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Relativistic Transformation Equations
Additional Support for the Existence of Dual States

The Lorentz transformation equations were developed to retain an absolute frame of reference (the aether) while incorporating the null results of the Michelson-Morley experiment. The Einstein interpretation dispensed with the aether. However, the two theories are equivalent since according to the Lorentz interpretation, there is no method one can use to identify an absolute frame of reference if it indeed exists.

Both theories employed the dilation of time and the contraction of space. This was principally a mathematical exercise that disregarded the physical and logical consequences involved in maintaining a constant velocity for light.

The relativistic modifications of mass, time and space (dilation, contraction, et al.) are represented by the beta function,

$$ß = (1- v^2/c^2)^{1/2} \qquad (1)$$

which is used in the Einstein-Lorentz transformation equations as follows:

$$x' = (x - vt) / ß \qquad (2)$$
$$t' = (t - vx/c^2) / ß \qquad (3)$$

and,

$$x = (x' + vt') / ß \qquad (4)$$
$$t = (t' + vx'/c^2) / ß \qquad (5)$$

Where [x'] and [t'] represent space and time in the "moving" frame of reference, and the unprimed values, that of the "fixed" frame[1].

Note that the denominators, [ß] may be eliminated as they are common to both frames of reference[2]. Since [x = ct] and [x' = ct'] according to the theory, we may substitute [ct] for [x] in (3) and [ct'] for [x'] in (5) which then reduce to,

$$t' = t(c - v) / c \qquad (6)$$

and,

$$t = t'(c + v) / c \qquad (7)$$

The Lorentz transformation equations **implicitly contain compound times**. It is difficult to understand why equations (3) and (5) were not reduced to their simplest form unless it was to obscure this fact. In any event, this anomaly was overcome in relativity theory by claiming an inability to determine synchronism of events with clocks separated by distances. The more obvious explanation is that the transformation equations apply specifically to the wavelengths and frequencies of light, which are known to vary directly with relative motion[3].

(By emphasizing constant (absolute) light speed, the treatment excluded reference or comparison to classical transformations. In this way, the formulas were separated from common usage and given a somewhat mystical aspect. This in all probability added to their appeal.)

Re-arranging equation (7) and comparing with (6) shows,

$$t' = t(c - v) / c$$
$$t' = tc / (c + v)$$
$$t' \neq t' \qquad (8)$$

Lengths are subject to the same disparities because of the ambiguity in time.

By inverting the equations in (8), it is immediately obvious that they represent classical Doppler frequencies,

$$f' = fc/(c\ [+/-]\ v) \qquad (9)$$

where the observer is at rest relative to a medium and the source is in motion, and

$$f' = f(c\ [+/-]\ v) / c \qquad (10)$$

where the source is at rest relative to a medium and the observer is in motion. (Sign changes in (9) and (10) depend on the direction of motion).

Although relativity theory dispenses with an absolute aether, it is **very obviously a fundamental component of the transformation equations** since they implicitly contain a **common** propagating medium. Furthermore, there is a change in frequency depending on whether the observer or the observed is in motion! Also, if there remains a belief in relativistic variations, the transformation equations demand that time, space and mass vary differently, depending on whether the source or the observer is in motion. This does not apply to media that are specific to each frame of reference. (Note that here it is the frequency and wavelength that vary, not the speed.)

By retaining the beta function, equality is re-established [t' = t'ß/ß] but the result is merely tautological.

In these demonstrations of logical flexibility, one begins to understand the appeal of relativity theory. One can always find support for diverse and even opposing arguments.

Regardless of evidence to the contrary, relativity theory does not distinguish differences with respect to motion of source or observer. We then have the relativistic frequency formula,

$$f' = f\,[(c + v)/(c - v)]^{1/2} \qquad (11)$$

if the source and observer are moving toward each other, and a reversal of signs in the opposite direction. This is the root of the classical Doppler expression (the product of equations (9) and (10)) for a fixed medium where **both source and observer are in motion**.

Mathematically, this allows treating source and observer equally but does profound violence to each since they are **physically required to take on the role and observations of both - to move and not move simultaneously**! The configuration can only be that of the dual aspects of a single object.

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[1] See Mathematical Invalidity of the Lorentz Transformation in Relativity Theory, A. Vukelja, http://wbabin.net/physics/vukelja1.pdf for an in-depth analysis of the equations.

[2] If the "fixed" observer identifies a specific space or time with respect to the "moving" observer, then according to the first postulate, the "moving" observer will obtain precisely the same measurements applied in the reverse. The modification is redundant. See "A Theoretical Analysis of the Foundations of Special Relativity, W. Babin, http://wbabin.net/babin/webdoc1.htm

[3] A theoretical Analysis of Sub-Atomic Particle Interactions, W. Babin, http://wbabin.net/babin/dyna2.htm.