On various Ramanujan's equations of Manuscript Book 2. New possible mathematical connections with some parameters of Particle Physics and Black Holes Physics. IV

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Abstract

In this research thesis, we continue to analyze and deepen further Ramanujan's equations of Manuscript Book 2 and described new possible mathematical connections with some parameters of Particle Physics and Black Holes Physics.

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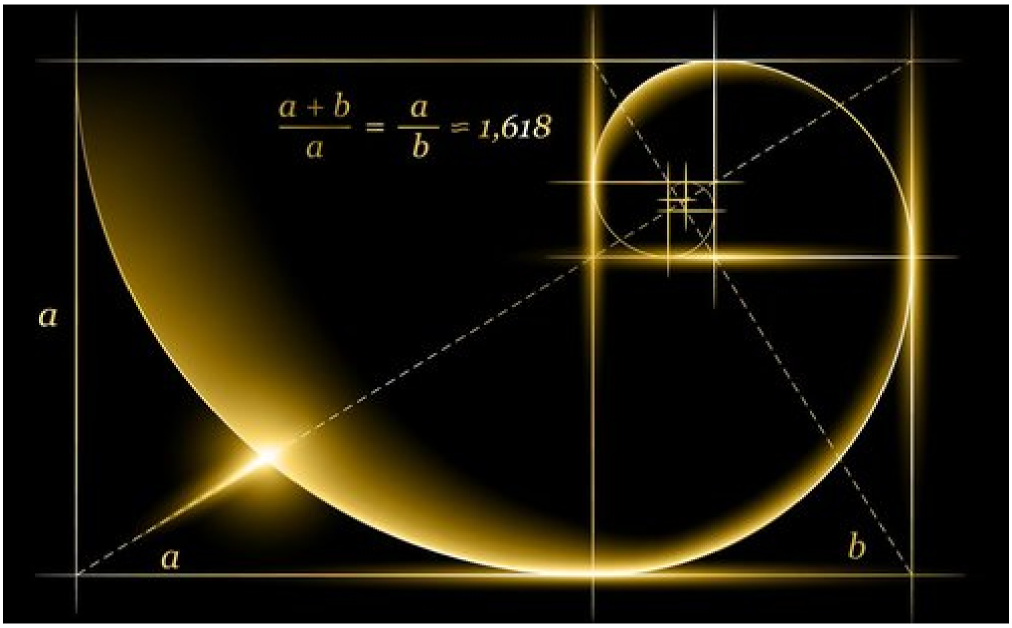
From : http://scienceofhindu.blogspot.com/2016/04/man-who-knew-infinity-by-ramana.html (modified by A. Nardelli)



https://kindtrainer.com/fractalbliss

From: **Manuscript Book 2 of Srinivasa Ramanujan**

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(1-1/8)(1-1/27)(1-1/64)(1-1/125)…

cosh(Pi*cos(Pi/6)) / (3Pi)

(1-1/8)(1-1/27)(1-1/64)(1-1/125)(1-1/216)(1-1/343)(1-1/512)(1-1/729)(1-1/1000)(1-1/1331)(1-1/1728)(1-1/2197)(1-1/2744)(1-1/3375)(1-1/4096)

Input:

$$\left(1-\frac{1}{8}\right)\left(1-\frac{1}{27}\right)\left(1-\frac{1}{64}\right)\left(1-\frac{1}{125}\right)\left(1-\frac{1}{216}\right)\left(1-\frac{1}{343}\right)\left(1-\frac{1}{512}\right)\left(1-\frac{1}{729}\right)\left(1-\frac{1}{1000}\right)\left(1-\frac{1}{1331}\right)\left(1-\frac{1}{1728}\right)\left(1-\frac{1}{2197}\right)\left(1-\frac{1}{2744}\right)\left(1-\frac{1}{3375}\right)\left(1-\frac{1}{4096}\right)$$

Exact result:

$$\frac{57601303716722261041}{71035269414912000000}$$

Decimal approximation:

0.810883159748111990166340581269612658808436025046574990458...

0.810883159…

Alternate form:

$$\frac{57601303716722261041}{71035269414912000000}$$

Continued fraction:

$$\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{9+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{39+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1733+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{10+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{16+\cfrac{1}{1+\cfrac{1}{1+\frac{1}{4}}}}}}}}}}}}}}}}}}}}}$$

cosh(Pi*cos(Pi/6)) / (3Pi)

Input:

$$\frac{\cosh\left(\pi \cos\left(\frac{\pi}{6}\right)\right)}{3\pi}$$

cosh(x) is the hyperbolic cosine function

Exact result:

$$\frac{\cosh\left(\frac{\sqrt{3}\,\pi}{2}\right)}{3\pi}$$

Decimal approximation:

0.8093965973662901095786804787263821193727876482611301658 77...

0.809396597…

Alternate form:

$$\frac{e^{-\left(\sqrt{3}\,\pi\right)/2}}{6\pi} + \frac{e^{\left(\sqrt{3}\,\pi\right)/2}}{6\pi}$$

Alternative representations:

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{\cos\left(i\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{\cos\left(-i\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{e^{-\pi\cos(\pi/6)} + e^{\pi\cos(\pi/6)}}{2(3\pi)}$$

Integral representations:

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{1}{3\pi}\int_{\frac{i\pi}{2}}^{\frac{\sqrt{3}\pi}{2}} \sinh(t)\,dt$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{1}{3\pi} + \frac{1}{2\sqrt{3}}\int_0^1 \sinh\left(\frac{1}{2}\sqrt{3}\,\pi t\right)dt$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = -\frac{i}{6\pi^{3/2}}\int_{-i\infty+\gamma}^{i\infty+\gamma} \frac{e^{(3\pi^2)/(16s)+s}}{\sqrt{s}}\,ds \quad \text{for } \gamma > 0$$

Multiple-argument formulas:

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{-1 + 2\cosh^2\left(\frac{\sqrt{3}\pi}{4}\right)}{3\pi}$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{1 + 2\sinh^2\left(\frac{\sqrt{3}\pi}{4}\right)}{3\pi}$$

$$\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi} = \frac{-3\cosh\left(\frac{\pi}{2\sqrt{3}}\right) + 4\cosh^3\left(\frac{\pi}{2\sqrt{3}}\right)}{3\pi}$$

1+(((cosh(Pi*cos(Pi/6)) / (3Pi))))^2

Input:

$$1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2$$

cosh(x) is the hyperbolic cosine function

Exact result:

$$1+\frac{\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}$$

Decimal approximation:

1.655122851828128345549650610838090915676552665632797034527...

1.6551228518… result very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3$ = 1164,2696 i.e. 1,65578...

Alternate forms:

$$1+\frac{1+\cosh(\sqrt{3}\,\pi)}{18\,\pi^2}$$

$$\frac{1+18\,\pi^2+\cosh(\sqrt{3}\,\pi)}{18\,\pi^2}$$

$$\frac{9\,\pi^2+\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}$$

Alternative representations:

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2=1+\left(\frac{\cos\left(i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2$$

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2=1+\left(\frac{\cos\left(-i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2$$

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2=1+\left(\frac{e^{-\pi\cos(\pi/6)}+e^{\pi\cos(\pi/6)}}{2\,(3\,\pi)}\right)^2$$

Series representations:

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2 = 1+\frac{1}{9\pi^2}+\frac{\sum_{k=1}^{\infty}\frac{3^k\pi^{2k}}{(2k)!}}{18\pi^2}$$

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2 = 1-\frac{\sum_{k=1}^{\infty}\frac{\left(\left(-i+\sqrt{3}\right)\pi\right)^{2k}}{(2k)!}}{18\pi^2}$$

$$1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2 = 1+\frac{\left(\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^k\pi^{2k}}{(2k)!}\right)^2}{9\pi^2}$$

76*((1+(((cosh(Pi*cos(Pi/6)) / (3Pi))))^2))

where 76 is a Lucas number

Input:

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)$$

$\cosh(x)$ is the hyperbolic cosine function

Exact result:

$$76\left(1+\frac{\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\pi^2}\right)$$

Decimal approximation:

125.78933673893775426177344642369490959141800258809257462 41...

125.789336…. result 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

Alternate forms:

$$76+\frac{76\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\pi^2}$$

$$\frac{38\left(1+18\pi^2+\cosh\left(\sqrt{3}\,\pi\right)\right)}{9\pi^2}$$

$$\frac{76\left(9\pi^2+\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)\right)}{9\pi^2}$$

Alternative representations:

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76\left(1+\left(\frac{\cos\left(i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76\left(1+\left(\frac{\cos\left(-i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76\left(1+\left(\frac{e^{-\pi\cos(\pi/6)}+e^{\pi\cos(\pi/6)}}{2\,(3\pi)}\right)^2\right)$$

Series representations:

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76+\frac{76}{9\pi^2}+\frac{38\sum_{k=1}^{\infty}\frac{3^k\pi^{2k}}{(2k)!}}{9\pi^2}$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76-\frac{38\sum_{k=1}^{\infty}\frac{\left(\left(-i+\sqrt{3}\right)\pi\right)^{2k}}{(2k)!}}{9\pi^2}$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)=76+\frac{76\left(\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^k\pi^{2k}}{(2k)!}\right)^2}{9\pi^2}$$

76*((1+(((cosh(Pi*cos(Pi/6)) / (3Pi))))^2))+11+golden ratio^2

where 76 and 11 are Lucas numbers

Input:

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)+11+\phi^2$$

cosh(x) is the hyperbolic cosine function

ϕ is the golden ratio

Exact result:

$$\phi^2 + 11 + 76\left(1 + \frac{\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}\right)$$

Decimal approximation:

139.40737072768764910997803325806054770913831176789833748 62...

139.4073707… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\phi^2 + 87 + \frac{76\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}$$

$$\phi^2 + 11 + \frac{38\left(1 + 18\,\pi^2 + \cosh\left(\sqrt{3}\,\pi\right)\right)}{9\,\pi^2}$$

$$\frac{1}{2}\left(177 + \sqrt{5}\right) + \frac{76\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}$$

Alternative representations:

$$76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) + 11 + \phi^2 = 11 + \phi^2 + 76\left(1 + \left(\frac{\cos\left(i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right)$$

$$76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) + 11 + \phi^2 = 11 + \phi^2 + 76\left(1 + \left(\frac{\cos\left(-i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right)$$

$$76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) + 11 + \phi^2 = 11 + \phi^2 + 76\left(1 + \left(\frac{e^{-\pi\cos(\pi/6)} + e^{\pi\cos(\pi/6)}}{2\,(3\,\pi)}\right)^2\right)$$

Series representations:

$$76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) + 11 + \phi^2 = 87 + \phi^2 + \frac{76}{9\,\pi^2} + \frac{38\sum_{k=1}^{\infty}\frac{3^k\,\pi^{2k}}{(2k)!}}{9\,\pi^2}$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)+11+\phi^2 = 87+\phi^2+\frac{76\left(\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^k \pi^{2k}}{(2k)!}\right)^2}{9\pi^2}$$

$$76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)+11+\phi^2 = \frac{177}{2}+\frac{\sqrt{5}}{2}-\frac{38\sum_{k=1}^{\infty}\frac{\left(\left(-i+\sqrt{3}\right)\pi\right)^{2k}}{(2k)!}}{9\pi^2}$$

(11+3)*(76*((1+(((cosh(Pi*cos(Pi/6)) / (3Pi))))^2)))-34+golden ratio

where 11 and 3 are Lucas numbers and 34 is a Fibonacci number

Input:

$$(11+3)\left(76\left(1+\left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\pi}\right)^2\right)\right)-34+\phi$$

cosh(x) is the hyperbolic cosine function

ϕ is the golden ratio

Exact result:

$$\phi-34+1064\left(1+\frac{\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\pi^2}\right)$$

Decimal approximation:

1728.668748333878454513032836766094372397572345413101807599...

1728.6687483….

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

Alternate forms:

$$\phi - 34 + \frac{532\,(1 + 18\,\pi^2 + \cosh(\sqrt{3}\,\pi))}{9\,\pi^2}$$

$$\frac{1}{2}\left(2061 + \sqrt{5}\right) + \frac{1064\cosh^2\left(\frac{\sqrt{3}\,\pi}{2}\right)}{9\,\pi^2}$$

$$\frac{1064 + 18549\,\pi^2 + 9\sqrt{5}\,\pi^2 + 1064\cosh(\sqrt{3}\,\pi)}{18\,\pi^2}$$

Alternative representations:

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = -34 + \phi + 1064\left(1 + \left(\frac{\cos\left(i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right)$$

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = -34 + \phi + 1064\left(1 + \left(\frac{\cos\left(-i\,\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right)$$

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = -34 + \phi + 1064\left(1 + \left(\frac{e^{-\pi\cos(\pi/6)} + e^{\pi\cos(\pi/6)}}{2\,(3\,\pi)}\right)^2\right)$$

Series representations:

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = 1030 + \phi + \frac{1064}{9\,\pi^2} + \frac{532\sum_{k=1}^{\infty}\frac{3^k\,\pi^{2k}}{(2k)!}}{9\,\pi^2}$$

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = 1030 + \phi + \frac{1064\left(\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^k\,\pi^{2k}}{(2k)!}\right)^2}{9\,\pi^2}$$

$$(11+3)\,76\left(1 + \left(\frac{\cosh\left(\pi\cos\left(\frac{\pi}{6}\right)\right)}{3\,\pi}\right)^2\right) - 34 + \phi = \frac{2061}{2} + \frac{\sqrt{5}}{2} - \frac{532\sum_{k=1}^{\infty}\frac{\left(\left(-i+\sqrt{3}\right)\pi\right)^{2k}}{(2k)!}}{9\,\pi^2}$$

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$$f_1(x) = \frac{x^2}{2} - \frac{x^3}{12} + \frac{x^4}{48} - \frac{x^5}{180} + \frac{11x^6}{8640} - \frac{x^7}{6720}$$

For x = 2

(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720)

Input:

$$\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}$$

Exact result:

$$\frac{1466}{945}$$

Decimal approximation:

1.551322751322751322751322751322751322751322751322751322751...

1.55132275…

(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))

Input:

$$1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}$$

Exact result:

$$\frac{2411}{1466}$$

Decimal approximation:

1.644611186903137789904502046384720327421555252387448840381...

1.6446111869... ≈ $\zeta(2) = \frac{\pi^2}{6} = 1.644934$ ...

10^3(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))+29-Pi+golden ratio

where 29 is a Lucas number

Input:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi$$

ϕ is the golden ratio

Result:

$$\phi+\frac{1226757}{733}-\pi$$

Decimal approximation:

1672.087628238297891514243989835806462655078392167879497423...

1672.087628… result practically equal to the rest mass of Omega baryon 1672.45

Property:

$\frac{1226757}{733}+\phi-\pi$ is a transcendental number

Alternate forms:

$$\frac{2454247+733\sqrt{5}-1466\pi}{1466}$$

$$\frac{1}{733}(733\phi+1226757-733\pi)$$

$$\frac{2454247}{1466}+\frac{\sqrt{5}}{2}-\pi$$

Alternative representations:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi=$$

$$29-\pi-2\cos(216\,°)+10^3\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$29-180\,°-2\cos(216\,°)+10^3\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$29-\pi+2\cos\left(\frac{\pi}{5}\right)+10^3\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

Series representations:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi = \frac{1226757}{733}+\phi-4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$\frac{1226757}{733}+\phi+\sum_{k=0}^{\infty}\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$\frac{1226757}{733}+\phi-\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$\frac{1226757}{733}+\phi-4\int_0^1\sqrt{1-t^2}\,dt$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi =$$
$$\frac{1226757}{733}+\phi-2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+29-\pi+\phi = \frac{1226757}{733}+\phi-2\int_0^\infty \frac{1}{1+t^2}\,dt$$

10^3(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))+76+4+Pi+1/golden ratio

where 4 and 76 are Lucas numbers

Input:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+76+4+\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+\frac{1264140}{733}+\pi$$

Decimal approximation:

1728.370813545477477991169276602365468423472730966629709065...

1728.3708135…

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

Property:

$\frac{1264140}{733}+\frac{1}{\phi}+\pi$ is a transcendental number

Alternate forms:

$$\frac{2527547+733\sqrt{5}+1466\pi}{1466}$$

$$\frac{1264140\,\phi + 733\,\pi\,\phi + 733}{733\,\phi}$$

$$\frac{2527547 + 733\sqrt{5}}{1466} + \pi$$

Alternative representations:

$$10^3\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) + 76 + 4 + \pi + \frac{1}{\phi} = 80 + \pi + -\frac{1}{2\cos(216\,°)} + 10^3\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

$$10^3\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) + 76 + 4 + \pi + \frac{1}{\phi} = 80 + 180\,° + -\frac{1}{2\cos(216\,°)} + 10^3\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

$$10^3\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) + 76 + 4 + \pi + \frac{1}{\phi} = 80 + \pi + \frac{1}{2\cos\left(\frac{\pi}{5}\right)} + 10^3\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

Series representations:

$$10^3\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) + 76 + 4 + \pi + \frac{1}{\phi} = \frac{1264140}{733} + \frac{1}{\phi} + 4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$10^3\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) + 76 + 4 + \pi + \frac{1}{\phi} = \frac{1264140}{733} + \frac{1}{\phi} + \sum_{k=0}^{\infty} -\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k} - 4\times 239^{1+2k}\right)}{1+2k}$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+76+4+\pi+\frac{1}{\phi}=$$
$$\frac{1264140}{733}+\frac{1}{\phi}+\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+76+4+\pi+\frac{1}{\phi}=$$
$$\frac{1264140}{733}+\frac{1}{\phi}+4\int_0^1\sqrt{1-t^2}\,dt$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+76+4+\pi+\frac{1}{\phi}=$$
$$\frac{1264140}{733}+\frac{1}{\phi}+2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$10^3\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+76+4+\pi+\frac{1}{\phi}=$$
$$\frac{1264140}{733}+\frac{1}{\phi}+2\int_0^\infty\frac{1}{1+t^2}\,dt$$

10^2(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))-29+Pi+1/golden ratio

where 29 is a Lucas number

Input:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+\frac{99293}{733}+\pi$$

Decimal approximation:

139.2207453326534670771174348561171737440730038179257527213...

139.22074533… result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$\frac{99293}{733} + \frac{1}{\phi} + \pi$ is a transcendental number

Alternate forms:

$$\frac{197853 + 733\sqrt{5} + 1466\pi}{1466}$$

$$\frac{99293\phi + 733\pi\phi + 733}{733\phi}$$

$$\frac{197853 + 733\sqrt{5}}{1466} + \pi$$

Alternative representations:

$$10^2\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) - 29 + \pi + \frac{1}{\phi} = -29 + \pi + -\frac{1}{2\cos(216\,°)} + 10^2\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

$$10^2\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) - 29 + \pi + \frac{1}{\phi} = -29 + 180\,° + -\frac{1}{2\cos(216\,°)} + 10^2\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

$$10^2\left(1 + \frac{1}{\frac{4}{2} - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} + \frac{11\times 64}{8640} - \frac{128}{6720}}\right) - 29 + \pi + \frac{1}{\phi} = -29 + \pi + \frac{1}{2\cos\left(\frac{\pi}{5}\right)} + 10^2\left(1 + \frac{1}{2 - \frac{8}{12} + \frac{16}{48} - \frac{32}{180} - \frac{128}{6720} + \frac{704}{8640}}\right)$$

Series representations:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=\frac{99\,293}{733}+\frac{1}{\phi}+4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=$$
$$\frac{99\,293}{733}+\frac{1}{\phi}+\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=$$
$$\frac{99\,293}{733}+\frac{1}{\phi}+\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=$$
$$\frac{99\,293}{733}+\frac{1}{\phi}+4\int_0^1\sqrt{1-t^2}\,dt$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=$$
$$\frac{99\,293}{733}+\frac{1}{\phi}+2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-29+\pi+\frac{1}{\phi}=\frac{99\,293}{733}+\frac{1}{\phi}+2\int_0^{\infty}\frac{1}{1+t^2}\,dt$$

10^2(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))-47+11-Pi

where 47 and 11 are Lucas numbers

Input:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi$$

Result:

$$\frac{94162}{733} - \pi$$

Decimal approximation:

125.3195260367239857519875612551925298579583558393697782172...

125.319526… result 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

Property:

$\frac{94162}{733} - \pi$ is a transcendental number

Alternate form:

$$\frac{1}{733}(94162 - 733\pi)$$

Alternative representations:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi = -36-180\,^\circ+10^2\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi = -36+i\log(-1)+10^2\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi = -36-\cos^{-1}(-1)+10^2\left(1+\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)$$

Integral representations:

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi=\frac{94162}{733}-4\int_0^1\sqrt{1-t^2}\,dt$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi=\frac{94162}{733}-2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$10^2\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-47+11-\pi=\frac{94162}{733}-2\int_0^\infty\frac{1}{1+t^2}\,dt$$

1/10^52((((((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))-55/10^2+11/10^3)))

where 55 is a Fibonacci number and 11 is a Lucas number

Input:

$$\frac{1}{10^{52}}\left(\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\frac{55}{10^2}+\frac{11}{10^3}\right)$$

Exact result:

$$\frac{810413}{7330000000000000000000000000000000000000000000000000000}$$

Decimal approximation:

$1.1056111869031377899045020463847203274215552523874488\ldots\times 10^{-52}$

$1.1056111869\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}\ m^{-2}$

Alternate form:

$$\frac{810413}{7330000000000000000000000000000000000000000000000000000}$$

We note that:

(((1+1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))-(21+5)/10^3

Where 5 and 21 are Fibonacci numbers

Input:

$$\left(1+\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\frac{21+5}{10^3}$$

Exact result:

$$\frac{593221}{366500}$$

Decimal approximation:

1.6186111869031377899045020463847203274215552523874488 40381...

1.6186111869... result that is a very good approximation to the value of the golden ratio 1,618033988749...

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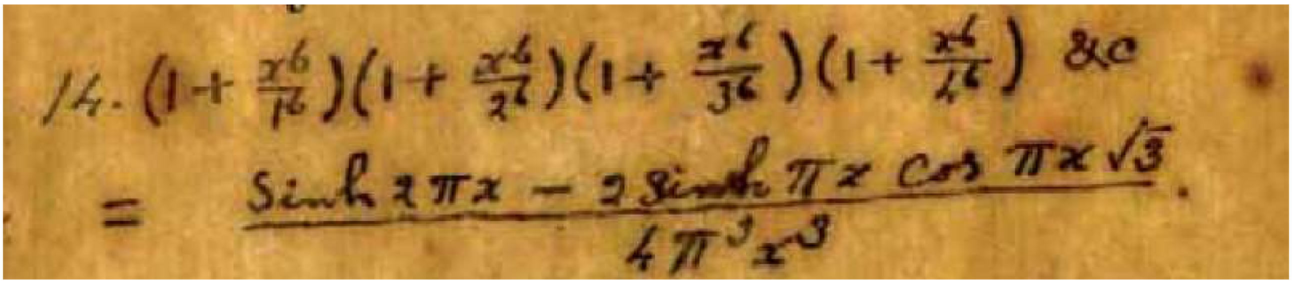

For x = 2

(((sinh(4Pi)-2sinh(2Pi)cos(2Pisqrt3))))/(4Pi^3*8)

Input:

$$\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\times 8}$$

$\sinh(x)$ is the hyperbolic sine function

Exact result:

$$\frac{\sinh(4\pi) - 2\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}{32\pi^3}$$

Decimal approximation:

144.5633911784022539527052223657635096864423475588917203422...

144.5633911…

Alternate forms:

$$\frac{\sinh(2\pi)(\cosh(2\pi) - \cos(2\sqrt{3}\,\pi))}{16\pi^3}$$

$$-\frac{2\cos(2\sqrt{3}\,\pi)\sinh(2\pi) - \sinh(4\pi)}{32\pi^3}$$

$$\frac{\sinh(4\pi)}{32\pi^3} - \frac{\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}{16\pi^3}$$

$\cosh(x)$ is the hyperbolic cosine function

Alternative representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\,8} = \frac{-\cosh(-2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\,8} = \frac{-\cosh(2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\,8} = \frac{-2i\cosh(-2i\pi\sqrt{3})\cos\left(\frac{\pi}{2} + 2i\pi\right) + i\cos\left(\frac{\pi}{2} + 4i\pi\right)}{32\pi^3}$$

Series representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\,8} = -\frac{-\sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!} + 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}(2\pi)^{1+2k_1+2k_2}}{(2k_1)!(1+2k_2)!}}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\,8} = -\frac{i\left(-\sum_{k=0}^{\infty}\frac{\left(\left(4-\frac{i}{2}\right)\pi\right)^{2k}}{(2k)!} + 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}\,2^{2k_1-2k_2}\,(4-i)^{2k_2}\,\pi^{2k_1+2k_2}}{(2k_1)!(2k_2)!}\right)}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8} = \sum_{k=0}^{\infty} \frac{2^{-3+2k}\,\pi^{-2+2k}\left(4^k - \sqrt{\pi}\,\sum_{j=0}^{\infty} \mathrm{Res}_{s=-j} \frac{3^{-s}\,\pi^{-2s}\,\Gamma(s)}{\Gamma\left(\frac{1}{2}-s\right)}\right)}{(1+2k)!}$$

Integral representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8} = \frac{\int_0^1 \cosh(4\pi t)\,dt + \int_0^1\int_0^1 \cos\left(\frac{1}{2}\left(1-4\sqrt{3}\right)\pi\,t_2\right)\cosh(2\pi\,t_1)\,dt_2\,dt_1}{8\pi^2}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8} = \int_{-i\,\infty+\gamma}^{i\,\infty+\gamma} -\frac{i\,e^{\pi^2/s+s}\left(e^{(3\pi^2)/s} + \int_{\frac{\pi}{2}}^{2\sqrt{3}\,\pi}\sin(t)\,dt\right)}{32\,\pi^{5/2}\,s^{3/2}}\,ds \quad \text{for } \gamma > 0$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8} = \int_0^1\left(\frac{\cosh(4\pi t)}{8\pi^2} + \frac{i\cosh(2\pi t)}{16\,\pi^{5/2}}\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{e^{-(3\pi^2)/s+s}}{\sqrt{s}}\,ds\right)dt \quad \text{for } \gamma > 0$$

(((sinh(4Pi)-2sinh(2Pi)cos(2Pisqrt3))))/(4Pi^3*8) – 5

where 5 is a Fibonacci number

Input:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\times 8} - 5$$

sinh(x) is the hyperbolic sine function

Exact result:

$$\frac{\sinh(4\pi) - 2\cos\left(2\sqrt{3}\,\pi\right)\sinh(2\pi)}{32\,\pi^3} - 5$$

Decimal approximation:

139.56339117840225395270522236576350968644234755889172034 22...

139.5633911… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{\sinh(2\pi)(\cosh(2\pi) - \cos(2\sqrt{3}\pi))}{16\pi^3} - 5$$

$$-5 + \frac{\sinh(4\pi)}{32\pi^3} - \frac{\cos(2\sqrt{3}\pi)\sinh(2\pi)}{16\pi^3}$$

$$-\frac{160\pi^3 - \sinh(4\pi) + 2\cos(2\sqrt{3}\pi)\sinh(2\pi)}{32\pi^3}$$

$\cosh(x)$ is the hyperbolic cosine function

Alternative representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 5 = -5 + \frac{-\cosh(-2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 5 = -5 + \frac{-\cosh(2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 5 = -5 + \frac{-2i\cosh(-2i\pi\sqrt{3})\cos\left(\frac{\pi}{2} + 2i\pi\right) + i\cos\left(\frac{\pi}{2} + 4i\pi\right)}{32\pi^3}$$

Series representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 5 = -\frac{160\pi^3 - \sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!} + 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}(2\pi)^{1+2k_1+2k_2}}{(2k_1)!(1+2k_2)!}}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\ 8} - 5 = -\frac{160\pi^3 - i\sum_{k=0}^{\infty}\frac{\left(\left(4-\frac{i}{2}\right)\pi\right)^{2k}}{(2k)!} + 2i\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}\, 2^{2k_1-2k_2}\,(4-i)^{2k_2}\,\pi^{2k_1+2k_2}}{(2k_1)!\,(2k_2)!}}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\ 8} - 5 = -5 + \sum_{k=0}^{\infty}\frac{2^{-3+2k}\,\pi^{-2+2k}\left(4^k - \sqrt{\pi}\,\sum_{j=0}^{\infty}\text{Res}_{s=-j}\,\frac{3^{-s}\,\pi^{-2s}\,\Gamma(s)}{\Gamma\left(\frac{1}{2}-s\right)}\right)}{(1+2k)!}$$

Integral representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\ 8} - 5 = -\frac{40\pi^2 - \int_0^1\cosh(4\pi t)\,dt + \int_0^1\int_0^1\cos\left(\frac{1}{2}\left(1-4\sqrt{3}\right)\pi t_2\right)\cosh(2\pi t_1)\,dt_2\,dt_1}{8\pi^2}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\ 8} - 5 = -5 + \int_{-i\infty+\gamma}^{i\infty+\gamma} -\frac{i\,e^{\pi^2/s+s}\left(e^{(3\pi^2)/s} + \int_{\frac{\pi}{2}}^{2\sqrt{3}\,\pi}\sin(t)\,dt\right)}{32\,\pi^{5/2}\,s^{3/2}}\,ds \quad \text{for } \gamma > 0$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\ 8} - 5 = -5 + \int_0^1\left(\frac{\cosh(4\pi t)}{8\pi^2} + \frac{i\cosh(2\pi t)}{16\pi^{5/2}}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{e^{-(3\pi^2)/s+s}}{\sqrt{s}}\,ds\right)dt \quad \text{for } \gamma > 0$$

(((sinh(4Pi)-2sinh(2Pi)cos(2Pisqrt3))))/(4Pi^3*8) - 18 - Pi + golden ratio

where 18 is a Lucas number

Input:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\times 8} - 18 - \pi + \phi$$

sinh(x) is the hyperbolic sine function

ϕ is the golden ratio

Exact result:

$$\phi - 18 - \pi + \frac{\sinh(4\pi) - 2\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}{32\pi^3}$$

Decimal approximation:

125.03983251356235556244716581684964491996548733932237738 33...

125.0398325… result 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

Alternate forms:

$$\phi - 18 - \pi + \frac{\sinh(2\pi)(\cosh(2\pi) - \cos(2\sqrt{3}\,\pi))}{16\pi^3}$$

$$\frac{1}{2}\left(\sqrt{5} - 35\right) - \pi + \frac{\sinh(4\pi) - 2\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}{32\pi^3}$$

$$\frac{64\pi^3(\phi - 18 - \pi) - e^{-4\pi} + e^{4\pi} - 4\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}{64\pi^3}$$

cosh(x) is the hyperbolic cosine function

Alternative representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = -18 + \phi - \pi + \frac{-\cosh(-2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = -18 + \phi - \pi + \frac{-\cosh(2i\pi\sqrt{3})(-e^{-2\pi} + e^{2\pi}) + \frac{1}{2}(-e^{-4\pi} + e^{4\pi})}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = -18 + \phi - \pi + \frac{-2i\cosh(-2i\pi\sqrt{3})\cos\left(\frac{\pi}{2} + 2i\pi\right) + i\cos\left(\frac{\pi}{2} + 4i\pi\right)}{32\pi^3}$$

Series representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{-560\pi^3 + 16\sqrt{5}\pi^3 - 32\pi^4 + \sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!} - 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}(2\pi)^{1+2k_1+2k_2}}{(2k_1)!(1+2k_2)!}}{32\pi^3}$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{1}{2}\left(-35 + \sqrt{5} - 2\pi + 2\sum_{k=0}^{\infty}\frac{2^{-3+2k}\pi^{-2+2k}\left(4^k - \sqrt{\pi}\sum_{j=0}^{\infty}\operatorname{Res}_{s=-j}\frac{3^{-s}\pi^{-2s}\Gamma(s)}{\Gamma\left(\frac{1}{2}-s\right)}\right)}{(1+2k)!}\right)$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{1}{32\pi^3}\left(-560\pi^3 + 16\sqrt{5}\pi^3 - 32\pi^4 + \sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!} + 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-1)^{k_2}(2\pi)^{1+2k_1}\left(-\frac{\pi}{2} + 2\sqrt{3}\pi\right)^{1+2k_2}}{(1+2k_1)!(1+2k_2)!}\right)$$

Integral representations:

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{1}{8\pi^2}\left(-140\pi^2 + 4\sqrt{5}\pi^2 - 8\pi^3 + \int_0^1\cosh(4\pi t)\,dt + \int_0^1\int_0^1\cos\left(\frac{1}{2}\left(1-4\sqrt{3}\right)\pi t_2\right)\cosh(2\pi t_1)\,dt_2\,dt_1\right)$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{1}{2}\left(-35 + \sqrt{5} - 2\pi + 2\int_{-i\infty+\gamma}^{i\infty+\gamma} -\frac{i\,e^{\pi^2/s+s}\left(e^{(3\pi^2)/s} + \int_{\frac{\pi}{2}}^{2\sqrt{3}\pi}\sin(t)\,dt\right)}{32\pi^{5/2}s^{3/2}}\,ds\right) \quad \text{for } \gamma > 0$$

$$\frac{\sinh(4\pi) - 2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3 8} - 18 - \pi + \phi = \frac{1}{2}\left(-35 + \sqrt{5} - 2\pi + 2\int_0^1\left(\frac{\cosh(4\pi t)}{8\pi^2} + \frac{i\cosh(2\pi t)}{16\pi^{5/2}}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{e^{-(3\pi^2)/s+s}}{\sqrt{s}}\,ds\right)dt\right)$$

for $\gamma > 0$

1/10^52[(((((((sinh(4Pi)-2sinh(2Pi)cos(2Pisqrt3))))/(4Pi^3*8))))^1/64 + 24/10^3 + 8/10^4]

where 8 is a Fibonacci number and 24 are the "modes" corresponding to the physical vibrations of a bosonic string.

Input:

$$\frac{1}{10^{52}}\left(\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos(2\pi\sqrt{3})}{4\pi^3\times 8}}+\frac{24}{10^3}+\frac{8}{10^4}\right)$$

sinh(x) is the hyperbolic sine function

Exact result:

$$\frac{\frac{31}{1250}+\frac{\sqrt[64]{\sinh(4\pi)-2\cos\left(2\sqrt{3}\,\pi\right)\sinh(2\pi)}}{2^{5/64}\,\pi^{3/64}}}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Decimal approximation:

$1.1056138750979245642878042676345199438233330025580295\ldots\times 10^{-52}$

1.10561387509…*10^-52 result practically equal to the value of Cosmological Constant 1.1056*10^-52 m^-2

Alternate forms:

$$\frac{31}{12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\left(\sqrt[64]{\sinh(4\pi)-2\cos\left(2\sqrt{3}\,\pi\right)\sinh(2\pi)}\right)\Big/\left(10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\times 2^{5/64}\,\pi^{3/64}\right)$$

$$\frac{31\,\pi^{3/64}+625\times 2^{59/64}\sqrt[64]{\sinh(4\pi)-2\cos(2\sqrt{3}\,\pi)\sinh(2\pi)}}{12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi^{3/64}}$$

$$\left(31\times 2^{3/32}\,\pi^{3/64}+1250\sqrt[64]{-e^{-4\pi}+e^{4\pi}-4\cos\left(2\sqrt{3}\,\pi\right)\sinh(2\pi)}\right)\Big/\left(12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\times 2^{3/32}\,\pi^{3/64}\right)$$

Alternative representations:

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8}}+\frac{24}{10^3}+\frac{8}{10^4}}{10^{52}}=\frac{\frac{24}{10^3}+\frac{8}{10^4}+\sqrt[64]{\frac{-\cosh\left(-2i\pi\sqrt{3}\right)\left(-e^{-2\pi}+e^{2\pi}\right)+\frac{1}{2}\left(-e^{-4\pi}+e^{4\pi}\right)}{32\pi^3}}}{10^{52}}$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8}}+\frac{24}{10^3}+\frac{8}{10^4}}{10^{52}}=\frac{\frac{24}{10^3}+\frac{8}{10^4}+\sqrt[64]{\frac{-\cosh\left(2i\pi\sqrt{3}\right)\left(-e^{-2\pi}+e^{2\pi}\right)+\frac{1}{2}\left(-e^{-4\pi}+e^{4\pi}\right)}{32\pi^3}}}{10^{52}}$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8}}+\frac{24}{10^3}+\frac{8}{10^4}}{10^{52}}=\frac{\frac{24}{10^3}+\frac{8}{10^4}+\sqrt[64]{\frac{-2i\cosh\left(-2i\pi\sqrt{3}\right)\cos\left(\frac{\pi}{2}+2i\pi\right)+i\cos\left(\frac{\pi}{2}+4i\pi\right)}{32\pi^3}}}{10^{52}}$$

Series representations:

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8}}+\frac{24}{10^3}+\frac{8}{10^4}}{10^{52}}=\frac{31\pi^{3/64}+625\times 2^{59/64}\sqrt[64]{\sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!}-2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-3)^{k_1}\,(2\pi)^{1+2k_1+2k_2}}{(2k_1)!\,(1+2k_2)!}}}{12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi^{3/64}}$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3 8}} + \frac{24}{10^3} + \frac{8}{10^4}}{10^{52}} = \frac{31\,\pi^{3/64} + 625\times 2^{59/64}\sqrt[64]{\sum_{k=0}^{\infty}\frac{4^{1+k}\pi^{1+2k}\left(4^k - \sqrt{\pi}\sum_{j=0}^{\infty}\text{Res}_{s=-j}\frac{3^{-s}\pi^{-2s}\Gamma(s)}{\Gamma\left(\frac{1}{2}-s\right)}\right)}{(1+2k)!}}}{12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi^{3/64}}$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3 8}} + \frac{24}{10^3} + \frac{8}{10^4}}{10^{52}} = \left(31\,\pi^{3/64} + 625\times 2^{59/64}\sqrt[64]{\sum_{k=0}^{\infty}\frac{(4\pi)^{1+2k}}{(1+2k)!} + 2\sum_{k_1=0}^{\infty}\sum_{k_2=0}^{\infty}\frac{(-1)^{k_2}(2\pi)^{1+2k_1}\left(-\frac{\pi}{2}+2\sqrt{3}\,\pi\right)^{1+2k_2}}{(1+2k_1)!\,(1+2k_2)!}}\right) / \left(12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi^{3/64}\right)$$

Integral representations:

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3 8}} + \frac{24}{10^3} + \frac{8}{10^4}}{10^{52}} = \left(31\sqrt[32]{\pi} + 625\times 2^{61/64}\sqrt[64]{\int_0^1\cosh(4\pi t)\,dt + \int_0^1\int_0^1\cos\left(\frac{1}{2}\left(1-4\sqrt{3}\right)\pi t_2\right)\cosh(2\pi t_1)\,dt_2\,dt_1}\right) / \left(12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\sqrt[32]{\pi}\right)$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3 8}} + \frac{24}{10^3} + \frac{8}{10^4}}{10^{52}} = \left(31\,\pi^{3/64} + 625\times 2^{59/64}\sqrt[64]{\int_{-i\infty+\gamma}^{i\infty+\gamma} -\frac{i\,e^{\pi^2/s+s}\sqrt{\pi}\left(e^{(3\pi^2)/s} + \int_{\frac{\pi}{2}}^{2\sqrt{3}\,\pi}\sin(t)\,dt\right)}{s^{3/2}}\,ds}\right) / \left(12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi^{3/64}\right) \text{ for } \gamma > 0$$

$$\frac{\sqrt[64]{\frac{\sinh(4\pi)-2\sinh(2\pi)\cos\left(2\pi\sqrt{3}\right)}{4\pi^3\,8}}+\frac{24}{10^3}+\frac{8}{10^4}}{10^{52}}=\left(31\pi^{3/64}+625\times 2^{59/64}\sqrt[64]{\int_0^1\left(4\pi\cosh(4\pi t)+2i\sqrt{\pi}\cosh(2\pi t)\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{e^{-(3\pi^2)/s+s}}{\sqrt{s}}\,ds\right)dt}\right)\Big/$$

$$\left(12\,500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\;\pi^{3/64}\right)\quad \text{for } \gamma>0$$

Now, we take this previous expression:

$$f_1(x)=\frac{x^2}{2}-\frac{x^3}{12}+\frac{x^4}{48}-\frac{x^5}{180}+\frac{11x^6}{8640}-\frac{x^7}{6720}$$

For x = 2

(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720)

we obtain:

(((1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))^1/64

Input:

$$\sqrt[64]{\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}}$$

Result:

$$\sqrt[64]{\frac{35}{1466}}\;3^{3/64}$$

Decimal approximation:

0.993162421550755654840483416593353880587404736296620061777...

0.993162…. 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 to the dilaton value **0.989117352243 = ϕ**

Alternate forms:

$$\frac{3^{3/64}\sqrt[64]{35}\ 1466^{63/64}}{1466}$$

root of $1466x^{64}-945$ near $x=0.993162$

2log base 0.99316242155(((1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))-Pi+1/golden ratio

Input interpretation:

$$2\log_{0.99316242155}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\pi+\frac{1}{\phi}$$

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

ϕ is the golden ratio

Result:

125.476441...

125.476441… result 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

Alternative representation:

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\pi+\frac{1}{\phi}=$$

$$-\pi+\frac{1}{\phi}+\frac{2\log\left(\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)}{\log(0.993162421550000)}$$

log(x) is the natural logarithm

Series representations:

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\pi+\frac{1}{\phi}=$$

$$\frac{1}{\phi}-\pi-\frac{2\sum_{k=1}^{\infty}\frac{(-1)^k\left(-\frac{521}{1466}\right)^k}{k}}{\log(0.993162421550000)}$$

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)-\pi+\frac{1}{\phi}=$$

$$\frac{1}{\phi}-1.000000000000\,\pi-291.5012143736\log\left(\frac{945}{1466}\right)-$$
$$2\log\left(\frac{945}{1466}\right)\sum_{k=0}^{\infty}(-0.006837578450000)^k\,G(k)$$

$$\text{for}\left(G(0)=0 \text{ and } G(k)=\frac{(-1)^{1+k}\,k}{2(1+k)(2+k)}+\sum_{j=1}^{k}\frac{(-1)^{1+j}\,G(-j+k)}{1+j}\right)$$

Now:

125.476441 GeV = kg

Input interpretation:

convert 125.476441 GeV/c^2 to kilograms

Result:

2.2368207×10^{-25} kg (kilograms)

2.2368207e-25

Additional conversion:

2.2368207×10^{-22} grams

Comparisons as mass:

≈ Higgs boson mass (≈125 GeV/c^2)

Inserting the Higgs boson mass in kg 2.236821e-25 in the Hawking radiation calculator, equating the particle with a quantum black hole, we obtain:

Mass = 2.236821e-25

Radius = 3.321347e-52

Temperature = 5.486373e+47

From the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(2.236821e-25)* sqrt[[-((((5.486373e+47 * 4*Pi*(3.321347e-52)^3-(3.321347e-52)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{1/\left(\frac{4\times1.962364415\times10^{19}}{5\times0.0864055^2}\times\frac{1}{2.236821\times10^{-25}}\sqrt{-\frac{5.486373\times10^{47}\times4\pi(3.321347\times10^{-52})^3-(3.321347\times10^{-52})^2}{6.67\times10^{-11}}}\right)}$$

Result:

1.618249258051498853596695659279002605901595317929090956976...

1.6182492...

Note that:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.167744^2)))*1/(2.236821e-25)* sqrt[[-((((5.486373e+47 * 4*Pi*(3.321347e-52)^3-(3.321347e-52)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times1.962364415\times10^{19}}{5\times0.167744^2}\times\frac{1}{2.236821\times10^{-25}}\sqrt{-\frac{5.486373\times10^{47}\times4\pi(3.321347\times10^{-52})^3-(3.321347\times10^{-52})^2}{6.67\times10^{-11}}}\right)\right)}$$

Result:

3.141600980754588813185782347999803405157741174007411952793...

3.14160098….

and:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.145141^2))*1/(2.236821e-25)* sqrt[[-((((5.486373e+47 * 4*Pi*(3.321347e-52)^3-(3.321347e-52)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times1.962364415\times10^{19}}{5\times0.145141^2}\times\frac{1}{2.236821\times10^{-25}}\sqrt{-\frac{5.486373\times10^{47}\times4\pi(3.321347\times10^{-52})^3-(3.321347\times10^{-52})^2}{6.67\times10^{-11}}}\right)\right)}$$

Result:

2.718279687784372465987442983182942257416060853065443641742...

2.71827968…..

We have also:

2log base 0.99316242155(((1/(4/2 - 8/12 + 16/48 - 32/180 + (11*64)/8640-128/6720))))+11+1/golden ratio

where 11 is a Lucas number

Input interpretation:

$$2\log_{0.99316242155}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+11+\frac{1}{\phi}$$

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

ϕ is the golden ratio

Result:

139.61803397455533832321913254769754315868840167899095939 86...

139.6180339745… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternative representation:

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+11+\frac{1}{\phi}=11+\frac{1}{\phi}+\frac{2\log\left(\frac{1}{2-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}-\frac{128}{6720}+\frac{704}{8640}}\right)}{\log(0.993162421550000)}$$

Series representations:

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+11+\frac{1}{\phi}=11+\frac{1}{\phi}-\frac{2\sum_{k=1}^{\infty}\frac{(-1)^k\left(-\frac{521}{1466}\right)^k}{k}}{\log(0.993162421550000)}$$

$$2\log_{0.993162421550000}\left(\frac{1}{\frac{4}{2}-\frac{8}{12}+\frac{16}{48}-\frac{32}{180}+\frac{11\times 64}{8640}-\frac{128}{6720}}\right)+11+\frac{1}{\phi}=11+\frac{1}{\phi}-291.5012143736\log\left(\frac{945}{1466}\right)-2\log\left(\frac{945}{1466}\right)\sum_{k=0}^{\infty}(-0.006837578450000)^k\,G(k)$$

$$\text{for }\left(G(0)=0\text{ and }G(k)=\frac{(-1)^{1+k}\,k}{2(1+k)(2+k)}+\sum_{j=1}^{k}\frac{(-1)^{1+j}\,G(-j+k)}{1+j}\right)$$

Now:

139.618034 MeV = kg

Input interpretation:

convert 139.618034 MeV/c^2 to kilograms

Result:

$2.4889175 \times 10^{-28}$ kg (kilograms)

2.4889175e-28

Inserting the Pion meson mass in kg 2.488917e-28 in the Hawking radiation calculator, we obtain:

Mass = 2.488917e-28

Radius = 3.695673e-55

Temperature = 4.930670e+50

From the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(2.488917e-28)* sqrt[[-((((4.930670e+50 * 4*Pi*(3.695673e-55)^3-(3.695673e-55)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1 \Big/ \left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times \frac{1}{2.488917\times 10^{-28}} \sqrt{-\frac{4.930670\times 10^{50}\times 4\,\pi\,(3.695673\times 10^{-55})^3-(3.695673\times 10^{-55})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

1.618249065553951502480857764172335845065644284142097721957...

1.61824906…

Also here, as above, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.167744^2)))*1/(2.488917e-28)* sqrt[[-((((4.930670e+50 * 4*Pi*(3.695673e-55)^3-(3.695673e-55)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.167744^2}\times\frac{1}{2.488917\times 10^{-28}}\sqrt{-\frac{4.930670\times 10^{50}\times 4\pi\left(3.695673\times 10^{-55}\right)^3-\left(3.695673\times 10^{-55}\right)^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

3.141600607047954595854997711873946727866761199219170542059...

3.1416006…..

Or:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*(11Pi/(199+7))^2)))*1/(2.488917e-28)* sqrt[[-((((4.930670e+50 * 4*Pi*(3.695673e-55)^3-(3.695673e-55)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(11\times\frac{\pi}{199+7}\right)^2}\times\frac{1}{2.488917\times 10^{-28}}\sqrt{-\frac{4.930670\times 10^{50}\times 4\pi\left(3.695673\times 10^{-55}\right)^3-\left(3.695673\times 10^{-55}\right)^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

3.141805638173274517683595476853193477676114928180751461071...

3.141805638….

and:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.145141^2))*1/(2.488917e-28)* sqrt[[-((((4.930670e+50 * 4*Pi*(3.695673e-55)^3-(3.695673e-55)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.145141^2}\times\frac{1}{2.488917\times 10^{-28}}\sqrt{-\frac{4.930670\times 10^{50}\times 4\pi(3.695673\times 10^{-55})^3-(3.695673\times 10^{-55})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

2.718279364433584378558936372681565373600901297309409765148...

2.71827936443…..

Or:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*(Pi^2/(34*2))^2))*1/(2.488917e-28)* sqrt[[-((((4.930670e+50 * 4*Pi*(3.695673e-55)^3-(3.695673e-55)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{\pi^2}{34\times 2}\right)^2}\times\frac{1}{2.488917\times 10^{-28}}\sqrt{-\frac{4.930670\times 10^{50}\times 4\pi(3.695673\times 10^{-55})^3-(3.695673\times 10^{-55})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

2.718283881617357172806221655789508094677928754685609608677...

2.7182838816…..

Now, we must analyze the two number 0.167744 and 0.145141. With regard 0.167744 this is about equal to 11π/(199+7) where 7, 11 and 199 are Lucas numbers, while 0.145141 this is about equal to $\pi^2/(34*2)$ where 34 and 2 are Fibonacci numbers.

Furthermore, we note that, from the following Ramanujan cube expression:

$135^3 + 138^3 = 172^3 - 1$

we obtain:

138^3 = 172^3 – 1 – 135^3

(172^3 – 1 – 135^3)^1/3

Input:

$$\sqrt[3]{172^3 - 1 - 135^3}$$

Exact result:

138

138

(172^3 – 1 – 135^3)^1/3 + golden ratio

Input:

$$\sqrt[3]{172^3 - 1 - 135^3} + \phi$$

ϕ is the golden ratio

Result:

$\phi + 138$

Decimal approximation:

139.6180339887498948482045868343656381177203091798057628621...

139.61803398…. result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{1}{2}\left(277+\sqrt{5}\right)$$

$$\frac{277}{2}+\frac{\sqrt{5}}{2}$$

$$138+\frac{1}{2}\left(1+\sqrt{5}\right)$$

Alternative representations:

$$\sqrt[3]{172^3-1-135^3}+\phi=\sqrt[3]{-1-135^3+172^3}+2\sin(54^\circ)$$

$$\sqrt[3]{172^3-1-135^3}+\phi=-2\cos(216^\circ)+\sqrt[3]{-1-135^3+172^3}$$

$$\sqrt[3]{172^3-1-135^3}+\phi=\sqrt[3]{-1-135^3+172^3}-2\sin(666^\circ)$$

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$$1.\ \frac{1^5}{2}+\frac{2^5}{2^2}+\frac{3^5}{2^3}+\&c=1082.$$

1/2+(2^5)/(2^2)+(3^5)/(2^3)+...

Input interpretation:

$$\frac{1}{2}+\frac{2^5}{2^2}+\frac{3^5}{2^3}+\cdots$$

Infinite sum:

$$\sum_{n=1}^{\infty} 2^{-n}\, n^5 = 1082$$

1082

And:

(29+4)+ ((1/2+(2^5)/(2^2)+(3^5)/(2^3)+...))

where 29 and 4 are Lucas numbers

Input interpretation:

$$(29+4)+\left(\frac{1}{2}+\frac{2^5}{2^2}+\frac{3^5}{2^3}+\cdots\right)$$

Result:

1115

1115

1/golden ratio+(29+4)+ ((1/2+(2^5)/(2^2)+(3^5)/(2^3)+...))

Input interpretation:

$$\frac{1}{\phi}+(29+4)+\left(\frac{1}{2}+\frac{2^5}{2^2}+\frac{3^5}{2^3}+\cdots\right)$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+1115$$

Input:

$$\frac{1}{\phi}+1115$$

ϕ is the golden ratio

Decimal approximation:

1115.618033988749894848204586834365638117720309179805762862...

1115.6180339887… result practically equal to the rest mass of Lambda baryon 1115.683 MeV

Alternate forms:

$$\frac{1}{2}\left(2229+\sqrt{5}\right)$$

$$\frac{1115\,\phi+1}{\phi}$$

$$\frac{\sqrt{5}}{2}+\frac{2229}{2}$$

Alternative representations:

$$\frac{1}{\phi} + 1115 = 1115 + \frac{1}{2\sin(54°)}$$

$$\frac{1}{\phi} + 1115 = 1115 + -\frac{1}{2\cos(216°)}$$

$$\frac{1}{\phi} + 1115 = 1115 + -\frac{1}{2\sin(666°)}$$

1115.6180339887 MeV is the rest mass of Lambda baryon

Input interpretation:

convert 1115.6180339887 MeV/c^2 to kilograms

Result:

$1.988769788273 \times 10^{-27}$ kg (kilograms)

$1.988769788273*10^{-27}$

Inserting the Lambda baryon mass in kg 1.988769788273e-27 in the Hawking radiation calculator, we obtain:

Mass = 1.988770e-27

Radius = 2.953028e-54

Temperature = 6.170665e+49

From the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(1.988770e-27)* sqrt[[-((((6.170665e+49 * 4*Pi*(2.953028e-54)^3-(2.953028e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1 \Big/ \left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times \frac{1}{1.988770\times 10^{-27}} \sqrt{-\frac{6.170665\times 10^{49}\times 4\,\pi\,(2.953028\times 10^{-54})^3-(2.953028\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

1.618249286026552103856758470126399046149006769041696610500...

1.6182492860…..

and:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*((11Pi)/(199+7))^2)))*1/(1.988770e-27)* sqrt[[-(((((6.170665e+49 * 4*Pi*(2.953028e-54)^3-(2.953028e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1 \Big/ \left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{11\pi}{199+7}\right)^2}\times \frac{1}{1.988770\times 10^{-27}} \sqrt{-\frac{6.170665\times 10^{49}\times 4\,\pi\,(2.953028\times 10^{-54})^3-(2.953028\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

3.141806066217433094108649153853680340743665320925781705925...

3.141806066217433…..

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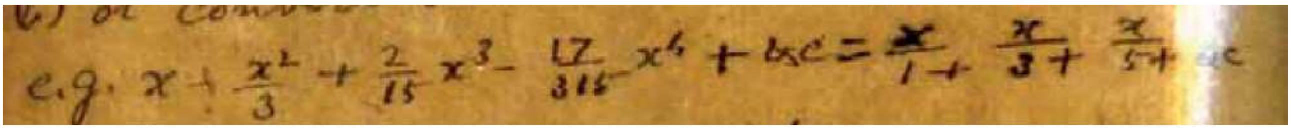
(6) or conv...
e.g. $x + \frac{x^2}{3} + \frac{2}{15}x^3 - \frac{17}{315}x^4 + \&c = \frac{x}{1+}\frac{x}{3+}\frac{x}{5+}\&c$

For x = 2

((2+4/3+16/15-(17*16)/315))

Input:

$$2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}$$

Exact result:

$$\frac{1114}{315}$$

Decimal approximation:

3.5365079365...

3.5365079365….

((2+4/3+16/15-(17*16)/315))^4-21+Pi+1/golden ratio

where 21 is a Fibonacci number

Input:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-21+\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+\frac{1333313458891}{9845600625}+\pi$$

Decimal approximation:

139.1818837167779476621210131604201532678654486147824295579...

139.181883716… result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$$\frac{1333313458891}{9845600625}+\frac{1}{\phi}+\pi \text{ is a transcendental number}$$

Alternate forms:

$$\frac{2656781317157+9845600625\sqrt{5}+19691201250\pi}{19691201250}$$

$$\frac{1\,333\,313\,458\,891\,\phi + 9\,845\,600\,625\,\pi\,\phi + 9\,845\,600\,625}{9\,845\,600\,625\,\phi}$$

$$\frac{2\,656\,781\,317\,157 + 9\,845\,600\,625\sqrt{5}}{19\,691\,201\,250} + \pi$$

Alternative representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = -21 + \pi + -\frac{1}{2\cos(216\,°)} + \left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = -21 + 180\,° + -\frac{1}{2\cos(216\,°)} + \left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = -21 + \pi + \frac{1}{2\cos\left(\frac{\pi}{5}\right)} + \left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

Series representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + 4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + \sum_{k=0}^{\infty} -\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k} - 4\times 239^{1+2k}\right)}{1+2k}$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + \sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + 4\int_0^1 \sqrt{1-t^2}\,dt$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + 2\int_0^1 \frac{1}{\sqrt{1-t^2}}\,dt$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4 - 21 + \pi + \frac{1}{\phi} = \frac{1\,333\,313\,458\,891}{9\,845\,600\,625} + \frac{1}{\phi} + 2\int_0^\infty \frac{1}{1+t^2}\,dt$$

((2+4/3+16/15-(17*16)/315))^4-34+Pi

where 34 is a Fibonacci number

Input:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi$$

Result:

$$\frac{1205320650766}{9845600625}+\pi$$

Decimal approximation:

125.56384972802805281391642632605451515014513943497666669 57...

125.563849… result 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

Property:

$$\frac{1205320650766}{9845600625}+\pi \text{ is a transcendental number}$$

Alternate form:

$$\frac{1205320650766+9845600625\,\pi}{9845600625}$$

Alternative representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi=-34+180\,°+\left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi=-34-i\log(-1)+\left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi=-34+\cos^{-1}(-1)+\left(\frac{10}{3}+\frac{16}{15}-\frac{272}{315}\right)^4$$

Series representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi=\frac{1205320650766}{9845600625}+4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi = \frac{1\,205\,320\,650\,766}{9\,845\,600\,625}+\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi = \frac{1\,205\,320\,650\,766}{9\,845\,600\,625}+\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi = \frac{1\,205\,320\,650\,766}{9\,845\,600\,625}+4\int_0^1\sqrt{1-t^2}\,dt$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi = \frac{1\,205\,320\,650\,766}{9\,845\,600\,625}+2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^4-34+\pi = \frac{1\,205\,320\,650\,766}{9\,845\,600\,625}+2\int_0^{\infty}\frac{1}{1+t^2}\,dt$$

((2+4/3+16/15-(17*16)/315))^6-199-29

where 29 and 199 are Lucas numbers

Input:

$$\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)^6-199-29$$

Exact result:

$$\frac{1\,688\,482\,063\,468\,005\,436}{976\,929\,722\,015\,625}$$

Decimal approximation:

1728.3557101572142341153927217621770634617522501617676456 47...

1728.355710.....

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

Now:

Input interpretation:

convert 1728.355710157 MeV/c^2 to kilograms

Result:

$3.08107391153 \times 10^{-27}$ kg (kilograms)

3.08107391153e-27 Kg = 3.081074e-27 = Mass

and:

Radius = 4.574937e-54, Temperature = 3.983037e+49

From the Ramanujan- Nardelli mock general formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times \frac{1}{3.081074\times 10^{-27}}\sqrt{-\frac{3.983037\times 10^{49}\times 4\pi\,(4.574937\times 10^{-54})^3-(4.574937\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

1.618249315618718998189314360179401706926656458031771584557...

1.6182493156187….

and:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*(((11Pi)/(199+7))^2)))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{11\pi}{199+7}\right)^2}\times\frac{1}{3.081074\times 10^{-27}}\sqrt{-\frac{3.983037\times 10^{49}\times 4\pi\,(4.574937\times 10^{-54})^3-(4.574937\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)}$$

Result:

3.141806123670169371482931588961158863472894933405213446928...

3.14180612367….

Further, we obtain also:

1/10^52(((1/(Pi)((2+4/3+16/15-(17*16)/315)) - 21/10^3+ 9/10^4)))

where 21 is a Fibonacci number and $9 = 3^2$ (3 is a Fibonacci number)

Input:

$$\frac{1}{10^{52}}\left(\frac{1}{\pi}\left(2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}\right)-\frac{21}{10^3}+\frac{9}{10^4}\right)$$

Result:

$$\frac{\frac{1114}{315\pi}-\frac{201}{10000}}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Decimal approximation:

$1.1056054387579136764859461104570222178183367959039268... \times 10^{-52}$

$1.1056054387579…*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}$ m^{-2}

Property:

$$\frac{-\frac{201}{10000}+\frac{1114}{315\pi}}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$ is a transcendental number

Alternate forms:

$$\frac{2\,228\,000 - 12\,663\,\pi}{(630\,000\,\pi)\,10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$-\frac{12\,663\,\pi - 2\,228\,000}{6\,300\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi}$$

$$\frac{557}{1\,575\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi} - \frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Alternative representations:

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times16}{315}}{\pi} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}} = \frac{\frac{\frac{10}{3}+\frac{16}{15}-\frac{272}{315}}{180\,^\circ} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}}$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times16}{315}}{\pi} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}} = \frac{-\frac{\frac{10}{3}+\frac{16}{15}-\frac{272}{315}}{i\log(-1)} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}}$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times16}{315}}{\pi} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}} = \frac{\frac{\frac{10}{3}+\frac{16}{15}-\frac{272}{315}}{\cos^{-1}(-1)} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}}$$

Series representations:

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times16}{315}}{\pi} - \frac{21}{10^3} + \frac{9}{10^4}}{10^{52}} = -\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(6\,300\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}\right)$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}}{\pi}-\frac{21}{10^3}+\frac{9}{10^4}}{10^{52}} =$$

$$-\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(6\,300\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \frac{(-1)^{1+k}\, 1195^{-1-2k} \left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}}{\pi}-\frac{21}{10^3}+\frac{9}{10^4}}{10^{52}} =$$

$$-\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(1\,575\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \left(-\frac{1}{4}\right)^k \left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)$$

Integral representations:

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}}{\pi}-\frac{21}{10^3}+\frac{9}{10^4}}{10^{52}} =$$

$$-\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(6\,300\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^1 \sqrt{1-t^2}\, dt\right)$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}}{\pi}-\frac{21}{10^3}+\frac{9}{10^4}}{10^{52}} = -\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(3\,150\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^\infty \frac{1}{1+t^2}\,dt\right)$$

$$\frac{\frac{2+\frac{4}{3}+\frac{16}{15}-\frac{17\times 16}{315}}{\pi}-\frac{21}{10^3}+\frac{9}{10^4}}{10^{52}} = -\frac{201}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 557 \Big/ \left(3\,150\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^1 \frac{1}{\sqrt{1-t^2}}\,dt\right)$$

With the following data:

Mass = 3.08107391153e-27 Kg = 3.081074e-27

Radius = 4.574937e-54

Temperature = 3.983037e+49

concerning the result 1728.355710, from the Ramanujan-Nardelli mock general formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*(5.90332e-54)^2)))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\,(5.90332\times 10^{-54})^2}\times\frac{1}{3.081074\times 10^{-27}}\sqrt{-\frac{3.983037\times 10^{49}\times 4\,\pi\,(4.574937\times 10^{-54})^3-(4.574937\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

$1.10561\ldots\times 10^{-52}$

$1.10561\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}\ m^{-2}$

Or:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*((((233+34+13)Pi)/(144+5))*10^-54)^2)))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{\frac{(233+34+13)\pi}{144+5}}{10^{54}}\right)^2}\times\frac{1}{3.081074\times 10^{-27}}\sqrt{-\frac{3.983037\times 10^{49}\times 4\,\pi\,(4.574937\times 10^{-54})^3-(4.574937\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

$1.10567\ldots\times 10^{-52}$

$1.10567\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}\ m^{-2}$

and:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5(8.62989e-37)^2)))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times1.962364415\times10^{19}}{5\,(8.62989\times10^{-37})^2}\times\frac{1}{3.081074\times10^{-27}}\sqrt{-\frac{3.983037\times10^{49}\times4\,\pi\,(4.574937\times10^{-54})^3-(4.574937\times10^{-54})^2}{6.67\times10^{-11}}}\right)\right)}$$

Result:

$1.61625... \times 10^{-35}$

$1.61625...*10^{-35}$ result practically equal to the value of Planck length

We note that:

$$\frac{228\,\pi}{83}\approx 8.62991716$$

where 228 = 199 + 29 and 83 = 76 + 7

Thence:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5((((228Pi)/(83)*10^-37))^2)))))*1/(3.081074e-27)* sqrt[[-((((3.983037e+49 * 4*Pi*(4.574937e-54)^3-(4.574937e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1/\left(\frac{4\times1.962364415\times10^{19}}{5\left(\frac{\frac{228\,\pi}{83}}{10^{37}}\right)^2}\times\frac{1}{3.081074\times10^{-27}}\sqrt{-\frac{3.983037\times10^{49}\times4\,\pi\,(4.574937\times10^{-54})^3-(4.574937\times10^{-54})^2}{6.67\times10^{-11}}}\right)\right)}$$

Result:

$1.61626\ldots \times 10^{-35}$

$1.61626\ldots*10^{-35}$ result practically equal to the value of Planck length

https://www.cambridgesciencefestival.org/event/photographing-black-holes-first-results-from-the-event-horizon-telescope/

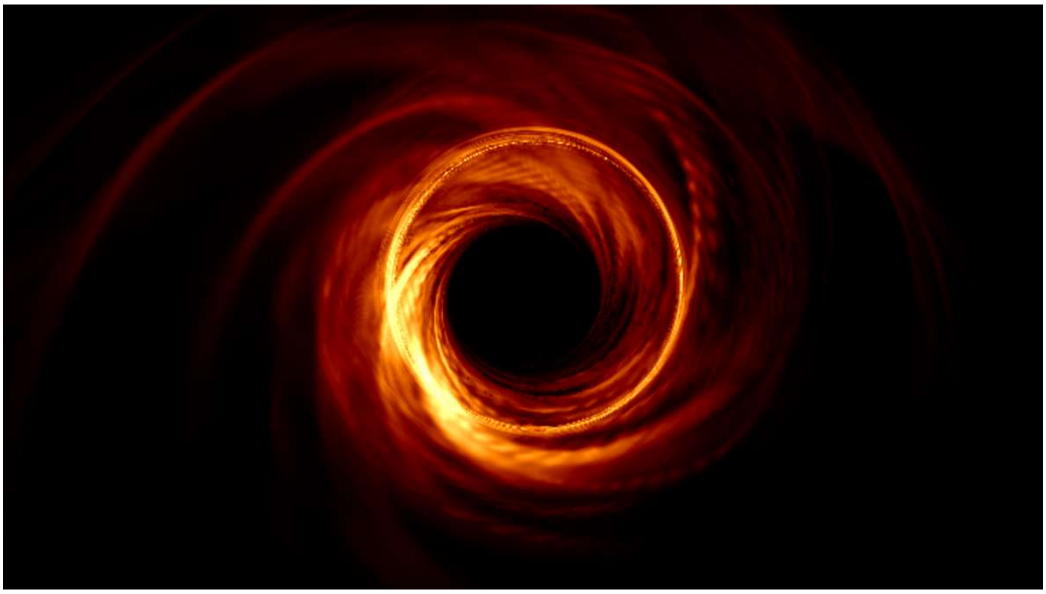

Fig. Black Hole (SMBH87)

Observations

The reason why inserting any mass, temperature and radius of a black hole, from the quantum to the supermassive one, is ALWAYS the golden ratio as a result, would seem to lie in the intrinsic spiral rotation in the black holes. The novelty in the calculations carried out in this paper is that with the same formula (Ramanujan-Nardelli mock formula), we obtain always by entering the above parameters, the value of π, that of e, the Planck length and even the Cosmological Constant. Note that in this formula there are numbers belonging to the succession of Lucas and / or to that of Fibonacci, both linked to ϕ. These additional values and / or constants are connected to black holes: π and "e" are related to the geometry of these celestial bodies, Planck's length to their quantum nature and the Cosmological Constant is connected to dark energy which, according to some studies, it would also be related to black holes. Finally, we remember that black holes are the central and fundamental part in the formation and evolution of a galaxy. The galaxies themselves are connected to π and ϕ, being of elliptical or spiral form (logarithmic-golden spiral) and also in the black holes in the center of them, as can be seen from the figure, the trace of the two fundamental physical-mathematical constants π and ϕ, is evident.

Finally, it should be highlighted how all Ramanujan's expressions are developed using ALWAYS numbers belonging to the Lucas and / or Fibonacci sequences connected strictly to the golden ratio, in addition to π and the golden ratio itself.

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References

Manuscript Book 2 of Srinivasa Ramanujan