

Dual nature in speed and existence of light

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Introduction - According James C. Maxwell speed light is constant. Further on this Albert Einstein developed his Special and General theory of relativity, which says the faster we move through space, the slower we move through time. He also gave formula's on time dilation, length contraction etc.

According to Einstein while traveling at the speed of light time stop's for you ,but speed of light is constant with the value $3 \times 10^8 \text{m/s}$.

Equations - If we put these two value in distance time formula keep distance as a variable 'd' -

$$s=d/t$$

$$3 \times 10^8 = d/0 \dots \text{ (since time stops)}$$

$$3 \times 10^8 = \infty$$

We see that speed of light approaches infinity. Because of this we consider that the speed light has dual nature to show, one shown to the observer ($3 \times 10^8 \text{m/s}$), one experiencing it(∞).

Further if we put these two values of speed of light in time dilation formula –

$$T = t / \sqrt{1 - (v/c)^2}$$

Where, T is the dilated time.

t is observed time.

v is speed of object.

c is speed of light.

When $v=c$

$$T = t / \sqrt{1 - (c/c)^2}$$

$$T = t / \sqrt{1 - 1}$$

$$T = \infty$$

When $v=\infty$

$$T = t / \sqrt{1 - (\infty/c)^2}$$

$$T = t / \sqrt{1 - \infty}$$

$$T = 0$$

Conclusion – According to the following calculations, the time dilation experienced by the traveler traveling with the speed of light is '0' which is appropriate and exactly correct according to experiments also, but speed of light observed by the observer gives us the time

dilation as ' ∞ ', which mean the light never reached the observer. This is contradictory since observer did observe the light.

This gives us a few hint of involvement of Quantum physics phenomenon 'Super position' in the existence of light.

The given research also somewhere unites Quantum physics and General theory of relativity. At the same time solves the problem of speed of signals of quantum entangled particles being faster than the speed of light since speed of light is actually ∞ .

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