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Production and Decay of Higgs Boson, From God Particle H to Heaven Particle Π

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Production and Decay of Higgs Boson, From God Particle H to Heaven Particle Π

ShaoXu Ren

Abstract-

This paper suggests an interesting idea: Based on quark genera $(t, b), (c, s), (u, d)$ harmony flavor symmetry and Mass Principle $\mathbf{Q}^2(\xi) - \xi^2 = \mathbf{Q}^2$, Heaven particle Π with $M(\Pi) = 692 \text{ GeV}$ should instead of God particle H with $M(H) = 125 \text{ GeV}$. $M(\Pi)$ as four times as heavy as ground state $\mathbf{Q}^2(t)$ of t top quark.

Keywords: God particle H , Heaven particle Π , Production and Decay, Mass Principle, deep neural networks.

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INTRODUCTION

• Both Higgs production modes and Higgs decay branching ratio are related to Higgs boson mass. For examples: Associated production with a pair of heavy quarks ($t\bar{t}H, b\bar{b}H$), Dominant decay branching ratio for bottom pair ($H \rightarrow b\bar{b}$, BR $\sim 58\%$) with $M(H) = 125 \text{ GeV}$.

An amazing phenomenon, since quark genera (t, b), (c, s), (u, d) are attributed to the same flavor symmetry, the decay $H \rightarrow q\bar{q}$ for $q = c, u, d, s, b$, are observed, BUT up to now the species t is still excluded from decay $H \rightarrow t\bar{t}$? Why?

God particle H may be not the perfect boson that as we wanted, expected before. A possible heavier zero spin particle named as *Heaven particle* Π boson, Π instead of H ?

This paper aims to discuss the above questions.

• In the analysis of physics experimental data, *deep neural networks* of artificial intelligence are operating on the masses of particles. Specially on searching for a new particle X of unknown mass by the parameterized neural networks [1].

In dealing with the production and decay of this hypothetical particle X , Pierre, Peter and Daniel " In order to test how well a parameterized neural network generalizes to new parameter values, ", they used three samples, then the " three different training data sets with $m_X = 500, 750, 1000, 1250, 1500 \text{ GeV}$ " were put into Feynman diagrams of particle physics. The mass distributions of m_X is relevant to the production and decay of X particle in the processes of $q\bar{q}, gg \rightarrow X \rightarrow t\bar{t} \rightarrow W^+bW^-\bar{b}$.

At the time of introducing the postulation *Mass Principle* [2], we found an eccentric scalar product $\mathbf{Q}^2 = \frac{692 \text{ GeV}}{0.511}$, as four times as heavy as ground state $\mathbf{Q}^2(t)$ of t top quark, that always wandering around our calculations related to the origin of Higgs mechanism, which could ensure the processes of "pure production" and "pure decay" for all the six flavor quarks $q = t, c, u, d, s, b$. Now this mass 692 GeV looks like an interesting parameter value for m_X in the *deep neural network* mentioned above.

• This paper includes three parts:

Part A endeavors to depict a story about a boson $\mathbb{B}$ and a color-pair of quark q & a antiquark $\bar{q}$. Their color representations are given by $\mathbf{Q}(\mathbb{B}, \xi(\mathbb{B})) + i\xi(\mathbb{B})$ and $\mathbf{Q}(q, \xi) + i\xi(q)$ & $\mathbf{Q}(\bar{q}, \bar{\xi}) + i\bar{\xi}(\bar{q})$ respectively.

Part B aims at explaining why, $\mathbb{B} = H \rightarrow t\bar{t}$, the decay process of *God particle* H , has not be observed, and why can't be happened. Because the mass principle $\mathbf{Q}^2(H) - \xi^2(H, t) = \mathbf{Q}^2(H) \left(\frac{M(H)}{0.511} \right)$ is violated. Due to the value of $\xi^2(H, t)$, the arithmetic square, is less than zero.

Part C gives the minimum critical value of $\mathbf{Q}^2(\mathbb{B} = \Pi) = 4\mathbf{Q}^2(t) - \frac{16}{3} = \frac{691997.2746666668}{0.511} \text{ MeV}$ of *Heaven particle* Π , as $\xi^2(\Pi, t) = 0$.

Part A Color Relation Formula between Color Boson $Q(\mathbb{B})$ and Fermion Color-Pair $Q(q, \xi) + i\xi(q)$ and $Q(\tilde{q}, \tilde{\xi}) + i\tilde{\xi}(\tilde{q})$

Relation Formula $Q(\mathbb{B}) = Q(F\bar{F})$ [2] between a Boson $\mathbb{B}$ and a Quark q & an Antiquark $\tilde{q}$ could be written more detailedly as below

Boson $\mathbb{B}$, that be consisten with a color-pair quark q and a color-pair antiquark $\tilde{q}$ in complex field $\mathbb{C}$

$$\underline{Q(\mathbb{B}, \xi(\mathbb{B})) + i\xi(\mathbb{B})} = \underline{Q(q, \xi) + i\xi(q)} + \underline{Q(\tilde{q}, \tilde{\xi}) + i\tilde{\xi}(\tilde{q})} \quad (0)$$

Here: $\mathbb{B}$ boson and $q, \tilde{q}$ fermions are required to satisfy the following Mass Principles

$$Q^2(\mathbb{B}, \xi(\mathbb{B})) - \xi^2(\mathbb{B}) = Q^2(\mathbb{B}) = \frac{M(\mathbb{B})}{0.511} \quad (0.1)$$

$$Q^2(q, \xi) - \xi^2(q) = Q^2(q) = \frac{M(q)}{0.511} \quad (0.2)$$

$$Q^2(\tilde{q}, \tilde{\xi}) - \tilde{\xi}^2(\tilde{q}) = Q^2(\tilde{q}) = \frac{M(\tilde{q})}{0.511} \quad (0.3)$$

Where the above, $Q^2(q)$ & $Q^2(\tilde{q})$ are the mass of ground states of quarks & antiquarks that are shown following

$$Q^2(t) = Q^2(\tilde{t}) = 338,551.859\,099\,8043 = \frac{173000.000\,000\,0000}{0.511} \quad (1)$$

$$Q^2(c) = Q^2(\tilde{c}) = 2,504.892\,367\,9061 = \frac{1280.000\,000\,0000}{0.511} \quad (2)$$

$$Q^2(u) = Q^2(\tilde{u}) = 4.500\,978\,4736 = \frac{2.300\,000\,0000}{0.511} \quad (3)$$

$$Q^2(d) = Q^2(\tilde{d}) = 9.393\,346\,3796 = \frac{4.800\,000\,0000}{0.511} \quad (4)$$

$$Q^2(s) = Q^2(\tilde{s}) = 185.909\,980\,4305 = \frac{95.000\,000\,0000}{0.511} \quad (5)$$

$$Q^2(b) = Q^2(\tilde{b}) = 9,197.651\,663\,4051 = \frac{4700.000\,000\,0000}{0.511} \quad (6)$$

Back to (0), and decomposes it into Real part $\mathbf{Q}$ and Imaginary part ξ respectively below

$$\text{【 Real part } \mathbf{Q} \text{ 】} \quad \mathbf{Q}(\mathbb{B}, \xi(\mathbb{B})) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \equiv \mathbf{Q}(q\tilde{q}, \xi\tilde{\xi}) \quad (0.4)$$

$$\text{【 Imaginary part } \xi \text{ 】} \quad \xi(\mathbb{B}) = \xi(q) + \tilde{\xi}(\tilde{q}) \equiv \xi(q\tilde{q}) \quad (0.5)$$

Here imaginary part (0.5) takes (0.6)

$$\tilde{\xi}(\tilde{q}) = -\xi(q) \quad (0.6)$$

yield

$$\xi(\mathbb{B}) = \xi(q\tilde{q}) = 0 \quad (0.7)$$

In case of (0.7), Color Relation Formula (0) becomes to (7) and (8) below

$$\mathbf{Q}(\mathbb{B}) = \mathbf{Q}(q, \xi) + i\xi(q) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) + i\tilde{\xi}(\tilde{q}) \quad (7)$$

$$\mathbf{Q}(\mathbb{B}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \quad (8)$$

Following we explore formulas (7) and (8) respectively.

【 discussion of (7) 】

- In left hand in (7), the color representation of $\mathbf{Q}(\mathbb{B})$ is given below

$$\mathbf{Q}(\mathbb{B}) = \left(\frac{X}{3}, \frac{X}{3}, \frac{-2X}{3} \right) \quad (9)$$

- FROM (9), obtain

$$\mathbf{Q}^2(\mathbb{B}) = \left(\frac{X}{3}, \frac{X}{3}, \frac{-2X}{3} \right)^2 = \frac{1}{9} (6X^2) = \frac{2}{3} X^2$$

obtain

$$X = X_{\pm} = \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B})} \quad (10)$$

- In right hand in (7), the color representation of $\mathbf{Q}(q, \xi) + i\xi(q)$, $\mathbf{Q}(\tilde{q}, \xi) + i\xi(\tilde{q})$ are given below

$$q = t, c, u \quad \mathbf{Q}(q, \xi) + i\xi(q) = \left(\frac{x(\xi)}{3}, \frac{x(\xi)}{3}, \frac{-2x(\xi)+6}{3} \right) + i \left(\frac{\xi(q)}{3}, \frac{\xi(q)}{3}, \frac{-2\xi(q)}{3} \right) \quad (11.1)$$

$$\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u} \quad \mathbf{Q}(\tilde{q}, \xi) + i\xi(\tilde{q}) = \left(\frac{\alpha(\xi)}{3}, \frac{\alpha(\xi)}{3}, \frac{-2\alpha(\xi)-6}{3} \right) - i \left(\frac{\xi(q)}{3}, \frac{\xi(q)}{3}, \frac{-2\xi(q)}{3} \right) \quad (11.2)$$

$$q = d, s, b \quad \mathbf{Q}(q, \xi) + i\xi(q) = \left(\frac{x(\xi)}{3}, \frac{x(\xi)}{3}, \frac{-2x(\xi)-3}{3} \right) + i \left(\frac{\xi(q)}{3}, \frac{\xi(q)}{3}, \frac{-2\xi(q)}{3} \right) \quad (12.1)$$

$$\tilde{q} = \tilde{d}, \tilde{s}, \tilde{b} \quad \mathbf{Q}(\tilde{q}, \xi) + i\xi(\tilde{q}) = \left(\frac{\alpha(\xi)}{3}, \frac{\alpha(\xi)}{3}, \frac{-2\alpha(\xi)+3}{3} \right) - i \left(\frac{\xi(q)}{3}, \frac{\xi(q)}{3}, \frac{-2\xi(q)}{3} \right) \quad (12.2)$$

Where

$$\xi(q) = \left(\frac{\xi(q)}{3}, \frac{\xi(q)}{3}, \frac{-2\xi(q)}{3} \right) = -\xi(\tilde{q}) \quad (13)$$

Base on Mass Principles (0.2) (0.3), obtain color-scalar equations (14.1) (14.2) & (15.1) (15.2) of color (11.1) (11.2) & color (12.1) (12.2) following

$$x^2 - 4x - \frac{3}{2} (\mathbf{Q}^2(q, \xi) - 4) = 0 \quad (14.1)$$

$$\alpha^2 + 4\alpha - \frac{3}{2} (\mathbf{Q}^2(\tilde{q}, \xi) - 4) = 0 \quad (14.2)$$

$$x^2 + 2x - \frac{3}{2} (\mathbf{Q}^2(q, \xi) - 1) = 0 \quad (15.1)$$

$$\alpha^2 - 2\alpha - \frac{3}{2} (\mathbf{Q}^2(\tilde{q}, \xi) - 1) = 0 \quad (15.2)$$

AND (16) (17) the solutions of the above equation are given below

- for $q = t, c, u$ (14.1), $\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u}$ (14.2)

$$x(q, \xi) = +2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - 2} \quad (16.1)$$

$$\alpha(\tilde{q}, \xi) = -2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - 2} \quad (16.2)$$

$$x_{\pm}(q, \xi) + \alpha_{\pm}(\tilde{q}, \xi) = \pm 2 \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - 2} \quad (16.3)$$

- for $q = d, s, b$ (15.1), $\tilde{q} = \tilde{d}, \tilde{s}, \tilde{b}$ (15.2)

$$x(q, \xi) = -1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} \quad (17.1)$$

$$\alpha(\tilde{q}, \xi) = +1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} \quad (17.2)$$

$$x_{\pm}(q, \xi) + \alpha_{\pm}(\tilde{q}, \xi) = \pm 2 \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} \quad (17.3)$$

【 discussion of (8) 】

From previous formulas (11.1) (11.2) and (12.1) (12.2) we have

$$q = t, c, u \quad \mathbf{Q}(q, \xi) = \left(\frac{x(\xi)}{3}, \frac{x(\xi)}{3}, \frac{-2x(\xi) + 6}{3} \right) \quad (18.1)$$

$$\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u} \quad \mathbf{Q}(\tilde{q}, \xi) = \left(\frac{\alpha(\xi)}{3}, \frac{\alpha(\xi)}{3}, \frac{-2\alpha(\xi) - 6}{3} \right) \quad (18.2)$$

$$q = d, s, b \quad \mathbf{Q}(q, \xi) = \left(\frac{x(\xi)}{3}, \frac{x(\xi)}{3}, \frac{-2x(\xi) - 3}{3} \right) \quad (19.1)$$

$$\tilde{q} = \tilde{d}, \tilde{s}, \tilde{b} \quad \mathbf{Q}(\tilde{q}, \xi) = \left(\frac{\alpha(\xi)}{3}, \frac{\alpha(\xi)}{3}, \frac{-2\alpha(\xi) + 3}{3} \right) \quad (19.2)$$

THEN (18.1) plus (18.2) and (19.1) plus (19.2), finally formula (8) could be rewritten as (20). And then obtain (21) below

$$\mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \xi) = \left(\frac{x(\xi) + \alpha(\xi)}{3}, \frac{x(\xi) + \alpha(\xi)}{3}, \frac{-2(x(\xi) + \alpha(\xi))}{3} \right) \quad (20)$$

$$\mathbf{Q}(\mathbb{B}) = \left(\frac{X}{3}, \frac{X}{3}, \frac{-2X}{3} \right) \quad (9)$$

$$x(\xi) + \alpha(\xi) = X \quad (21)$$

Because of (21) (10), the left hands of (16.3) and (17.3) could be rewritten as (22) and (23) respectively

$$q = t, c, u \quad 2\sqrt{\frac{3}{2}\mathbf{Q}^2(q, \xi) - 2} = \sqrt{\frac{3}{2}\mathbf{Q}^2(\mathbb{B})} \quad (22)$$

$$q = d, s, b \quad 2\sqrt{\frac{3}{2}\mathbf{Q}^2(q, \xi) - \frac{1}{2}} = \sqrt{\frac{3}{2}\mathbf{Q}^2(\mathbb{B})} \quad (23)$$

After square of (22) and (23), and use (0.2) (0.3),

$$\mathbf{Q}^2(q, \xi) - \xi^2(q) = \mathbf{Q}^2(q) \quad (0.2)$$

$$\mathbf{Q}^2(\tilde{q}, \xi) - \xi^2(\tilde{q}) = \mathbf{Q}^2(\tilde{q}) \quad (0.3)$$

LAST Yielding $\mathbf{Q}^2$ (24) (25) and ξ^2 (26) (27) below

$$q = t, c, u \quad \mathbf{Q}^2(q, \xi) = \mathbf{Q}^2(q) + \xi^2(q) = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}) + \frac{4}{3} \quad (24)$$

$$q = d, s, b \quad \mathbf{Q}^2(q, \xi) = \mathbf{Q}^2(q) + \xi^2(q) = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}) + \frac{1}{3} \quad (25)$$

$$q = t, c, u \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}) - \mathbf{Q}^2(q) + \frac{4}{3} \quad (26)$$

$$q = d, s, b \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}) - \mathbf{Q}^2(q) + \frac{1}{3} \quad (27)$$

After Substitute (24) (25) back into (16.1) (16.2) and (17.1) (17.2) respectively, we get solutions x, α of color representation (28) (29) below

$$\bullet \quad q = t, c, u, \quad \tilde{q} = \tilde{t}, \tilde{c}, \tilde{u}$$

$$x(q, \xi) = +2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi)^2 - 2} = +2 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B})} \quad (28.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = -2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - 2} = -2 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B})} \quad (28.2)$$

$$\bullet \quad q = d, s, b, \quad \tilde{q} = \tilde{d}, \tilde{s}, \tilde{b}$$

$$x(q, \xi) = -1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} = -1 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B})} \quad (29.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = +1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} = +1 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B})} \quad (29.2)$$

Next part, we will search for production $q\tilde{q} \rightarrow H$ and decay $H \rightarrow q\tilde{q}$, base on the above logistic background of between Boson $\mathbb{B}$, a color-pair quark q , a color-pair antiquark $q^\sim$

Part B $\mathbb{B} = H$

- In case of $\mathbb{B}=H$, (8) turns to

$$\mathbf{Q}(H) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \quad (30)$$

AND (28.1) (28.2) and (29.1) (29.2) become (31.1) (31.2) and (32.1) (32.2) respectively

$$x(q, \xi) = +2 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B}=H)} \quad (31.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = -2 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B}=H)} \quad (31.2)$$

$$x(q, \xi) = -1 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B}=H)} \quad (32.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = +1 \pm \frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(\mathbb{B}=H)} \quad (32.2)$$

Where

$$\mathbf{Q}^2(H) = 244618.395 \ 303 \ 3268 = \frac{125000}{0.511} \quad (33)$$

$$\frac{1}{2} \sqrt{\frac{3}{2} \mathbf{Q}^2(H)} = \pm 302.872 \ 742 \ 6474 \quad (34)$$

THEN (31.1) (31.2) and (32.1) (32.2) offer following results:

$$x(q, \xi) = +2 \pm 302.872 \ 742 \ 6474 = (+304.8727426474, -300.8727426474) \quad (35.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = -2 \pm 302.872 \ 742 \ 6474 = (+300.8727426474, -304.8727426474) \quad (35.2)$$

$$x(q, \xi) = -1 \pm 302.872 \ 742 \ 6474 = (+301.8727426474, -303.8727426474) \quad (36.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = +1 \pm 302.872 \ 742 \ 6474 = (+303.8727426474, -301.8727426474) \quad (36.2)$$

AND further

$$q = t, c, u \quad \frac{x(q, \xi)}{3} = (+101.6242475491, -100.2909142158) \quad (37.1)$$

$$\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u} \quad \frac{x(\tilde{q}, \tilde{\xi})}{3} = (+100.2909142158, -101.6242475491) \quad (37.2)$$

$$q = d, s, b \quad \frac{x(q, \xi)}{3} = (+100.6242475491, -101.2909142158) \quad (38.1)$$

$$\tilde{q} = \tilde{d}, \tilde{s}, \tilde{b} \quad \frac{x(\tilde{q}, \tilde{\xi})}{3} = (+101.2909142158, -100.6242475491) \quad (38.2)$$

Put (37.1) (37.2) and (38.1) (38.2) into (18.1) (18.2) (19.1) (19.2), then obtain two groups of color representations of $\mathbf{Q}(q, \xi)$ and $\mathbf{Q}(\tilde{q}, \tilde{\xi})$ (notice (30)) below :

Group ▲

$$q = t, c, u$$

$$\blacktriangle \quad \mathbf{Q}(q, \xi) = (+101.6242475491, +101.6242475491, -201.2484950982) \quad (39.1)$$

$$\blacktriangle \quad \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (+100.2909142158, +100.2909142158, -202.5818284316) \quad (39.2)$$

$$\begin{aligned} \mathbf{Q}(q\tilde{q}, \tilde{\xi}) &= \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \\ &= (+201.9151617649, +201.9151617649, -403.8303235298) = \mathbf{Q}_+(H) \end{aligned} \quad (39.3)$$

$$q = d, s, b$$

$$\blacktriangle \quad \mathbf{Q}(q, \xi) = (+100.6242475491, +100.6242475491, -202.2484950982) \quad (40.1)$$

$$\blacktriangle \quad \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (+101.2909142158, +101.2909142158, -201.5818284316) \quad (40.2)$$

$$\begin{aligned} \mathbf{Q}(q\tilde{q}, \tilde{\xi}) &= \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \\ &= (+201.9151617649, +201.9151617649, -403.8303235298) = \mathbf{Q}_+(H) \end{aligned} \quad (40.3)$$

AND Group ▼

$$q = t, c, u$$

$$\blacktriangledown \quad \mathbf{Q}(q, \xi) = (-100.2909142158, -100.2909142158, +202.5818284316) \quad (41.1)$$

$$\blacktriangledown \quad \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (-101.6242475491, -101.6242475491, +201.2484950982) \quad (41.2)$$

$$\begin{aligned} \mathbf{Q}(q\tilde{q}, \xi) &= \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \\ &= (-201.9151617649, -201.9151617649, +403.8303235298) = \mathbf{Q}_-(H) \end{aligned} \quad (41.3)$$

$$q = d, s, b$$

$$\blacktriangledown \quad \mathbf{Q}(q, \xi) = (-101.2909142158, -101.2909142158, +201.5818284316) \quad (42.2)$$

$$\blacktriangledown \quad \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (-100.6242475491, -100.6242475491, +202.2484950982) \quad (42.2)$$

$$\begin{aligned} \mathbf{Q}(q\tilde{q}, \xi) &= \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) \\ &= (-201.9151617649, -201.9151617649, +403.8303235298) = \mathbf{Q}_-(H) \end{aligned} \quad (42.3)$$

Square of (39.3) (40.3) (41.3) (42.3)

$$\mathbf{Q}_{\pm}^2(H) = (\pm 201.9151617649, \pm 201.9151617649, \mp 403.8303235298)^2 = 244618.3953032742 = \frac{12499.999999731}{0.511} \quad (43)$$

Then compare (43) with Higgs boson theoretical value (44)

$$\mathbf{Q}_{Theo}^2(H) = 244618.3953033268 = \frac{125000}{0.511} \quad (44)$$

We see: $\mathbf{Q}_{\pm}^2(H) = \mathbf{Q}_{Theo}^2(H)$ means the above color representations of $\mathbf{Q}_{\pm}(H)$ and $\mathbf{Q}(q, \xi)$ $\mathbf{Q}(\tilde{q}, \tilde{\xi})$ satisfy relationship (30).

Following discussions will lead to throw doubt on *God particle H*.

- In case of $\mathbb{B}=H$, (26) (27) turn to

$$q = t, c, u \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}=H) - \mathbf{Q}^2(q) + \frac{4}{3} \quad (45)$$

$$q = d, s, b \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B}=H) - \mathbf{Q}^2(q) + \frac{1}{3} \quad (46)$$

AS the left hand of (45) (46)

$$\xi^2(q) > 0 \quad (47)$$

The right hand of (45) (46) should be greater than zero too

$$q = t, c, u \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(q) + \frac{4}{3} > 0 \quad (48)$$

$$q = d, s, b \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(q) + \frac{1}{3} > 0 \quad (49)$$

HOWEVER, the following calculations show: quarks c, u satisfy (48) (see (53.2) (53.3)), quarks d, s, b satisfy (49) (see (54.1) (54.2) (54.3)). BUT ONLY TOP QUARK, $q = t$ CONFLICTS WITH formula (48) ! (see (53.1))

Using (44) and (50)

$$\mathbf{Q}^2(H) = 244618.3953033268 = \frac{125000}{0.511} \quad (44)$$

$$\frac{1}{4} \mathbf{Q}^2(H) = 61154.5988248317 = \frac{31250}{0.511} \quad (50)$$

Obtain

$$q = t \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(t) + \frac{4}{3} = 61154.5988248317 - 338551.8590998043 + \frac{4}{3} \quad (51.1)$$

$$q = c \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(c) + \frac{4}{3} = 61154.5988248317 - 2504.8923679061 + \frac{4}{3} \quad (51.2)$$

$$q = u \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(u) + \frac{4}{3} = 61154.5988248317 - 4.5009784736 + \frac{4}{3} \quad (51.3)$$

$$q = d \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(d) + \frac{1}{3} = 61154.5988248317 - 9.3933463796 + \frac{1}{3} \quad (52.1)$$

$$q = s \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(s) + \frac{1}{3} = 61154.5988248317 - 185.9099804305 + \frac{1}{3} \quad (52.2)$$

$$q = b \quad \frac{1}{4} \mathbf{Q}^2(H) - \mathbf{Q}^2(b) + \frac{1}{3} = 61154.5988248317 - 9197.6516634051 + \frac{1}{3} \quad (52.3)$$

OR

$$\xi^2(H, t) = \xi^2(t) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(t) + \frac{4}{3} = -277395.9269406393 < 0 \quad (53.1)$$

$$\xi^2(H, c) = \xi^2(c) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(c) + \frac{4}{3} = +58651.0397912589 > 0 \quad (53.2)$$

$$\xi^2(H, u) = \xi^2(u) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(u) + \frac{4}{3} = +61151.4311806914 > 0 \quad (53.2)$$

$$\xi^2(H, d) = \xi^2(d) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(d) + \frac{1}{3} = +61145.5388127854 > 0 \quad (54.1)$$

$$\xi^2(H, s) = \xi^2(s) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(s) + \frac{1}{3} = +61145.5388127854 > 0 \quad (54.2)$$

$$\xi^2(H, b) = \xi^2(b) = \frac{1}{4} \mathbf{Q}^2(h) - \mathbf{Q}^2(b) + \frac{1}{3} = +51957.2804957599 > 0 \quad (54.3)$$

It is obviously for *God particle* H , $\mathbf{Q}^2(H) = \frac{125000}{0.511}$, $(\frac{1}{4} \mathbf{Q}^2(h) (50))$ is too small to hold $\xi^2(t)$ to be greater than zero (see (53.1)) ! This is why the phenomenons, "pure production" $i\tilde{t} \rightarrow H$ and "pure decay" $H \rightarrow i\tilde{t}$, have not been observed up to now [3],[4],[5],[6]. Next part the boson Π debuts.

Part C $\mathbb{B} = \Pi$

Instead of working at *God particle H* (45) (46), we looking for a new boson Π , named *Heaven particle* (55) (56)

$$q = t, c, u \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B} = \Pi) - \mathbf{Q}^2(q) + \frac{4}{3} \quad (55)$$

$$q = d, s, b \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\mathbb{B} = \Pi) - \mathbf{Q}^2(q) + \frac{1}{3} \quad (56)$$

(55) (56) are required to guarantee physical modes $q\bar{q} \rightarrow \Pi$ production and $\Pi \rightarrow q\bar{q}$ decay for all the six flavor quarks, specially for the heaviest quark, *top quark*, $t\bar{t} \rightarrow \Pi$ production and $\Pi \rightarrow t\bar{t}$ decay. Our aim at this paper is to find out the minimum critical values of $\mathbf{Q}^2(\mathbb{B} = \Pi)$ (or $\frac{M(\mathbb{B}=\Pi)}{0.511}$).

- Following suppose (57) in formula (55), then (55) becomes (58)

$$q = t \quad \underline{\xi^2(q = t)} = 0 \quad (57)$$

$$\underline{\xi^2(t)} = \frac{1}{4} \mathbf{Q}^2(\Pi) - \mathbf{Q}^2(t) + \frac{4}{3} = 0 \quad (58)$$

From (58), have relations (59) (60) below.

$$\frac{1}{4} \mathbf{Q}^2(\Pi) = \mathbf{Q}^2(t) - \frac{4}{3} \quad (59)$$

$$\mathbf{Q}^2(\Pi) = 4\mathbf{Q}^2(t) - \frac{16}{3} \quad (60) \quad \star 1$$

Substitute (59) back to (55) (56), using $\mathbf{Q}^2(t) - \frac{4}{3}$ to replace $\frac{1}{4} \mathbf{Q}^2(\Pi)$. YIELDING two key relation expressions (61) (62) and (63) (64) below

$$q = t, c, u \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\Pi) - \mathbf{Q}^2(q) + \frac{4}{3} = \mathbf{Q}^2(t) - \frac{4}{3} - \mathbf{Q}^2(q) + \frac{4}{3} = \mathbf{Q}^2(t) - \mathbf{Q}^2(q)$$

$$q = d, s, b \quad \underline{\xi^2(q)} = \frac{1}{4} \mathbf{Q}^2(\Pi) - \mathbf{Q}^2(q) + \frac{1}{3} = \mathbf{Q}^2(t) - \frac{4}{3} - \mathbf{Q}^2(q) + \frac{1}{3} = \mathbf{Q}^2(t) - \mathbf{Q}^2(q) - 1$$

OR

$$q = t, c, u \quad \xi^2(q) = \mathbf{Q}^2(t) - \mathbf{Q}^2(q) \quad (61) \quad \star 2$$

$$q = d, s, b \quad \xi^2(q) = \mathbf{Q}^2(t) - \mathbf{Q}^2(q) - 1 \quad (62) \quad \star 3$$

AND

$$q = t, c, u \quad \mathbf{Q}^2(q, \xi) = \mathbf{Q}^2(q) + \xi^2(q) = \mathbf{Q}^2(t) \quad (63) \quad \star 4$$

$$q = d, s, b \quad \mathbf{Q}^2(q, \xi) = \mathbf{Q}^2(q) + \xi^2(q) = \mathbf{Q}^2(t) - 1 \quad (64) \quad \star 5$$

NOTICE: Both $\mathbf{Q}^2(q, \xi)$, $\xi^2(q)$ and $\mathbf{Q}^2(\Pi)$ are the functions of $\mathbf{Q}^2(t)$.

- Base on (60) $\star 1$

$$4\mathbf{Q}^2(t) = 4(338,551.859\,099\,8043) = 1354207.4363992172 = \frac{692000}{0.511} \quad (65)$$

$$\begin{aligned} \underline{(60) \star 0 \quad \mathbf{Q}^2(\Pi) = 4\mathbf{Q}^2(t) - \frac{16}{3}} &= 1354207.4363992172 - \frac{16}{3} \\ &= 1354202.1030658840 = \frac{691997.2746666668}{0.511} \end{aligned} \quad (66)$$

(66) (65) shows: Msss $M(\Pi) = 692000 \text{ Mev}$ of the new boson Π is about four times of $M(t) = 173000 \text{ Mev}$ top quark !

AND

t, H, Π Data compared below

$$M(\Pi) - M(t) = 692000 - 173000 = 456000 \text{ Mev} \quad (67)$$

$$\frac{M(\Pi)}{M(t)} = \frac{692000}{173000} = 4 \quad (68)$$

$$M(\Pi) - M(H) = 692000 - 125000 = 567000 \text{ Mev} \quad (69)$$

$$\frac{M(\Pi)}{M(H)} = \frac{692000}{125000} = 5.536 \quad (70)$$

- More details about $\xi^2(q)$ (61) ★2 and (62) ★3 below

$$q = t \quad \xi^2(t) = \mathbf{Q}^2(t) - \mathbf{Q}^2(t) = 338551.8590998043 - 338551.8590998043 = 0 \quad (71.1)$$

$$q = c \quad \xi^2(c) = \mathbf{Q}^2(t) - \mathbf{Q}^2(c) = 338551.8590998043 - 2504.8923679061 = 336046.9667318982 > 0 \quad (71.2)$$

$$q = u \quad \xi^2(u) = \mathbf{Q}^2(t) - \mathbf{Q}^2(c) = 338551.8590998043 - 4.5009784736 = 338547.3581213307 > 0 \quad (71.3)$$

$$q = d \quad \xi^2(d) = \mathbf{Q}^2(t) - \mathbf{Q}^2(d) - 1 = 338551.8590998043 - 9.3933463796 - 1 = 338541.4657534247 > 0 \quad (72.1)$$

$$q = s \quad \xi^2(s) = \mathbf{Q}^2(t) - \mathbf{Q}^2(s) - 1 = 338551.8590998043 - 185.9099804305 - 1 = 338364.9491193738 > 0 \quad (72.2)$$

$$q = b \quad \xi^2(b) = \mathbf{Q}^2(t) - \mathbf{Q}^2(b) - 1 = 338551.8590998043 - 9197.6516634051 - 1 = 329353.2074363992 > 0 \quad (72.3)$$

- More details about $\mathbf{Q}^2(q, \xi)$ (63) ★4 and (64) ★5, then create a table below

Table: $\mathbf{Q}^2(q, \xi)$

$\mathbf{Q}^2(q, \xi)$	338551.8590998043	338551.8590998043	338551.8590998043	338550.8590998043	338550.8590998043	338550.8590998043
$\mathbf{Q}^2(q)$	338551.8590998043	2504.8923679061	4.5009784736	9.3933463796	185.9099804305	9197.6516634051
	$\mathbf{Q}^2(t)$	$\mathbf{Q}^2(c)$	$\mathbf{Q}^2(u)$	$\mathbf{Q}^2(d)$	$\mathbf{Q}^2(s)$	$\mathbf{Q}^2(b)$
$\xi^2(q)$	0	+336046.9667318982	+338547.3581213307	+338541.4657534247	+338364.9491193738	+329353.2074363992
$\frac{3}{2}\xi^2(q)$						
$\xi^2(q)$	0	504070.4500978473	507821.0371819960	507812.1986301371	507547.4236790607	494029.8111545988
$\xi(q)$	0	709.9791899048	712.6156307449	712.6094292318	712.4236265587	702.8725426097
$\sqrt{\frac{3}{2}\xi^2(q)}$						
$\frac{1}{3}\xi(q)$	$\frac{0}{3}$	$\frac{709.9791899048}{3}$	$\frac{712.6156307449}{3}$	$\frac{712.6094292318}{3}$	$\frac{712.4236265587}{3}$	$\frac{702.8725426097}{3}$
$\sqrt{\frac{1}{6}\xi^2(q)}$	0	236.6597299683	237.5385435816	237.5364764106	237.4745421862	234.2908475366

NEXT search for $x(q, \xi)$ $\alpha(\tilde{q}, \tilde{\xi})$. In case of $\mathbb{B} = \Pi$. PUT (60) ★0 into (28.1) (28.2) and (29.1) (29.2), Having (74.1) (74.2) and (75.1) (75.2) below

$$\mathbf{Q}^2(\Pi) = 4\mathbf{Q}^2(t) - \frac{16}{3} \quad (60) \quad \star 0$$

$$\sqrt{\frac{3}{8} \mathbf{Q}^2(\Pi)} = \sqrt{\frac{3}{8} (4\mathbf{Q}^2(t) - \frac{16}{3})} = \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2}$$

$$\sqrt{\frac{3}{8} \mathbf{Q}^2(\Pi)} = \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} \quad (73)$$

- $q = t, c, u, \quad \tilde{q} = \tilde{t}, \tilde{c}, \tilde{u}$

$$x(q, \xi) = +2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi)^2 - 2} = +2 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B}=\Pi)} = +2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} \quad (74.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = -2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - 2} = -2 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B}=\Pi)} = -2 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} \quad (74.2)$$

- $q = d, s, b, \quad \tilde{q} = \tilde{d}, \tilde{s}, \tilde{b}$

$$x(q, \xi) = -1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} = -1 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B}=\Pi)} = -1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} \quad (75.1)$$

$$\alpha(\tilde{q}, \tilde{\xi}) = +1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(q, \xi) - \frac{1}{2}} = +1 \pm \sqrt{\frac{3}{8} \mathbf{Q}^2(\mathbb{B}=\Pi)} = +1 \pm \sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} \quad (75.2)$$

AS (76)

$$\mathbf{Q}^2(t) = 338, 551. 859 \ 099 \ 8043 = \frac{173000.000 \ 000 \ 0000}{0.511} \quad (1)$$

$$\frac{3}{2} \mathbf{Q}^2(t) = \frac{3}{2} (338, 551. 8590998043) = 507, 827. 7886497065$$

$$\frac{3}{2} \mathbf{Q}^2(t) - 2 = 507825. 7886497065$$

$$\sqrt{\frac{3}{2} \mathbf{Q}^2(t) - 2} = \sqrt{507825. 7886497065} = \pm 712. 6189645594$$

(76)

PUT (76) back to (74.1) (74.2) and (75.1) (75.2), Consequently obtain (77.1) (77.2) and (78.1) (78.2) following

$$\bullet \quad x(q, \xi) = +2 \pm 712.6189645594 = (+714.6189645594, -710.6189645594) \quad (77.1)$$

$$\bullet \quad \alpha(\tilde{q}, \tilde{\xi}) = -2 \pm 712.6189645594 = (+710.6189645594, -714.6189645594) \quad (77.2)$$

$$\bullet \quad x(q, \xi) = -1 \pm 712.6189645594 = (+711.6189645594, -713.6189645594) \quad (78.1)$$

$$\bullet \quad \alpha(\tilde{q}, \tilde{\xi}) = +1 \pm 712.6189645594 = (+713.6189645594, -711.6189645594) \quad (78.2)$$

Further obtain following expressions

$$q = t, c, u \quad \frac{x(q, \xi)}{3} = (+238.2063215198, -236.8729881865) \quad (79.1)$$

$$\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u} \quad \frac{x(\tilde{q}, \tilde{\xi})}{3} = (+236.8729881865, -238.2063215198) \quad (79.2)$$

$$q = d, s, b \quad \frac{x(q, \xi)}{3} = (+237.2063215198, -237.8729881865) \quad (80.1)$$

$$\tilde{q} = \tilde{d}, \tilde{s}, \tilde{b} \quad \frac{x(\tilde{q}, \tilde{\xi})}{3} = (+237.8729881865, -237.2063215198) \quad (80.2)$$

Each of the above four formulas has two groups ($\blacktriangle$ and $\blacktriangledown$) of quark color representations for *Heaven particle* Π , which similar to that for *God particle* H appeared in **Part B** previously. The relevant formulas for these quark color representations ($\blacktriangle$ and $\blacktriangledown$) are given below

- For $q = t, c, u$ and $\tilde{q} = \tilde{t}, \tilde{c}, \tilde{u}$

$$\blacktriangle \quad \mathbf{Q}(t, \xi) = \mathbf{Q}(c, \xi) = \mathbf{Q}(u, \xi) = (+238.2063215198, +238.2063215198, -474.4126430396) \quad (81.1)$$

$$\blacktriangle \quad \mathbf{Q}(\tilde{t}, \tilde{\xi}) = \mathbf{Q}(\tilde{c}, \tilde{\xi}) = \mathbf{Q}(\tilde{u}, \tilde{\xi}) = (+236.8729881865, +236.8729881865, -475.7459763730) \quad (81.2)$$

PLUS

$$\mathbf{Q}(q\tilde{q}, \tilde{\xi}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (+475.0793097063, +475.0793097063, -950.1586194126) = \mathbf{Q}_+(\Pi) \quad (81.3)$$

$$\blacktriangledown \quad \mathbf{Q}(t, \xi) = \mathbf{Q}(c, \xi) = \mathbf{Q}(u, \xi) = (-236.8729881865, -236.8729881865, +475.7459763730) \quad (82.1)$$

$$\blacktriangledown \quad \mathbf{Q}(\tilde{t}, \tilde{\xi}) = \mathbf{Q}(\tilde{c}, \tilde{\xi}) = \mathbf{Q}(\tilde{u}, \tilde{\xi}) = (-238.2063215198, -238.2063215198, +474.4126430396) \quad (82.2)$$

PLUS

$$\mathbf{Q}(q\tilde{q}, \tilde{\xi}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (-475.0793097063, -475.0793097063, +950.1586194126) = \mathbf{Q}_-(\Pi) \quad (82.3)$$

- For d, s, b and $\tilde{d}, \tilde{s}, \tilde{b}$

$$\blacktriangle \quad \mathbf{Q}(d, \xi) = \mathbf{Q}(s, \xi) = \mathbf{Q}(b, \xi) = (+237.2063215198, +237.2063215198, -475.4126430396) \quad (83.1)$$

$$\blacktriangle \quad \mathbf{Q}(\tilde{d}, \tilde{\xi}) = \mathbf{Q}(\tilde{s}, \tilde{\xi}) = \mathbf{Q}(\tilde{b}, \tilde{\xi}) = (+237.8729881865, +237.8729881865, -474.7459763730) \quad (83.2)$$

PLUS

$$\mathbf{Q}(q\tilde{q}, \tilde{\xi}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (+475.0793097063, +475.0793097063, -950.1586194126) = \mathbf{Q}_+(\Pi) \quad (83.3)$$

$$\blacktriangledown \quad \mathbf{Q}(d, \xi) = \mathbf{Q}(s, \xi) = \mathbf{Q}(b, \xi) = (-237.8729881865, -237.8729881865, +474.7459763730) \quad (84.2)$$

$$\blacktriangledown \quad \mathbf{Q}(\tilde{d}, \tilde{\xi}) = \mathbf{Q}(\tilde{s}, \tilde{\xi}) = \mathbf{Q}(\tilde{b}, \tilde{\xi}) = (-237.2063215198, -237.2063215198, +475.4126430396) \quad (84.2)$$

PLUS

$$\mathbf{Q}(q\tilde{q}, \tilde{\xi}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\tilde{q}, \tilde{\xi}) = (-475.0793097063, -475.0793097063, +950.1586194126) = \mathbf{Q}_-(\Pi) \quad (84.3)$$

OR

$$\mathbf{Q}(q\bar{q}, \xi) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\bar{q}, \xi) = (\pm 475.0793097063, \pm 475.0793097063, \mp 950.1586194126) = \mathbf{Q}_{\pm}(\Pi) \quad (85)$$

• • SUBSEQUENT color representations of t top quark and $\bar{t}$ anti-top quark, that correspond to $\mathbf{Q}_{+}(\Pi)$ (or $\mathbf{Q}_{-}(\Pi)$) above, are given by (86) (87)

$$\mathbf{Q}(t) = (+238.206\ 321\ 5198, +238.206\ 321\ 5198, -474.412\ 643\ 0396) \quad (86)$$

$$\mathbf{Q}(\bar{t}) = (+236.872\ 988\ 1865, +236.872\ 988\ 1865, -475.745\ 976\ 3730) \quad (87)$$

LAST OBTAIN (88)

$$\mathbf{Q}(t\bar{t}) = \mathbf{Q}(t) + \mathbf{Q}(\bar{t}) = \mathbf{Q}(q, \xi) + \mathbf{Q}(\bar{q}, \xi) = \mathbf{Q}_{+}(\Pi) \quad (88)$$

Square of the above expression

$$\mathbf{Q}_{+}^2(\Pi) = \mathbf{Q}^2(t\bar{t}) = 1354,202.1030660877 = \frac{691997.2746667708}{0.511} \quad (89)$$

Notice: Compare (89) with *Heaven particle* Π theoretical value (66) and (65)

$$\mathbf{Q}_{Theo}^2(\Pi) = 4\mathbf{Q}^2(t) - \frac{16}{3} = 1354202.1030658840 = \frac{691997.2746666668}{0.511} \quad (66)$$

$$4\mathbf{Q}^2(t) = 1354207.4363992172 = \frac{692000}{0.511} \quad (65)$$

EPILOGUE

The relationship (88) and (89) are the portrait of *Heaven particle* boson relevant to production and decay of Π boson. Eagerly looking forward to probing into the existence of *Heaven particle*, Hoping for experimentalists.

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