the general science journal

The Lorentz Coefficient and Einstein's Relativity.

Le Van Cuong
Email: cuong_le_van@yahoo.com

I think the Lorentz coefficient: γ is correct and can be calculated by determining the kinetic energy of frames of reference as follows:
If we have two frames of reference with the same mass, $m_o = m_r$ and in parallel motion $v_o = v_r$, their kinetic energy is expressed in the following formula:

$$\frac{m_o v_o^2}{2} = \frac{m_r v_r^2}{2} \quad \rightarrow \quad \frac{m_o}{m_r} = \frac{v_r^2}{v_o^2}$$

If they move in the same direction, they are considered fixed frames relative to one another: $\frac{v_r}{v_o} = 1$, $v_r = v_o$. If either velocity becomes less, it may be considered the fixed frame and the other may be considered the frame in motion, resulting in $\frac{v_r}{v_o} \neq 1$, $v_r \neq v_o$. To another observer (considered fixed), the velocity of the slower frame is v_o=constant =1, the velocity of the faster frame is $v_r \neq v_o$, and if we want to maintain the formula: $\frac{m_o}{m_r} = \frac{v_r^2}{v_o^2}$ where the energies are equal, velocity: v_r^2 must decrease and the mass: m_r must increase, this applies to momentum as well.

With light velocity at c (constant) and according to first Newton's law as well as Galilean relative, the frames with velocity v_o^2; v_r^2 and the mass m_o; m_r are equivalent to the motion frames with velocity c^2; $(c^2 - v_r^2)$ and the mass m_o; m_r .

So $\frac{m_o}{m_r} = \frac{c^2 - v_r^2}{c^2}$ and $\frac{m_o}{m_r} = \frac{v_r^2}{v_o^2}$ $\rightarrow$ $\frac{v_r^2}{v_o^2} = \frac{c^2 - v_r^2}{c^2}$

We put $\gamma = \frac{1}{v_r}$ or $v_r = \frac{1}{\gamma}$ because $v_o = constant = 1$ and $v_o = v_r . \gamma \rightarrow \gamma = \frac{v_o}{v_r}$

From $\frac{v_r^2}{v_o^2} = \left(\frac{v_r}{v_o}\right)^2 = \left(\frac{1}{\gamma}\right)^2 \rightarrow \left(\frac{1}{\gamma}\right)^2 = \frac{c^2 - v_r^2}{c^2} = 1 - \frac{v_r^2}{c^2}$

$$\rightarrow \frac{1}{\gamma} = \sqrt{1 - \frac{v_r^2}{c^2}} \rightarrow \gamma = \frac{1}{\sqrt{1 - \frac{v_r^2}{c^2}}}$$

$\frac{m_o}{m_r} = \frac{1}{\gamma} \rightarrow m_r = m_o.\gamma$. We call $\frac{1}{\gamma}$ the shrinkable coefficient of Lorentz.

This means that if velocity $v_r = v_o$; $\frac{1}{\gamma} = 1$, the mass $m_r = m_o$ and if velocity $v_r \neq v_o$; $\frac{1}{\gamma} \neq 1$, mass $m_r \neq m_o$. But from $\gamma = \frac{1}{\sqrt{1 - \frac{v_r^2}{c^2}}}$ we also realize that when the velocity v_r is small, it has little effect in changing the mass, $m_r \approx m_o$. If velocity: v_r is large, near light velocity, it will change the mass $m_r \neq m_o$.

Given the coefficient: γ of Lorentz, Einstein assumes that a frame moving with extreme velocity, has its space reduced and its time slowed.($km_r < km_o$; $s_r < s_o$). On the contrary, I think in that a frame in motion has its space expanded and its time accelerated. I think this, because the translation of light is in space, which has been contained by the invisible gravitational field of the frame. Therefore, the translation of the wave and particle of light in space, which has been contained in the gravitational field of one frame, is different from the other. (The nature of light is a duality of wave and particle (photon)).

I believe both Einstein's opinion and my opinion are correct. I think that the light wave can be expanded and particle (photon) can be shrunk and that is why the translation of light in one frame is different from the other.

I also think that we are living in space which has been contained by the invisible gravitational field of our frame. As Einstein said, mass can turn into the invisible energy, so changing the mass of frame at rest is equivalent to a frame moving at high speed so that its mass is changed. It means that there are many different frames in the universe, so there are many spaces have been contained by different invisible gravitational fields. Einstein affirmed that light velocity is constant in the vacuum. What is the vacuum? The vacuum is space which has been contained by nothing, isn't it? If so there is no vacuum in the universe. This is because there is no chaos in all planets or stars or even galaxies in universal space. They move in their particular orbits. This means they must obey their spaces which have been contained by the invisible gravitational fields which are different in the universe. Thus there is no vacuum for a light velocity to be constant.

I have learned that in 1911, Einstein had written the formula: $c' = c_o.\sqrt{1-\frac{v^2}{c^2}}$ or c'= $\frac{c_o}{\gamma}$, but he didn't announce it. I think that he could be embarrassed by that formula. This is because from that formula, the formula $E_{re}= m_o.\gamma.c^2$ would be revised by formula $E_{re}= m_o.\gamma.\frac{c^2}{\gamma^2} = m_o.\frac{c^2}{\gamma}$. If so, it means that the energy of a rapidly moving frame (whose mass, space and time are changed) is decreased. The best way is to ignore Einstein's formula. I think my idea of an expanded space and time of a frame in motion is correct.

We can give some examples of the expansion of space and time. According Newton's first law, all physical laws in a rest frame at and one in uniform motion are the same, even though the frame in motion approaches light velocity.

Given Newton's formulas $F_o= m_o.a_o$ or $F_o=m_o.\frac{v_{02}-v_{01}}{t_o}$, which are the force, mass, acceleration and time in the frame at rest and formula $F_r= m_r.a_r$ or $F_r= m_r.\frac{v_{r2}-v_{r1}}{t_r}$, in which the force, mass, acceleration and time in the rapidly moving frame are changed. From coefficient of Lorenzt: $m_o < m_r$:

$$\rightarrow \quad m_o = \frac{F_o}{v_{02}-v_{01}}.t_o < m_r = \frac{F_r}{v_{r2}-v_{r1}}.t_r \qquad \rightarrow \qquad \frac{F_o}{F_r}.\frac{v_{r2}-v_{r1}}{v_{02}-v_{01}}.t_o < t_r$$

We find that the time passing in the rapidly moving frame is slower than the time passing in the frame at rest: $t_r > t_o$.

Given that we have two mass with $m_{o1}=m_{o2}$ in parallel motion in the same direction, $v_{o1}=v_{o2}$, the distance of mass m_{o1} and m_{o2} is l_o . Then one frame accelerates to velocity of $v_{r1}=v_{r2}$, (the velocity of $v_{r1}=v_{r2}$ enough to make the mass, space and time change), the distance of mass m_{r1} and m_{r2} is l_r. The gravitational force of the two mass m_{o1} and m_{o2} in the former frame is

$F_o = \frac{m_{o1}.m_{o2}}{l_o^2}$ or $m_{o1}.m_{o2} = F_o.l_o^2$ and the gravitational force of the two masses m_{r1} and m_{r2} in the moving frame is $F_r = \frac{m_{r1}.m_{r2}}{l_r^2}$ or $m_{r1}.m_{r2} = F_r.l_r^2$.

$m_{o1}.m_{o2}$ is smaller than $m_{r1}.m_{r2}$, ($m_{o1}.m_{o2} < m_{r1}.m_{r2}$).

$$\rightarrow \quad m_{o1}.m_{o2} = F_o.l_o^2 < m_{r1}.m_{r2} = F_r.l_r^2 \quad \rightarrow \quad \frac{F_o}{F_r}.l_o^2 < l_r^2$$

The distance l_o in the former frame is smaller than the distance l_r in the later frame: $l_o < l_r$.

We also have to understand that the light velocity in the moving frame with changes in its mass, space and time is faster than light velocity in the frame at rest, but space and time in the moving frame is curved space and slower time. So regarding observers in the frame at rest, they have seen the light velocity in the moving frame as if it is slower than the original light velocity. The translation of light from one frame to other frame is a change in all of wave, particle and velocity. It doesn't mean that the addition of the light's velocity and the motion frame's velocity makes light velocity faster. This is because the wave, particle and velocity of light inf the frame at rest are different from the moving frame. The light velocity, c of this frame is similar to the light: c' of other frame and both of them follow the same physical rules, as the dimension of mass in this frame is similar to the one in other frame. Calculating c in Maxwell's equations for the frame at rest is similar to calculating c' in the moving frame, athough $c \neq c'$.

Obviously, light velocity is not a universal constant and I hope that my expression about the coefficient: γ of Lorentz and Einstein's relativity may be helpful in discovering new things.

Hanoi, October 1, 2006.