The mass of a photon is the key of all source of energy & the result of complete unified theory; it can explain the structure of electron, which is the basic source of all energy like particles, stars, and computer's function, EMR etc.

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ABSTRACT

The structure of electron and electromagnetic radiation is unknown to us. Knowing the mass of a photon, the structures of these have been shown in this script. The accurate mass of a photon is not known. The scientists are trying to find out the mass from 1936, but the results are not matching each other. It has been described in the book complete unified theory, this theory is very important and applicable from the particle to the universe. The application of this structure will help to improve & bring the computer fast, can omit lot of hazarded.

Key words : New style of concept Structure of electron, EMR; Planck constant, Eigen value of electron, quantum circulation of black hole, Curie, Einstein equation.

Determination of mass of a photon (σ), structure of electron, EMR and unification of physics

In this article we shall adopt an unusual and hitherto unknown concept involving the magic number (N_A = Avogradro number = 6.0221367×10^{23}) of one-gram molecules or atoms of any substance. According to the quantum theory, the energy has discrete nature having smallest possible value $h\nu$. From the theory of mass energy equivalence of Einstein, the total energy contain in an atom can be equivalently represented by means of the aggregate of discrete quanta. Now let us suppose that Avogadro number of photons are equivalent to the energy of any atom in its lowest state. If each photons of mass say, σ & if these photons behaves like ideal gas inside the atom, then we can write :

$E = ½\ N_A\ \sigma\ c^2$ ----- (1) as its energy stored in ground state. Again the Compton theory of photons scattering by an atom (taken as atomic mass constant $m(C^{12})/12 = m_u$) gives us Compton wavelength of electron $\lambda_c = h/m_e c$ & for atom $\lambda_u = h/m_u c$. The energy of an electron bounded in the atom in its ground state is given by $E = m_e c^2$. Let the hypothetical atom (m_u) as $E_1 = m_e c^2 \times (\lambda_u/\lambda_c) = 4.49128 \times 10^{-10}$ erg = 0.2803 kev (This energy is showing the average energy of Eigen value of electron between first and generating state)---- (2) Again Avogadro number of this value brings 1.68×10^{17} Gev, the energy range of unified theory. So, the equation (2) has some meaning and now this may utilized which based on the assumption that total energy of the said atom can be expressed numerically as same multiple of electron rest energy. Then from equating (1) &(2),

$$½\ N_A\ \sigma\ c^2 = m_e\ c^2 \times \frac{\lambda_u}{\lambda_c}$$

$$\sigma = \frac{2h^2}{N_A m_u \lambda_c^2 c^2} = 1.659619614 \times 10^{-54} \text{ gm} \text{ ----(A) Or } N_A \sigma = \frac{2h^2}{m_u \lambda_c^2 c^2} = 9.99445618 \times 10^{-31} \text{ gm} \text{ ---(B)}$$

The equation (A) is showing the mass of a photon, where some investigators tried to find out the mass of a photon experimentally[1] from 1936, but the results are not tallying each other. The application of A or B proves in the field of photochemical relation of Stark-Einstein equation[2]. On changing the mass of atom by an electron in the above equation and by applying the theory of relativity of mass of Einstein, we get the equation of the *unification of physics* which is applicable from the particle to the universe in simple way:

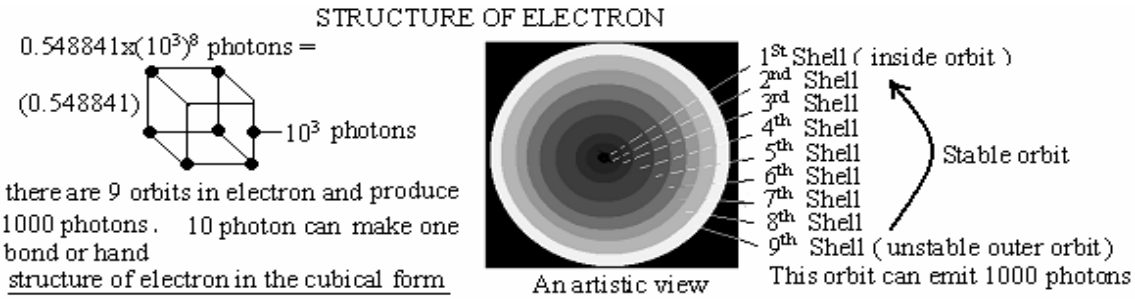
$$N_A \sigma' = \frac{m_e (m_0^2 - m_1^2)}{\pi^2 m_1^2} \text{ ------(C) or } \sigma' = \frac{m_e (m_0^2 - m_1^2)}{\pi^2 N_A m_1^2} \text{ ------ (D)}$$

But to explain the complete unified theory, it require to know the mass of a graviton by which gravitational force is occurred. Here, the equation of mass of a photon is explained as :

$$\sigma = 8\pi^2 g_\eta^2 G^2 \frac{m_e^{\,2}\, m_u}{N_A \lambda_c^2 (\lambda\!\!\!^{-}/\beta)^4 c^2} = 1.659619615\text{x}10^{-57}\ \text{Kg} \qquad (E)$$

This equation is the master key of the universe; the complete unified theory & so explain many known and unknown phenomena from the particle to universe. Lot of examples are there of the equation A, C and E. Here, we will discuss about the *Structure of electron*:

The electron is made up of by $0.548841\text{x}10^{27}$ photons. Now $0.548841\text{x}10^{27}$ photons be shown as $0.548841\text{x}10^3\text{x}10^3\text{x}10^3\text{x}10^3\text{x}10^3\text{x}10^3\text{x}10^3\text{x}10^3$ photons = $0.548841\text{x}(10^3)^8$photons. If 10^3 photons makes bond as $10^3 = \vdash$ and so,



Determination of energy by using 1000 photons from an electron which will similar to Eigen value of electron as follows :

$$\text{Energy of electron} = \frac{(1000\ \text{photons})(\text{energy of a photon})}{2\sqrt{\frac{3}{2}}\ (\text{Å})^2} = 38\ \text{ev at zero point energy}$$

Where,3/2 is the angular quantum number (l=1) and we can write Å as l also which scientist Eigen use this l as length. But the Eigen value of energy[3] of electron at zero point is 37.6 ev. $E_n = n^2\pi^2\hbar^2 / 2m\,l^2 = 37.6$ ev (when, $n = 0$, $E_n = 0$). So the above system follows quantum number accordingly. In a computer, the function of electron is most important and the photons may liberate from electron to do work to follow the above hand over take over process by taking 10^3 photons from one electron to other. Similarly, if we divided 10^6 photons by $\sqrt{2}$ as quantum number ($l = 0$), then we will get $6.5830\text{x}10^{-16}$ev which is showing the value similar to Planck constant[4] ($\hbar$ /[e] = $6.5821\text{x}10^{-16}$ev-s). So, the mass of a photon is very important in the microscopic field of particle. The equation C or D is the equation of unification of physics, this equation is applicable in materialistic world from the particle to the universe. If we classify the equation E, we will get Hawking equation[5] and finally it bring the quantum circulation of black hole $(2\pi\ h\ G\ /\ c\ )^{1/2} = 3.0440727\text{x}10^{-26}\ \text{m}2\ /\ \text{sec}$), a new phenomena by which we can classify the black hole in proper way. On arranging the equation E, it is possible to calculate the lifetime of electron, atom[6] also. The equation of unification physics is very important which is deducing from the equation of mass of a photon. In this equation, the value of Pi at excited state changes as :

$$\pi_e = 3.152970491\text{x}\sqrt{\frac{m_0^{\,2} - m_1^{\,2}}{m_0}}\quad \text{(The equation to determine the value of Pi at excited state)}$$

here, m_1 is the mass of Alfa particle (4.033 amu) and it is constant for calculating the energy in excited state of particle. As a result, the value of Pi changes accordingly on the mass of particle. The real equation of unification of physics will

$$N_A \sigma_0' = \frac{m_e(m_0^{\,2} - m_1^{\,2})}{\pi_0^{\,2} m_1^{\,2}} \text{ or } \sigma_0' = \frac{m_e(m_0^{\,2} - m_1^{\,2})}{\pi_0^{\,2} N_A m_1^{\,2}} \text{ at rest}$$

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The equation for the unification of physics

we can use the above equation for the universe as $\sigma_e' = \frac{m_e\, m_o^2}{\pi_e^4\, N_A\, m_1^2}$

(because, the mass of Alfa particle is very small to compare the mass of the star universe. For the white dwarf, π^4 will change to π^5 as the value of Pi can not large enough, the max. value of Pi at excited state found as 3.152974091. This equation will use for the birth of stars).

Avogadro number of this energy indicates the birth of stars, galaxies thus the birth of the universe. If the mass of populated photons (σ') is same as the mass of electron, then we will get the energy spent by the sun per second and putting this value in the equation $m_0 = N_A \sqrt{\sigma'} / Cic$, we can get the mass of the sun. Here, Ci = One Curie unit, c = velocity of light and m_0 is showing the internal function of matter & is the definition of matter which we cannot get from the traditional theories. Accordingly, Einstein equation ($E = m_0 c^2$) will turn into $E = N_A^2 \sqrt{\sigma'}\, c/Ci$.

Again, if $\sigma' = m_0$, then get the maximum mass of the universe which is 1.967902767 times larger than the mass of the observed universe (5.4×10^{53} gram). When $W = N_A \sqrt{\sigma'} / c\lambda$, here, λ = disintegration constant, then we can determine unknown weight of radioactive elements after calculating the value of Pi. But the Curie equation[7] for this purpose is $W = m_0\, Ci / N_A\, \lambda$, both the result will same. Again this proves that the equation of mass of a photon is perfectly correct.

Now we want to enter into the electromagnetic radiation which is important for communication. We know the energy range of it, but we have no information about its structure. So let us try to find out the structure of EMR here taking the mass or energy of a photon.

Introduction: Since radiation and propagation of radio waves cannot be seen, all our descriptions must be based on theory, which is acceptable only to the extent that it has measurable and predictive value. The theory of EMR was proposed by the British physicist James Clerk Maxwell[8] in 1857 and finalized in 1973.

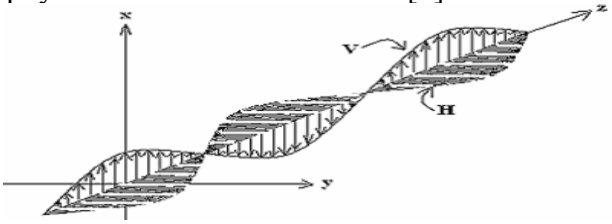


Figure : EMR Transverse wave in free space.

The direction of electric field, the magnetic field and propagation are mutually perpendicular in EMR. This is a theoretical assumption that cannot be checked since wave is invisible.

To determine the structure of EMR, we can take the energy level of radio frequency and microwave as a reference from the following energy range of electromagnetic radiation[9].

Name of the radiation	Energy range
Radio frequency	$0 - 10^{-5}$ ev
Microwave	10^{-5} ev – 10^{-3} ev
Infrared spectrum	10^{-3} ev – 1.6 ev
Visible spectrum	1.6 ev – 3.2 ev
Ultraviolet	3- 2 x 10^3 ev
X - ray	1.2×10^3 ev – 2.4×10^5 ev
Gamma rays	10^4 ev – 10^7 ev

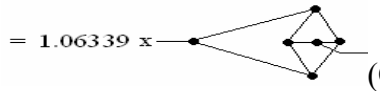
The energy range of electromagnetic radiation is 10^{-5}ev – 10^{-3} ev, the difference of energy between 10^{-5} and 10^{-3} is 9.9×10^{-4} ev. This energy is responsible to create microwave radiation and contain 1.06339×10^{18} photons (because, energy of a photon is 9.309779×10^{-22} ev) & so,

1.06339×10^{18} photons = $(1.06339)10^3 \times 10^3 \times 10^3 \times 10^3 \times 10^3 \times 10^3$ photons

If 10 photon can make 1 bond as ⊷, then 10^3 photons will produce 3 bonds as ⊷

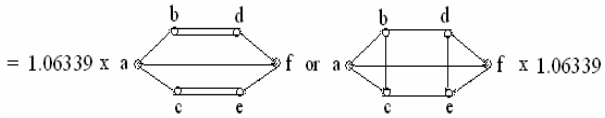
1.06339×10^{18} photons = (1.06339) x ⊷ x ⊷ x ⊷ x ⊷ x ⊷ x ⊷

We can arrange the above bonds of microwave to create the structure as :



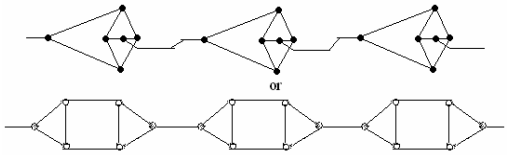
(Outer bond or active link, which may ready to form bond)

Figure –1



Hexagonal type picture

Figure - 2

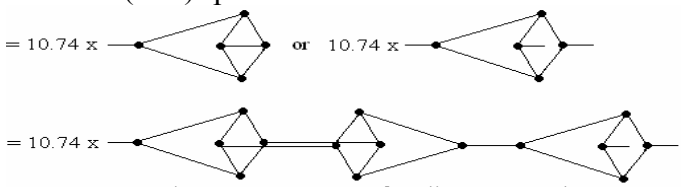


(Figure – 3 Open bond system structure)

(probable structure of microwave)

In the case of Radio frequency, we can write,

10^{-5} ev = 10.74x(10^{3})^{5} photons.



(Figure – 4, Structure of Radio Frequency)

Conclusion: If it is possible to detect the structure, then we can able to make new type energy, which may help for mankind in future. So, the mass of a photon[10] is very important in all energy fields, even in computer science, this may help to run fast the data process by using the structure of electron in a software/hardware. Moreover the complete unified theory will help to find the unknown characteristics of particle thus matter, stars, black hole etc. It is really strange that there are many distasteful assumptions present in our traditional theories, which need to clarify for the better achievement of the world science by using this theory.

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