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The photon and its importance for restmass calculations of particles, force carriers and information tranfers using a new Harmonics series method

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Abstract
In this paper the restmass of the Photon is central in the calculations of particle masses, force carriers and information transfers. The Photons are created by using the new intensity formula together with the discussion of the couple of Photons in a pair. Calculations of different force carriers of different forces and particles have been done together with calculation of information transfers. A new method using Harmonic series by separating the rest mass values of particles into numerical numbers, which represent the masses, charges and oscillation frequences of the particles, has been used here. This method is very accurate and represents a big step for Atomic Physics, where the mass of particles can be calculated without using accelerators.

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I. Introduction

For a long time the mass of the Photon has been a controversal subject. An important question has been the Photon mass at lower speed than the speed of light at vacuum.Special relativity tells us that the mass gets bigger(restmass) of zero speed and looses mass at higher speed. In that paper the restmass of the Photon was determined.One of us B.T. has been working a lot in the spectroscopy field creating Photons by using light sources together with a photon counting spectrometer sysem (IDES).This system was suited for studies of intensities of spectral lines and a new intensity formula for analytical chemistry. This formula has been published a lot by one of us B.T. in the spectroscopy and stellar fields.

The Photon was also included in the determination of force carriers of the particles Zeta zero Boson and the Higgs Boson.The masses of these Bosons were determined with very good results compared to the CERN measurements. The speed of information was also studied together with the specific velcoties of particles.

A new method using Harmonic series by separating the rest mass values of particles into numerical numbers.These numbers represent the masses,charges and oscillation frequences of the particles and are only dependent on the restmas of the particles./ This method of adjusted Harmonics was used to calculate the force carriers for different particles and the amount of informations between different particles,without using accelerators. The rest mass has shown to be proportional to the bandwidt, mass- oscillating frequency, time and curvature. All particles seem to follow the 12- tone scale of music.

With the new Harmonic series method the masses of a number of differemt particles were determined with very good results compared to the CERN measurements.

2.a Mass of the Photon

MASS of THE PHOTON,

We will here prove that the photon has a nonzero mass if it does not reach the speed of light.This is valid as the flat space-time is equal to a perfect vacuum and mass bends Space-Time./ The transfered energy by a photon, when emitted from a Hydrogen Atom is 13.6056093123 eV/c^2 in the first orbital. It is released when the electron reaches the specific velocity.

$$\mathbf{v = c/137.0359990845,.. \ m/s \quad = \quad 2.187691265,\ldots * 10^6 \ m/s} \qquad \mathbf{(1)}$$

The particle-wave oscillation will produce a photon with the kinetic mass and electron rest mass m_e. We have :

$$\mathbf{m_0 = \left(\ me * \ v^2 / 2 \ \right) / c^2 \quad = \quad 13.6056093123 \ eV/c^2} \qquad \mathbf{(2)}$$

Ref 1 and 2

2b. The creation of photons.

According to a new theory by S.Yngström Ref 3, which was created during the 1980s,together with the author (B.T.) the intensity I is given

$$\mathbf{I = C\ \lambda^{-2}(e\ x\ p\ (-\ J/\ k\ T\ ))\ /\ (\ e\ x\ p\ (\ h\ \nu\ /k\ T) - 1\ )} \quad \mathbf{(3)}$$

J is here the ionization energy, and C is a factor given by transition probabilities, number densities and sample properties. λ and ν are here the wavelength and frequency of the atomic spectral line. This means that the new intensity formula consists of 4 parts : the C-factor, λ^{-2}-part, the J-dependence exp(-J / k T) and the Planck factor 1/((exp(h ν / k T) - 1). Ref 4 and 5.

2c. The couple of photons

According to General Relativity by Schwarzschild the photon forms a galaxy type of rotation of two photons in a pair, where the mass is distributed all over the rotation disc.This distribution will give Electromagnetic charge for one photon and Magnetic charge for the other photon.The total mass of the Photon are :

$2m_0 = 27.211384\ eV/c^2$. The rotation formula for these two Photons is :

$$\mathbf{V_{rot} = 2\ m_0\ (\ 1 - 2\ m_0\ /\ R\ c^2\ )^{1/2}} \quad \mathbf{(4)}$$

where $2m_0/R$ is less than c^2. The ideas with the double Photons have also been discussed by Dr. Sten Yngström in a theoretical paper (Ref.3). These Photons will form a lightwave according to Maxwell equation and giving the Rydberg constant restmass :

$\mathbf{m_0 = 13.605692\ eV/c^2 = 2.42\ 10^{-35}\ kg.}$ Ref 1 **(5)**

Fig 3. shows the double Photon and its swinging in Transformation perspective.

2d Force carriers of photons

Kinetic energy

The force carrier cannot carry more energy than the electromagnetic pair of Photons because these force carrier cannot go faster than light and they produce two Photons according to Table 1. .For the proton and the neutron we can see that they include one Photon each, which means that the Photon is included in all matter Ref 1.

Table 1

Now accounting for the **kinetic energy of** the **force carriers** (for g = 9.807):

Electromagnetic force $m_0*v^2/c^2 = 510998.9/137.035999^{20} = 2*13.605693\ eV/c^2 = 2m_0$

(6)

Gravitational force $m_G*v^2/c^2 = 6308/15.23^2 = 2*13.605693\ eV/c^2 = 2\ m_0$ **(7)**

Strong force $m_S*v^2/c^2 = 701/5.1^2 = 2*\ 13.605693\ eV/c^2 = 2\ m_0$ **(8)**

Weak force $m_W*v^2/c^2 = 4.5859*10^6/411.108^2 = 2*\ 13.605693\ eV/c^2 = 2\ m_0$ **(9)**

Proton $m_S*v^2/c^2 = 938.27208*10^6/8304..3153^2 = 13.605693\ eV/c^2 = m_0$ **(10)**

Neutron $m_W*v^2/c^2 = 939.5641*10^6/8310.03537^2 = 13.605693\ eV/c^2 = m_0$ **(11)**

2e Force carriers of photons

Velocities

We can order the strength of the four forces by looking at their **velocity in respect to their force carriers** rest mass compared to the rest mass of the Photon m_0, we can use the velocity as a strength measurement since its square together with mass gives the auto kinetic velocities in Table 2. Ref 1.

Table 2

- Photon $\sqrt{2}\ \sqrt{(m_0\ /[2m_0])} = c = 2.9979*10^8$ m/s **(12)**
- Gravitational force $\sqrt{(m_0\ /m_G)} = c/15.23 = 19.7*10^6$ m/s **(13)**
- Electromagnetic force $\sqrt{2}\ \sqrt{(m_0\ /m_e)} = c/137.035999 = 2.1869*10^6$ m/s **(14)**
- Weak force $\sqrt{(m_W\ /m_P)} = c/411.108 = 3.65*10^5$ m/s **(15)**
- Strong force $\sqrt{(m_0\ /[2m_0])} = c\ /5.1 = 5.88*10^7$ m/s **(16)**

3. The Harmonic series method

1. The Harmonic series method can separate the rest mass into numerical numbers representing masses, charges and oscillating frequences of the particles and are only depending on the rest mass.
2. The Betafunktion is describing the different values of the inverse fine structure constant.For example : beta 2

= 137.035999084, where we have several values of this constant.
3. The Eta function is exponential degree number of the Beta function as for example : $E(2) = Beta(2)^2$, $Eta(3) = Beta(3)^3$,..... $Eta(5) = Beta(5)^5$,where the Beta function has the argument x, which means $Eta(x) = Beta(x)^x$.
4. The quark number Q is the distance as the different quarks have. The ratio between the upquark and the downquark is Q = down / up = 2.11892674 = 2 x 1.05946 = 2 times a half tone step in frequencyin the 12 - tone scale of the Music world.
All particles follow the Music Theory !
With the new Harmonic series method the masses of a number differemt particles were determined with very good results compared to the CERN measurement, which are seen in Table 3.
.

4. The speed of information

It is assumed by Albert Einstein and others that the energy transfer velocity of the physical forces is the so called "speed of light" c. We can then formulate the Force Carrier Equation. Ref 6.

Equation of a Force-Carrier

The Ratio-mass law coupling coefficient k_x for a force x with force carrier with rest mass m_x is given by

$$\mathbf{c\sqrt{(k_x*2m_0/m_x)}=c} \quad \mathbf{(17)}$$

where c is the speed of light and $2m_0$ =2x13.605692… eV/c^2 is the restmass of an dual Photon.
Mass of the Zeta Boson Weak Force Carrier**
For the Zeta zero Boson, weak force carrier we will be given:

$$\mathbf{c\sqrt{(k_z*2m_0/m_Z)}=c} \quad \mathbf{(18)}$$

or as we write it for simplicity

$$\mathbf{c\sqrt{(k_z*2m_0/Z^0)}=c} \quad \mathbf{(19)}$$

β_6 = 136.87,… is the inverse fine structure constant of degree 6, β_8 = 136.79,… is the inverse fine structure constant of degree 8, here k_Z is the Weak coupling coefficient and $Z^0 = m_Z$ is the mass of the force carrier Zeta Boson..
Then with the constant k, and the mass $Z^0 = k * 2 * m_0 * 2^{24} * \beta_N^1$ = $k*(136.79/2^{-x}) * m_0$ = $1.6 * 2^x*2*13.605693*136.79$ eV/c^2 = $1.6 * 2^{24} * 2 * 13.605693 * 136.79$,… = $81.1469 *10^9$ eV/c^2 =
= $(13/10)^2 * \beta_6^5$ = $1.3^2 * \beta_6^5$ = $1.3^2 * 136.87^5$,… = $1.69 * 48.0 * 10^9$,…
Where x is the integer x = 24. And 2*13.605693 = 27.211,… is the dual Photon or electric charge, and 128 =
2^7 Which corresponds to over 99.95% by the mass given by CERN of $Z^0 = 81.1875$ GeV/c^2
Example 4: Mass of the Dual Photon

$$\mathbf{m_\Upsilon = 2Gg/c^3} = 2*2.4254433824*10^{-35} \text{ kg} = 2*13.605691 \text{ e V/c}^2 , \quad \mathbf{(20)}$$

5a. Mass of the Higgs Boson Force Carrier

For the Higgs Boson we will then have:

$$\mathbf{c\sqrt{(k_H*2m_0/m_H)}=c} \quad \mathbf{(21)}$$

α= 1/ 137.035999 is the fine structure constant, here k_H is the Higgs coupling coefficient and m_H is the mass of the force carrier Higgs Boson..
Then with the fine adjustment constant k, and $m_H=k*2*m_0*2^{25}*\alpha^{-1}$ = $k*(137.035999/2^{-x}) * m_H = k*$ $2^x*2*13.605693*137.035999$ eV/c^2 = $k*2^{25}*2*13.605693*$ 128 *1.070593742 = $k*125.12244 *10^9$ eV/c^2
Where x is the integer x = 25. And 2*13.605693 is the dual Photon or electric charge, and 128 = 2^7 Which corresponds to over 99.95% by the mass given by CERN of m_H=125.18 GeV/c^2

5b. More accurate rest mass of the Higg's boson

From the force carrier equation

$$\mathbf{c*\sqrt{([2^x]*2m_0/ (\alpha m_H))} =c} \quad \mathbf{(22)}$$

with α= 1/ 137.035999 is the fine structure constant , setting x=25, we solve for m_H the rest mass of the Higg's boson
$m_H= 2m_0 2^{25}/ \alpha$ = 125.11925 GeV/c^2 , and **the inverse alpha value** $\alpha^{-1}_2 \approx 137.035999$,…

this corresponds to the mass weighting of the Higg's boson from CERN of
125.18 ± 0.16 GeV/c^2 , 2012.
Now later the value has been more precise as $m_H = 2m_0\, 2^{25}/\, \alpha = 125.1224467$ GeV/c^2
with the inverse alpha value $\alpha^{-1}{}_2 \approx 137.035999,\ldots$

6. Perfect quarks

We will use the Harmonic method
The solution to the equation

$$\mathbf{Q_0^{1/13} = 2^{1/12}} \quad \mathbf{(23)}$$

Is the equal tempered second (Music theory language) in the twelwe note chromatic scale , s.t,.
$\mathbf{Q_0 = 2^{13/12} = 2*\, 2^{1/12}} = 2*\, 1.059463094,.. = 2.11892618872,\ldots$ **(24)**
This number differs from our old value of Q_0 by less than 1/1000000 , a Millionth part in relative On assumption that the value of Q_0 should actually be :

$$\mathbf{Q_0 = 2.11892618872,\ldots} \quad \mathbf{(25)}$$

7. The Information Theorem

The specific velocity of a particle is given by the hyperbolic equation
$$\mathbf{v = c^*\, \sqrt{\,[2*m0/m\,]}} \quad \mathbf{(26)}$$
Here c is the speed of light , and $2*m_0 = 2*\, 13.605693,\ldots$, is the Photon restmass and m is the restmass of some particle beeing analyzed , Now assuming that a Photon has the restmass $2*m_0$, then it's specific velocity , setting $m = 2*m_0$, will be
$\mathbf{v = c^*\sqrt{\,[2*m_0/m\,] = c^*\sqrt{\,[2*m_0/\,(2*m_0)\,] = c}}}$, (about 2.187 million meters per second,in, m/s, meters per second) **(27)**
- the speed of light (299792458 m/s) , also the specific velocity of an electron particle , e^+ , will be :
$\mathbf{e^+ = m_e = \ 2*\, 13.605693,\ldots * 137.035999084^2\ ,\ldots = 510998.9594,\ldots\ eV/c^2}$ **(28)**
and
$\mathbf{\alpha^{-1} = 137.035999084,\ldots}$ **(29)**
The inverse fine structure constant , with the "wonderful" function w(x), value , w(-1) = 137.035999084,…
The total energy or Information is given by the very known kinetic energy equation and Albert Einstein's famous formula;
$$\mathbf{E = mv^2/2} \quad \mathbf{(30)}$$
And
$$\mathbf{E = mc^2} \quad \mathbf{(31)}$$
Then the electron carries the information
$\mathbf{E = mv^2/2 = 2*\, m_0\, c^2\, /\, 2 = m_0\, c^2}$ **(32)**
…and the Photon carries
$\mathbf{E = mv^2/2 = 2\ m_0\ \ c^2\ \ /\, 2 = m_0\, c^2}$ **(33)**
The two particles carries an equal amount of information, given in electron volt per c squared , (eV/c^2)

8. Pi-Meson and other particles

Define restmass for the pi-zero meson by;
$\mathbf{\pi^0 = w\, *\, ^4 = 3.838056\, *\, [136.95882335,\ldots]^4 = 134976600.0}$ **(34)**
$\mathbf{v = c^*\ \ \sqrt{[2*m_0/m\,]^{1/2} = c^*\, \sqrt{([2*m_0]/\,[w\, *\, ^4])} = 134605.780923\ m/s}}$ **(35)**
then for kinetic mass we get ,(with 299792458 m/s)
$\mathbf{m' = mv^2/[2*c^2\,] = 134976600.0\, *\, [134605.780923]^2 = \ 134976600\, *(134605.780923)^2\, /\, (299792458)^2\, /2 = m_0}$
(36)
so again;
$$\mathbf{E = m_0\, c^2}$$

(37)
And the information principle holds. with with
The Beta function given by
9a. Inverse alpha (Beta) constant restmass calculation

The 'Wonderful' sequence
The wonderful function
w(-4) = 510998.9594,… e^+
w(-3) = 50976.5049587,… m_{50}
w(-2) = 2227.1666666,… C_{22}
w(-1) = 137.035999094,…
w(0) = 13.60569312299,… m_0
w(1) = 3.838056 = 2*(3/10 + 1.618033989,… +) , wonderful
w(2) = 2 Two/Octave
w(3) = 3/2 Quint
w(4) = 1.333987,… Proto/Fifth
w(5) = 1.12604805,… Tert/Third
w (6) = 1.08333333333,… Septi
w(7) = 1.05946309436,… Q/2 , Semitone , Quarcus
w(8) = 1.03406294128,… π^0 , Picharge
w(9) = 1.012764,… Zcharge
w(10) = 1.007827,… Kcharge
w(11) = 1.00596545241
w(12) = 1.00447733784
w(13) = 1.00348526146
w(14) = 1.00279080799
w(15) = 1.00228575092
w(16) = 1.001907
w(17) = 1.00161557904
w(18) = 1.00137837558,… Nuke/Nuclearcharge
generally for , x>8 we have , the adjusted Harmonics ;

w (x) = const *[2*(x-5)+1]/ ([2*(x-5)+1] -1) (38)

And all numbers shall be multiplied by the very very small adjustment constant
const=1.00046589/1.00045289 =1.000013

9b. The Beta function , Inverse fine structure , (x)
-4 137.4389
-3 137.30528
-2 137.22
-1 137.12570176
0 137.074
1 137.035999084
2 136.99
3 136.975
4 136.9588235
5 136.92175
6 136.9

9c. Eta function , (x)
-3 2588580.73292
-2 18829.3284
-1 137.12570176
0 137.13001893
1 137.074

2 18778.865045
3 2570789.9711
4 351679634.733
5 48124018069.4

9d. The Quark Powerfunction , Q(x)

$Q(x)= 2 * 2^{x/12}$
(39)

9e. The Quark exponential mean sequence
Up 2213614.6478
Down 4427229.2956
Strange 95185429.8553
Charm 1274744581.3
Bottom 4291875730.34
Top 1.72520271191e+11
We here extend the Information principle into all other elementary and fundamental particles, beeing equal effective as the Photon and the electron..

10. Examples:

$2* 13.605693,\ldots * [137.035999,\ldots]^2 = 510998.950003,\ldots = abs(e^-) = e^+$ = Positive electron = positron

$2 * w_2 * w_0^3 = 2 * w_2 * [137.035999,\ldots]^3 =$
$2 * 3.86166578819,... * [137.035999,\ldots]^3 = 139811995.552 = \pi^+$ = Pi-plus meson

$2 * (w_6 * w_7)^{-1/4} * w_2 * w_0^3 =$
$2 * (w_6 * w_7)^{-1/4} * 3.86166578819,... * [137.035999,\ldots]^3 =$
$2 * 1.035379847^{-1} ,... * 3.86166578819,... * [137.035999,\ldots]^3 =$
$1.035379847^{-1} ,... *139811995.552 = 134976800,\ldots = \pi^0$ = Pi-zero meson

$2 * 1.330333,\ldots * [137.035999,\ldots]^4 = P^+$ = Proton

$2* w_1 * [w_{-1}]^2 = 2 * 13.605693,\ldots * [2227.218841,\ldots]^2 =$
$2 * 13.605693,\ldots *4960503.768,\ldots = 134.9821827 = \pi^0$

$(w_6 * w_7)^{-1/4} * \pi^0 = 1.035773738^1,... * \pi^0 = 139811995.552 = \pi^+$ = Pi-plus meson

$229.4336509,... * 2227.218841^1 =$
$1.0625^{-1} * 1. 33333^2 ,.. * 137.035999,\ldots * 2227.218841 = h^{-1} * w_4^2 * w_0 * w_{-1} =$
$[16/17] *[4/3]^2 * w_0 * w_{-1} = 1.674258243,... * 137.035999,\ldots * 2227.218841^1 =$
$(w_6^{1.95} * [2*w_4] * w_0 * w_{-1}) = 510998.9495,\ldots = e^+$
$\approx 1.67,... * w_0 * w_{-1}$

$2 * m_0 * [w_{-2}]^{0.6666,...} = 2 * w_1 * [w_{-2}]^{0.6666,...} =$
$6 * 13.605693,... * 50976.50525^{3/2} ,... =$
$81.54177653,...,... * 50976.50525^{3/2} ,... = 939565379.0,... = n^0$ = neutrond

Table 3

List of particles

New method		**CERN**
e^+	510998.959446 eV/c^2	0.511 MeV/c^2
P^+	938.2720881629 MeV/c^2	938.272 MeV/c^2

n^0	939.5653790 MeV/c^2	939.5656328 MeV/c^2
π^+	139.811995552 MeV/c^2	139.57018 MeV/c^2
π^0	134.9821827 MeV/c^2	134.9766 MeV/c^2
H	125.12244 GeV/c^2	125.18 GeV/c^2
Z^0	81.1469 GeV/c^2	81.1875 GeV/c^2
Quarks		
Topp Q	172.3656 GeV/c^2	172.52 GeV/c^2
Bottom Q	4277.4105 MeV/c^2	4279.145809 MeV/c^2
Charm Q	1273.6890 MeV/c^2	1274.828916 MeV/c^2
up Q	2.216346 MeV/c^2	2.213614 MeV/c^2
down Q	4.690604 MeV/c^2	4.6 MeV/c^2
strange Q	94.556657 MeV/c^2	96 MeV/c^2

11. The other Quarks

Other Quarks have no , adjustment,… and are found with repeated iteration of Q. Generated with the formula $Q_n = Up * Q^x$, and Q_n is the restmass of a Quark,.. **(40)**

Now we also find the meanvalued quarks ,

Using geometric mean , then we have;

Up = 2213670.44738, eV/c^2

Down = 4690604.28256 , eV/c^2

Strange = 94556657.029 , eV/c^2

Charm = 1274828916.7 , eV/c^2

Bottom = 4279145809.8 , eV/c^2

Top = 1.72524347911e+11 , eV/c^2 .

12a. The Mass-Frequency Theorem of Elementary and Fundamental Particles

The Mass-Frequency Theorem of Elementary and Fundamental Particles (T. Barrera) will state that

The rest mass ,m , is proportional to the bandwidth l , and the mass-oscillating frequency , f , here emphazized for clarity;

m α f

(41)

i.e ; m f α k_i f_i ,

(42)

(Obs! Do not intermix the constant , k , with the index suffix , k and α = proportional to)

Axiom (an axiom is fundamental and therefore here is accentuated by a capital letter A) , (yes, this do mean that mass is also dependent on time , not only curvature) , beeing more clear then:

And the mass-oscillating (distributive) frequency , f ;

$f = A_i * \; ==> \; A_1 *_1 + \ldots + A_i *_j$

(43)

of the frequency wave function , $_j$, s.t;

$y_j = y_j(t) => A_i * \exp(-i*n*t/l_i) = A_i y*_j$ **(44)**

with amplitude , A_i , (Obs! Do not intermix the imaginary unit , i , with the index suffix , i .)

De Moivre. Etc,.. ,- , l = bandwidth and t = time

$A_i * \exp(-i*n*t/l_i) = a * \sin(n*t/l_i) + b * \cos(n*t/l_i)$, **(45)**

And ,

$(\sin n*t/l_i + b * \cos n*t/l_i) = (\sin t/l_i + b * \cos t/l_i)^n$ **(46)**

This will mean that for a Photon E = h f , where $E=m c^2$,

And

$m = h f / c^2 \; \alpha \; k \; f_i$,

(47)

12b. Harmonic frequency spectre in the relative frequency domain

The Harmonic Frequency spectre in the relative frequency domain of the wonderful function, denoted , $w_k(x)$, here on x , by taking a product function , , on Harmonics , here on N, s.t.,

$f = f_0 \quad w_k(N) = f_0 \, w_k \quad [N_k + 1] / [N_k])^4$ **(48)**

Frequenct shift f_0 ,Then for a Proton , a multiplicative language;

$P^+ = w(2) * w(3) * \beta_4^4$ = 2* (4/3) * ^{4} = 2* (4/3) * 136.9588233^4,… = 938272088.1629,… eV/c^2 **(49)**

With the modified inverse fine structure constant power exponent four,

$(\alpha^{-1}{}_2)^4 = \beta_4^4 = 136.9588233^4,\ldots \approx 351588520.398$ **(50)**

, we will have harmonic oscillation poduct , F , when the irrational , β_4^4 , basis , is retracted

$F = w_k(N) = (4/3) * (3/ 2) * (2/1) = 8/3 = 2.66666666,\ldots$ **(51)**

We have the fourier series

$yj = y_j(t) = A_1 * \exp(-i*1*t/l_i) + A_2 * \exp(-i*2*t/l_i) + A_3 * \exp(-i*3*t/l_i)$ **(52)**

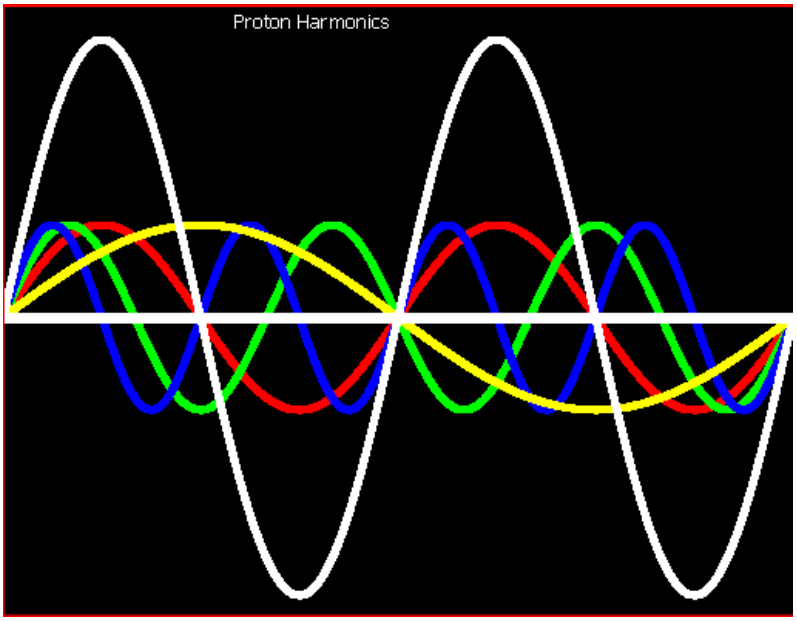

Fig 1 Proton Harmonics

Then for a neutron , using the multiplicative language;

$n^0 = w(2) * w(3) * w(Nuke) * \beta_4^4$ = 2* (4/3) * ^{4} = 2* (4/3) * 136.9588233^4**,…*** 1.001378375,… = 939565378,… eV/c^2 **(53)**

Nuke is a index pointer , attaching the Nuclear charge 1.001378375 by multiplication ,with the modified inverse fine structure

constant power exponent four, the Eta – function ^{4} = (x) ,

$(\alpha^{-1}{}_2)^4 = \beta_4^4$ = 136.9588233^4,… ≈ 351588520.398 **(54)**

, we will have harmonic oscillation product , F , when the irrational , β_4^4 , basis , is retracted

$F \approx w_k(N) = (4/3) * (3/ 2) * (2/1) * (729/728) =$ 5832/2184 = 1459/546 = 2.67032967033,… **(55)**

And simplifying , we then have the fourier series based on the composition of the rest mass.

$y = y_j(t) = A_1 * \exp(-i*1*t/l_i) + A_2 * \exp(-i*2*t/l_i) + A_3 * \exp(-i*3*t/l_i) + A_4 * \exp(-i*728*t/l_i) + A_5 * \exp(-i*729*t/l_i)$ **(56)**

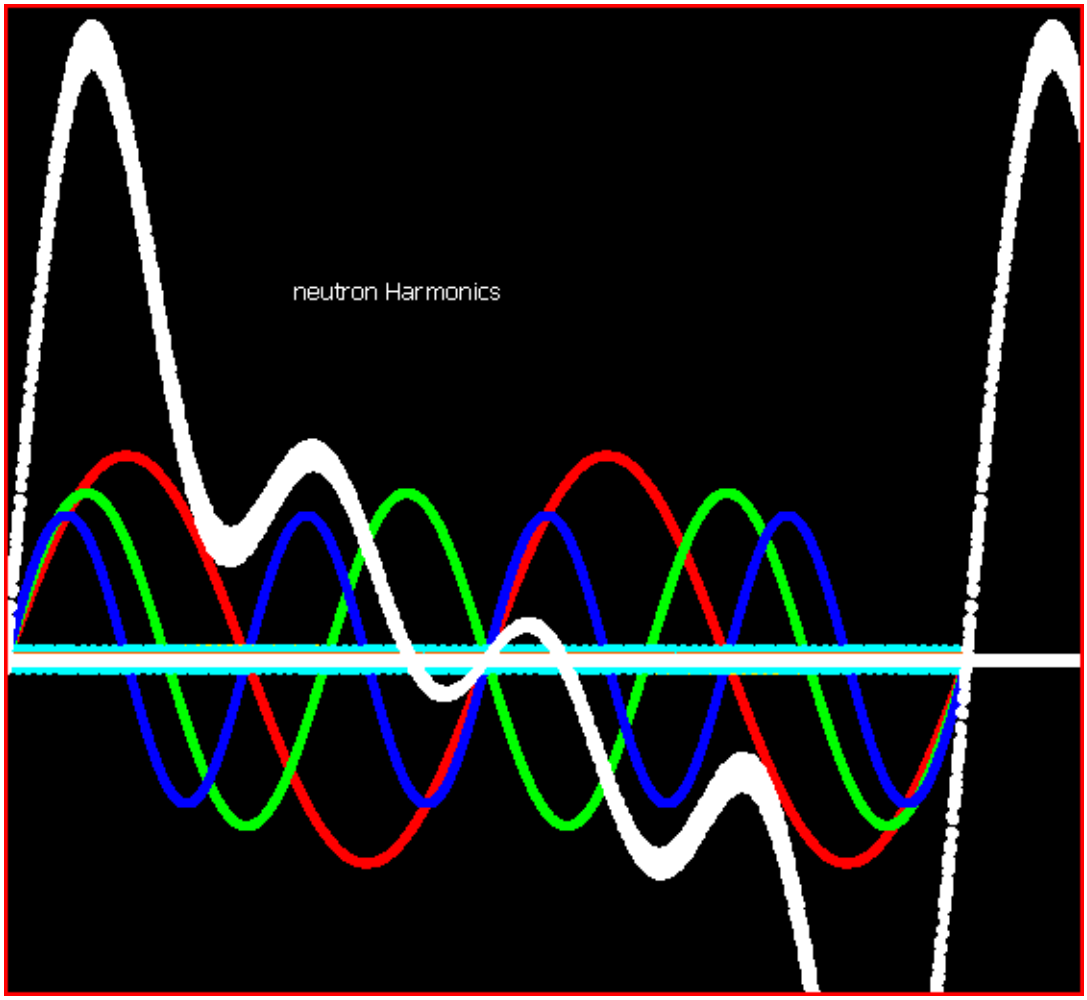

Fig 2 Neutron Harmonics

As consequences of Figs 1 and 2 are the following observations for protons and neutrons : The presence of mass gives minus charge and the absence of mass gives positive charge. The rest mass of a particle is unique and an exact identity for all particles. The difference in mass between neutrons and protons is very important.

12c. The frequency and percieved mass of a photon

The energy ,E , of a Photon oscillating at the frequency , f, is'

$$\mathbf{E = h\ f} \quad \mathbf{(57)}$$

And the carried mass will then be

$$\mathbf{m = h\ f\ / c^2} \quad \mathbf{(58)}$$

in the n:th orbital of a Hydrogen atom we have the Photon energy

$$\mathbf{E = m_0\ c^2\ /n^2} \quad \mathbf{(59)}$$

i.e,.. the mass

$$\mathbf{m = m_0\ /n^2} \quad \mathbf{(60)}$$

with

$m_0 = 13.605693084122994\ eV/c^2$

in free empty vaccuum with two paralel waves the dual Photon have the restmass

$m = 2 * m_0 = 27.2113861682\ eV/c^2$
(61)
generally speaking;
$E_n = (1/n^2) * m_e * e^4 / [2*(4*\pi*m_0)^2 * h^2] = m_0 = 13.605693084122994\ eV/c^2 = 1\ Ry$
(62)
In the n:th orbital ,
$m_e = e^+ = 510998.959446\ eV/c^2 = 9.1093837* 10^{-31}\ kg$, is the electron mass , also we note the singular Photon mass **(63)**
$m0 = 13.605693084122994\ eV/c^2 \approx 2.35*10^{-35}$ kg , e^4 , denotes the fourth power electron charge , e , also m_0 and h , the Planck , constant , $h = 6.62607015* 10^{-31}$ J, in Joule , now the frequency ,f ,
$f = m_0 * c^2 / h = 3.18752235068* 10^{15}\ Hz$, **(64)**

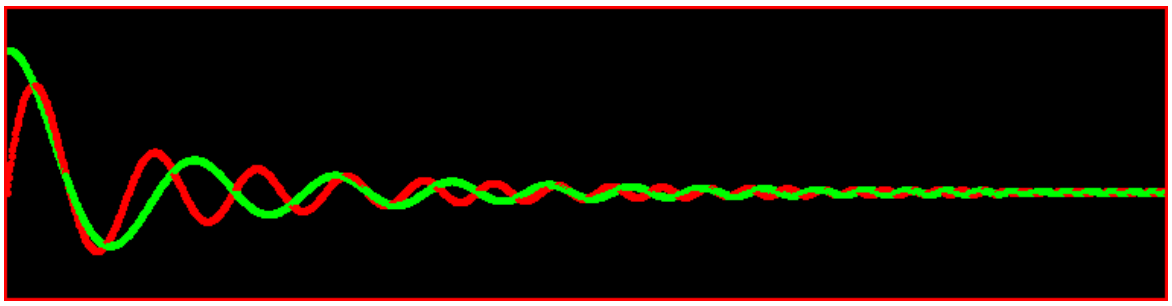

Fig 3 The swinging of a double photon of a pulse train in perspective transformation

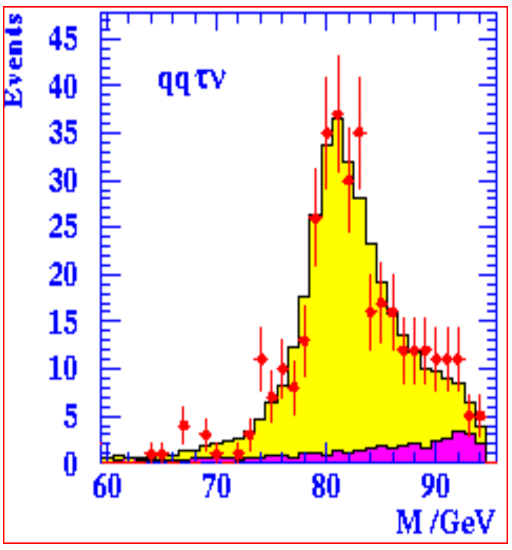

Fig 4

Quarks building Protons and Neutrons
Only about 1% of the Nucleon restmass of Proton , 938.272088 MeV/c^2 and neutron , 939.565479 MeV/c^2 comes from the three valence Quark restmasses, the rest comes from the strong force dynamic, which could be the force of the mass which Quarks build up the rest of the particle.

13. Discussion

In our previous paper Ref Pek 8 about the Photon in the Universe we showed its importance there together with the new intensity formula.In this paper we will further describe its importance there together with its importance for calculating the restmass of particles, an electron force carriers and information tranferes by using a new Harmonic series method. The force carriers cannot carry more energy than the electromagnatic pair of Photons, because they cannot go faster than light and they produce two Photons according to Table 1. We can also see that the protons and the neutrons include one Photon each , which means that the Photon is included in all matter. Table 1 also shows that the Photon is included in different forces of physics. We have also determined the different velocities(Table 2) in respect to their force carriers compared to the restmass of the Photon m_0.These velocities are a kind of strength measurements of the different forces, where the Photon

restmass is central.

According to the Information Theorem, we have also studied the total information (energy) a particle will carry. At these studies we have shown that an electron carry the same information (energy) as a Photon carries in eV/c^2.

According to the new method using Harmonic series the Mass Frequency Theorem of Elementary and Fundamental Particles will state that the rest mass is proportional to the inverse bandwidth and the mass-oscillating frequency and space -time. In the Harmonic series method will use these facts by separating the values of the particles into numerical numbers.These numbers represent masses,charges and oscillation frequences of the particles and are only dependent on the rest mass of the particles. The results of these mearurements with the new method are very precise and give very good correlation to the CERN -values, which can be seen in Table 3. Here all particles have mass.In this method no accelerator has been used.

An experiment in agreement with our measurements is coming from Germany. They have found the following results.Light can be directed in different directions, usually also back the same way. Physicists from the University of Bonn and the University of Cologne have however succeeded in creating a new one-way street for light. They cool photons down to a Bose-Einstein condensate Ref 7, which causes the light to collect in optical "valleys" from which it can no longer return.These kept photons must have mass, otherwise they were not kept in these small "valleys".In our model all particles have mass.

Particle mass measurement in this paper are not in line with Standard Model. This new mass measurement are different to the result expected when scientists work out the mass using the **theory outlined in the Standard Model.**

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References : bara en del skall vara med.Har du andra också?

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