,750\,647\,926\,754\,128\,729\,775\,264\,x^4 - \\ \quad 56\,043\,194\,862\,537\,243\,407\,423\,452\,731\,264\,x^3 - \\ \quad 98\,895\,256\,279\,685\,429\,644\,236\,592\,081\,460\,664\,x^2 + \\ \quad 594\,373\,129\,662\,338\,729\,010\,221\,612\,113\,582\,416\,x + \\ \quad 1\,758\,938\,720\,002\,985\,773\,527\,380\,052\,529\,514\,409\end{array}$$

((((27*1/2[(((sqrt(((((((1/4(100+11sqrt79)))^1/2 + ((1/4(96+11sqrt79)))^1/2))))) * sqrt(((((((1/2(143+16sqrt79)))^1/2 + ((1/2(141+16sqrt79)))^1/2))))))))*7]+3))))^1/15-(21+5)1/10^3

Input:

$$\left(27\times\frac{1}{2}\left(\left(\sqrt{\sqrt{\frac{1}{4}\left(100+11\sqrt{79}\right)}+\sqrt{\frac{1}{4}\left(96+11\sqrt{79}\right)}}\sqrt{\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}}\right)\times 7\right)+3\right)\text{^}(1/15)-(21+5)\times\frac{1}{10^3}$$

Result:

$$\left(3+\frac{189}{2}\sqrt{\left(\left(\frac{1}{2}\sqrt{96+11\sqrt{79}}+\frac{1}{2}\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{\frac{1}{2}\left(141+16\sqrt{79}\right)}+\sqrt{\frac{1}{2}\left(143+16\sqrt{79}\right)}\right)\right)}\right)\text{^}(1/15)-\frac{13}{500}$$

Decimal approximation:

1.617813269499360816175543718552125190287489757641818765751...

1.6178132694… result that is a very good approximation to the value of the golden ratio 1,618033988749...

Alternate forms:

$$\frac{1}{500}\left(250\times 2^{4/5}\left(3\left(63\sqrt{\left(2\left(2\sqrt{96+11\sqrt{79}}+11\sqrt{2}+\sqrt{158}\right)\left(\sqrt{2\left(141+16\sqrt{79}\right)}+8\sqrt{2}+\sqrt{158}\right)\right)}+8\right)\right)\text{^}(1/15)-13\right)$$

$$\frac{1}{2^{2/15}}\left(\left(3\left(4+63\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}\right)\right)\text{^}(1/15)\right)-\frac{13}{500}$$

$$\frac{1}{500}\left(250\times 2^{13/15}\left(3\left(4+63\sqrt[4]{2}\sqrt{\left(\left(\sqrt{96+11\sqrt{79}}+\sqrt{100+11\sqrt{79}}\right)\left(\sqrt{141+16\sqrt{79}}+\sqrt{143+16\sqrt{79}}\right)\right)}\right)\right)\text{^}(1/15)-13\right)$$

Note that all the results of the analyzed Ramanujan expressions, can be connected with the previous solutions obtained from the equations concerning black hole/wormhole physics, that we have previously described.

Observations

From:
https://www.scientificamerican.com/article/mathematics-ramanujan/?fbclid=IwAR2caRXrn_RpOSvJ1QxWsVLBcJ6KVgd_Af_hrmDYBNyU8mpSjRs1BDeremA

Ramanujan's statement concerned the deceptively simple concept of partitions—the different ways in which a whole number can be subdivided into smaller numbers. Ramanujan's original statement, in fact, stemmed from the observation of patterns, such as the fact that p(9) = 30, p(9 + 5) = 135, p(9 + 10) = 490, p(9 + 15) = 1,575 and so on are all divisible by 5. Note that here the n's come at intervals of five units.

Ramanujan posited that this pattern should go on forever, and that similar patterns exist when 5 is replaced by 7 or 11—there are infinite sequences of p(n) that are all divisible by 7 or 11, or, as mathematicians say, in which the "moduli" are 7 or 11.

Then, in nearly oracular tone Ramanujan went on: "There appear to be corresponding properties," he wrote in his 1919 paper, "in which the moduli are powers of 5, 7 or 11...and no simple properties for any moduli involving primes other than these three." (Primes are whole numbers that are only divisible by themselves or by 1.) Thus, for instance, there should be formulas for an infinity of n's separated by 5^3 = 125 units, saying that the corresponding p(n)'s should all be divisible by 125. In the past methods developed to understand partitions have later been applied to physics problems such as the theory of the strong nuclear force or the entropy of black holes.

From Wikipedia

*In particle physics, **Yukawa's interaction** or **Yukawa coupling**, named after Hideki Yukawa, is an interaction between a scalar field ϕ and a Dirac field ψ. The Yukawa interaction can be used to describe the nuclear force between nucleons (which are fermions), mediated by **pions** (which are pseudoscalar mesons). The Yukawa interaction is also used in the Standard Model to describe the coupling between the Higgs field and massless quark and lepton fields (i.e., the fundamental fermion particles). Through spontaneous symmetry breaking, these fermions acquire a mass proportional to the vacuum expectation value of the **Higgs field**.*

*Can be this the motivation that from the development of the Ramanujan's equations we obtain results very near to the dilaton mass calculated as a type of **Higgs boson:***

125 GeV *for T = 0 and to the Higgs boson mass 125.18 GeV and practically equal to the rest mass of* ***Pion meson*** *139.57 MeV*

Note that:

$$g_{22} = \sqrt{(1+\sqrt{2})}.$$

Hence

$$\begin{aligned} 64g_{22}^{24} &= e^{\pi\sqrt{22}} - 24 + 276e^{-\pi\sqrt{22}} - \cdots, \\ 64g_{22}^{-24} &= 4096e^{-\pi\sqrt{22}} + \cdots, \end{aligned}$$

so that

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}.$$

Hence

$$e^{\pi\sqrt{22}} = 2508951.9982\ldots.$$

Thence:

$$64g_{22}^{-24} = 4096e^{-\pi\sqrt{22}} + \cdots$$

And

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}$$

That are connected with 64, 128, 256, 512, 1024 and 4096 = 64^2

*(**Modular equations and approximations to π -** S. Ramanujan - Quarterly Journal of Mathematics, XLV, 1914, 350 – 372)*

All the results of the most important connections are signed in blue throughout the drafting of the paper. We highlight as in the development of the various equations we use always the constants π, ϕ, 1/ϕ, the Fibonacci and Lucas numbers, linked to the golden ratio, that play a fundamental role in the development, and therefore, in the final results of the analyzed expressions.

*In mathematics, the **Fibonacci numbers**, commonly denoted F_n, form a sequence, called the **Fibonacci sequence**, such that each number is the sum of the two preceding ones, starting from 0 and 1. Fibonacci numbers are strongly related to the golden ratio: Binet's formula expresses the nth Fibonacci number in terms of n and the golden ratio, and implies that the ratio of two consecutive Fibonacci numbers tends to the golden ratio as n increases.*
Fibonacci numbers are also closely related to Lucas numbers ,in that the Fibonacci and Lucas numbers form a complementary pair of Lucas sequences

The beginning of the sequence is thus:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, 514229, 832040, 1346269, 2178309, 3524578, 5702887, 9227465, 14930352, 24157817, 39088169, 63245986, 102334155...

*The **Lucas numbers** or **Lucas series** are an integer sequence named after the mathematician François Édouard Anatole Lucas (1842–91), who studied both that sequence and the closely related Fibonacci numbers. Lucas numbers and Fibonacci numbers form complementary instances of Lucas sequences.*

The Lucas sequence has the same recursive relationship as the Fibonacci sequence, where each term is the sum of the two previous terms, but with different starting values. This produces a sequence where the ratios of successive terms approach the golden ratio, and in fact the terms themselves are roundings of integer powers of the golden ratio.[1] The sequence also has a variety of relationships with the Fibonacci numbers, like the fact that adding any two Fibonacci numbers two terms apart in the Fibonacci sequence results in the Lucas number in between.

The sequence of Lucas numbers is:

2, 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207, 3571, 5778, 9349, 15127, 24476, 39603, 64079, 103682, 167761, 271443, 439204, 710647, 1149851, 1860498, 3010349, 4870847, 7881196, 12752043, 20633239, 33385282, 54018521, 87403803……

All Fibonacci-like integer sequences appear in shifted form as a row of the Wythoff array; the Fibonacci sequence itself is the first row and the Lucas sequence is the second row. Also like all Fibonacci-like integer sequences, the ratio between two consecutive Lucas numbers converges to the golden ratio.

*A **Lucas prime** is a Lucas number that is prime. The first few Lucas primes are:*

2, 3, 7, 11, 29, 47, 199, 521, 2207, 3571, 9349, 3010349, 54018521, 370248451, 6643838879, ... (sequence A005479 in the OEIS).

*In geometry, a **golden spiral** is a logarithmic spiral whose growth factor is φ, the golden ratio.[1] That is, a golden spiral gets wider (or further from its origin) by a factor of φ for every quarter turn it makes. Approximate logarithmic spirals can occur in nature, for example the arms of spiral galaxies[3] - golden spirals are one special case of these logarithmic spirals*

We note how the following three values: 137.508 (golden angle), 139.57 (mass of the Pion - meson Pi) and 125.18 (mass of the Higgs boson), are connected to each other. In fact, just add 2 to 137.508 to obtain a result very close to the mass of the Pion and subtract 12 to 137.508 to obtain a result that is also very close to the mass of the Higgs boson. We can therefore hypothesize that it is the golden angle (and the related golden ratio inherent in it) to be a fundamental ingredient both in the structures of the microcosm and in those of the macrocosm.

References

Wormholes in generalized hybrid metric-Palatini gravity obeying the matter null energy condition everywhere - *Joao Luis Rosa, Jose P. S. Lemos, and Francisco S. N. Lobo* **-** arXiv:1808.08975v1 [gr-qc] 27 Aug 2018,

TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY Volume 349, Number 6, June 1997, Pages 2125{2173 S 0002-9947(97)01738-8 **RAMANUJAN'S CLASS INVARIANTS, KRONECKER'S LIMIT FORMULA, AND MODULAR EQUATIONS** - *BRUCE C. BERNDT, HENG HUAT CHAN, AND LIANG - CHENG ZHANG*