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LENGTH CONTRACTION CONTRADICTS TIME DILATION

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In the article "UNAVOIDABLE INTERACTION SEEN AS REASON FOR RELATIVISTIC TIME DILATION" http://wbabin.net/physics/bolstein2.htm it was proven that time dilation cannot be a consequence of mutual relative motion of symmetrical systems as well as acceleration or deceleration. It was shown that if two clocks are in asymmetrical relation then the slowdown of one of them is the measure of their mutual asymmetry. This asymmetry is caused just by their different motional relation to their common base – real physical surroundings (vacuum).

Slowdown of clock as a function of speed of motion is admittedly the consequence of its interaction with real physical environment.

Einstein´s STR is accepted as a true theory because of experimental attestation of one relativistic effect - time dilation. But the fact that it was measured only in asymmetrical systems is omitted. So, the flying space ship is not symmetrical to the Earth. Analogically, accelerated short-living particles elongating their lifetime are not symmetrical to their surroundings.

It is not a problem to prove that Einstein´s STR is the wrong theory. But despite mistaken logic, its detection of the deceleration of processes in moving systems is a remarkable result which was experimentally attested many times. So, the relativistic time dilation is not a problem of STR but its asymmetrical reason is. The greatest problem of STR is the relativity of simultaneity that has not been experimentally verified and is in contradiction to non-locality in quantum physics. The same situation is with the length contraction, which in addition, is a consequence of mistaken logical interpretation of the phenomena.

By the detailed analysis of the fact that the time dilation is a deceleration of processes, we can simply detect that the length contraction is in logical contradiction with time dilation.

The material process is a space-time change, space-time motion. Time dilation means the deceleration of the space-time motion by which the identical processes take more time in moving system in compare with system at rest from the wiev-point of system at rest.

In a reference system at rest, a certain process (space-time change) is completely performed by a velocity $\mathbf{u}$ through a path $\mathbf{d}$ in the time $\mathbf{\Delta t}$. Then $\mathbf{d = u\Delta t}$. In the system moving at velocity $\mathbf{v}$ in relation to the system at rest, from the viewpoint of the observer at rest, the moving frame is liable to time dilation, which means dilation of the whole process , $\mathbf{\Delta t' = \Delta t/\gamma}$, where $\mathbf{\gamma = (1-v^2/c^2)^{1/2}}$. Time dilation means at the same time the slowdown of the speed of the process (space-time motion) to $\mathbf{u' = \gamma u = d/\Delta t'}$. So, the length remains untouched despite time dilation. If the transit of a body from the back to the front wall of the space ship is elected as a representative of the process, the slowdown of its speed means that the transit

will take dilated time without a length contraction of the space ship. If the length of the space ship is shortened to $\mathbf{d´ = \gamma d}$, the whole transit, with slower speed $\mathbf{u´}$, will take $\mathbf{\Delta t = d´/ u´ = d/u}$. So, no time dilation appears. Length contraction and time dilation are two mutually incompatible facts. The slowdown of the speed of process is an extension of its duration. Then the length of the path of the process as a conjunction of its speed and time, is an invariant $\mathbf{d = u\Delta t = u´\Delta t´}$.

The dilated time $\mathbf{\Delta t´}$ is the time elapsed in a reference system at rest until the entire process is complete in the moving system.

Time dilatation can be also demonstrated by the fact that while an entire process is complete in the reference system at rest, only a part of the identical process is realized in the moving system. This means that the entire identical process in the moving system is realized by a dilated time.

While a time period $\mathbf{\tau = \Delta t}$ elapses in the reference system at rest, a shorter time period $\mathbf{\tau´}$ elapses in the moving system. The time period $\mathbf{\tau´}$ is calculated according to the Lorentz´s relation $\mathbf{\tau´ = \gamma \tau}$. This means that while the body passes the distance $\mathbf{d = u\tau}$ in a reference system at rest, it passes a shorter distance $\mathbf{d´ = u´\tau = u\tau´}$ in a moving system. While an entire process of transition of body is realized through the reference system at rest, only a part of this process equal to $\mathbf{\tau´/\tau}$ is realized in the moving system. While the whole distance of the space ship at rest is transited by the moving body, only a part of this distance, equal to $\mathbf{d´ = \gamma d}$ is transited in a moving space ship. Time periods $\mathbf{\tau´,\tau}$ are in opposite relation to time periods $\mathbf{\Delta t, \Delta t´}$ expressing the duration of identical processes in both systems from the view-point of the observer at rest: $\mathbf{\tau´/\tau = \Delta t/ \Delta t´}$.

The dramatic mistake of length contraction follows from misunderstanding the fact that **the shorter path transited by the moving body in the moving system in comparison with the path transited by an analogical moving body in the system at rest isn´t a length contraction of the moving system from the viewpoint of the observer at rest.**

Time dilation is experimentally attested. But it is in logical contradiction to length contraction, which never has been experimentally attested. Length contraction is only the consequence of mistaken logic.