Contents

Formulas for various summations of quark masses in relation to the mass of the electron and quantum dimensionless length derived from the fine structure constant, seven dimensions an twenty-six.

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Abstract

In this paper, we present several equations that generate the ratio of the sum of the roots of the masses of the quarks with respect to the electron, likewise the ratio of the sum of the masses of the quarks in relation to the mass of the electron. Both equations depend exclusively, and in a very simple and logical way from quantum dimensionless length derived from the fine structure constant to zero momentum; lengths in seven dimensions, the number of quarks and the three charges of color group SU(3).

1 Introduction

In our previous paper "Simple Formulas That Generates the Quark Masses",there were six empirical equations, which by its logical consistency and accuracy, we leave no doubt of his profound implications for advancing knowledge of the mass, and not naturally occurring negative mass, since mathematically obtaining planck mass derives from a root (two solutions, positive and negative value). Likewise the total energy is also obtained from a root. Equally mass and relativistic energy is obtained from a root, derived from the Lorentz transformation. In other papers conjectured the possibility that the angle of oscillation of neutrinos θ_{13} may be due to the existence of extra dimensions.

In this paper, we further reaffirm in this conjecture, since these same extra dimensions is obtained with great accuracy the main angle sine of Cabibbo, $\sin \theta_c$

2 Quantum dimensionless lengths

1. Length associated with the fine structure constant (closed circular string): $l_\gamma = \sqrt{\alpha^{-1}/4\pi} = 3.30226866215$

2. Dimensionless quantum length: larger radius torus in seven dimensions.

$$l_P(7)/l_P = \frac{\left(\hbar G_{d+4} \Big/ c^3\right)^{1/(d+2)}}{\left(\hbar G_N \Big/ c^3\right)^{1/2}} = \left(2(2\pi)^7 \Big/ \left[2\pi^{7/2}/\Gamma(7/2)\right]\right)^{\frac{1}{7+2}} = 3.0579009561$$

3. Dimensionless quantum length: smaller radius torus in seven dimensions.
$$R(7)/l_p = \left(4(2\pi)^7 \Big/ \left[2\pi^{7/2}/\Gamma(7/2)\right] \cdot (7+1)\right)^{\frac{1}{7+1}} = 2.95694905822$$

We recall how, with the major radius dimensionless in seven dimensions, we obtained the Higgs boson mass by applying the model of a string in a box, being a function of the equivalent mass of the Higgs field.

$P(2, l_P(7)) = (2/l_P(7))(\sin(2\pi/l_P(7))^2 = 0.5124574918 \quad ; \ m(Vh) = 246.221202 Gev$

$P(2, l_P(7)) \cdot 246.221202\, Gev = 126.17789\, Gev = m_h$

Our conjecture about the angle of neutrino oscillation θ_{13}, as formulated in our other papers:
$\cos^2(2\theta_{13}) = R(7)/l_\gamma = 0.8954295849 \quad ; \ \sin^2(2\theta_{13}) = 0.1045704151$

2.1 The Cabibbo angle θ_c as a function of angle $2\theta_{13}$

$[1 - \sin(2\theta_{13})]/3 = \sin\theta_c \quad ; \ (1 - \sqrt{0.1045704151})/3 = 0.2255421695 = \sin\theta_c$

$2/(3R(7)) = 0.225457609 \approxeq \sin\theta_c$

2.2 Experimental data:

Cabibbo angle: $\theta_c = 13.04°$; $\theta_{c23} = 2.38°$

Quark masses: $m_t = 173.2\, Gev$, $m_b = 4.19\ Gev$, $m_c = 1.275\, Gev$, $m_s = 93\, Mev$, $m_d = 4.7\, Mev$, $m_u = 2.15\, Mev$

Electron mass: $0.5109989276\, Mev$; $\alpha^{-1} = 137.035999073$

2.3 The two summations.

$$\sum_{q=1}^{6}(\sqrt{m_q}/\sqrt{m_e}) = (\sqrt{m_t}+\sqrt{m_b}+\sqrt{m_c}+\sqrt{m_s}+\sqrt{m_d}+\sqrt{m_u})/\sqrt{m_e} = 741.2663743$$

$(xp_x - p_x x)/h = 2\pi i$; $(p_x x + x p_x)/h = -2\pi i$; $[(2\pi i)(-2\pi i)(2\pi i)(-2\pi i)(2\pi i)(-2\pi i)] \cdot 4 = 246115.633 \approxeq m_h/m_e$

a) $\sum_{q=1}^{6}(\sqrt{m_q}/\sqrt{m_e}) = (\alpha^{-1}/240) \cdot l_\gamma^6 = 740.4535993 \approxeq 6q \cdot 3c \cdot (m_t/m_b) - 3 = 741.0572792$

b) $\sum_{q=1}^{6}(\sqrt{m_q}/\sqrt{m_e}) = [R(7)/l_p]^6/\cos^4\theta_c = 742.0749348$

c) $\sum_{q=1}^{6}(\sqrt{m_q}/\sqrt{m_e}) = [l_P(7)/l_P]^6(\pi/\sqrt{12}) = 741.4805066$; maximum density packings spheres in two dimensions (6 spheres), $\pi/\sqrt{12}$

d) $\exp(l(26)/l_p) - 3 = \exp(6.612405391) - 3 = 741.2711304$; $26 = 6q \cdot 3\ colours\ + 8\ gluons$

$\sum_{q=1}^{6}(m_q/m_e) = 349834.0693 \approxeq (2\pi)^{8-1}([m(Vh)/m_h] - 1)^2 = 349919.6727$

References

[1] The Review of Particle Physics, (http://pdg.lbl.gov/)

[2] Alejandro Rivero (Universidad de Zaragoza), Andre Gsponer; The strange formula of Dr. Koide; http://arxiv.org/abs/hep-ph/0505220

[3] Observation of Reactor Electron Antineutrino Disappearance in the RENO Experiment, arXiv:1204.0626v1 [hep-ex] 3 Apr 2012

[4] Angel Garces Doz; On the Possibility of a New Principle of Equivalence and Its Relation With a String Theory Based on the Foundations of Quantum Mechanics; http://www.fqxi.org/community/forum/topic/1373

[5] A.Garces Doz, The God Particle: the Higgs Boson, Extra Dimensions and the Particle in a Box; http://vixra.org/abs/1204.0038