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IMPOSSIBLE RELATIVISTIC REST ON INCLINED PLANES

THE STATE OF REST OF A FLAT OBJECT ON AN INCLINED PLANE IS USED HERE TO FORMALLY PROVE THE INCONSISTENCY OF SPECIAL RELATIVITY.

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Abstract.-An impossible relativistic rest on an inclined plane is used here to demonstrate in a very simple and concise way that the theory of special relativity is formally inconsistent, with the second of its fundamental principles being the cause of its formal inconsistency.

Keywords: Motion on inclined planes, rest on inclined planes, law of motion on inclined planes, special relativity, relativistic length contraction, relativistic time dilation, relativistic phase difference in synchronization, principles of special relativity.

1. Relativity of rest and motion on inclined planes

In the inertial reference frame RF_o rests a solid structure with an inclined plane PL_o, on the top of which a flat object F is also at rest (Figure 1, left). The angle that the inclined plane PL_o makes with the horizontal plane X_oZ_o is the critical angle θ_o, above which the object F would move downwards on PL_o, but not for any other angle θ equal or less than θ_o. Therefore, F remains at rest on the plane PL_o, and consequently with respect to RF_o (Figure 1, left). According to the physical law governing motion on inclined planes, we can write:

$$\forall\ \theta \leq \theta_o : a = g\sin\theta - \mu\cos\theta = 0 \tag{1}$$

$$\forall\ \theta > \theta_o : a = g\sin\theta - \mu\cos\theta > 0 \tag{2}$$

where $\theta > 0$ is the angle the inclined plane makes with the horizontal plane; $g > 0$ is the local gravitational acceleration; and $\mu > 0$ the coefficient of friction between the involved surfaces. The law (1)-(2) holds true not only for RF_o but for any other inertial reference frame, readers can "verify" this by consulting the "scientific authority" of ChatGPT 5.2, Gemini 3, etc.

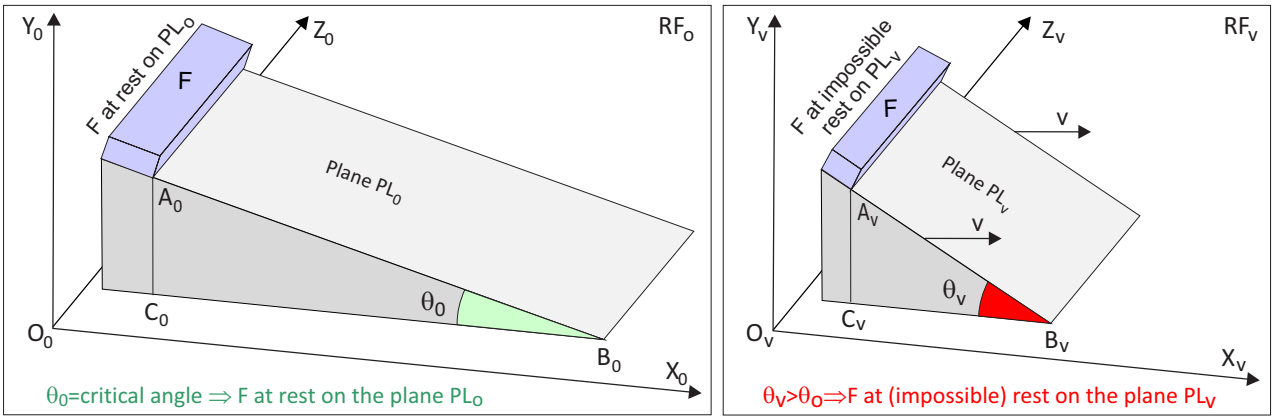

Figure 1 – Left: the flat object F at rest on the plane PL_o, which is in turn at rest in the inertial reference frame RF_o. The plane PL_o is inclined at the critical angle θ_o, above which F would move downwards on PL_o. Right: the same situation observed from RF_v, although in this case F should move downwards on PL_v because $\theta_v > \theta_o$ due to the FitzGerald-Lorentz contraction in the direction of the relative motion of RF_o (and therefore of PL_o and F) with respect to RF_v.

RF_v is another inertial reference frame whose axes coincide at a certain instant with the axes of RF_o, which moves relative to RF_v with a velocity v parallel to its axis X_v (Figure 1, right). According to special relativity, we can write:

$$0 < \gamma^{-1} = \sqrt{1 - v^2/c^2} < 1 \tag{3}$$

$$C_vB_v = \gamma^{-1}C_oB_o < C_oB_o \tag{4}$$

$$(A_oC_o = A_vC_v) \wedge (C_oB_o < C_oB_o) \implies \tan\theta_v > \tan\theta_o \implies \theta_v > \theta_o \tag{5}$$

Therefore, according to (2) and (5), F should move downwards on the plane PL_v with an acceleration $a_v > 0$, because, except for gravity and friction, there is no other physical interaction between F and PL_v, regardless of how large v is (although always less than the speed of light c), since both are at rest in RF_v and both move relative to RF_v with the same relative velocity v. But, on the other hand, F cannot move downwards on PL_v because it remains at rest on PL_o.

This contradiction, F moves and does not move downwards on PL_v, demonstrates the apparent nature of the relativistic contraction of space and the objects that physically occupy it. And since apparent phenomena, such as the rotation of the Sun around the Earth, are false phenomena, we must conclude that this relativistic contraction is false. Thus, it must be $C_vB_v = C_oB_o$, therefore $\gamma^{-1} = 1 = \gamma$; and then $v = 0$, which means that the only true observations on lengths and distances are those made in RF_o.

The above conclusion is confirmed by considering now a photon a^* emitted by its source S_o in RF_o, travels in the direction X_o of RF_o a distance d_o in a time t_o. We will have for this photon: $c = d_o/t_o$. According to the Second Principle of Special Relativity, observing this motion of a^* from the above RF_v, we will have $c = d_v/t_v$. And since $d_v = d_o$, it must be $t_v = t_o$. This implies that $t_v = \gamma t_o + \gamma d_o v^2/c^2 = t_o$, which is only possible if $\gamma = 1$ and $v = 0$. And then the time dilation γt_o and the phase difference in synchronization $\gamma d_o v^2/c^2$ are also apparent, that is, false. Once again, we must conclude that the only valid observations and measurements of lengths, distances and times are those made in RF_o ($v = 0$), i.e. in the proper reference frame of the involved objects, whether they are at rest on it or set in motion from it.

Consequently, the above relativistic deformations of spacetime, be them considered real or apparent, are false. Therefore, special relativity is an inconsistent theory. And then one of its two fundamental principles must be false. The first of these principles implies the universality of physical laws, for which there is overwhelming empirical evidence. Therefore, it must be its second principle that is false, a principle which states that the speed of light is the same in all inertial reference frames, regardless of how they move relative to the source emitting the light. The speed of light would always be the same, but THROUGH THE ABSOLUTE REAL PHYSICAL SPACE in which it propagates.

Regarding the increase in mass with relative velocity and the relation $E = mc^2$, I recall here that both can be obtained outside of theory of special relativity [2] [3] [1, 15-10, 15-11], summarized in [4, p. 127-128].

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