Special Relativity and the Sagnac Effect

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The constancy of the speed of light in each frame of reference logically results in compound light speeds (c+v)(c-v) for all frames in uniform motion relative to an observer. This is the *de facto* explanation for the Sagnac effect. No other is required.

The logic is as follows:
If, according to the Michelson-Morley experiments and Galilean relativity, the speed of light is constant at [c] in each frame of reference,

1. Light must travel a distance d = (c+v) in time t or (c-v)t in the opposite direction in the moving frame as measured in the reference frame of a "fixed" observer, or,
2. Space (or a combination of space-time) must contract in the direction of motion, **or contrary to relativistic doctrine, expand in the case where the light wave is opposite to the direction of motion,** by the value, [vt].

(Regarding ring lasers, the distance (d) is fixed at $2\pi R$ and the time taken is $t_1 = d/(c-v)$ and $t_2 = d/(c+v)$ respectively. The difference, $t_1 - t_2 = 2dv/c^2 - v^2$)

Relativists will claim the Sagnac effect is valid in relativity, **thereby sanctioning the precise opposite of what the theory was to achieve, which is a single wave front common to both observers!** A moment's reflection will convince you that without this objective, the theory is redundant. (see Relativistic Kinematics)

An interesting and equally logical result of the Michelson-Morley experiment is the negation of a universal aether for light propagation in favour of a continuum specific to each frame of reference (see The Nature of Light).

Furthermore, early spectrometric experiments with particle trajectories in magnetic fields led to the erroneous conclusion that mass increased with velocity. The velocity is the resultant effect of an impulse and cannot in any way be considered a cause. Although induced fields opposing the initial field had been know from the time of Faraday, this explanation was completely ignored. A detailed assessment of the equations of relativity identifies this to be the reason and no change in mass is evident. There are no partial electrons. (See Relativistic Dynamics)

Earlier Comment:
Variations in the speed of light due to polarity and in particular, the Sagnac effect led me to the conclusion that the latter contained the experimental evidence for a new theoretical basis for SRT dynamics without the obvious contradictions contained in its kinematic assumptions.

Fundamental to this concept is that the dynamic effects predicted by SRT as derived from the motion of an object are in fact the direct result of accelerations (linear or otherwise) that produced the motion and can be resolved within the general framework of classical mechanics and electrodynamics. To be specific; the mass increase of a particle is the result of acceleration, producing not only an increase in kinetic energy but of its potential. With respect to moving charges, a parallel modification of field characteristics is obvious and may exclusively account for the experimentally calculated mass increase. In either instance, the effects remain constant, provided no change of state is imposed (inertial frames of reference and the first law of mechanics).

A retrospective assessment of experiments from the Compton effect through particle physics to the confirmation of mass-energy equivalence (and the dualism) contained in the work of Dirac make it evident that no further assumptions are required, particularly with respect to time and space (eg. the life-span of the u-meson). It does not contain a significant departure from the results of modern experimental physics and its classical antecedents and therein lies its strength. Furthermore, placing these experiments on a sound theoretical foundation will have a profound effect on future developments.

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