

## SELECTED ISSUES REFUTING SPECIAL RELATIVITY THEORY

In our opinion there are no theories that ultimately describe reality. A theory fails or its usability is restricted when proved inconsistent with experiment. Albert Einstein stated that even a large number of experiments cannot prove his relativity theory right, but one experiment is enough to refute his theories.

Two matters that have been explained in this work, rock the boat of modern physics refuting the Special Relativity Theory, namely the Michelson's experiment and the observation of the Earth's rotation with the use of atomic clocks.

Shifts of interference fringes in Albert Michelson's interferometer were to prove the Earth's movement with respect to the aether, but no such shifts were observed. At that time the physicists were, and most of them still are, convinced that the Michelson's experiments have produced a negative outcome because the absence of the interference fringes shifts during the experiments is contradictory to their values calculated in the interferometer. This negative result convinced the scientists even further that the postulates which the Special Relativity Theory rests upon are correct.

In this work, the authors created a mathematical model of Michelson's interferometer, whereby the values of interference fringes shifts were calculated for different speeds of the interferometer with respect to the aether and for different positions of the interferometer with respect to its movement direction.

When the speed of the interferometer with respect to the aether is equal to the Earth's speed on its orbit then the shifts do not exceed the value of  $2.5897 \cdot 10^{-4}$  of a fringe and therefore cannot be observed. That, however, does not mean that the results of the experiment can be deemed to be negative. While calculating the values of the interference fringe shifts Albert Michelson assumed a mutual perpendicularity of the light rays reaching the interferometer mirror. The interference of those rays does not occur as they reach the screen of a mutual distance that amount to over one thousand lengths of the light wave. So, no evidence exists that would contradict experimental results with calculated shift values. After all James C. Maxwell was right in his belief that it is possible to determine the speed of the Earth with respect to the aether exploiting optical phenomena.

Resulting from the calculated values of interference fringes, the Earth's speed (and the speed of the interferometer) with respect to the aether is less than two times the Earth's speed on its orbit. If the Earth's speed was faster the shift of interference fringes would be clearly visible. The speed of the Earth with respect to the aether, however, cannot be lower than its speed on the orbit.

With respect to the aether, the speeds of the Sun and the Galaxy centers do not exceed the value of  $1.73 \cdot 10^{-4}$  and  $10^{-3}$  of the light speed with respect to the aether respectively.

The interferometer's absolute speed can be determined from the observed shifts of interference fringes and then a purpose-made speedometer can provide the absolute speed of an inertial system (a space ship) with no links, whatsoever, to any external reference system. Having measured both the absolute speed of the inertial system and the time with an atomic clock running within that system, the absolute time can be calculated from the relationship (3.15) provided herein.

When atomic clocks are used in the observation of the Earth's movement on its orbit, the Special Relativity Theory results in a very unexpected and strangely excessive elongation of a stellar day with respect to the time provided by atomic clocks.

From 1972 to 2012 the stellar day became longer by 25 seconds, which may lead to the conclusion that before the elapse of 140 thousand years the Earth's movement on its orbit will have ceased to exist, which is an utter absurdity resulting from the rejection of the existence of aether and the absolute (preferred) system as well as the notion of the absolute time. In our study, nonetheless, it has been shown that this elongation is only apparent because the times measured by atomic clocks delay, thus are shorter than times defined by the Earth's movement on its orbit.

International Earth Rotation And Reference Systems Service (IERS) quite rightly has been adding leap seconds to the UTC time so that the UT1-UTC time differential does not exceed 0.9 of a second. Since 1972, 25 leap seconds have already been added to the UTC time.

The Special Relativity Theory has been confirmed by laboratory experiments within the limits of the measurement errors and at present precision of measuring devices. From the content of this study it can be concluded that the above is the consequence of the very low Earth's speed with respect to the aether when compared with the speed of light.

In this study it has also been shown that Albert Einstein's formula  $E=mc^2$  describing the energy of an accelerated particle is correct only in the absolute system. In an inertial system which is in motion with respect to the absolute system, the energy of the accelerated particle depends on the absolute speed of the system and the direction towards which the particle is being accelerated. The Earth's speed with respect to the aether is very low, therefore the formula proves correct within the limits of the measurement errors.

Moreover, it has been shown that in the inertial system the limit speed of the accelerated particle depends on the absolute speed of the system and on the direction towards which the particle is being accelerated. The limit speed of the accelerated particle in the absolute system is equal to the speed of light with respect to the aether and is the same in every direction.

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