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FINE STRUCTURE OF PROTON AND HIGGS MESON

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ABSTRACT

This paper includes the relationship of the fine structure constant with the ratio of the squares of $m_{eg5.1a}$ and Planck mass, so there is a relationship with the other coupling constants of the standard model ($m_{eg5.1a}$ = 2sqrt(2π)M_{PH}, M_{PH} the Hawking mass). A fine structure constant was proposed for proton 2π/137,035 = 1/21,8 and characteristic length of 4,9 fermi. Finally there are independent interstitial papers on calculating the neutrino. Some relationships were also found, indicating the possibility of consolidation, in separate particles as well.

1.Indexes and constants of my theory

frequency (f)
condenser capacity (C)
electric potential (U_e)
potential (U_m)
electric charge (Q)
length (l)
acceleration (g) not (a) sympol
speed of light (c)
self-induction coefficient (L)
energy (E)
force (F)
intensity of current (i)
Mass of proton (mp)
Plank constant (h)
Coeficient of volume (θv)
Mass related with mass of Hawking

($M_{eg5.1a}$)
Coefficient of elasticity (τ)
Volume (V)
Velocity (v)
Time (t)
Period of time (T)
Temperature (T) the same symbol
Density of mater (ϱ)
Parameters of an oscillator α,β,tc

CONSTANTS OF MY THEORY

$\pi^{*4} = h^2\ c^2\ G/K_e^3\ k_b^4$

h: Planck's constant, c: speed of light, G: gravity Newton constant, $K_e = 1/4\pi\varepsilon_0$: Coulomb constant, k_b: Boltznan constant

SI system

$\pi^{*2} = 3.1598^2\ Cb^3\ Kelvin^2\ sec^4\ kg^{-3}\ m^4$

NIS system

$\pi^{*2} = 8.257x10^{-16}\ GeV^{-1}\ e^3$, $\pi^* = 2.87x10^{-8}\ GeV^{-1/2}\ e^{3/2}$, $\pi^{*4} = 68.182x10^{-32}\ GeV^{-2}\ e^6$

e: electric charge of positron

Density-Temperature constant under pressure of gravity

$\rho_m = DT\ T^2/l_c$, t_c without θ_v (coeficient of Volume), $\rho_m = DT\ T^2/\theta_v\, l_c$

$DT = (n_l/n_2)^3\ N^3\ \pi^{*-2}\ (2\pi)^{1/2}\ 4\pi\ \varepsilon_0{}^2\ e^{-1}$

$n_1 = 10$, $n_2 = 12$, N=1

ρm: density of matter DT:constant , T:temperature(core of a star) ,l_c: some radius of the body

SI system

$DT = 8.928x10^{-4}\ Kelvin^{-2}\ kg.\ m^{-2}$

$1/DT = 0.112x10^4\ Kelvin^2\ kg^{-1}\ m^2$

$(1/DT)^{1/2} = 0.334x10^2\ Kelvin\ kg^{-1/2}\ m$

NIS system

$DT = 2.626x10^{18}\ GeV$

$1/DT = 0.38x10^{-18}$ GeV^{-1}

$(1/DT)^{1/2} = 0.616x10^{-9}$ $GeV^{-1/2}$

mass : $m_{eg\ 5.1a}$ $m_{eg} = e/k = e/(G/2\pi\ K_e)^{1/2} = e/(2\varepsilon_0 G)^{1/2}$

e: electric charge of positron

$m_{eg\ 5.1b}$ $m_{eg} = e/(4\pi\varepsilon_0\ G)^{1/2}$

$m_{eg\ 5.1b}$ is about 2.Mass of Hawking $m_{eg\ 5.1a} = (2\pi)^{1/2}\ m_{eg\ 5.1b}$

SI system

$m_{eg\ 5.1a} = 4.66x10^{-9}$.kg

NIS system

$m_{eg\ 5.1a} = 2.61x10^{18}$.$GeV/c^2$

$m_{eg\ 5.1b} = 1.041x10^{18}$.$GeV/c^2$

Function related to Wien's law

$T = (n_1/n_2)^{-3/2}\ N^{-3/2}\ 1.085x10^{16}.\ e\ /\ l_c$

$n_1=10$, $n_2=12$,N=1 , e : electric charge of positron

$1.085x10^{16}$ Kelvin Cb^{-1} m = $\pi^*\ (4\pi)^{-3/4}\ \ \varepsilon_0^{-5/4}\ \ G^{-1/4}$

$T\ \ l_c = 2.28x10^{-3}$ m Kelvin

lengths of oscilators : $\lambda = (2\pi)^{1/2}\ l_g = 2\pi\ l_c$, $l_g = (2\pi)^{1/2}\ l_c$

$T\ \ l_g = 2.28x10^{-3}\ (2\pi)^{1/2} = 5.727x10^{-3} = 1.976$ W

$W = 2.898x10^{-3}$ m Kelvin : Wien's constant

Fine structure of proton

$m_{plank}{}^2/m_{eg}{}^2 = 137.035/2\pi = 21.80995$

fine structure of proton : $2\pi/137.035 = 1/21.8 = 0.045$

2a.Fine structure constant

We start with these empirical types of angular momentum of meg

$2\pi.(5meg).c.\lambda plank/h=1.071$, (1)

$2\pi.(6meg).c.(le/Na)/h=6.986$, (2)

$2\pi.(5meg).c.\lambda plank/h =$

$= 2\pi.(6meg).c.(le/Na)/7.h$ so , (3a)

5.(7/6) = le/(Na.λplank) , (3b)

le : Bohr radius or length of electrical charge (a_0) = $5.29.10.^{-11}$ .m, , Na : Avogadro number , λplank : length of Plank = $1.616.10.^{-35}$.m

We find the 5.(7/6) parameter in nuclear particle index in proton mass

We use 6/7 to analyse the fine structure
137,3134.(6/7).meg = Na.me
me = mass of electron also , (4)

for proton
Mp:mass of proton , Lp: length of proton
From function 195 fp or paragraph , empirical types, we have :

$(Na.mp.meg/(2\pi)^{½})^{1/2}.c.\lambda plank=10,0067.h$
$Na.mp = 100.h^2.(2\pi)^{1/2}/meg.c^2.\lambda plank^2$

$$\mathbf{N_a.m_p = A.m_{eg}} \quad \textbf{, (5)}$$

$A=100.h^2.(2\pi)^{1/2}/meg^2.c^2.\lambda plank^2$, (6a)
From function 5 : A_5=216110,057 , (6b)
And from function 6a :
A_6=215826,3357 , A_5/ A_6=1.0013 , (7)
Also for electron :

$$\mathbf{N_a.m_e = B.m_{eg}} \quad \textbf{, (8)}$$

And B=137,3134.(6/7)=
$=(6/7).(E1/E2)^2$, (9)

$E1/E2 = (137,3134)^{½}=$
$=137^{1/2} = 11,7$, (10)
11,7.(6/7)=10,04 , (11)
so B=10.(E1/E2)=(6/7).(1/a) , (12)
Na.me = 10.(E1/E2).meg , (13)

For proton
$Eplank/Emeg = 4,670113 = (1/ap)^{½}$, (14a)
Fine structure constant of proton : ap = 0,04585

$\boldsymbol{E_{plank}^2/ E_{meg}^2=21,80995}$ ***, (14b)***

$E_{plank}=m_{plank}c^2$, $m_{plank}= 2.176.10^{-8}$ .kg
This number comes from angular momentum of the electron(J_e)

$\mathbf{E_{plank}^2 / E_{meg}^2 = J_e/h =}$

$\mathbf{=1/a_p = 21{,}80995}$, **(15a)**

so positron, electron and proton are linked.

We need to refer the 194, fp function or paragraph, empirical types sp :

$m_{eg}.l_e^2 .N_A^{-2} = M_{Planck}.l_g^2$, charge and length of charge (radius of Bohr , a_0) are connected by meg and length of plank
A.ap = 9895,71

and $\mathbf{a_p/a=2\pi}$ **or** $\mathbf{a_p=2\pi.a}$ **,**
a =1/137,035 , **(15b)**

2b.Neutrino

An other way to analyse the fine structure constant of the electron is :

p.(6/7).160,1989.(6/7).meg= Na.me ,
approximation p = 1 , (16)
m_e : mass of electron = $9.109.10^{-31}$.kg

$\mathbf{p.(6/7)^2.5.2^5.meg = Na.me}$ **,**
with p=1,0012 **, (17)**

and $5.2^5 = 160$

that means the fine structure constant is :
$1/137.14 = (7/6)/5.\ 2^5$, (18a)

137,***14***-137,035 = 0.1 , (18b)

We propose for the angular momentum of the electron in the meg system :

Je.meg=137,035.h/2π + h/10.2π or

Je.meg=137.h/2π + 0,14h/2π , (19a)

(18a) function gives the fine structure 1/137.14 , that means,
energy : E = 0.14.h.c/2π.le = $8.36x10^{-17}$.J =
=522.eV/c2 so , (19b)

for one level the energy is :
E/137 = 3.81eV , (19c)

also h/10.2π gives energy :
E = 0.10.h.c/2π.le =
=372,8.eV, E/137 = 2,72.eV , (19d)

I remind you that meg and proton are linked , and these empirical types will give us the potential of spectrum verification .

Newest experimental events in 2009 predict the mass of neutrino between 2,1eV-0.4eV
After that event we could say that the prediction of the paper is wrong , but we have one more hope, because the predicted masses are for length lc. We have one more effort with two lengths, λ,lg .
le is the lc length and for the neutrino there are two possibilities with two lengths lg = sqrt(2π). lc = 2,5.lc and λ=2π.lc

So the predictions are: for lg:
E=2,72/2,5=1.088eV ,
λ: E=2,72/6,28=0,433eV
Also for 3,81eV we have
lg : E=3,81/2,5=1,524eV ,
ë: E=3,81/6,28=0,606eV

sqrt(2π)=2,5 , 2π=6,28

The predictions are based on two hypotheses :
1. fine structure is analysed with coefficient : 2^5
2. The energy is the neutrino particle.

If the predictions are false, the theory is not false but if predictions are true it will be a great achievement. That prediction was a separate effort of my theory.

3.Proton

Mp: mass of proton , ***Lp***: length of proton
From function 195 fp and function 1 of 2a paragraph of the present paper we have :

$(Na.mp.meg/(2\pi)^{½})^{1/2}.c.\lambda plank=10,0067.h$
$2\pi.(5meg).c.\lambda plank=1.071.h$, we have

$(Na.mp.meg/(2\pi)^{½})^{½}.c.\lambda plank/10=2\pi.(5meg).c.\lambda plank$, (20)

arises :

$$\mathbf{p.N_a.m_p = 10^4.\pi^2.(2\pi)^{½}.m_{eg} , p = 1,1447} \quad \mathbf{, (21)}$$

Function (1) this paper: $2\pi.(5meg).c.\lambda plank/h=1.071$, (22)
With the angular momentum of proton :

mp.c.Lp = np.h and 2π.(5meg).c.λplank=h , (23)
mp.c.Lp/np = 2π.(5meg).c.λplank , (24)
arises : Lp/np = 10.π.meg.λplank/mp = 1.4147 fermi

for np=1 without 2π , (25)

with 2π Lp/np =0.225 fermi , (26)

The length in 25 function could arise from a dynamic of meg $c^2/2$
so Lp/np=1 fermi , (27)

The length in 25 function could arise from a dynamic , $c^2/2$, because
1.414=sqrt(2) and length will be 1fermi

From function (26) we get length 0,225 fermi
At first it seems that exist this length , but we find that proton has **fine structure constant : 1/21,8** or **2π.α** , α is the fine structure of electron 1/137,035 .So if we replace np=21,8 we get a legth 4,9 fermi

The angular momentum of **one proton** is : mp.c.4,6 fermi = 21,8.(h/2π) .

4,9 fermi is a characteristic length of the nucleus and related to molarity .
4,6 fermi is related to quanto mechanic of proton

Perhaps we can analyse more **4,9 fermi** as 1,96 fermi .2,5 = 1,96 fermi.sqrt(2π)= lg , lg is gravity length , the electromagnetic length is lc=1,96fermi and existe λ=2π.lc = 12,3fermi .The lengths lg,lc,λ comes from hypotheses of first paper .So we can experimentally examine these hypotheses .

4.Nuclear particles

parameter: **6/7** from functions (2),(4),(18) this paper
2π.(6meg).c.(le/Na)/h=6.986
137,3134.(6/7).meg = Na.me , me = mass of electron
Structure of proton
1/ap=21,8 from functions (14),(15) this paper
Eplank/ Emeg = 4,670113 = $(1/ap)^{½}$
ap/a=2π or ap=2π.a , a=1/137,035

energy to be 1/ap=21 :
E_0 =0.8hc/(2π.1fermi)=159,82 MeV/C2 , (28)

3μ=2 E_0

K+=3 E_0

(6/7).η=3 E_0
(6/7).p=5E_0
(6/7).n=5.E_0
Λ=7 E_0

(6/7).Ξ0=7 E_0
(6/7).Ξ-=7 E_0
(6/7).Ω=9 E_0
π+=(6/7)E_0
π0=(6/7)E_0

Boson W(kg) =(6/7).100.mp = 1.43375.10^{-25}
mp = mass of proton

	MeV/C2	MeV/C2		diverse MeV/c2
μ	105.7	106.546	0.004	0.85
τ	1784		9.568	
K+	493.7	479.46	2.647	-14.24
K0s	497.7		2.669	
			0	
η	548.8	559.37	2.943	10.57
p	938.3	932.283	5.032	-6.02
n	939.6	932.283	5.039	-7.32
Λ	1115.6	1118.74	5.983	3.14
Σ+	1189.4		6.379	
Σ0	1192.5		6.395	
Σ-	1197.3		6.421	
Ξ0	1315	1305.196	7.052	-9.80
Ξ-	1321	1305.196	7.085	-15.80
Ω	1672	1678.11	8.967	6.11
π+	139.6	136.988		-2.61
π0	135	136.988		1.99

		Calculated	Diverse
Boson W(kg)	Real 80.398.GeV/c2	80.426.GeV/c2	0.028.GeV/c2

From this approach it seems that we talk about a unified theory where the particles π+ and boson have very good approximation , also we can see the numbers of particles η ,(p,n) ,Ξ , Ω : 3, 5, 7, 9 in order in an approximation of 0,8-1,5 %. The unified approach was obvious from the proton equations in the former paper of applications .

In the particle index, the energies come from the structure of the proton (coefficient 0,8),6/7 and length of 1 fermi . We can have the same results in 1,072fermi with 0,8 and without 6/7, also in 0,9 fermi without 0,8 and 6/7 .

We can experimentally examine these lengths and particle approach.
proton structure 1/ap=21,8
21,8/3=7,26 this is equal to the coefficient of the nuclear spectrum function (like the Rydberg function).

Some interesting calculations:

if we use the approximation 1,1447 of 21 function (this paper)
1.4147 fermi/1,1447 =1,2358 fermi

and 5.0,225fermi=1,125f , (29a)

Also h/(mp.c)=1,321fermi and 1,321/1,1447=1,1547 fermi

so 1,32/1,14=1,1547 ≈ 1,16=7/6 and , (29b)

7,25/6,28 =1,15 ≈ 7/6 or 2π/7,25 ≈ 6/7 , (30)
this must be the natural matter of 6/7

7,25fermi/0,225fermi=32,2 , (31)
$32,2=2^5+0.2$, (32)

5.Fine structure of proton

from function (26) we have :

Lp/np=2π.0,225fermi=1,41f =
10π.meg.λplank/mp , np=1 without 2π , (33)
also from (31),(32) we have :
2^5x0,225fermi =7,2fermi ≈ 7,25fermi , (34)

from (31) ,(32),(33)
we have : $2\pi.(7,25/(2^5))$fermi = 10πmeg.λplank/mp so , (35)
mp.7,25fermi = $5.(2^5)$meg.λplank

from (18a)we have : a=1/137,035 and
we gave the hypothesis that $1/a=(6/7)x5x2^5$
and arises : mp.7,25fermi = (1/a).(7/6).meg.λplank so , (36)

α.mp.(7,25/2π).1fermi = (7/6).(1/2π).meg.λplank , (37)

the approximation of this function is 1 if the length is 0,993 fermi .

we can see that 7,25/2π equalized to 7/6 and for 1/2π we can say that 1/2π has the meaning of the fine structure , but is not the fine structure of meg because 2π.a = ap : the fine structure of proton , a is the fine structure of the electron , so meg has the fine structure 1
So the right equation is:

ap.mp(7,25/2π).0,993fermi = f_{meg}*.(7/6).meg.λplank , (38)*

f_{meg}=1 is the fine structure of meg

*The analysis of a previus version of the paper, about **1/2π** is perhaps **wrong** , it is an extreme hypothesis that it will be the fine structure of space*

The approximation of this equation is 1 if length is 0,993 fermi
Also 1,072 fermi gives the particles in order η ,(p,n) ,Ξ , Ω : 3,5,7,9 in index particles. So the diverse or fermi is : -0.007f +1 fermi + 0,07f
The 0,993 fermi gives in function of index particles :

E_0= 0,8hc/(2π.l) = 160,94MeV/c2 , (39)

as in particle index arises energy of proton
(7/6)x5x160,94.MeV/c2 = 938.8MeV/c2 , (40)
better approximation of index particles
There exists a particle at the meson level that gives the other nuclear particles:
E_0 = 160,94MeV/c^2 at

0.993fermi or 2π0.993fermi = 6.23fermi . , (41)

For this particle is in a force so that :

$5(7/6)160,94.MeV/c^2 = 938.8MeV/c^2 = m_p+m_e$, (42)
From function (3b) of this paper , we know that :
$5(7/6) = l_e/(N_a.\lambda_{plank})$ so arises the interaction :

$$E_0/(N_a.\lambda_{plank}) = (m_p+m_e)/l_e \quad , (43)$$

These interactions act in an atom of hydrogen and there seems to exist microcells in the atom with length , λ_{plank} .
The E_0 particle will be a ***meson Higgs particle .***
Mp: mass of proton , λ_{plank}: plank length, me: mass of electron , l_e: Bohr radius (it is referred in the paper as the length of the electric charge, or radius of an atom of Hydrogen), N_a: Avogadro's Number

More about my theory

GS Journal , http://www.wbabin.net/science/alexandris23.pdf

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