New Properties of Photons and Photoelectric Effect

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-: Abstract :-

The photons has an important property . It is electrically neutral but couples with electric charges. That is why photons do not interact with each other ?Since photons are mass less, Photons do not interact with each other, Because it seems that the interaction between charge particles exist only when they are possesses mass, Otherwise there will be no any interaction between them.

Key words :-Photons, Photoelectric effect, Velocity of light, Momentum.

-:Introduction:-

PHYSICAL PROPERTIES

A photon is mass less has no electric charge and is a stable particle. Photons are emitted is many natural processes. In empty space, the moves at C (velocity of light) and its energy momentum are related by E=PC, Where P is the magnitude of the momentum vector P. The photons from the sun are necessary for life on the earth . However the energy is produced from fusion at the center of the sun the other two interactions in the standard model also play important roles . The photons has an important property . It is electrically neutral but couples with electric charges. That is why photons do not interact with each other ?Since photons are mass less, Photons do not interact with each other, Because it seems that

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Now Let us consider Planck's theory we have

$E = hc/\lambda$ where $E= Pc$ or $P= h/\lambda$

Here all factors of P are strictly not change . So we can observed that there is no change in the rate of momentum, this imply that there is no any interaction exist in bundle of photons.

-: New about photoelectric effect:-

We can observed conclusion from Einstein equation for photoelectric effect

$$E = \Phi + E_{electron}$$

$$\Rightarrow h\nu = h\nu_0 + \tfrac{1}{2}m_e v^2$$

$$\Rightarrow \tfrac{1}{2}m_e v^2 = h\nu - h\nu_0$$

$$\Rightarrow \tfrac{1}{2}m_e v^2 = h(\nu - \nu_0) \ldots\ldots\ldots\ldots(1)$$

Where, Φ tends to infinity or $h\nu_0$ tends to infinity,

Since Φ go the infinity, we can assume that electrostatic potential at infinity is equal to zero. After photoelectric effect process, when electrons are ejected the total energy

$$E = \tfrac{1}{2}m_e v^2 \Rightarrow h\nu = \tfrac{1}{2}m_e v^2 \quad \ldots\ldots\ldots\ldots(2)$$

So total rest mass energy of electron $= h\nu$

In this equation we can observed that the mass converted into

Energy without its own (mass) existence. So we can imagine the energy concept without existence of mass. From above equation we can also think the energy can be converted into mass. Under the right circumstances light should be used to push electrons from the surface of solid from them . This energy is equal to $h\nu$. This process is called the photoelectric effect. which give all its energy to the electron and eject it.

Conclusion:-- (1) In this phenomena we can understand the properties of photons and photoelectric effect. Also describes the total energy after photoelectric effect process, when electrons are ejected.

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