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The Single Nature of Light

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ABSTRACT
As we know light concerns each one of us,the beauty of light and its effects has fascinated everyone of us. So far lots of theories were proposed which explained the nature of light and matter and consider light as a double nature. This paper explains the single nature of light and motion/ behavior of photon.

CONTENTS

Keywords: Dense photon, wave of particle, De Broglie equation**,** polarisation of light. polarisation of light.

I. INTRODUCTION

The most wonderful thing of Nature is 'LIGHT' so far we know that light is a dual nature ie, Wave and particle(matter). Initially two theorieswere proposed by Newton(corpuscular theory) and Huygen's (wave theory) .These two theories explained several phenomenon of light and then electromagnetic theory and quantum theory were proposed which conclude light as a double nature. But How can a single thing have dual nature?according to above theories When there is photoelectric effects then the light is particle and When there is a interference of light thelight is a wave strange!. This paper explain the single nature of light.

II. SINGLENATURE OF LIGHT

This paper explain that Light is not only the particle and not onlythe wave "light is a wave of particle".

2.1 Structure of light

Light is a wave of packets of energy (photon, particle , matter) emitted from the source of lightas shown in fig no -02. This is a new view of light to world.

2.2 Position of photon

Distance between to photon is constant from its outer surface (not from center)

2.3 Size of the photon

The size of the photon is not constant it increase with increase in wave length and decrease with decrease in wave length(increase in frequency) as shown in fig no-03.

2.4 Thecolour of light

The colour of light is depends on thesize of photon, its mean that the colour depends upon the wave of particle (light). By keeping the amplitude same we only increased the wave length which leads to increase the size of photon because the distance between two photon is constant.

2.5 The energy of photon

The energy of a photon depends upon the frequency of light (wave of particle as we increase the frequency (wave length decreases) hence the size photon also decreases and photon become dense (density increases)increase in density simply increase theeffects ,sensation of force which tells us that the work done by dense photon is more which increasedthe energy of photon. as shown in figno - 04.

2.6 Mass of photon with energy

Increase in frequency or decrease in wavelength leads to increase in energy due to increase in density of photon

As a size of photon decreases the matter is concentrated at small volume we simply assume this

as increase in mass because the matter is become dense (see figure 01) which leads increases the result of force or momentum of force.Mass of the photon is not constant it increases by increase in the frequency(decreasing the wavelength).

Increase in the frequency of wave of particle doesnot increases the intensity of light it only increase the energy of the photon.

Figure 01- Big rare photon and small dense photon .

III. PHOTON

3.1 Nature of photon

1) photon is a packet of energy which consist some mass which may it energy
2) size of photon is not constant.
3) photon travel in a wave path according to its density or size by co-operating with other photon present in a wave.
4) The sensation of photon is only to a retina of eyes not to a skin of human(retina can sense the energy and size)
5) photon travel with speed 3×10(power of 8) m/s
6) photon may be created by gaining the energy in suitable condition and photon can destroyed it self by donating the energy to atmosphere or elementary particle(fraction impossible).
7) photon has electric and magnetic fields mutually perpendicular to the direction of propagation of photon.
8) photon is a minimum energy from the source.

3.2 Electromagnetic photon.

As the electromagnetic theory said the light is a electromagnetic wave in which the magnetic and electric fields are mutually perpendicular to the direction of propagation of wave .Here also the concept is same' The particle (photon) of wave of particle is surrounded by electric and magnetic field, Which leads to explain the polarisation of light.The speed of light in a vacuum is defined to be exactly 299,792,458 m/s (approximately 186,282 miles per second). The fixed value of the speed of light in SI units results from the fact that the meter is now defined in terms of the speed of light. All forms of electromagnetic radiation move at exactly this same speed in vacuum.This concept of electric and magnetic fields also explain the motion of light in vacuum.

3.3 Motion of photon.

A new photon may be add or remove in the wave of particle(light) while the wave of particle passes from specific molecular structure or travelling from the atmosphere due to collision with various particle this concept leads to explain the phenomenon of scattering of light. Adding o photon simply increased the intensity and removing of photon decrease the intensity of wave ofparticle. The light wave of particle in which the photon have mass hence the velocity of the photon (light) is more in rare medium due to less resistance from the medium and less in denser medium.

IV. EQUATIONS

This concept satisfy maximum the fundamental equations.

4.1 Energy equation

$E=h\nu$, or $E=h\frac{c}{\lambda}$ Where,

h=plank's constant ,c=velocity ν=frequency ,ʎ=wavelength

we decreases the wave length frequency increases and energy(E) also increases because photon become dense.

4.2 Mass / Momentum

As a size of photon decreases the matter is concentrated at small volume we simply assume as increase in mass because the matter is become dense which leads increases the result of force or momentum

$P = mc$

where,m = mass of the photon

P = momentum of photon

c = velocity of photon

here the velocity is constant so the increased in momentum leads to increase the mass of the photon as mentioned initially

Here this conceptalso satisfy the Einstein's mass energy relation

ie $E=mc^2$

It also satisfy the De Broglie equation of wave length

$\lambda=h/p=h/m\nu$

V. FIGURES

Below are some figure which will clear the single nature of light better

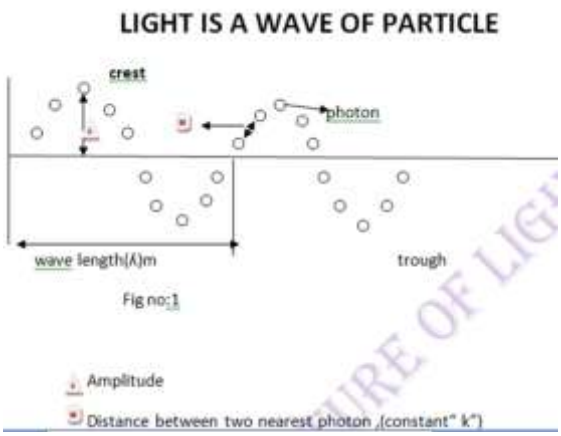

Figure 02-wave of particle nature of light

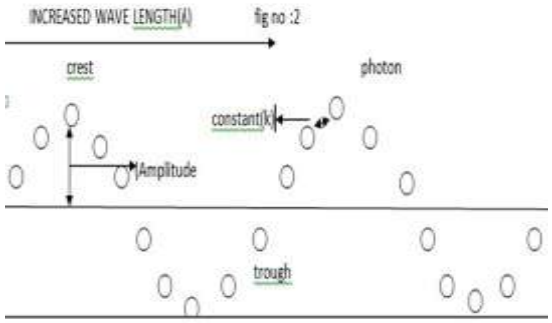

Figure 03-wave of particle with increased wave length

Figure 04-wave of particle with dense photon

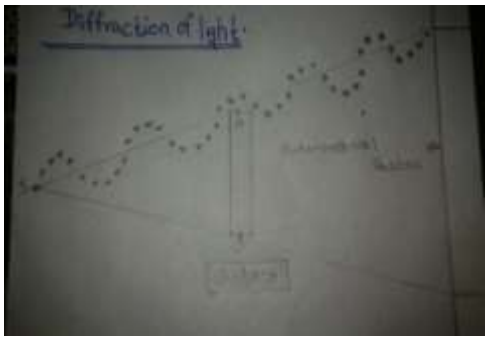

Figure 05-wave of particle showing diffraction

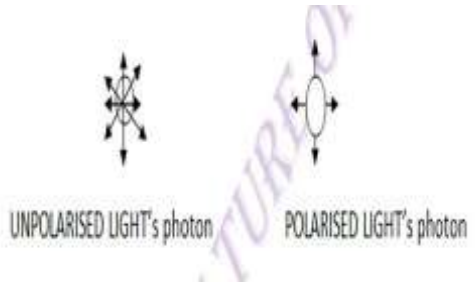

Figure 06- unpolarised and polarized photon

VI. Acknowledgment

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References

[1] G. N. Lewis, "The Conservation of Photons," Nature, Vol. 118, No. 2981, 1926, pp. 874-875. doi:10.1038/118874a0

[2] The Nature of Light, What is a Photon?" P39, Edited by Chandrasekhar Roychoudhuri A. F. Kracklauer Katherine Creath, CRC Press, Taylor & Francis Group, Boca Raton London New York, 2008.

[3] M. Planck, "The Theory of Heat Radiation," Translation by Morton Masius, P. Blakiston's Son & CO., Philadelphia, 1914.