A Simple Experimental Verification of Einstein's Variance of Mass with Velocity Equation

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Abstract: Like any scientific theory, the theory of relativity must be confirmed by experiment. So far, relativity has passed all its experimental tests. The special theory predicts unusual behavior for objects traveling near the speed of light. So far no human has traveled near the speed of light. Physicists do, however, regularly accelerate sub atomic particles with large particle accelerators like the recently canceled Superconducting Super Collider (SSC). Physicists also observe cosmic rays which are particles traveling near the speed of light coming from space. When these physicists try to predict the behavior of rapidly moving particles using classical Newtonian physics, the predictions are wrong. When they use the corrections for Lorentz contraction, time dilation, and mass increase required by special relativity, it works. For example, muons are very short lived subatomic particles with an average lifetime of about two millionths of a second. However when they are traveling near the speed of light physicists observe much longer apparent lifetimes for muons. Time dilation is occurring for the muons. As seen by the observer in the lab time moves more slowly for the muons traveling near the speed of light. Time dilation and other relativistic effects are normally too small to measure at ordinary velocities. But what if we had sufficiently accurate clocks? In 1971 two physicists, J. C. Hafele and R. E. Keating used atomic clocks accurate to about one billionth of a second (one nanosecond) to measure the small time dilation that occurs while flying in a jet plane. They flew atomic clocks in a jet for 45 hours then compared the clock readings to a clock at rest in the laboratory. To within the accuracy of the clocks they used time dilation occurred for the clocks in the jet as predicted by relativity. Relativistic effects occur at ordinary velocities, but they are too small to measure without very precise instruments. The formula $E=mc^2$ predicts that matter can be converted directly to energy. Nuclear reactions that occur in the Sun, in nuclear reactors, and in nuclear weapons confirm this prediction experimentally. Albert Einstein's special theory of relativity fundamentally changed the way scientists characterize time and space. So far it has passed all experimental tests. It does not however mean that Newton's law of physics is wrong. Newton's laws are an approximation of relativity. In the approximation of small velocities, special relativity reduces to Newton's laws. In this short paper, the authors proposed a simple experimental verification for Einstein's variance of mass with velocity equaion. [Researcher. 2009; 1(5):44-46]. (ISSN: 1553-9865).

Key words: Special theory of relativity, mass-velocity equation, experimental verification, bosons and gravity.

1. Introduction

Special theory of relativity (a physical theory of relativity based on the assumption that the speed of light in a vacuum is a constant and the assumption that the laws of physics are invariant in all inertial systems).

Einstein's theory that describes the motion of particles moving at any speed, even close to the speed of light. The theory proposes that the measured speed of light is a constant even if the source or observer of the light is moving. In contrast, measured distance, time, and mass all depend on the relative velocity of the source and observer.

Einstein's version of the laws of physics, when there is no gravity. The two fundamental concepts in the foundation of this theory are equality of observers, and the constancy of the speed of light. The first of these means that the laws of physics must be the same, no matter how quickly an observer is moving. The second means that everyone measures the exact same speed of light. This theory is useful whenever the effects of gravity can be ignored, but objects are moving at nearly the speed of light. It has been successfully tested many times in particle accelerators, and orbiting spacecraft. For objects moving much more slowly than light, Special Relativity becomes very nearly the same as Newton's theory, which is much easier to use.

A description of the relationships and interactions between moving objects. The 'special' theory only applies to the special case of objects moving at constant speeds in straight lines. It does not deal with accelerated motions.

It states that laws of nature are the same for all observers regardless of how they move. Also, it describes that space and time are connected and no longer individually absolute. Developed and published in 1905 by Albert Einstein, it deals with the measurement of physical quantities by observers who are in uniform motion with respect to each other Einstein's statement that the laws of physics are the same for all observers in uniform [linear] motion.

2. Experiment

Choose an 1HP (one horse power) electric motor whose RPM is 1440. Take two single cell torch lights made by one and the same company. Take two single tiny 1.5volt battery cells made by one and the same company. Fix one of the torches to a wheel of the motor. Let the second torch light be at rest. Now switch on the torch lights simultaneously and switch on the electric motor at the same time. In our experiment the torch light at rest gave light only for 90 minutes where as the torch light in motion emitted light for 111 minutes. That is, the torch light at motion gave light more than 11 minutes than the torch light at rest. From this, we get the moving mass (the torch light in motion) is greater than the rest mass.(the torch light at rest) And hence the proof for Einstein's mass-velocity equation.

3. Discussion

From where does the rotating torch light get more energy? Who has put the energy in the moving torch? How is it possible that the moving object has more energy? It is generally accepted that in quantum mechanics Higgs bosons whose nickname is the God particle gives energy to other particles. Since we have performed the experiment in open space on a table, there is no involvement of quantum mechanical forces/field. So, the moving torch light might have taken energy from the space which is filled with gravitons. Let us recall what Einstein said about gravity: We can not separate gravity from space. Space is full of gravity. In this experiment, a physical mystery happened naturally. The gravitational force was converted into electro magnetic force. This is the only possibility.

4. Conclusion

Needless to say, novel ideas rule the world. In science, the statements which are initially rejected are normally accepted later. Similarly the authors believe that their findings will be welcomed by the physics community. Guye and Lavanchy carried out their experiment 2000 times. Keeping this fact in mind, the authors also repeated their experiment for 700 times and the result was consistent.

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