

Image Property of Light

Dev Kushwaha

* B.Sc 3rd Year, Physics Department, Institute Name-J.B College Jorhat

I. INTRODUCTION

We all knew that light exhibit dual behaviour, particle and wave nature.

Newton was the first to say that light is made up of particle, but he unable to prove that fact.

Later, Einstein and Plank make this prediction proof by explaining blackbody radiation and photoelectric phenomenon with the help of particle behaviour of light.

Plank said that every particle photon of light “ $h\nu$ ”, ν is the frequency of that particle.

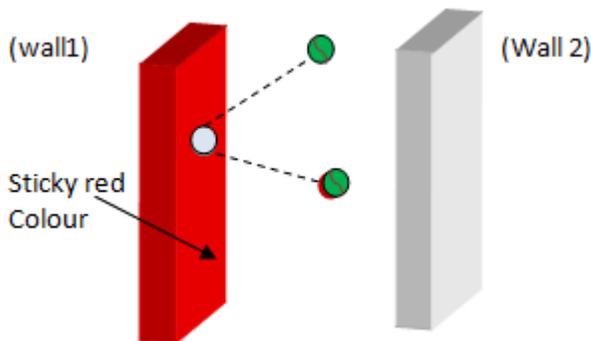
This was all about energy and wave behaviour of light. One of the most important behaves imaging forming by light.

II. RESEARCH ELABORATION

The Ray optic of light can explain the correct position of image forming successfully.

But it still lake to say how image carry by light from one plane to another. Here I am going to explain this behaviour of light by some evidences.

Let us consider an illustration.



Let us consider two parallel smooth. It wall standing to each other. Wall (1) is painted with sticky red paint on the inner face which is facing wall (2). Suppose a tennis ball is hit in the inner side of red sticky wall (1), this tennis ball will bounce to the wall (2). If the tennis ball fall on the (2) by the side of which it interact with red wave, it will imprint the image of red portion on wall (2) which is taken by the tennis ball from the wall (1).

The probability of imprinting image on wall (2) will increase with decrease in size of tennis ball.

Probability of imprinting image $\propto 1/\text{size of tennis ball}$. (Where as \propto means proportional)

Photon particle of light behave similar to that tennis ball. It move with most fastest speed ever by any particle in the universe, with each reflection from any object it carry that amount of image of its size and carry until to the next reflection.

After every reflection photon changes its image which it carries on its surface.

But refraction of photon particle does not affect its image carried on its surface.

Since there are millions of photon in a single beam of light striking to a small area of object and carry its complete image continuously by their continuous sticking photon, until reflection from another rigid body.

This photon has specific image transmitting property to the particle of similar size, like electron. The quality of image form by this photon is proportional to the intensity of illumination of light.

Again let us consider two walls such as.

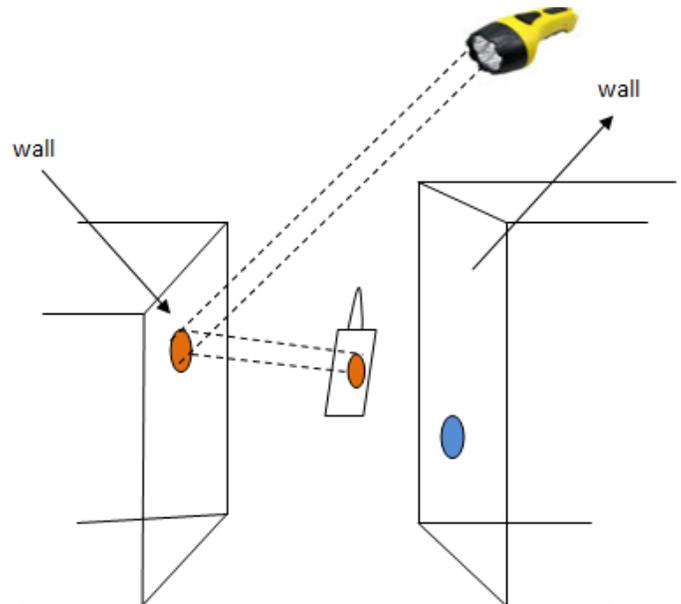


Figure:1

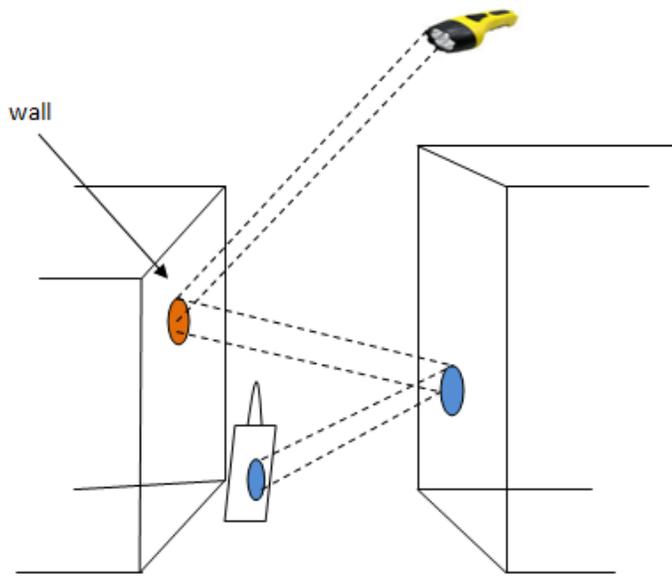


Figure:2

When light beam from torch is incident on Red circle, we see the image of red circle on mirror from (figure 1).

In case II, when the same light beam reflected from blue colour circle, we see the image of blue circle in mirror and not the image of red circle.

This shows that by reflection of photon from blue circle it changes its image of red circle to blue circle and gives blue circle image on mirror.

Image carried by photon of having frequency of visible region is only detected by human eye, but the photon particle of lower or upper frequency range from visible light also carry image but not seen by any normal method.

III. CONCLUSION

Image carrying property of light is very important phenomenon to enable us to see object. Ray optics can only give correct position of image, but this explanation give correct evidence that how photon carry image on its surface.

AUTHORS

First Author – Dev Kushwaha, Studying in B.Sc. 3rd year (Physics department), J.B. Collage, Jorhat, Assam, India, Email. Id. Devk63@yahoo.com, Ph. No. +919613912751