

Further Explanation for the Paper “Is Einstein’s Formula True?”

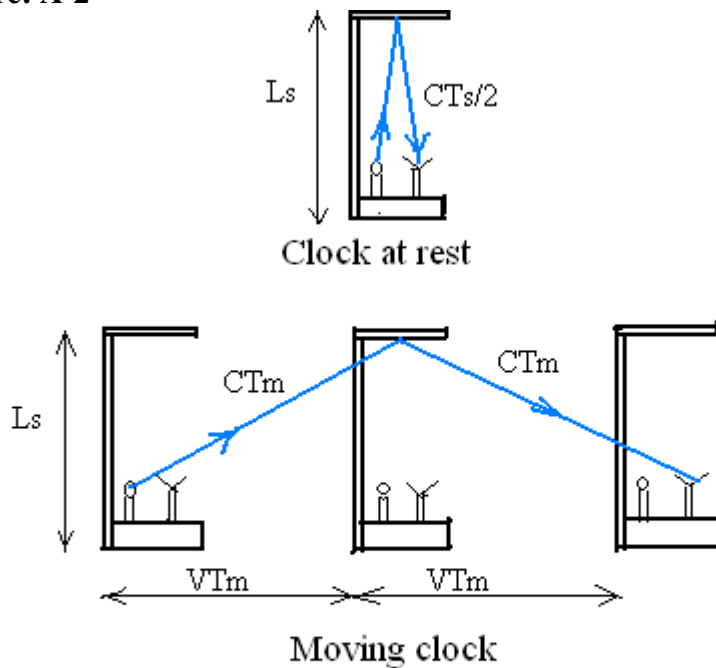
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In the paper: “Is Einstein’s Formula True?”, many people asked me to explain the velocities of light: c , c_o , c_r . By the way, I want to again affirm that Einstein had been confused by his concept of invariable light velocity.

Because Einstein forgot that space (km) and time (s) are based on calculating a unit of velocity (km/s), (in Figure: A-2 – experimental apparatus to measure light time, when the frame is fixed,) he used light velocity as c and when the frame moves with changing in mass, space and time (in figure: Moving Clock), he also used light velocity c .

Figure: A-2



If we call $t_s=s_o$ and $l_s=2.L_s=km_o$ are units of the light velocity: $c=c_o$ in the frame at rest (in figure: Clock at rest), then $c=c_o=300,000km_o/s_o$.

And if we call $t_e=2.t_m=s_r$ and $l_e=2.c.t_m=c.t_e=km_r$ as units of light velocity: c_r in the moving frame (in figure: Moving Clock), then $c_r=300,000km_r/s_r$.

In the moving frame, (in figure: Moving Clock), Einstein has written $l_e=2.c.t_m=c.t_e$.
 Because $c=c_0=300,000\text{km}_0/\text{s}_0$, so

$$l_e= 300,000 \text{ km}_0/\text{s}_0 \cdot 2.t_m \quad \text{or} \quad l_e= 300,000\text{km}_0/\text{s}_0 \cdot t_e$$

We find that the km_0/s_0 is the unit of light velocity: $c=c_0$ in the frame at rest (in figure: Clock at rest), and t_e or $2t_m$ is the unit of time in the moving frame (in figure: Moving Clock). The unit of time in the frame at rest: $s_0=t_s$ is different from the unit of time in the moving frame: t_e or $t_e=2.t_m$. The distance of translation of light in the moving frame: l_e is calculated when the unit: km_0/s_0 becomes km_r/s_r , (so that $s_r=t_e=2t_m$). So $l_e=c_r \cdot t_e$ and $l_e \neq c.t_e \rightarrow$

$$c \neq \frac{l_e}{t_e} = \frac{c \cdot 2t_m}{2.t_m} = c . \text{ Einstein has been confused by this.}$$

However, the experimental apparatus to measure time using light as per **Figure: A-2** is correct if we consider c is only $c=300,000=\text{constant}$ which is correct in all frames of reference and the unit: km/s of $c=300,000=\text{constant}$ in the space and time of each frame of reference.

Then, because $t_e=2.t_m$ and $t_e= s_r$ and $l_e=2.c_r.t_m=c_r.t_e$, so

$$l_e= 300,000\text{km}_r/\text{s}_r \cdot 2.t_m= 300,000\text{km}_r/\text{s}_r \cdot t_e= 300,000 \text{ km}_r.$$

Since $t_e=t_s \cdot \gamma$ and $s_0=t_s \rightarrow l_e= 300,000\text{km}_0/\text{s}_0 \cdot t_s \cdot \gamma = 300,000\text{km}_0 \cdot \gamma = l_s \cdot \gamma$
 Because $t_e=s_r=s_0 \cdot \gamma$ and $l_e=l_s \cdot \gamma$ and $\text{km}_r=\text{km}_0 \cdot \gamma$. So the light velocity $c_r=l_e/t_e$ in the moving frame is

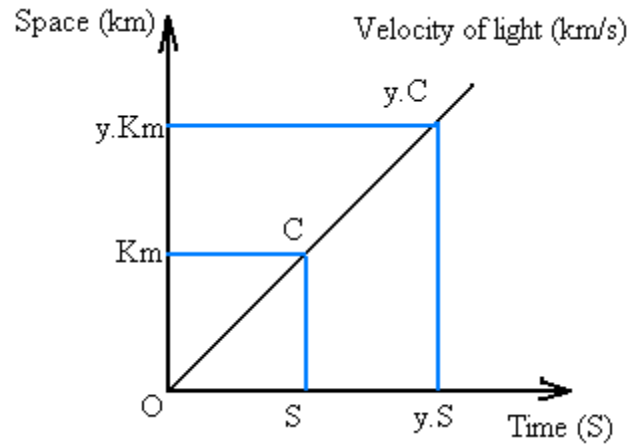
$$\frac{l_e}{t_e} = \frac{l_s \cdot \gamma}{t_s \cdot \gamma} = \frac{300,000\text{km}_r}{s_r} = \frac{300,000\text{km}_0 \cdot \gamma}{s_0 \cdot \gamma} = 300,000 \frac{\text{km}_r}{s_r} = 300,000 \frac{\text{km}_0 \cdot \gamma}{s_0 \cdot \gamma} = c_r = \gamma \cdot c_0$$

In the paper: Is Einstein's formula True?, I wrote:

$$\frac{l_e}{t_e} = \frac{l_s \cdot \gamma}{t_s \cdot \gamma} = \frac{\text{km}_r}{s_r} = \frac{\text{km}_0 \cdot \gamma}{s_0 \cdot \gamma} \rightarrow \frac{\text{km}_r}{s_r} = \gamma \cdot \frac{\text{km}_0}{s_0} \rightarrow c_r = \gamma \cdot c_0 \quad \text{or}$$

$$300,000\text{km}_r/\text{s}_r = \gamma \cdot 300,000\text{km}_0/\text{s}_0$$

This is because space and time are components of a velocity and we can see the graph of the components of space, time and light velocity as follows:



We can conclude that light velocity: $c=c_0$ in the frame at rest is different from the light velocity: c_r in the moving frame and we can't apply $c=300,000\text{km}_0/\text{s}_0$ for the frames which move, where the space and time are changed.

Hanoi, October 27, 2006