Light propagation

Mohammad Mahbod

mohammad.mahbod44@gmailcom, Isfahan Medical Science University Technical Office, Isfahan Medical Science University

There are 2 discussions in the phenome none of light propagation:

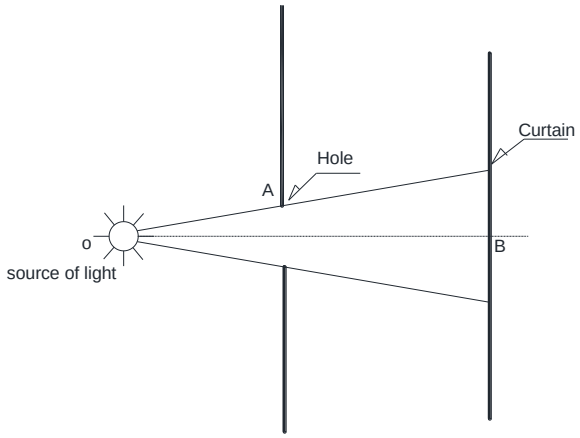
1. Geometric optics in which only light rays are considered.
2. Wave optics in which the wave nature of light receives attention.

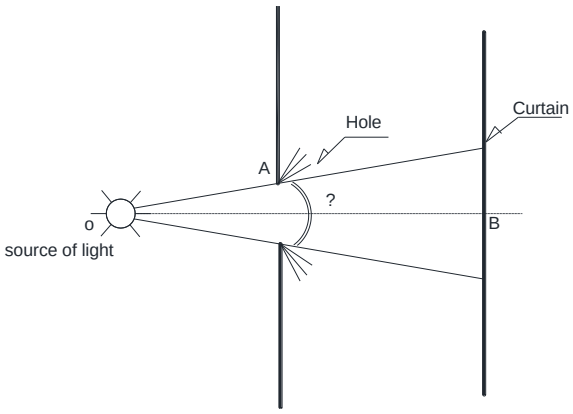
In the presented paper, our discussion is on geometric optics. In light physics, light speed has been measured and regarding the conducted experiment, light speed has been measured to be (V=300,000 km/sec)

Let's consider a lamp in 2 states:

A. Lamp in the OFF state.
B. Lamp in the ON state.

A. In this state, the lamp being OFF, no ray comes out of the light source (lamp). That is, light speed in this state equals zero.
B. In this state, switching the lamp on will turn it on. Light speed will thus equal propagation.
A remarkable point: (V=300,000 km/sec)
In order for light speed to reach from state (A) to state (B), light speed should increase from zero to (V=300,000 km/sec)
Therefore, in order for light speed to get from zero to (V=300,000 km/sec) or from state (A) to state (B), a time interval will be required between the 2 states:
The following experiment is performed to obtain the interval between states (A) and (B), named in physics course books as "light refraction point" , "light deviation point" or ....





Figures

Consider a light source such as point (o) it propagates light rays in to all directions (360°)

Plate (A) is put against the light source. A small circular hole is drilled (according to the figure) in the plate. Screen (B) is put at a certain distance. Evidently, the circular image of light passing through hole (A) is seen on screen (B) .

If plate (A) is brought close to the light source (point o), the circular image on screen (B) becomes larger.

The nearer the plate to the light source, the larger the circle diameter on the screen. If plate (A) is so close to the light source that plate (B) is felt to have nearly stuck to the light source, a phenomenon will be generated in the course of light through hole (A). This phenomenon can be called :

1. Light refraction point

2. Light deviation point

3. Light phenomenon point

Light phenomenon undergoes refraction through passing from hole (A), further refracting greater or larger than angle (α) In this case , the circular image on the screen manifests itself as a penumbra. The distance between points (A and O) is now studied.

For investigation in to the distance between point A and O some parameters should be considered :

1. Speed at point (O) equals zero.
2. Speed at point (A) equals (V=300,000 km/sec)
   It is know that movement formula of a moving object with accelerating speed is :
   1- $x = \frac{1}{2} . \gamma . t^2 + \mathrm{V}_{\circ} . t$
   2- $V = \gamma . t$

x = moving object distance from destination in meters (m).
γ : moving object acceleration in meters per square seconds (m/sec^2)
T : moving object time in seconds (sec)
$\mathrm{V}_{\circ}$: moving object primary speed in meters / seconds (m/sec)
V : moving object speed in meters / seconds (m/sec)

Since speed equals zero at point (O) , primary speed ($\mathrm{V}_{\circ}=0$) thus equals zero.
($\mathrm{V}_{\circ}$) will then equal zero in formula 1.

$$\left.\begin{array}{l} ①\ -\ x\ =\ \frac{1}{2}\,.\gamma.t^2+0\ =\ \frac{1}{2}\,(\gamma.t).t \\ ②\ -\ V=\gamma.t \end{array}\right\} \Rightarrow ①\ -\ x=\ \frac{1}{2}\,(\gamma.t)\cdot t=\ \frac{1}{2}\,.V.t$$

$① \ x=\frac{1}{2}\,.V.t$

And speed at point (A) equals (V=300,000 km/sec). Speed will thus be (V=300,000 km/sec)

We shall thus have:

$① \ x=\frac{1}{2}\,.V.t=\frac{1}{2}.(300{,}000).T=(150{,}000).T\Rightarrow X=(150{,}000).T$

Regarding the above mentioned relation , in order to obtain time (t) , the distance between points (A and O) will therefore be required , and because at present , there is not a documented and established number , the distance between (A and O) cannot be determined . Some options are thus proposed (these options are in the form of different numbers and lie in the range of imagination. If a final number is established, it will be substituted for the proposed values.
In the proposed numbers, some numbers are recommended and substituted in formula 1 to obtain the time elapsed between points (A and O).

This time (t) can be called the time of the existence world start till the beginning of the existence world, start of shaping.

Time (t) can also be called the time of big bang.

A. Distance (x=0. 1 mm) is considered to equal 0.1 mm .
B. Distance (x=0.01 mm) is considered to equal 0.01 mm .
C. Distance (x=0.001 mm) is considered to equal 0.001 mm .

A: x=0.1 mm

$$\left.\begin{array}{l} ①\ x=150{,}000\ t \\ x=0.1\ mm \end{array}\right\} 0.1^{mm}=150{,}000^{km/sec}.t\Rightarrow t=\frac{0.1^{mm}}{\left[150{,}000^{km/sec}\right].\left[\frac{10^6 mm}{1\ km}\right]}$$

$$t=\frac{0.1^{mm}}{150{,}000^{km/sec}*10^6 mm/sec}=\frac{1\ sec}{10*15*10^4*10^6}=\frac{1\ sec}{15*10^{11}}$$

$$A:\ \mathbf{t=\frac{1\ sec}{15*10^{11}}}$$

B: x=0.01 mm

$$t=\frac{0.01^{mm}}{150{,}000^{km/sec}*10^6 mm/sec}=\frac{1\ sec}{15*10^{12}}=\frac{1\ sec}{15*10^{12}}$$

$$B:\ \mathbf{t=\frac{1\ sec}{15*10^{12}}}$$

C: x=0.001 mm

$$t=\frac{0.001^{mm}}{150{,}000^{km/sec}*10^6 mm/sec}=\frac{1\ sec}{15*10^{13}}=\frac{1\ sec}{15*10^{13}}$$

$$C:\ \mathbf{t=\frac{1\ sec}{15*10^{13}}}$$