

# "The Impossibility of Measuring the Velocity of

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"The Impossibility of Measuring the Velocity of Light"

The idea that the velocity of light is the same no matter in what reference frame it is measured is fundamental to the modern science of physics. The premise started with the confusion resulting from failure of the Michelson–Morely experiment to reveal an absolute velocity reference for space and shortly led to both the unique solution Lorentz Transformation–Aether Theory and the general case solution (no Aether) equivalent – the Special Theory of Relativity. Since the conclusion that the velocity of light was constant in all reference frames is based on observation, the necessity of understanding the methodology of measuring the velocity of light should be apparent to all who would deal with relativistic phenomena.

Velocity is defined as distance travelled (length) per unit time. If one wishes to measure the velocity of any entity, be it light or bullets, one needs in principle, a yardstick to measure the distance travelled and a clock to measure the time required for the entity to travel that distance. It behooves us then to examine the nature of the instruments which might be used in making the required observations.

In principle, all measurements of length require the equivalent of a yardstick. (It is not suitable, for example, to define length in terms a number of wavelengths of light for our purpose since that would result in measuring the velocity of light in terms of itself, an obvious absurdity.) That yardstick is constructed, in effect, of an array of atomic nuclei separated from each other and held in place by electromagnetic fields ("virtual photons" are one explanation of the operation of those fields.) The atomic nuclei contains 99.95% of the mass(energy) of the atom and are on the order of  $10^{-15}$  meters in diameter. The atoms in the array are separated by about  $10^{-10}$  meters. To provide some perspective, a scale representation would show that if the nuclei were enlarged to the size of a billiard ball, the nominal distance between nuclei would be about 3.1 miles. Obviously the length of the yardstick is determined almost entirely by the characteristics of the electromagnetic forces acting between its nuclei. Similarly, time is measured by counting the "ticks" of a clock or their equivalent. The time between clock "ticks" is measured by the period of some type of resonant system. Such a system could be composed of the coiled "hairspring" of a

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watch and a balance wheel or it could be composed of the elasticity of the bond between two atoms and the mass of those atoms. In all cases, the period of the resonant system is determined by the spring constant acting in the resonant system and the significant mass of that system. In other words, with regard to relativistic effects, what is true of one type of clock is true for all types of clocks!

Let us then consider what would happen if the velocity of light in free space were to change. Since the atomic nuclei of the yardstick control their separation by electromagnetic means, the nuclei would sense that their separation was now "wrong" and they would move to correct the error, thus causing the yardstick to change its length. The stiffness of the clocks "hairspring" is also determined electromagnetic means and the mass of the "balance wheel" is determined by the energy represented by that mass and the velocity of light in accordance with  $M=E/C^2$ ! The result would be that the postulated change in the velocity of light should change the calibration of the clock. If the Principle of Relativity is applicable, as indeed it must be if the Laws of Physics are to be the same in all velocity and elevation reference frames, then the length of our yardsticks and the speed of our clocks must change as a result of the postulated change in the free space velocity of light. Moreover, that change must be such that a measurement of the velocity of light would produce the same value regardless of the reference frame (velocity, elevation) in which it was measured. This would occur because the units of measurement by which the velocity of light is measured would change to conceal any actual change in that velocity. Any measurement of the velocity of light that we may care to make is actually a measurement of the velocity of light in terms of the velocity of light. Such a measurement is clearly meaningless. The quantity we accept as the velocity of light probably results from the dimensionless Fine Structure Constant which reveals the velocity of light in terms of the dielectric constant of space.

To add perspective to the discussion. It is axiomatic that every process which involves obeying physical laws (including the "constancy" of the velocity of light and the length of our "yardsticks" must contain the following steps:

- 1:– It must measure the magnitude of the quantity in question.
- 2:– It must compare the measured quantity with its nominal value.
- 3:– It must apply the necessary "force" to reduce any error towards zero.

This is not an invention of the writer. It is a requirement of any stable process.

The framers of relativity theory missed the boat in not digging deeply enough. It is not enough to accept the Principle of Relativity. The question they should have asked is why does the Principle of Relativity hold. Such a question leads to the very obvious answer that it holds because matter uses

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the velocity of light to control its parameters. One need only to add the proviso that information cannot propagate faster than the velocity of light and the mysteries of SR vanish (providing one is not too lazy to follow the reasoning through to its conclusion). In the case of gravity, the effects of a change in the velocity of light between reference frames which differ in elevation is immediately obvious, it is called gravity. Gravity results because proximity to energy causes an increase in the "absolute" permeability of the Aether. All of the known gravitational effects can be shown to follow from this change. Space is not "curved". See <http://einsteinhoax.com/gravity.htm>.

The source material for this posting may be found in

<http://einsteinhoax.com/hoax.htm/> (1997);

<http://einsteinhoax.com/gravity.htm> (1987); and

<http://einsteinhoax.com/relicor.htm> (1997). EVERYTHING WHICH WE ACCEPT AS TRUE MUST BE CONSISTENT WITH EVERYTHING ELSE WE HAVE ACCEPTED AS TRUE, IT MUST BE CONSISTENT WITH ALL OBSERVATIONS, AND IT MUST BE MATHEMATICALLY VIABLE. PRESENT TEACHINGS DO NOT ALWAYS MEET THIS REQUIREMENT. THE WORLD IS ENTITLED TO A HIGHER STANDARD OF WORKMANSHIP FROM THOSE IT HAS GRANTED WORLD CLASS STATUS.

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