Velocity of Light is variable and depends on the Intensity of its source

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ABSTRACT :-Michelson-Morley experiment conclusively proves that Ether, the hypothetical medium does not exist. Light photons are not waves but they create waves in the medium through which they travel. It is experimentally observed that the depth to which light penetrates into a water medium varies with the intensity of its source. If light be assumed to be ballistic photons or quanta, they must then be emitted with different velocities according to the intensity of the radiation. Theoretical and mathematical analysis also proves that velocity of light is variable.

INDEX TERMS :-Intensity,Michelson Morley experiment,Variable,Velocity of light, Classical and Quantum Physics,Experimental Physics,Theoretical Physics

1.INTRODUCTION

Michelson-Morley Experiment is considered as the greatest of all negative results in the whole history of science. In this experiment, velocity of light in the direction of the earth's (ether's) motion and velocity of light against the direction of earth's (Ether's) motion were examined to see whether any fringe shift is caused. It was seen that there is no fringe shift.

Mathematically,

c : velocity of light

v : velocity of Ether Then

$c + v = c - v$

2. INTERPRETATION

From this result, two interpretations follow.

I)First interpretation :- In whatever direction the light may travel in Ether, it's velocity will be the same. Clearly this interpretation is against logic and reason. But presently this viewpoint is adopted as the hypothetical medium Ether is necessary for wave theory.

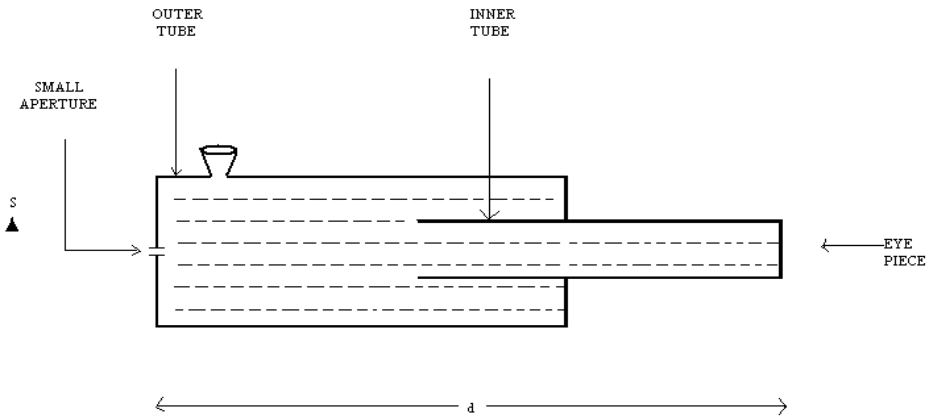
II)Second interpretation :- from the above equation, it will be seen that the equation will hold good if v i.e. velocity of Ether is zero. Velocity of Ether will be zero when ETHER DOES NOT EXIST. Till date, nobody has proved the existence of Ether. Even Michelson has observed "The interpretation of these results is that there is no displacement of the interference bands. The result of the hypothesis of stationary ether is thus shows to be incorrect." Michelson Morley experiment thus conclusively proves that Ether does not exist. This interpretation was discarded to accommodate wave theory which requires the hypothetical Ether as medium. It may be seen that **light photons are not waves but they create waves in the medium through which they travel**. Different photons with different volumes produce waves of different wavelengths. Hence there is no need of this hypothetical Ether from theoretical point of view also.

Actually the velocity of light must be measured in a UNIDIRECTIONAL manner. Practically it is not possible due to its tremendous velocity and the large distance it requires. So it can be measured by slowing down in water.

Intensity is measured as the rate at which light energy is emitted from a unit surface.When intensity is increased, the energy emitted from a unit surface is increased. The prevailing notion is that when intensity is increased, energy per unit surface is increased, the number of photons traveling with the same velocity emitted per unit surface are increased. We want to verify when the intensity is increased, when the energy per unit surface is increased, whether it is due to increase in number of photons traveling with the same velocity or due to increase in velocity of photons. For this purpose, the below given experiment is performed.

3.EXPERIMENT

In the experiment (RE:- Dixit A. Toth Maatian Review Vol.10 pp.4823-4824, 1991), light from outside source was made to pass through a water column in two metal tubes arranged to fit snugly one inside the other and readings of distances are noted when light becomes extinguished at the other end as seen by the naked eye. It was observed that as the voltage to the source of light is increased i.e. intensity is increased, the distance also increases. A qualitative result was obtained. In this experiment voltage applied was from 1.5 to 12 volts and combined length of the tubes ranged from 100 cm. and 230 cm.



4.ANALYSIS

In the aforementioned paper, only experiment is given. A theoretical and mathematical analysis of the above experimental result is as follows :-

c :- Initial velocity of light c_1 :- first reading c_n :- nth reading after increasing voltage applied to the source

v: - Final velocity of light (here 0). In all readings, final velocity will be zero, as we are taking readings when the light stops.

a :- (negative) acceleration, same for all readings

t :- time

t_1 :- first reading t_n :- nth reading after increasing the voltage applied to the source

S :- Distance traversed by light photon

S_1 :- first reading S_n :- nth reading after increasing voltage applied to the source

Applying Newton's Laws :-

v = c + at here v = 0 Hence c = - a t

$$a = -c / t \text{ and } t = -c / a \qquad \text{------(1)}$$

$$S_1 = c_1 t_1 + \tfrac{1}{2} a t_1^2$$

$$= c_1 t_1 + \tfrac{1}{2} (- c_1 / t_1) t_1^2$$

$$= c_1 t_1 - \tfrac{1}{2} c_1 t_1$$

$$S_1 = \tfrac{1}{2} c_1 t_1 \qquad \text{------(2)}$$

Similarly ,

$$S_n = \tfrac{1}{2} c_n t_n \qquad \text{------(3)}$$

Hence ,

$$S_n - S_1 = \tfrac{1}{2} c_n t_n - \tfrac{1}{2} c_1 t_1$$

$$= \tfrac{1}{2} \{ (c_n \times - c_n / a) - (c_1 \times - c_1 / a) \}$$

$$= - \tfrac{1}{2} a (c_n^2 - c_1^2)$$

$$S_n - S_1 = - \tfrac{1}{2} a (c_n + c_1)(c_n - c_1) \qquad \text{-----(4)}$$

$$S_n - S_1 \ \alpha \ c_n - c_1 \qquad \text{-----(5)}$$

$$S_n / S_1 = c_n^2 / c_1^2 \qquad \text{------(6)}$$

If the velocity of light is constant,

then $c_n - c_1 = 0$.Hence $S_n - S_1$ will become zero and S_n / S_1 will become a unity. In other words , if velocity of light is constant , then there will not be any change in readings of distances even though we increase the voltage applied to the source. But experimental results show that $S_n - S_1$ is always positive and S_n / S_1 is > 1

5.CONCLUSION

The velocity of light is variable and depends on the intensity of its source.

References :- Dixit A. " An Experiment on the absorption of light" The Toth Maatian Review Vol. 10, pp 4823-4824, (1991)