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A Unified Mass Theory of Elementary Fermions and Elementary Bosons

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Abstract

Base on photon generation, a unified mass theory of elementary fermions and elementary bosons is postulated.

Photon Generation Charge Q(Λ[Q] Ψ) Particle Mass Function Ψ(γ) Color-Unit Constant Ψ0 ScalarProduct-Mass Equation Q(Λ[Q] Ψ)-Running

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A Unified Mass theory of Elementary Fermions and Elementary Bosons

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Abstract Base on photon generation, a unified mass theory of elementary fermions and elementary bosons is postulated.

Keywords: Table X, Photon Generation Charge $\mathbf{Q}(\gamma^{Q},\xi)$, Particle Mass Function $\xi(\omega)$, Color-Unit Constant ξ_0, ScalarProduct-Mass Equation, $\mathbf{Q}(\gamma^{Q},\xi)$–Running, Double Helix Structure, 4th, 5th of Fermion, Mass Spectrum

Contents

1. Introduction

After obtaining a unified mass theory of twelve elementary fermions [1], extravagant hopes naturally, subsequently what about the other six elementary bosons, $B = H, Z, W^+, W^-$ and γ, g ? ! May these six bosons be merged into the existing unified mass theory of twelve elementary fermions mentioned ?

Ahead of us, light ; Genesis of mass, light .

In this paper, we will use photon generation $\mathbf{Q}(\gamma^{\mathrm{Q}}, \xi)$, instead of zeroth generation Zth of fermion $\mathbf{Q}(\Psi(0), \xi)$ of **Table 0** [1], to make a new larger **Table X** below, in which six elementary bosons B are included. Further, all the masses of both twelve elementary fermions and six elementary bosons of Standard Model SM could be uniformly identified.

IN **Table 0,** column ($\mathbf{Q}(\Psi(0), \xi)$, $\xi(\Psi(0))$) is the zeroth zh of generation of fermion.

$$(\mathbf{Q}(\Psi(0), \xi), \ \xi(\Psi(0))) \qquad (00.1)$$

IN **Table X,** column ($\mathbf{Q}(\gamma^{\mathrm{Q}}, \xi)$, $\xi(\gamma^{\mathrm{Q}})$) is the generation of photon.

$$(\mathbf{Q}(\gamma^{\mathrm{Q}}, \xi), \ \xi(\gamma^{\mathrm{Q}})) \qquad (00.2)$$

OR

$$\mathbf{Q}(\Psi(0), \xi) = \begin{bmatrix} \mathbf{Q}(\delta(0), \xi) \\ \mathbf{Q}(\gamma(0), \xi) \\ \mathbf{Q}(\beta(0), \xi) \\ \mathbf{Q}(\alpha(0), \xi) \end{bmatrix} \Longrightarrow \mathbf{Q}(\gamma^{\mathrm{Q}}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{+2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{-1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{-\mathrm{e}}, \xi) \\ \mathbf{Q}(\gamma^{0\mathrm{e}}, \xi) \end{bmatrix}$$

Table 0 fermion zeroth generation
For twelve elementary fermions

Table 0 photon generation
For twelve elementary bosons and six elementary bosons

The color representation of particle ω is defined as below. And $\xi(\omega)$ is called as mass function.

$$\mathbf{Q}(\gamma^{Q}, \xi) + i\ \xi(\omega) \qquad (00.3)$$

Base on ScalarProduct-Mass Equation, the mass value $M(\omega)$ of a particle ω could be obtained below

$$\mathbf{Q}^2(\gamma^{Q}, \xi) - \xi^2(\omega) = \mathbf{Q}^2(\omega) = \frac{M(\omega)}{M(e^-)} \qquad (00.4)$$

Here $\omega = F,B$ fermion, boson. CHARGE of ω rely on photon generation $\mathbf{Q}(\gamma^{Q}, \xi)$ and MASS of ω relate to mass function $\xi(\omega)$.

AND $\mathbf{Q}^2(\gamma^{Q}, \xi)$ is the scalar product of $\mathbf{Q}(\gamma^{Q}, \xi)$ that comprises four members, each one of $\mathbf{Q}(\gamma^{Q}, \xi)$ with different charge: $Q(\gamma^{Q}, \xi) = (\ 0e,\ -e,\ \frac{-1e}{3}\ \ \frac{+2e}{3}\ )$ $\widetilde{Q}(\gamma^{Q}, \xi) = (\ 0e,\ +e,\ \frac{+1e}{3}\ \ \frac{-2e}{3}\ )$.

Analogy with what did for the masses of the twelves elementary fermions, NOW, the more detailed discussions for the masses of the six elementary bosons $\omega = H, Z, W^+, W^-$ and γ, g are given in the next three parts **Part A**, **Part B** and **Part C** following

Part A and **Part C** are related to four neutral bosons H, Z and $\gamma\ g$, that all with same charge, $0e$, So, both H, Z and $\gamma\ g$ belong to the common photon generation members (A.1) (C.1) and (A.2) (C.2); But accompanied by the different mass function $\xi(\omega)$: $\xi(Z), \xi(H)$ by (A.7),(A.8) and photon $\xi(\gamma)$ by (C.4), gluon $\xi(g)$ by (C.10), (C.11), ... , (C.16), (C.17). Subsequently result in bosons Z, H masssive (A.13),(A.12), and γ, g massless (C.9), (C.22). NOTICE: photon γ is just γ^{0e}.

Part B is related to two charged bosons W^-, W^+ that with different particle charge $-e, +e$, So they belong to different photon generation. W^- (B.1), W^+ (B.2); W^- accompanied by mass function $\xi(W^-)$ (B.13), $\xi(W^+)$ by (B.14). BUT at last, the two particles possess the same mass valus (B.17) (B.18).

Table X is defined as (more details see Table 2 and Table 3 Table 4 & Table 5) :

$$\underline{\underline{\textbf{Table X}}} = \underline{\textbf{Table 0}} + \underline{\textbf{Part A} + \textbf{Part B} + \textbf{Part C}} \qquad (00.5)$$

Before discuss **Part A**, **Part B**, **Part C** First, glance over Table 1, the archives of elementary fermion and elementary boson below

Table1 Mass M and Color Scalar Products $\mathbf{Q}^2$ of Twelve elementary fermions q, l and six elementary bosons B

Fermion				Fermion				Boson			
q	I_3	Y	$M(q)$ Mev	l	I_3	Y	$M(l)$ Kev	B	I_3	Y	$M(B)$ Mev
t	$+5/2$	$-11/3$	$173,000.0$	υ_τ	$+5/2$	-5	$18,200.0$	W^+	$+1$	0	$80,400$
c	$+3/2$	$-5/3$	$1,280.0$	υ_μ	$+3/2$	-3	190.0	Z,H	0	0	$91,200,\ 125,000$
u	$+1/2$	$+1/3$	2.3	υ_e	$+1/2$	-1	0.002	W^-	-1	0	$80,400$
d	$-1/2$	$+1/3$	4.8	e^-	$-1/2$	-1	511.0				
s	$-3/2$	$+7/3$	95.0	μ^-	$-3/2$	$+1$	$105,700.0$	γ	0	0	0
b	$-5/2$	$+13/3$	$4,700.0$	τ^-	$-5/2$	$+3$	$1,777,000.0$	g	0	0	0
			$\mathbf{Q}^2(q)$	$\mathbf{Q}(q)$			$\mathbf{Q}^2(l)$	$\mathbf{Q}(l)$			$\mathbf{Q}^2(B)$
t	$+5/2$	$-11/3$	$338,551.859\ 099\ 8043$	$\mathbf{Q}(t)$	υ_τ	$+5/2$	-5	$35.616\ 438\ 3562$	$\mathbf{Q}(\upsilon_\tau)$	H	0	0	$244,618.395\ 303\ 3268$
c	$+3/2$	$-5/3$	$2,504.892\ 367\ 9061$	$\mathbf{Q}(c)$	υ_μ	$+3/2$	-3	$0.371\ 819\ 9609$	$\mathbf{Q}(\upsilon_\mu)$	Z	0	0	$178,473.581\ 213\ 3072$
u	$+1/2$	$+1/3$	$4.500\ 978\ 4736$	$\mathbf{Q}(u)$	υ_e	$+1/2$	-1	$0.000\ 003\ 9139$	$\mathbf{Q}(\upsilon_e)$	$W^\pm$	±1	0	$157,338.551\ 859\ 0998$
d	$-1/2$	$+1/3$	$9.393\ 346\ 3796$	$\mathbf{Q}(d)$	e^-	$-1/2$	-1	$1.000\ 000\ 0000$	$\mathbf{Q}(e^-)$				
s	$-3/2$	$+7/3$	$185.909\ 980\ 4305$	$\mathbf{Q}(s)$	μ^-	$-3/2$	$+1$	$206.849\ 315\ 0685$	$\mathbf{Q}(\mu^-)$	γ	0	0	$0.000\ 000\ 0000$
b	$-5/2$	$+13/3$	$9,197.651\ 663\ 4051$	$\mathbf{Q}(b)$	τ^-	$-5/2$	$+3$	$3,477.495\ 107\ 6321$	$\mathbf{Q}(\tau^-)$	g	0	0	$0.000\ 000\ 0000$

Decompose the color scalar products $\mathbf{Q}^2(B)$ of Six Bosons of the right column of Table1, into three demensional color space $\mathbf{Q}(B)$ following

• Boson Ground States for massive particles $B = H, Z, W^-, W^+$:

$$\mathbf{Q}(H) = (+201.915\ 161\ 76492,\ +201.915\ 161\ 76492,\ -403.830\ 323\ 50984) \quad (0.1)$$

$$\mathbf{Q}^2(H) = 244,618.\ 395\ 303\ 3228 = \frac{124{,}999.999\ 999\ 9980}{0.511} = \frac{M(H)}{0.511} \quad (0.2)$$

$$\mathbf{Q}(Z) = (+172.469\ 118\ 59486,\ +172.469\ 118\ 59486,\ -344.938\ 237\ 18972) \quad (0.3)$$

$$\mathbf{Q}^2(Z) = 178,473.581\ 213\ 3274 = \frac{91{,}200.000\ 000\ 0103}{0.511} = \frac{M(Z)}{0.511} \quad (0.4)$$

$$\mathbf{Q}(W^-) = (-161.932\ 883\ 14360,\ -163.932\ 883\ 14360,\ +322.865\ 766\ 28720) \quad (0.5)$$

$$\mathbf{Q}^2(W^-) = 157,338.551\ 8591929 = \frac{80{,}400.000\ 000\ 0476}{0.511} = \frac{M(W^-)}{0.511} \quad (0.6)$$

$$\mathbf{Q}(W^+) = (-159.932\ 883\ 14360,\ -161.932\ 883\ 14360,\ +324.865\ 766\ 28720) \quad (0.7)$$

$$\mathbf{Q}^2(W^+) = 157,338.551\ 859\ 1929 = \frac{80{,}400.000\ 000\ 0476}{0.511,} = \frac{M(W^+)}{0.511} \quad (0.8)$$

• Boson Ground States for massless photon, gluon, $B = \gamma, g$:

$$\mathbf{Q}(\gamma, g) = (0.000\ 000\ 0000,\ 0.000\ 000\ 0000,\ 0.000\ 000\ 0000) \quad (0.9)$$

$$\mathbf{Q}^2(\gamma, g) = 0.000\ 000\ 0000 = \frac{0.000\ 000\ 0000}{0.511,} = \frac{M(\gamma,g)}{0.511} \quad (0.10)$$

The above six formulas $\mathbf{Q}^2$ (0.2) (0.4) (0.6) (0.8) (0.10) will help us to use ScalarProduct-Mass Equation (00.4) (0.11) to calculate the mass $M(B)$ of the above six boson particle $\omega = B$

$$\mathbf{Q}^2(\gamma^{\mathrm{Q}}, \xi) - \boldsymbol{\xi}^2(\omega = B) = \underline{\mathbf{Q}^2(\omega = B)} = \frac{M(\omega = B)}{M(e^-)} \quad (0.11)$$

Later we will see the formulas $\mathbf{Q}^2$ (0.2) (0.4) (0.6) (0.8) (0.10) are just formulas (A.13) (A.12) (B.17) (B.18) (C.9) (C.36).

Table X Unified Mass Theory of Elementary Fermion and Elementary Boson

Boson γ^{Q}	**Fermion**	**Fermion**	**Fermion**	**Boson**	$Q(\omega)$
	1st	2nd	3rd	Force Carriers	Charge
$\gamma^{\frac{+2}{3}}$	u	c	t		$+\frac{2}{3}e$
$(\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi),\ \xi(\delta(0)))$	$(\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi),\ \xi(u))$	$(\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi),\ \xi(c))$	$(\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi),\ \xi(t))$		
$\gamma^{\frac{-2}{3}}$	$\tilde{u}$	$\tilde{c}$	$\tilde{t}$		$-\frac{2}{3}e$
$(\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi),\ \xi(\bar{\delta}(0)))$	$(\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi),\ \xi(\tilde{u}))$	$(\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi),\ \xi(\tilde{c}))$	$\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi),\ \xi(\tilde{t}))$		
$\gamma^{\frac{-1}{3}}$	d	s	b		$-\frac{1}{3}e$
$(\mathbf{Q}(\gamma^{\frac{-1}{3}},\xi),\ \xi(\gamma(0))$	$(\gamma^{\frac{-1}{3}},\xi),\ \xi(d))$	$(\gamma^{\frac{-1}{3}},\xi),\ \xi(s))$	$(\mathbf{Q}(\gamma^{\frac{-1}{3}},\xi),\ \xi(b))$		
$\gamma^{\frac{+1}{3}}$	$\tilde{d}$	$\tilde{s}$	$\tilde{b}$		$+\frac{1}{3}e$
$(\mathbf{Q}(\gamma^{\frac{+1}{3}},\ \xi(\tilde{\gamma}(0))$	$(\mathbf{Q}(\gamma^{\frac{+1}{3}},\xi),\ \xi(\tilde{d}))$	$(\mathbf{Q}(\gamma^{\frac{+1}{3}},\xi),\ \xi(\tilde{s}))$	$(\mathbf{Q}(\gamma^{\frac{+1}{3}},\xi),\ \xi(\tilde{b}))$		
γ^{-}	e	μ	τ		$-e$
$(\mathbf{Q}(\gamma^{-},\xi),\ \xi(\gamma^{-}))$	$(\mathbf{Q}(\gamma^{-},\xi),\ \xi(e^{-}))$	$(\mathbf{Q}(\gamma^{-},\xi),\ \xi(\mu^{-}))$	$(\mathbf{Q}(\gamma^{-},\xi),\ \xi(\tau^{-}))$	$(\mathbf{Q}(\gamma^{-},\xi),\ \xi(W^{-}))$	
γ^{+}	$\tilde{e}$	$\tilde{\mu}$	$\tilde{\tau}$		$+e$
$(\mathbf{Q}(\gamma^{+},\xi),\ \xi(\gamma^{+}))$	$(\mathbf{Q}(\gamma^{+},\xi),\ \xi(e^{+}))$	$(\mathbf{Q}(\gamma^{+},\xi),\ \xi(\mu^{+}))$	$(\mathbf{Q}(\gamma^{+},\xi),\ \xi(\tau^{+}))$	$(\mathbf{Q}(\gamma^{+},\xi),\ \xi(W^{+}))$	
γ^{0}	υ_e	υ_μ	υ_τ		$0e$
$(\mathbf{Q}(\gamma^{0},\xi),\ \xi(\gamma^{0}))$	$(\mathbf{Q}(\gamma^{0},\xi),\ \xi(\upsilon_e))$	$(\mathbf{Q}(\gamma^{0},\xi),\ \xi(\upsilon_\mu))$	$(\mathbf{Q}(\gamma^{0},\xi),\ \xi(\upsilon_\tau))$	$(\mathbf{Q}(\gamma^{0},\xi),\ \xi(Z,H;\gamma,g))$	
γ^{0}	$\tilde{\upsilon}_e$	$\tilde{\upsilon}_\mu$	$\tilde{\upsilon}_\tau$		$0e$
$(\mathbf{Q}(\tilde{\gamma}^{0},\xi),\ \xi(\gamma^{0}))$	$(\mathbf{Q}(\tilde{\gamma}^{0},\xi),\ \xi(\tilde{\upsilon}_e))$	$(\mathbf{Q}(\tilde{\gamma}^{0},\xi),\ \xi(\tilde{\upsilon}_\mu))$	$(\mathbf{Q}(\tilde{\gamma}^{0},\xi),\ \xi(\tilde{\upsilon}_\tau))$	$(\mathbf{Q}(\tilde{\gamma}^{0},\xi),\ \xi(Z,H;\gamma,g))$	
ZeroMass	Non-Zero-Mass	Non-Zero-Mass	Non-Zero-Mass		

Table2 Photon Generation $\mathbf{Q}(\gamma^{Q}, \xi)$ and Mass Function MF $\xi(\omega)$ of Elementary Fermion and Elementary Boson

Photon Generation $\mathbf{Q}(\gamma^{Q}, \xi)$	MF $\xi(\gamma^{Q})$	MF $\xi(F)$ Fermion 1st	MF $\xi(F)$ Fermion 2nd	MF $\xi(F)$ Fermion 3rd	MF $\xi(B)$ Force Carriers	Charge $Q(\omega)$
	$\gamma^{\frac{+2}{3}}$	u	c	t		$+\frac{2}{3}e$
$\mathbf{Q}(\gamma^{\frac{+2}{3}}, \xi)$	$\xi(\gamma^{\frac{+2}{3}})$	$\xi(u)$	$\xi(c)$	$\xi(t)$		
	$\gamma^{\frac{-2}{3}}$	$\tilde{\mathrm{u}}$	$\tilde{\mathrm{c}}$	$\tilde{\mathrm{t}}$		$-\frac{2}{3}e$
$\mathbf{Q}(\gamma^{\frac{-2}{3}}, \xi)$	$\xi(\gamma^{\frac{-2}{3}})$	$\xi(\tilde{u})$	$\xi(\tilde{c})$	$\xi(\tilde{t})$		
	$\gamma^{\frac{-1}{3}}$	d	s	b		$-\frac{1}{3}e$
$\mathbf{Q}(\gamma^{\frac{-1}{3}}, \xi)$	$\xi(\gamma^{\frac{-1}{3}})$	$\xi(d)$	$\xi(s)$	$\xi(b)$		
	$\gamma^{\frac{+1}{3}}$	$\tilde{\mathrm{d}}$	$\tilde{\mathrm{s}}$	$\tilde{\mathrm{b}}$		$+\frac{1}{3}e$
$\mathbf{Q}(\gamma^{\frac{+1}{3}}, \xi)$	$\xi(\gamma^{\frac{+1}{3}})$	$\xi(\tilde{d})$	$\xi(\tilde{s})$	$\xi(\tilde{b})$		
	γ^{-}	e	μ	τ		$-e$
$\mathbf{Q}(\gamma^{-}, \xi)$	$\xi(\gamma^{-})$	$\xi(e^{-})$	$\xi(\mu^{-})$	$\xi(\tau^{-})$	$\xi(W^{-})$	
	γ^{+}	$\tilde{\mathrm{e}}$	$\tilde{\mu}$	$\tilde{\tau}$		$+e$
$\mathbf{Q}(\gamma^{+}, \xi)$	$\xi(\gamma^{+})$	$\xi(e^{+})$	$\xi(\mu^{+})$	$\xi(\tau^{+})$	$\xi(W^{+})$	
	γ^{0}	υe	υμ	υτ		$0e$
$\mathbf{Q}(\gamma^{0}, \xi)$	$\xi(\gamma^{0})$	$\xi(\upsilon_e)$	$\xi(\upsilon_\mu)$	$\xi(\upsilon_\tau)$	$\xi(Z, H; \gamma, g)$	
	γ^{0}	$\tilde{\upsilon}$e	$\tilde{\upsilon}$μ	$\tilde{\upsilon}$τ		$0e$
$\mathbf{Q}(\tilde{\gamma}^{0}, \xi)$	$\xi(\gamma^{0})$	$\xi(\tilde{\upsilon}_e)$	$\xi(\tilde{\upsilon}_\mu)$	$\xi(\tilde{\upsilon}_\tau)$	$\xi(Z, H; \gamma, g)$	
	ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass		

2. Part A: Unifed Mass Theory of Two Neutral Mass Bosons B = H, Z B = H, Z

♦ Detailed values of $\mathbf{Q}(\gamma^0, \xi)$ of particles $B = Z, H$ bwlow

• **0** $\mathbf{Q}(\gamma^0, \xi) = (+236.539\ 654\ 85315, \quad +238.539\ 654\ 85315, \quad -475.079\ 309\ 70630)$ (A.1)

• **0** $\mathbf{Q}(\tilde{\gamma}^0, \xi) = (+238.539\ 654\ 85315, \quad +236.539\ 654\ 85315 \quad -475.079\ 309\ 70630)$ (A.2)

The charges of particles $B = Z, H$ are zero

$$Q = \tfrac{1}{3}(236.53965485315 + 238.53965485315 - 475.07930970630) = 0 \quad \text{(A.3)}$$

$$Q = \tfrac{1}{3}(238.53965485315 + 236.53965485315 - 475.07930970630) = 0 \quad \text{(A.4)}$$

AND below

♦ Detailed values of mass function $\xi(B)$ of particles $B = Z, H$ below

• **1** $\xi(Z) = (+163.339\ 597\ 441044, \quad +163.339\ 597\ 441044, \quad -326.679\ 194\ 882088)$ (A.5)

• **2** $\xi(H) = (+125.122\ 693\ 427295, \quad +125.122\ 693\ 427295, \quad -250.245\ 386\ 854590)$ (A.6)

• **1** $\xi(Z) = 163.339\ 597\ 441044\ (+1, \quad +1, \quad -2) = 163.339\ 597\ 441044\ \xi_0$ (A.7)

• **2** $\xi(H) = 125.122\ 693\ 427295\ (+1, \quad +1, \quad -2) = 125.122\ 693\ 427295\ \xi_0$ (A.8)

Where ξ_0 called as Color-Unit Constant that is a three dimensional colore vector, with which $\xi(\omega)$ could be limpid. see following

$$\xi_0 = (+1, \quad +1, \quad -2) \quad \text{(00.6)}$$

$$\xi_0^2 = 6 \quad \text{(00.7)}$$

Expressions of the color scalar products of the above **0**, **1**, **2** are given below

- **0** $\mathbf{Q}^2(\gamma^0,\xi) = \mathbf{Q}^2(\tilde{\gamma}^0,\xi) = 338,552.525\ 766\ 5218$ (A.9)
- **1** $\xi^2(Z) = 160,078.\ 944\ 553\ 2138$ (A.10)
- **2** $\xi^2(H) = 93,934.\ 130\ 463\ 0052$ (A.11)

Finally using ScalarProduct-Mass Equation (0.11)**:** The masses of two neutral bosons Z, H are obtained by using a common color scalar product $\mathbf{Q}^2(\gamma^0,\xi)$ of photon generation of particle γ^0 and color scalar product $\xi^2(Z), \xi^2(H)$ of mass function $\xi(Z), \xi(H)$ of particles Z, H

- **1** $\mathbf{Q}^2(\gamma^0,\xi) - \xi^2(Z) =$

$$= 338,552.\ 525\ 766\ 5218 - 160,078.\ 944\ 553\ 2146 = 178,473.581\ 213\ 3072 = \frac{91,200.\ 000\ 000\ 0000}{0.511} = \frac{M(Z)}{M(e^-)}$$

$$= 338,552.\ 525\ 766\ 5218 - 160,078.\ 944\ 553\ 2138 = 178,473.581\ 213\ 3080 = \frac{91,200.\ 000\ 000\ 0004}{0.511} \quad \text{(A.12)}$$

- **2** $\mathbf{Q}^2(\gamma^0,\xi) - \xi^2(H)$

$$= 338,552.\ 525\ 766\ 5218 - 93,934.\ 130\ 463\ 1950 = 244,618.\ 395\ 303\ 3268 = \frac{125,000.000\ 000\ 0000}{0.511} = \frac{M(H)}{M(e^-)}$$

$$= 338,552.\ 525\ 766\ 5218 - 93,934.\ 130\ 463\ 0052 = 244,618.\ 395\ 303\ 5166 = \frac{125,000.000\ 000\ 0097}{0.511} \quad \text{(A.13)}$$

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3. Part B: Unifed Mass Theory of Two Charged Mass Bosons B = W $^{-}, W^{+}$ $B = W-, W+$

- Detailed values of photon generation $\mathbf{Q}(\gamma^{-}, \xi)$ $\mathbf{Q}(\gamma^{+}, \xi)$ of particle γ^{-} and anti-particle γ^{+}

- **0** $\mathbf{Q}(\gamma^{-}, \xi) = (+236.539\ 654\ 85315, \quad +238.539\ 654\ 85315, \quad -478.079\ 309\ 70630)$ (B.1)

- **0** $\mathbf{Q}(\gamma^{+}, \xi) = (+238.539\ 654\ 85315, \quad +236.539\ 654\ 85315 \quad -472.079\ 309\ 70630)$ (B.2)

The charges of particles $B = W^{-}, W^{+}$

$$Q(W^{-}) = \tfrac{1}{3}(236.53965485315 + 238.53965485315 - 478.07930970630) = -e \quad \text{(B.3)}$$

$$Q(W^{+}) = \tfrac{1}{3}(238.53965485315 + 236.53965485315 - 472.07930970630) = +e \quad \text{(B.4)}$$

And the color scalar products of (B.1) (B.2) are below

- **0** $\mathbf{Q}^{2}(\gamma^{-}, \xi) = 341,412.001\ 624\ 7596$ (B.5)

- **0** $\mathbf{Q}^{2}(\gamma^{+}, \xi) = 335,711.049\ 908\ 2840$ (B.6)

Because of requirement of final results (B.7) (B.8) below, Then having color scalar products (B.9) (B.10)

- **1** $\mathbf{Q}^{2}(\gamma^{-}, \xi) - \xi^{2}(W^{-}) =$

$$= 341,412.\ 001\ 624\ 7596 \quad - \quad 184,073.\ 449\ 765\ 6598 \quad = 157,338.551\ 859\ 0998 = \frac{80{,}400.000\ 000\ 0000}{0.511} \quad \text{(B.7)}$$

- **1** $\mathbf{Q}^{2}(\gamma^{+}, \xi) - \xi^{2}(W^{+}) =$

$$= 335,711.049\ 908\ 2840 \quad - \quad 178,372.\ 498\ 049\ 1842 \quad = 157,338.551\ 859\ 0998 = \frac{80{,}400.000\ 000\ 0000}{0.511} \quad \text{(B.8)}$$

OR

$$\xi^2(W^-) = 184,073.\ 449\ 765\ 6598 \qquad (B.9)$$

$$\xi^2(W^+) = 178,372.\ 498\ 049\ 1842 \qquad (B.10)$$

FURTHER, Discompose color scalar products (B.9) and (B.10) into their mass function (B.11) (B.13) and (B.12) B.14) below

- **1** $\xi(W^-) = (\ +175.153\ 955\ 97667,\ +175.153\ 955\ 97667,\ -350.307\ 911\ 95334\ )$ (B.11)
- **2** $\xi(W^+) = (\ +172.420\ 270\ 48716,\ +172.420\ 270\ 48716,\ -344.840\ 540\ 97432\ )$ (B.12)

OR

- **1** $\xi(W^-) = 175.153\ 955\ 97667\ (\ +1,\ +1,\ -2\ ) = 175.153\ 955\ 97667\ \xi_0$ (B.13)
- **2** $\xi(W^+) = 172.420\ 270\ 48716\ (\ +1,\ +1,\ -2\ ) = 172.420\ 270\ 48716\ \xi_0$ (B.14)

NOW USING (B.13) and (B.14), obtain (B.15) and (B.16); Finally the masses (B.17) and (B.18) of charged bosons W^- and W^+ are given

$$\xi^2(W^-) = 184,073.\ 449\ 765\ 6635 \qquad (B.15)$$

$$\xi^2(W^+) = 178,372.\ 498\ 049\ 1924 \qquad (B.16)$$

- **1** $\mathbf{Q}^2(\gamma^-,\xi) - \xi^2(W^-) =$

  $= 341,412.\ 001\ 624\ 7596 - 184,073.\ 449\ 765\ 6635 = 157,338.551\ 859\ 0961 = \dfrac{80{,}399.999\ 999\ 9981}{0.511} = \dfrac{M(W^-)}{M(e^-)}$ (B.17)
- **2** $\mathbf{Q}^2(\gamma^+,\xi) - \xi^2(W^+) =$

  $= 335,711.049\ 908\ 2840 - 178,372.\ 498\ 049\ 1924 = 157,338.551\ 859\ 0916 = \dfrac{80{,}399.999\ 999\ 9958}{0.511} = \dfrac{M(W^+)}{M(e^-)}$ (B.18)

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4. Part C: Unifed Mass Theory of Two Neutral Massless Bosons B = gamma, gluon

Both Boson photon γ and Boson gluon g are massless particles. Photon γ is mediating particle in electromagnetic interation, And gluon g in strong interaction.

♦ Detailed values of photon generation of particles $B = \gamma, g$ bwlow

• **0** $\mathbf{Q}(\gamma^0, \xi) = (\ +236.539\ 654\ 85315,\ \ +238.539\ 654\ 85315,\ \ -475.079\ 309\ 70630\ )$ (C.1) (A.1)

• **0** $\mathbf{Q}(\tilde{\gamma}^0, \xi) = (\ +238.539\ 654\ 85315,\ \ +236.539\ 654\ 85315\ \ -475.079\ 309\ 70630\ )$ (C.2) (A.2)

♦ Next two paragraphs search for detailed values of mass function of particles $B = \gamma, g$ respectively

FIRST discuss mass function $\xi(\gamma)$ of photon $B = \gamma$ following:

The color representation of mass function of photon is given below

■ γ $\xi(\gamma) = (\ +237.540\ 356\ 489349,\ \ +237.540\ 356\ 489349,\ \ -475.080\ 712\ 978698\ )$ (C.3)

$= \kappa\,(\ +1,\ \ +1,\ \ -2\ ) = \kappa\,\xi_0$ (C.4)

Where

$\kappa = 237.540\ 356\ 489349$ (C.5)

From (C.4), having

$\xi^2(\gamma) = 338,552.525\ 766\ 5220$ (C.6)

Further the expressions of the color scalar products of photon generation and mass function of photon γ are given below

$$\mathbf{Q}^2(\gamma^0, \xi) = \mathbf{Q}^2(\tilde{\gamma}^0, \xi) = 338,552.525\ 766\ 5218 \qquad \text{(C.7)}$$

$$\boldsymbol{\xi}^2(\gamma) = 338,552.525\ 766\ 5220 \qquad \text{(C.8)}$$

Last making subtraction, using ScalarProduct-Mass Equation:

$$\left| \mathbf{Q}^2(\gamma^0, \xi) - \boldsymbol{\xi}^2(\gamma) \right| =$$

$$= \left| 338,552.5257665218 - 338,552.5257665220 \right| = 0.000\ 000\ 0002 = \frac{0.000\ 000\ 0001}{0.511} = \frac{M(\gamma)}{0.511} \approx 0 \qquad \text{(C.9)}$$

(C.9) shows from photon generation (C.1) and mass function (C.4), we could obtain mass of photon γ

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SECOND discuss mass function $\boldsymbol{\xi}(g)$ of gluons $B = g$ following:

In contrast with photon γ, the pictures of color representation of mass function $\boldsymbol{\xi}(g)$ of gluon is rough to be revealed.

Because of: The gluons are consindered as the mediating particles in strong interaction, which both carry color charge and anti-color charge simultaneously. So a gluon actually is a mixture of element color and element anti-color. There are six colored gluons $\mathrm{R\tilde{G}, G\tilde{B}, B\tilde{R}}$ & $\mathrm{G\tilde{R}, B\tilde{G}, R\tilde{B}}$ and two color neutral gluons $\mathrm{R\tilde{R}, G\tilde{G}}$ (see following).

In the expedition to explore the color representations of twelve elementary fermions and six elementary bosons, the color representations of photon and gluon are the rather life of hardship, we could even not write down " the real ground states of photon and gluon " But the trivial ground state, $\mathbf{Q}(\gamma) = \mathbf{Q}(g) = (0.0000000000,\ 0.0000000000,\ 0.0000000000)$!! (see: (0.9)).

■ The way to the mass function of gluons $B = g$ following:

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THEN six mass function states of colored gluons

- $R\tilde{G}$ $\xi(gR\tilde{G}) = \sqrt{3}\,\kappa\,(\ +1,\ -1,\ 0\ )$ (C.10)
- $G\tilde{B}$ $\xi(gG\tilde{B}) = \sqrt{3}\,\kappa\,(\ 0,\ +1,\ -1\ )$ (C.11)
- $B\tilde{R}$ $\xi(gB\tilde{R}) = \sqrt{3}\,\kappa\,(\ -1,\ 0,\ +1\ )$ (C.12)
- $G\tilde{R}$ $\xi(gG\tilde{R}) = \sqrt{3}\,\kappa\,(\ -1,\ +1,\ 0\ )$ (C.13)
- $B\tilde{G}$ $\xi(gB\tilde{G}) = \sqrt{3}\,\kappa\,(\ 0,\ -1,\ +1\ )$ (C.14)
- $R\tilde{B}$ $\xi(gR\tilde{B}) = \sqrt{3}\,\kappa\,(\ +1,\ 0,\ -1\ )$ (C.15)

AND three mass function states of color neutral gluons

- $R\tilde{R}$ $\xi(gR\tilde{R}) = \kappa\,(\ +2,\ -1,\ -1\ )$ (C.16)
- $G\tilde{G}$ $\xi(gG\tilde{G}) = \kappa\,(\ -1,\ +2,\ -1\ )$ (C.17)
- $B\tilde{B}$ $\xi(gB\tilde{B}) = \kappa\,(\ -1,\ -1,\ +2\ )$ (C.18)

Due to the color representation of mass function of photon is given by (C,4), and compare it with (C.18)

- γ $\xi(\gamma) = \kappa\,(\ +1,\ +1,\ -2\ ) = +\kappa\,\xi_0$ (C.4)
- $B\tilde{B}$ $\xi(gB\tilde{B}) = \kappa\,(\ -1,\ -1,\ +2\ ) = -\kappa\,\xi_0$ (C.18)

Having

$$\xi(gB\tilde{B}) = -\,\xi(\gamma) \qquad \text{(C.19)}$$

Last, (C.16) and (C.17) are chosen as two color neutral candidates of eight color states of boson gluon g

■ $R\widetilde{R}$ $\xi(gR\widetilde{R}) = \kappa\,(\;\; +2, \;\; -1, \;\; -1 \;\;)$ (C.16)

■ $G\widetilde{G}$ $\xi(gG\widetilde{G}) = \kappa\,(\;\; -1, \;\; +2, \;\; -1 \;\;)$ (C.17)

Because **of** the color scalar products of the eight color states of boson gluon g possess the same math value below

$$\xi^2(g) \equiv \xi^2(gR\widetilde{G}) = \xi^2(gG\widetilde{B}) = \xi^2(gB\widetilde{R}) = \xi^2(gG\widetilde{R}) = \xi^2(gB\widetilde{G}) = \xi^2(gR\widetilde{B}) = \xi^2(gR\widetilde{R}) = \xi^2(gG\widetilde{G}) \qquad (C.20)$$

$$= 6\,\kappa^2 = 338,552.525\ 766\ 5220 \qquad (C.21)$$

Where $\kappa = 237.540\ 356\ 489349$ (C.5)

Then making subtraction, using ScalarProduct-Mass Equation:

$$\left|\ \mathbf{Q}^2(\gamma^0, \xi) - \xi^2(g)\ \right| =$$

$$= \left|\ 338,552.5257665218 - 338,552.5257665220\ \right| = 0.000\ 000\ 0002 = \frac{0.000\ 000\ 0001}{0.511} = \frac{M(g)}{0.511} \approx 0 \qquad (C.22)$$

(C.22) shows from photon generation (C.1) and the eight color states ((C.10), (C.11), ... , (C.16), (C.17)) , we could obtain mass of gluon g

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5. Photon Generation Charge $\mathbf{Q}(\gamma^{Q}, \xi)$ and Particle Mass Function $\xi(\omega)$ of Table X

♦ Photon Generation Charge $\mathbf{Q}(\gamma^{Q}, \xi)$: In Part A & Part C, neutral particles H, Z & γ, g are related to charges $\mathbf{Q}(\gamma^{0e}, \xi)$ & $\mathbf{Q}(\tilde{\gamma}^{0e}, \xi)$ AND In Part B charged particles W^{-}, W^{+} related to charges $\mathbf{Q}(\gamma^{-e}, \xi)$ and $\mathbf{Q}(\gamma^{+e}, \xi)$ shown in **Table Y** below

♦ Particle Mass Function $\xi(\omega)$: H, Z & γ, g and W^{-}, W^{+} are listed in **Table3** below

For Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{+2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{-1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{-e}, \xi) \\ \mathbf{Q}(\gamma^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+236.53965485315, & +238.53965485315, & -473.07930970630) \\ (+236.53965485315, & +238.53965485315, & -476.07930970630) \\ (+236.53965485315, & +238.53965485315, & -478.07930970630) \\ (+236.53965485315, & +238.53965485315, & -475.07930970630) \end{bmatrix}$ (1.1)

Table 0 photon generation **Table Y1** values of photon generation (**Critical PG**)

For Anti-Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{-2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{+1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{+e}, \xi) \\ \mathbf{Q}(\tilde{\gamma}^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+238.53965485315, & +236.53965485315, & -477.07930970630) \\ (+238.53965485315, & +236.53965485315, & -474.07930970630) \\ (+238.53965485315, & +236.53965485315, & -472.07930970630) \\ (+238.53965485315, & +236.53965485315, & -475.07930970630) \end{bmatrix}$ (1.2)

Table 0 photon generation **Table Y1** values of photon generation (**Critical PG**)

Table3 Critical PG and **Mass Function MF** $\xi(\omega)$ **values** of Elementary Fermion and Elementary Boson (Color-Unit Constant ξ_0)

$\mathbf{Q}(\gamma^{Q},\xi)$	Photon	**Fermion**	**Fermion**	**Fermion**	**Boson**	**Boson**	**Boson**
	Generation	1st	2nd	3rd	Force Carriers	Force Carriers	Force Carriers
$\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi)$	$\xi(\gamma^{\frac{+2}{3}})$	$\xi(u)$	$\xi(c)$	$\xi(t)$			
	236. 890997571510	236. 889414215465	236. 008183479106	0. 0000000000			
$\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi)$	$\xi(\gamma^{\frac{-2}{3}})$	$\xi(\tilde{u})$	$\xi(\tilde{c})$	$\xi(\tilde{t})$			
	238. 224230106917	238. 222655612254	237. 346375048611	18. 040896875322			
$\mathbf{Q}(\gamma^{\frac{-1}{3}},\xi)$	$\xi(\gamma^{\frac{-1}{3}})$	$\xi(d)$	$\xi(s)$	$\xi(b)$			
	237. 873805614775	237. 870514860345	237. 808667632002	234. 629506784110			
$\mathbf{Q}(\gamma^{\frac{+1}{3}},\xi)$	$\xi(\gamma^{\frac{+1}{3}})$	$\xi(\tilde{d})$	$\xi(\tilde{s})$	$\xi(\tilde{b})$			
	237. 207141245477	237. 203841242341	237. 141820143797	233. 953597779454			
$\mathbf{Q}(\gamma^{-},\xi)$	$\xi(\gamma^{-})$	$\xi(e^{-})$	$\xi(\mu^{-})$	$\xi(\tau^{-})$		$\xi(W^{-})$	
	238. 541401586377	238. 541052240755	238. 469128788085	237. 323445434400		175. 15395597667	
$\mathbf{Q}(\gamma^{+},\xi)$	$\xi(\gamma^{+})$	$\xi(e^{+})$	$\xi(\mu^{+})$	$\xi(\tau^{+})$		$\xi(W^{+})$	
	236. 541416355320	236. 541064055935	236. 468532294544	235. 313108715690		172. 42027048716	
$\mathbf{Q}(\gamma^{0},\xi)$	$\xi(\gamma^{0})$	$\xi(\upsilon_e)$♣	$\xi(\upsilon_\mu)$	$\xi(\upsilon_\tau)$	$\xi(\gamma)^{*}$	$\xi(Z)$	$\xi(H)$
	237. 540356489349	237. 540356487976	237. 540226048334	237. 527861287950	237. 540356489349	163.339 597441044	125.122693427295
$\mathbf{Q}(\tilde{\gamma}^{0},\xi)$	$\xi(\tilde{\gamma}^{0})$	$\xi(\tilde{\upsilon}_e)$♣	$\xi(\tilde{\upsilon}_\mu)$	$\xi(\tilde{\upsilon}_\tau)$	$\xi(g)^{✠✠✠}$	$\xi(Z)$	$\xi(H)$
	237. 540356489349	237. 540356487976	237. 540226048334	237. 527861287950	✠✠✠	163.339 597441044	125.122693427295
	ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass	ZeroMass	Non-ZeroMass	Non-ZeroMass

Next, the detailed examples ($\xi(\upsilon_e)$♣ $\xi(\tilde{\upsilon}_e)$♣ and $\xi(\gamma)^{*}$ $\xi(g)^{✠✠✠}$) of characteristic vlues of Function-$\xi(\omega)$ are given

$\xi(\upsilon_e)^{♣}$	$\xi(\gamma)^{*}$
237. 540356487976	237. 540356489349
$\xi(\widetilde{\upsilon}_e)^{♣}$	$\xi(g)^{✠✠✠}$
237. 540356487976	✠✠✠

(1.3)

⇓ ⇓

$$\xi(\upsilon_e)^{♣} = \xi(\widetilde{\upsilon}_e)^{♣} = (+237.540\ 356\ 487976,\ +237.540\ 356\ 487976,\ -475.080\ 712\ 975952)$$

$$\xi(\gamma)^{*} = (+237.540\ 356\ 489349,\ +237.540\ 356\ 489349,\ -475.080\ 712\ 978698)$$

$$\xi(g)^{✠✠✠} = \xi(g\mathrm{R}\widetilde{\mathrm{R}}) = (+475.080\ 712\ 978698,\ -237.540\ 356\ 489349,\ -237.540\ 356\ 489349)$$

$$\xi(g\mathrm{G}\widetilde{\mathrm{G}}) = (-237.540\ 356\ 489349,\ +475.080\ 712\ 978698,\ -237.540\ 356\ 489349)$$

$$\xi(g\mathrm{R}\widetilde{\mathrm{G}}) = \sqrt{3}\ (+237.540\ 356\ 489349,\ -237.540\ 356\ 489349,\ 0.000\ 000\ 000000)$$

$$\xi(g\mathrm{G}\widetilde{\mathrm{B}}) = \sqrt{3}\ (0.000\ 000\ 000000,\ +237.540\ 356\ 489349,\ -237.540\ 356\ 489349)$$

$$\xi(g\mathrm{B}\widetilde{\mathrm{R}}) = \sqrt{3}\ (-237.540\ 356\ 489349,\ 0.000\ 000\ 000000,\ +237.540\ 356\ 489349)$$

$$\xi(g\mathrm{G}\widetilde{\mathrm{R}}) = \sqrt{3}\ (-237.540\ 356\ 489349,\ +237.540\ 356\ 489349,\ 0.000\ 000\ 000000)$$

$$\xi(g\mathrm{B}\widetilde{\mathrm{G}}) = \sqrt{3}\ (0.000\ 000\ 000000,\ -237.540\ 356\ 489349,\ +237.540\ 356\ 489349)$$

$$\xi(g\mathrm{R}\widetilde{\mathrm{B}}) = \sqrt{3}\ (+237.540\ 356\ 489349,\ 0.000\ 000\ 000000,\ -237.540\ 356\ 489349)$$

$$\xi(\upsilon_e)^{2♣} = \xi(\widetilde{\upsilon}_e)^{2♣} = 338,552.525\ 762\ 6079$$ (1.11) [1]

$$\xi(\gamma)^{2*} = \xi(g)^{2✠✠✠} = 338,552.525\ 766\ 5220$$ (C.6) (C.21)

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Next $\mathbf{Q}(\gamma^{Q}, \xi)$–Running: increasing the values of $\mathbf{Q}(\gamma^{Q}, \xi)$ from Critical PG, (1.1) and (1.2) to (2.1) and (2.2) below

For Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{+2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{-1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{-e}, \xi) \\ \mathbf{Q}(\gamma^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+475.07930970630, & +475.07930970630, & -948.15861941260) \\ (+475.07930970630, & +475.07930970630, & -951.15861941260) \\ (+475.07930970630, & +475.07930970630, & -953.15861941260) \\ (+475.07930970630, & +475.07930970630, & -950.15861941260) \end{bmatrix}$ (2.1)

Table 0 photon generation **Table Y2** values of photon generation (**Running PG**)

For Anti-Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{-2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{+1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{+e}, \xi) \\ \mathbf{Q}(\tilde{\gamma}^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+475.07930970630, & +475.07930970630, & -952.15861941260) \\ (+475.07930970630, & +475.07930970630, & -949.15861941260) \\ (+475.07930970630, & +475.07930970630, & -947.15861941260) \\ (+475.07930970630, & +475.07930970630, & -950.15861941260) \end{bmatrix}$ (2.2)

Table 0 photon generation **Table Y2** values of photon generation (**Running PG**)

SUBSEQUENTLY, Table Y2 instead of **Table Y1, Table4** instead of **Table3. see below**

Table4 **Q**(γ^{Q}, ξ)–Running and Mass Function MF $\xi(\omega)$ values of Elementary Fermion and Elementary Boson (Color-Unit Constant ξ_0)

Q(γ^{Q}, ξ)	Photon	**Fermion**	**Fermion**	**Fermion**	**Boson**	**Boson**	**Boson**
	Generation	1st	2nd	3rd	Force Carriers	Force Carriers	Force Carriers
Q($\gamma^{\frac{+2}{3}}$,ξ)	$\xi(\gamma^{\frac{+2}{3}})$	$\xi(u)$	$\xi(c)$	$\xi(t)$			
	474.412877247312	474.412086624059	473.972674356608	410.660770281391			
Q($\gamma^{\frac{-2}{3}}$,ξ)	$\xi(\gamma^{\frac{-2}{3}})$	$\xi(\widetilde{u})$	$\xi(\widetilde{c})$	$\xi(\widetilde{t})$			
	475.746209924251	475.745421516814	475.307241893043	412.200371672955			
Q($\gamma^{\frac{-1}{3}}$,ξ)	$\xi(\gamma^{\frac{-1}{3}})$	$\xi(d)$	$\xi(s)$	$\xi(b)$			
	475.412701468404	475.411054940622	475.380112878891	473.797736142317			
Q($\gamma^{\frac{+1}{3}}$,ξ)	$\xi(\gamma^{\frac{+1}{3}})$	$\xi(\widetilde{d})$	$\xi(\widetilde{s})$	$\xi(\widetilde{b})$			
	474.746034883786	474.744386043845	474.713400528296	473.128793981064			
Q(γ^{-},ξ)	$\xi(\gamma^{-})$	$\xi(e^{-})$	$\xi(\mu^{-})$	$\xi(\tau^{-})$		$\xi(W^{-})$	
	476.079834828600	476.079659787898	476.043626408948	475.470742120363		447.692882625925	
Q(γ^{+},ξ)	$\xi(\gamma^{+})$	$\xi(e^{+})$	$\xi(\mu^{+})$	$\xi(\tau^{+})$		$\xi(W^{+})$	
	474.079837043933	474.079661264787	474.043475860345	473.468171447314		445.565483307544	
Q(γ^{0},ξ)	$\xi(\gamma^{0})$	$\xi(\upsilon_e)$♣	$\xi(\upsilon_\mu)$	$\xi(\upsilon_\tau)$	$\xi(\gamma)^{*}$	$\xi(Z)$	$\xi(H)$
	475.079309706300	475.079309705614	475.079244485613	475.073062210388	475.079309706300	442.667768921716	430.035600805864
Q($\widetilde{\gamma}^{0}$,ξ)	$\xi(\widetilde{\gamma}^{0})$	$\xi(\widetilde{\upsilon}_e)$♣	$\xi(\widetilde{\upsilon}_\mu)$	$\xi(\widetilde{\upsilon}_\tau)$	$\xi(g)$✠✠✠	$\xi(Z)$	$\xi(H)$
	475.079309706300	475.079309705614	475.079244485613	475.073062210388	✠✠✠	442.667768921716	430.035600805864
	ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass	ZeroMass	Non-ZeroMass	Non-ZeroMass

Q(γ^{Q}, ξ)–Running increasing continuously following

For Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{+2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{-1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{-e}, \xi) \\ \mathbf{Q}(\gamma^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+950.15861941260, & +950.15861941260, & -1898.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1901.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1903.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1900.3172388252) \end{bmatrix}$ (3.1)

Table 0 photon generation **Table Y3** values of photo generation (**Running PG**)

For Anti-Particle: $\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{-2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{+1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{+e}, \xi) \\ \mathbf{Q}(\widetilde{\gamma}^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+950.15861941260, & +950.15861941260, & -1902.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1899.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1897.3172388252) \\ (+950.15861941260, & +950.15861941260, & -1900.3172388252) \end{bmatrix}$ (3.2)

Table 0 photon generation **Table Y3** values of photon generation (**Running PG**)

SUBSEQUENTLY, Table Y3 instead of **Table Y2, Table5** instead of **Table4. see below**

Table5 $\mathbf{Q}(\gamma^{Q}, \xi)$–Running and Mass Function MF $\xi(\omega)$ values of Elementary Fermion and Elementary Boson (Color-Unit Constant ξ_0)

$\mathbf{Q}(\gamma^{Q}, \xi)$	Photon	**Fermion**	**Fermion**	**Fermion**	**Boson**	**Boson**	**Boson**
	Generation	1st	2nd	3rd	Force Carriers	Force Carriers	Force Carriers
$\mathbf{Q}(\gamma^{\frac{+2}{3}},\xi)$	$\xi(\gamma^{\frac{+2}{3}})$	$\xi(u)$	$\xi(c)$	$\xi(t)$			
	949. 492069767572	949. 491674733607	949. 272199366541	919. 298580822107			
$\mathbf{Q}(\gamma^{\frac{-2}{3}},\xi)$	$\xi(\gamma^{\frac{-2}{3}})$	$\xi(\tilde{u})$	$\xi(\tilde{c})$	$\xi(\tilde{t})$			
	950. 825402936807	950. 825008456794	950. 605840929154	920. 675641591529			
$\mathbf{Q}(\gamma^{\frac{-1}{3}},\xi)$	$\xi(\gamma^{\frac{-1}{3}})$	$\xi(d)$	$\xi(s)$	$\xi(b)$			
	950. 491981970565	950. 491158418953	950. 475682378879	949. 685245671655			
$\mathbf{Q}(\gamma^{\frac{+1}{3}},\xi)$	$\xi(\gamma^{\frac{+1}{3}})$	$\xi(\tilde{d})$	$\xi(\tilde{s})$	$\xi(\tilde{b})$			
	949. 825315324411	949. 824491194761	949. 809004292115	949. 018012309153			
$\mathbf{Q}(\gamma^{-},\xi)$	$\xi(\gamma^{-})$	$\xi(e^{-})$	$\xi(\mu^{-})$	$\xi(\tau^{-})$		$\xi(W^{-})$	
	951. 158882249902	951. 158794637476	951. 140759507781	950. 854161669888		937. 272707010274	
$\mathbf{Q}(\gamma^{+},\xi)$	$\xi(\gamma^{+})$	$\xi(e^{+})$	$\xi(\mu^{+})$	$\xi(\tau^{+})$		$\xi(W^{+})$	
	949. 158882803734	949. 158795006698	949. 140721873942	948. 853519931973		935. 243012713122	
$\mathbf{Q}(\gamma^{0},\xi)$	$\xi(\gamma^{0})$	$\xi(\upsilon_e)$♣	$\xi(\upsilon_\mu)$	$\xi(\upsilon_\tau)$	$\xi(\gamma)^{*}$	$\xi(Z)$	$\xi(H)$
	950. 158619412600	950. 158619412257	950. 158586802258	950. 155495680049	950. 158619412600	934. 374 552936441	928. 456606144576
$\mathbf{Q}(\tilde{\gamma}^{0},\xi)$	$\xi(\tilde{\gamma}^{0})$	$\xi(\tilde{\upsilon}_e)$♣	$\xi(\tilde{\upsilon}_\mu)$	$\xi(\tilde{\upsilon}_\tau)$	$\xi(g)$✠✠✠	$\xi(Z)$	$\xi(H)$
	950. 158619412600	950. 158619412257	950. 158586802258	950. 155495680049	✠✠✠	934. 374 552936441	928. 456606144576
	ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass	ZeroMass	Non-ZeroMass	Non-ZeroMass

6. Table Z 4th, 5th of Elementary Fermion

If $\mathbf{Q}(\gamma^{Q}, \xi)$–Running increasing continuously and approaching to **Table Z,** we seem to run out " the despairing plateau " ! Finally the firsy light of morning, Table 6. below. Further **Table 7**, Ahead of us, light **;** Genesis of mass, light **.**

For Particle**:**

$$\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{+2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{-1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{-e}, \xi) \\ \mathbf{Q}(\gamma^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+3800.6344776504, & +3800.6344776504, & -7599.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7602.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7604.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7601.2689553008) \end{bmatrix} \quad (4.1)$$

For Anti-Particle**:**

$$\mathbf{Q}(\gamma^{Q}, \xi) = \begin{bmatrix} \mathbf{Q}(\gamma^{\frac{-2}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{\frac{+1}{3}e}, \xi) \\ \mathbf{Q}(\gamma^{+e}, \xi) \\ \mathbf{Q}(\tilde{\gamma}^{0e}, \xi) \end{bmatrix} = \begin{bmatrix} (+3800.6344776504, & +3800.6344776504, & -7603.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7600.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7598.2689553008) \\ (+3800.6344776504, & +3800.6344776504, & -7601.2689553008) \end{bmatrix} \quad (4.2)$$

Table 0 photon generation **Table Z** values of photon generation (**Light PG**)

Table6 Photon Generation $\mathbf{Q}(\gamma^{Q}, \xi)$ and Mass Function MF $\xi(\omega)$ values of Elementary Fermion

$\mathbf{Q}(\gamma^{Q}, \xi)$	Photon Generation	**Fermion** 1st	**Fermion** 2nd	**Fermion** 3rd	**Fermion** 4th	**Fermion** 5th
$\mathbf{Q}(\gamma^{\frac{+2}{3}}, \xi)$	$\xi(\gamma^{\frac{+2}{3}})$	$\xi(u)$	$\xi(c)$	$\xi(t)$	$\xi(q_4^{\frac{+2}{3}})$	$\xi(q_5^{\frac{+2}{3}})$
	3799. 967 840 223747	3799. 967 741 517242	3799. 912 907 511620	3792. 536 127 301197	3790. 040 644 754800	3786. 324 837 743850
$\mathbf{Q}(\gamma^{\frac{-2}{3}}, \xi)$	$\xi(\gamma^{\frac{-2}{3}})$	$\xi(\widetilde{u})$	$\xi(\widetilde{c})$	$\xi(\widetilde{t})$	$\xi(q_4^{\frac{-2}{3}})$	$\xi(q_5^{\frac{-2}{3}})$
	3801. 301 173 546824	3801. 301 074 874941	3801. 246 260 103013	3793. 872 072 455593	3791. 377 466 725300	3787. 662 965 515700
$\mathbf{Q}(\gamma^{\frac{-1}{3}}, \xi)$	$\xi(\gamma^{\frac{-1}{3}})$	$\xi(d)$	$\xi(s)$	$\xi(b)$	$\xi(q_4^{\frac{-1}{3}})$	$\xi(q_5^{\frac{-1}{3}})$
	3800. 967 818 291814	3800. 967 612 349822	3800. 963 742 354470	3800. 766 161 413529	3800. 697 721 102900	3800. 596 995 634700
$\mathbf{Q}(\gamma^{\frac{+1}{3}}, \xi)$	$\xi(\gamma^{\frac{+1}{3}})$	$\xi(\widetilde{d})$	$\xi(\widetilde{s})$	$\xi(\widetilde{b})$	$\xi(q_4^{\frac{+1}{3}})$	$\xi(q_5^{\frac{+1}{3}})$
	3800. 301 151 626429	3800. 300 945 648309	3800. 297 074 974064	3800. 099 459 370670	3800. 031 007 053400	3799. 930 263 914600
$\mathbf{Q}(\gamma^{-}, \xi)$	$\xi(\gamma^{-})$	$\xi(e^{-})$	$\xi(\mu^{-})$	$\xi(\tau^{-})$	$\xi(l_4^{-})$	$\xi(l_5^{-})$
	3801. 634 543 411587	3801. 634 521 491192	3801. 630 009 190056	3801. 558 314 578680	3801. 531 408 174100	3801. 493 304 717900
$\mathbf{Q}(\gamma^{+}, \xi)$	$\xi(\gamma^{+})$	$\xi(e^{+})$	$\xi(\mu^{+})$	$\xi(\tau^{+})$	$\xi(l_4^{+})$	$\xi(l_5^{+})$
	3799. 634 543 446202	3799. 634 521 514268	3799. 630 006 838006	3799. 558 274 488192	3799. 531 353 920900	3799. 493 230 407900
$\mathbf{Q}(\gamma^{0}, \xi)$	$\xi(\gamma^{0})$	$\xi(\upsilon_e)$	$\xi(\upsilon_\mu)$	$\xi(\upsilon_\tau)$	$\xi(\upsilon_4^{0e})$	$\xi(\upsilon_5^{0e})$
	3800. 634 477 650400	3800. 634 477 650314	3800. 634 469 497815	3800. 633 696 718466	3800. 633 431 690300	3800. 633 041 224300
$\mathbf{Q}(\widetilde{\gamma}^{0}, \xi)$	$\xi(\widetilde{\gamma}^{0})$	$\xi(\widetilde{\upsilon}_e)$	$\xi(\widetilde{\upsilon}_\mu)$	$\xi(\widetilde{\upsilon}_\tau)$	$\xi(\widetilde{\upsilon}_4)$	$\xi(\widetilde{\upsilon}_5)$
	3800. 634 477 650400	3800. 634 477 650314	3800. 634 469 497815	3800. 633 696 718466	3800. 633 431 690300	3800. 633 041 224300
	ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass	Non-ZeroMass

Table7 Mass values of Photon and Mass values of Elementary Fermion Mev

Photon		**Fermion**	**Fermion**	**Fermion**		**Fermion**	**Fermion**
	Charge	1st	2nd	3rd		4th	5th
$\gamma^{\frac{+2}{3}}$	|	u	c	t	||	$\mathbf{q}_4^{\frac{+2}{3}}$	$\mathbf{q}_5^{\frac{+2}{3}}$
0	$\frac{+2}{3}$	2. 300 000 0084	1279. 999 999 9969	173000. 000 000 0008	||	231015. 428 381 58422	317330. 416 904 2517
$\gamma^{\frac{-2}{3}}$	|	$\tilde{u}$	$\tilde{c}$	$\tilde{t}$	||	$\mathbf{q}_4^{\frac{-2}{3}}$	$\mathbf{q}_5^{\frac{-2}{3}}$
0	$\frac{-2}{3}$	2. 999 999 9982	1280. 000 000 0002	172999. 999 999 9978	||	231015. 486 558 1882	317330. 606 538 0023
$\gamma^{\frac{-1}{3}}$	|	d	s	b	||	$\mathbf{q}_4^{\frac{-1}{3}}$	$\mathbf{q}_5^{\frac{-1}{3}}$
0	$\frac{-1}{3}$	4. 799 999 9986	94. 999 999 9844	4699. 999 999 9872	||	6295. 075 920 3249	8642. 540 330 1016
$\gamma^{\frac{+1}{3}}$	|	$\tilde{d}$	$\tilde{s}$	$\tilde{b}$	||	$\mathbf{q}_4^{\frac{+1}{3}}$	$\mathbf{q}_5^{\frac{+1}{3}}$
0	$\frac{+1}{3}$	4. 799 999 9981	94. 999 999 9997	4700. 000 000 0127	||	6295. 075 897 7285	8642. 540 258 2346
γ^-	|	e^-	μ^-	τ^-	||	l_4^-	l_5^-
0	−1	0. 510 999 9898	105. 699 999 9957	1776. 999 999 9938	||	2404. 217 163 7408	3292. 442 021 4139
γ^+	|	e^+	μ^+	τ^+	||	l_4^+	l_5^+
0	+1	0. 510 999 9969	105. 699 999 9906	1776. 999 999 9969	||	2404. 217 150 1534	3292. 441 987 5652
γ^0	|	υ_e	υ_μ	υ_τ	||	υ_4	υ_5
0	0	0. 000 002 0287	0. 189 999 9996	18. 200 000 0020	||	24. 376 609 9545	33. 476 608 6728
$\tilde{\gamma}^0$	|	$\tilde{\upsilon}_e$	$\tilde{\upsilon}_\mu$	$\tilde{\upsilon}_\tau$	||	$\tilde{\upsilon}_4$	$\tilde{\upsilon}_5$
0	0	0. 000 002 0287	0. 189 999 9996	18. 200 000 0020	||	24. 376 609 9545	33. 476 608 6728
ZeroMass		Non-ZeroMass	Non-ZeroMass	Non-ZeroMass		Non-ZeroMass	Non-ZeroMass

7. Epilogue

" Double Helix Structure " of elementary particle: Two so-called " Double Helix Structure ", Photon Generation PG $\mathbf{Q}(\gamma^{Q}, \xi)$ and Mass Function MF $\xi(\omega)$, of a unified mass theory of elementary fermions and elementary bosons, with which the mass-values of particles of Standard Model SM could be uniformly identified. We are amazed to see a wide variety of particle masses of SM, go so far as to be trace back to a regular digital arrangement of **Table Y1, Y2, Y3** and **Table3, 4, 5 !!**

STUNNING ! Due to **Table Z** and **Table 6**, 4th, 5th generations, **Table 7,** of elementary fermion are wondering hazily from the far horizon.

8. Mass Spectrum of 1st, 2nd, 3rd of Elementary Fermion

We arrange 1st, 2nd, 3rd of Elementary Fermion by THE ORDER of PARTICLE CHARGE ARITHMETIC PROGRESSION, Instead of by CURRENT PARTICLE FLAVOR.

$$\frac{M(\omega,n)}{0.511} = \mathbf{Q}^2(\omega) = \mathbf{Q}^2(\gamma^{Q}, \xi) - \xi^2(\omega) = \mathbf{Q}^2(\gamma^{Q}, \xi) - \xi^2(\omega, n, R) \quad (5.1)$$

$$n = 1, 2, 3 \quad (5.2)$$

AND $$\xi^2(\omega, n, R) = \xi^2(\upsilon_n) \pm m R_n \quad (5.3)$$

Where $\xi^2(\upsilon_n) \pm m R_n$ is Arithmetic Progression

When $\upsilon_n = \upsilon_1, \upsilon_2, \upsilon_3 = \upsilon_e, \upsilon_\mu, \upsilon_\tau$ yield $\xi^2(\upsilon_n) + m R_n$ (5.4)

$\widetilde{\upsilon}_n = \widetilde{\upsilon}_1, \widetilde{\upsilon}_2, \widetilde{\upsilon}_3 = \widetilde{\upsilon}_e, \widetilde{\upsilon}_\mu, \widetilde{\upsilon}_\tau$ yield $\xi^2(\widetilde{\upsilon}_n) - m R_n$ (5.5)

$m = 1, 2, 3, 4, 5, 6, 7$ (5.6)

AND R_n

When $n = 1,$ $R_1 = 15,190 \sim 15,211$ (5.7)

When $n = 2,$ $R_2 = 12,880 \sim 17,551$ (5.8)

When $n = 3,$ $R_3 =$? ? (5.9)

Table R1 Mass Spectrum of 1st of Elementary Fermion for Charge $Q \leqslant 0$ **and** $Q \geqslant 0$

Charge $Q \leqslant 0$	$\mathbf{Q}^2(\gamma^Q, \xi)$	$\xi^2(\omega^Q)$ 1st	Mass $M(\omega)$	Mass $M(\omega)$	$\xi^2(\omega^Q)$ 1st	$\mathbf{Q}^2(\gamma^Q, \xi)$	Charge $Q \geqslant 0$
$-7/3$	$\mathbf{Q}^2(\gamma^{-7/3}, \xi)$	$\xi^2(q^{-7/3})$			$\xi^2(q^{+7/3})$	$\mathbf{Q}^2(\gamma^{+7/3}, \xi)$	$+7/3$
		86775, 369. 678 830 4600	16.189 897 1767	16.189 860 5023	86562, 534. 148 153 8000		
-2	$\mathbf{Q}^2(\gamma^{-2e}, \xi)$	$\xi^2(q^{-2})$			$\xi^2(q^{+2})$	$\mathbf{Q}^2(\gamma^{+2e}, \xi)$	$+2$
		86760, 163. 951 681 8800	11.176 597 7794	11.176 567 7735	86577, 733. 496 813 3900		
$-5/3$	$\mathbf{Q}^2(\gamma^{-5/3}, \xi)$	$\xi^2(q^{-5/3})$			$\xi^2(q^{+5/3})$	$\mathbf{Q}^2(\gamma^{+5/3}, \xi)$	$+5/3$
		86744, 958. 224 533 3000	7.185 298 3872	7.185 275 0498	86592, 932. 845 472 9600		
$-4/3$	$\mathbf{Q}^2(\gamma^{-4/3}, \xi)$	$\xi^2(q^{-4/3})$			$\xi^2(q^{+4/3})$	$\mathbf{Q}^2(\gamma^{+4/3}, \xi)$	$+4/3$
		86729, 752. 497 383 8200	4.215 999 4498	4.215 982 3159	86608, 132. 194 132 5400		
-1	$\mathbf{Q}^2(\gamma^{-e}, \xi)$	$\xi^2(e^-)$			$\xi^2(e^+)$	$\mathbf{Q}^2(\gamma^{+e}, \xi)$	$+1$
		86714, 550. 209 961 3800	0.511 000 0000	0.511 000 0000	86623, 334. 982 497 7800		
$-2/3$	$\mathbf{Q}^2(\gamma^{-2/3}, \xi)$	$\xi^2(\widetilde{u})$			$\xi^2(u)$	$\mathbf{Q}^2(\gamma^{+2/3}, \xi)$	$+2/3$
		86699, 339. 171 072 2964	2.300 000 0000	2.300 000 0000	86699, 339. 171 072 2964		
$-1/3$	$\mathbf{Q}^2(\gamma^{-1/3}, \xi)$	$\xi^2(d)$			$\xi^2(\widetilde{d})$	$\mathbf{Q}^2(\gamma^{+1/3}, \xi)$	$+1/3$
		86684, 128. 740 793 8004	4.800 000 0000	4.800 000 0000	86653, 723. 664 972 6104		
0	$\mathbf{Q}^2(\gamma^0, \xi)$	$\xi^2(\upsilon_e)$			$\xi^2(\widetilde{\upsilon}_e)$	$\mathbf{Q}^2(\gamma^0, \xi)$	0
		86668, 934. 596 225 6861	0.000 002 0000	0.000 002 0000	86668, 934. 596 225 6861		
0	$\mathbf{Q}^2(\gamma^0, \xi)$	$\xi^2(\gamma^0)$			$\xi^2(\gamma^0)$	$\mathbf{Q}^2(\gamma^0, \xi)$	0
Charge Order $\Uparrow$		86668, 934. 596 229 6000 $R_1 = 15, 190 \sim 15, 211$	0.000 000 0000	0.000 000 0000	86668, 934. 596 229 6000 $R_1 = 15, 190 \sim 15, 211$		Charge Order $\Uparrow$

Table R2 Mass Spectrum of 1st 2nd 3rd of Elementary Fermion for Charge Q ⩽ 0

Charge Q ⩽ 0	$\mathbf{Q}^2(\gamma^{Q}, \xi)$	$\xi^2(\omega^{Q})$ 1st	$\xi^2(\omega^{Q})$ 2nd	$\mathbf{Q}^2(\gamma^{Q}, \xi)$ 3rd
−7/3	$\mathbf{Q}^2(\gamma^{-7/3}, \xi)$	$\xi^2(q^{-7/3})$	$\xi^2(q^{-7/3})$	
		86775, 369. 678 830 4600	86562, 534. 148 153 8000	
−2	$\mathbf{Q}^2(\gamma^{-2e}, \xi)$	$\xi^2(q^{-2})$	$\xi^2(q^{-2})$	
		86760, 163. 951 681 8800	86577, 733. 496 813 3900	
−5/3	$\mathbf{Q}^2(\gamma^{-5/3}, \xi)$	$\xi^2(q^{-5/3})$	$\xi^2(q^{-5/3})$	
		86744, 958. 224 533 3000	86592, 932. 845 472 9600	
−4/3	$\mathbf{Q}^2(\gamma^{-4/3}, \xi)$	$\xi^2(q^{-4/3})$	$\xi^2(q^{-4/3})$	
		86729, 752. 497 383 8200	86608, 132. 194 132 5400	
−1	$\mathbf{Q}^2(\gamma^{-e}, \xi)$	$\xi^2(e^-)$	$\xi^2(\mu^-)$	$\xi^2(\tau^-)$
		86714, 550. 209 961 3800	86714, 344. 360 646 3115	86711, 073. 714 853 7479
−2/3	$\mathbf{Q}^2(\gamma^{-2/3},\xi)$	$\xi^2(\widetilde{u})$	$\xi^2(\widetilde{c})$	$\xi^2(\widetilde{t})$
		86699, 339. 171 072 2964	86696, 838. 779 682 8639	86360♦, 791. 812 950 9657
−1/3	$\mathbf{Q}^2(\gamma^{-1/3},\xi)$	$\xi^2(d)$	$\xi^2(s)$	$\xi^2(b)$
		86684, 128. 740 793 8004	86683, 952. 224 159 7495	86674, 940. 482 476 7749
0	$\mathbf{Q}^2(\gamma^0,\xi)$	$\xi^2(\upsilon_e)$	$\xi^2(\upsilon_\mu)$	$\xi^2(\upsilon_\tau)$
		86668, 934. 596 225 6861	86668, 934. 224 409 6391	86668, 898. 979 791 2438
0	$\mathbf{Q}^2(\gamma^0,\xi)$	$\xi^2(\gamma^0)$	$\xi^2(\gamma^0)$	$\xi^2(\gamma^0)$
Charge		86668, 934. 596 229 6000	86668, 934. 596 229 6000	86668, 934. 596 229 6000
Order ⇑		$R_1 =$ 15, 190~15, 211	$R_2 =$ 12, 880 ~ 17, 551	$R_3 =$? ?

Table R3 Mass Spectrum of 1st 2nd 3rd of Elementary Fermion for Charge Q ⩽ 0 Mev

Charge	$\mathbf{Q}^2(\gamma^Q, \xi)$	$\xi^2(\omega^Q)$	$\xi^2(\omega^Q)$	$\mathbf{Q}^2(\gamma^Q, \xi)$
Q ⩽ 0		1st	2nd	3rd
−7/3	$\mathbf{Q}^2(\gamma^{-7/3}, \xi)$	$\xi^2(q^{-7/3})$	$\xi^2(q^{-7/3})$	
		16.189 897 1767	1210.883 000 0610	
−2	$\mathbf{Q}^2(\gamma^{-2e}, \xi)$	$\xi^2(q^{-2})$	$\xi^2(q^{-2})$	
		11.176 597 7794	1055.620 000 0456	
−5/3	$\mathbf{Q}^2(\gamma^{-5/3}, \xi)$	$\xi^2(q^{-5/3})$	$\xi^2(q^{-5/3})$	
		7.185 298 3872	901.379 000 0353	
−4/3	$\mathbf{Q}^2(\gamma^{-4/3}, \xi)$	$\xi^2(q^{-4/3})$	$\xi^2(q^{-4/3})$	
		4.215 999 4498	748.160 000 0199	
−1	$\mathbf{Q}^2(\gamma^{-e}, \xi)$	$\xi^2(e^-)$	$\xi^2(\mu^-)$	$\xi^2(\tau^-)$
		0.511 000 0000	105.700 000 0000	1777.000 000 0000
−2/3	$\mathbf{Q}^2(\gamma^{-2/3},\xi)$	$\xi^2(\widetilde{u})$	$\xi^2(\widetilde{c})$	$\xi^2(\widetilde{t})$
		2.300 000 0000	1280.000 000 0000	173000.000 000 0000
−1/3	$\mathbf{Q}^2(\gamma^{-1/3},\xi)$	$\xi^2(d)$	$\xi^2(s)$	$\xi^2(b)$
		4.800 000 0000	95.000 000 0000	4700.000 000 0000
0	$\mathbf{Q}^2(\gamma^0,\xi)$	$\xi^2(\upsilon_e)$	$\xi^2(\upsilon_\mu)$	$\xi^2(\upsilon_\tau)$
		0.000 002 0000	0.190 000 0000	18.200 000 0000
0	$\mathbf{Q}^2(\gamma^0,\xi)$	$\xi^2(\gamma^0)$	$\xi^2(\gamma^0)$	$\xi^2(\gamma^0)$
Charge		0.000 000 0000	0.000 000 0000	0.000 000 0000
Order ⇑		$R_1 = 15,190 \sim 15,211$	$R_2 = 12,880 \sim 17,551$	$R_3 =$? ?

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