COMMENT ON "THE EINSTEIN-LORENTZ TRANSFORMATION ... " BY J. A. MORALES

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In a recent paper, Morales [1] has attempted to prove that the Einstein-Lorentz transformation is, in fact, bosh. The Lorentz transformations are used directly to transform the coordinates only but not the lapses of time and length. For the latter, two coordinates are needed.

When we have a point of coordinates x in frame S, these transformations tell us what is the coordinate x' (of the same point) in frame S' moving with speed v with respect to S. This must be expressed with the help of coordinates x and t (time) from S. We must distinguish here two situations: the point is fixed or is moving with speed V in S.

Morales starts with the Galilean transformation

$$x' = x - vt \tag{1}$$

that is, when the point is fixed in S, its coordinate is $x = x_0$. If the point is moving to the right, with speed V in S, then we must take

$$x' = (x_0 + Vt) - vt \tag{2}$$

If we put V = v, which is physically possible, then equation (2) reduces to

$$x' = x_0 \tag{3}$$

What does Figure 1 show in [1]? A rod of length O'A that is fixed in S. This means that coordinate x' at A is constant, but coordinate x in S is changing in time with speed v. Thus the situation in Figure 1 does not correspond completely to equation (1) taken by Morales. We must take equation (3) since V = v in Figure 1. After taking into account the length contraction, the point coordinate in S' is

$$Kx' = x_0 \tag{4}$$

instead of Morales'

$$Kx' = x - vt \tag{5}$$

Morales makes use of the following equations

$$x = ct, \qquad x' = ct' \tag{6}$$

where c is the speed of light, and makes use of these equations in his further derivations. Since *x represents the path of a ray of light moving from the origin of the system at rest, O, to the end A, x' must represent such a path from O' to* A, as Figure 1 shows. But then we have two different events that cannot be connected in the transformation; the latter refers to the same event seen in two frames. Note that, physically, in transforming we have not to start with x = t = 0 and

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$x' \quad t' \quad 0$; then there would have to be two sources of light signals. This is the main fault of Morales.

In the transformations, to time lapse t in S corresponds time lapse t' in S'. But in (6) there is no correspondence between t and t'. One of them is constant (increasing) and the other is increasing (constant), since either $x = \text{const.}$ or $x' = \text{const.}$ if $v \quad \text{const.}$ Note that it is physically possible that either $x = x_0 = 0$ or $x' = x'_0 = 0$. Moreover, since in Figure 1

$$x = x_0 + vt \tag{7}$$

since $x_0 \quad OA = \text{const.}$ when O coincides with O', then (6, 7) give a physically untrue equation

$$x_0 = t(c - v) \tag{8}$$

In the light of the above, there is no point in discussing the remaining formulae.

Nevertheless, the Lorentz transformations are inconsistent internally and give silly relationships [2]. Take the Lorentz equations

$$Kx' = x - vt \tag{9}$$

$$Kt' = t - vx/c^2 \tag{10}$$

It is physically possible to put $x = 0$, that is, a point is at the center of coordinates in system S. Then (9, 10) reduce to

$$Kx' = -vt \tag{11}$$

$$Kt' = t \tag{12}$$

In (9 - 12) t denotes the time lapse but not a period of the clock. From (12) we get $t' > t$ and the clock frequency is greater in S' than in S, contrary to experimental data.

The term vx/c^2 in (10) is to be connected [3, 4] with the assumption that the speed of light is isotropic in every inertial reference frame. But the complimented Einstein train-embankment experiment tells us [5, 6] that the second postulate cannot apply in special relativity; the isotropy, if any, can exist only in one frame in a given region of space.

The Lorentz transformations are symmetrical as they ought to be in special relativity. But in the Lorentz-type theories such a symmetry cannot take place. These transformations could be used only when passing from a preferred frame into one of the moving frame. In the preferred frame there are no time dilation and length contractions, and in the moving frame the isotropy of light speed cannot exist. Therefore, the term vx/c^2 cannot exist in the transformations validly in the Lorentz-type theory.

In our model of gravitation, aether and photons [7], there exist specific preferred reference frames in the nearest environment of the whole Earth's surface. The above is confirmed [8, 9], e.g. by the temperature-dependent experiments [10, 11] but first of all in the experiment by Byl et al. [12]. The Byl experiment ought to confirm the anisotropy of light speed in a frame attached to the laboratory moving with respect to the Earth's surface (the effect of first order in v/c). The Michelson-Morley type experiments in a moving laboratory ought to test the existence of length contraction when the Byl experiment gives a positive result.

In conclusion, new transformations ought to be deduced. They must be asymmetrical and transform the coordinates from the preferred into a moving frame and vice versa, and moreover between frames moving on the background of the preferred reference frame.

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Editorial Remark: The author's rebuttal of this criticism will appear in a future issue of this publication, if he cares to make a reply.