Scalar Theory of Everything replacement of Special Relativity

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Abstract

The Special Theory of Relativity applies where gravitation is insignificant. There are many observations that remain poorly explained by the standard models of either the big of cosmology or the small of Quantum mechanics. Each of the STOE axioms has been used in the development of models of observations in the big and the small. The strength of the Scalar Theory Of Everything (STOE) is its ability to describe an extremely wide range of observations and to predict observations. The axioms that replace Special Relativity are: (1) Time progression (dt) is a constant in the universe rather than the speed of light. (2) The diameter of the hods is the same throughout the universe. (3) The distance between hods is related to plenum densityρ. Higher ρ reduces the distance between hods. (4) The speed of photons and hods is the greatest of any matter in a given environment. And (5) The speed of the plenum wave is much faster than the speed of the hods. The STOE passes the tests of Special Relativity and does much more. The STOE is a major paradigm shift.

keywords: STOE, special relativity

1 INTRODUCTION

The theory of Special Relativity (SR) was developed from consideration of the aberration of light, Lorentz's elaborations of Maxwell's equations (independence of the speed of light c of the source and observer), the moving magnet and conductor thought experiment, the null results of aether drift experiments, and the Fizeau experiment (suggesting the c is modified to c/n where n is the index of refraction). Additional experiments considered to be tests of SR are the Doppler effect, the Kennedy-Thorndike like experiments (testing constancy of c) and Ives-Stilwell like experiments (testing time dilation and length contraction).

The Scalar Theory Of Everything (STOE) was developed to model cosmological problems (Hodge 2015d). Hodge (2004) posited the universe was composed of two components and their interaction.

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The STOE application to SR started with Newton's speculations about corpuscular nature of light (Hodge 2012). A particle model of diffraction and interference must first describe "coherence" of light. Passing the light through a slit in a mask tests coherence. If the light is coherent, a diffraction pattern appears on a screen. If the light is not coherent, a diffraction pattern will not appear on a screen.

Hodge (2012) expanded on the characteristics of the plenum, hods, and their interactions to derive the STOE particle[1] photon diffraction model. This photon model and a toy simulation program were developed to yield a diffraction pattern after random particle photons moved a large distance that simulated the development of coherence of light. The computer program involved several iterations, which raises the specter of chaos. However, chaos is avoided by having several feedback conditions that are also in nature. Passing the photons through a slit and matching the screen pattern to a Fraunhofer pattern demonstrated coherence. Other observations suggest the photon distribution in a laser beam and explain the Afshar Experiment.

The photon model was extended and modified to describe the single photon at a time in the experiment (Hodge 2015c, and references therein). This model suggested the experiments (Hodge Experiments) involving the varying illumination of coherent light across a slit(Hodge 2017a,b). The prediction was found to be consistent with the observations of Hodge Experiments. The Hodge Experiments rejected all wave models of light. One of the characteristics of this model is that the c varies linearly with the ρ and is the highest speed that any matter (hods) may achieve. Because the ρ caused by the Sun and the universe may vary locally to the photon without being in a refractive substance, this model differs from the Fizeau model.

The STOE addressed Maxwell's Equations by experiments that suggested the "moving magnet and conductor thought experiment" had a basis in a different view of the Biot-Savart Law and the magnetic field (Hodge 2018a,b,c).

The sections of this paper discuss the aspects of Special Reletivity:
2 Null Experiments
3 Length contraction
4 Doppler shift
5 Clocks
6 Time dilation
7 Discussion and Conclusion.

2 Null experiments

The null experiments such as the Michelson-Morely Experiment are explained because the ρ and $\vec{\nabla}\rho$ (gravity) are constant across the experiment. The ρ caused by the Sun and Moon cause tides. But the changes around the experiment are too slow and may have caused the P.M observations to be slightly higher

[1]A distinction is made between a wave packet type model that is called a "photon" and a particle type model.

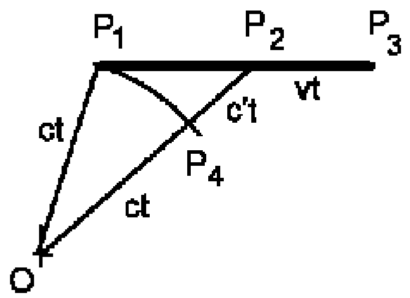

Figure 1: The length of a rod and its measured length.

than the noon observations (Sun perpendicular to the plane of the experiment) (Michelson & Morley 1987). Therefore, there is no wind causing the required change in the diffraction pattern, but a tidal force of $\vec{\nabla}\rho$ is present.

3 Length contraction

Length contraction is a measurement phenomenon. That is, the length of rods does not change from one inertial frame to another due to the relative velocity. Figure 1 shows the actual length of a rod $l = P_3 - P_1$ in the comoving coordinate system where the P's are points of interest. The length $l' = P_2 - P_1$ as measured in another coordinate system (O) moving at a constant velocity v. The distance moved during the time t a photon takes to move from P_1 to O is vt as shown on the diagram. P_2 was the position of the end (P_3) at $t = 0$. During t, light travels toward the observer and moves a distance of $c't$. That is, the direction of light appears to originate from each end of the rod. Therefore, the $l' < l$ by the Lorentz factor.

Lorentz suggested the structure of particles contracted with relative velocity. The STOE suggests the distance between hods in particle structures lessens in greater ρ environments. This lessens the particles' size but not the mass. Thus, particles contract toward the center of spiral galaxies and become black holes. The black holes compress to release high–energy photons which radiate outward as observed in periodic X-ray bursts without accompanying radiation of other frequencies (Hodge 2006b). A subset of length contraction is aberration because of the direction of photon movement.

4 Doppler shift

The STOE models the primary redshift of galaxies as a variation of the photon energy as it travels through space (Hodge 2006a). The STOE model accounted for redshift galaxies, some blueshift galaxies, and reduced to the Hubble Law for distances outside our galaxy cluster. The same equation was applied to the Pioneer Anomaly (Hodge 2006c). The Doppler shift of light from galaxies is from the stars in the galaxy. Some stars in a galaxy are approach us relative to the galaxy as a whole. Some are receding.

The model of a photon (Hodge 2012) included the simulation of how a random distribution of photons become coherent with distance traveled. The forces on the photons force them to become organized in accordance with the number of hods (frequency) in a photon as depicted in Fig. 2. The speed of photons is the fastest that matter can travel in any environment. If the source is moving away from the direction of previously emitted photons, the rate spacing of the photons becomes longer Fig. 3. The photons are no longer coherent. The STOE suggests the forces on the photon tend toward becoming coherent. But all are traveling at the same speed. The addition of hods to matter particles has been assumed for galaxy redshift, the Doppler effect, and for the generation of the magnetic field of electromagnetic waves of photons. They become coherent by attracting free hods or by ejecting hods during their travel. The coherent grouping is reestablished (see Fig. 4 and Fig. 5).

The redshift equations were successfully applied to the Pioneer Anomaly (Hodge 2006c). The Pound-Rebka Experiment also has photons experiencing a redshift and a blueshift while traveling in a changing ρ potential. The change in photon frequency was measured with the Doppler Effect. Thus, the Pound-Rebka Experiment uses models of both the Doppler Effect and time dilation. The STOE redshift equations alone are insufficient. That is, in the STOE model there are more parameters to be determined than there are observation data points. Therefore, their results may be erroneous.

A distinction is made between the velocity of an object such as hods that depends on the environment (ρ and n) along its path and the velocity of an object such as bullets and balls that depend on the velocity of the source.

5 Clocks

Consider a pendulum clock. The pendulum clock is well modeled. We can predict the tick rate if the clock is placed in a box and dropped. The time between ticks slows if not stops. Similarly, the tick rate slows or stops if placed in an accelerating plane, at a higher altitude, etc.

We have no model of the decay rates beyond the statistical description. But, the statistical description omits the mechanism of decay. Without the knowledge of the mechanism of decay, ascribing the rate of time progression to time dilation is questionable. For example, the muon decay rate while falling may be analogous to a free falling pendulum clock in a box.

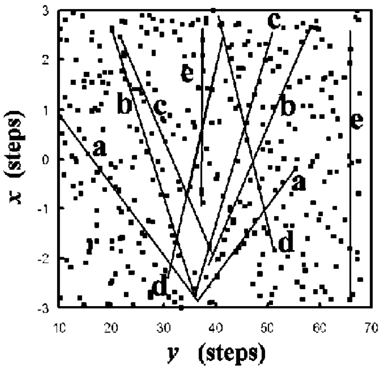

Figure 2: Coherent distribution of photons from Hodge (2012).

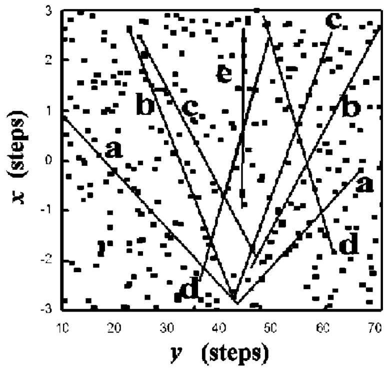

Figure 3: Distribution of coherent photons if source moving away.

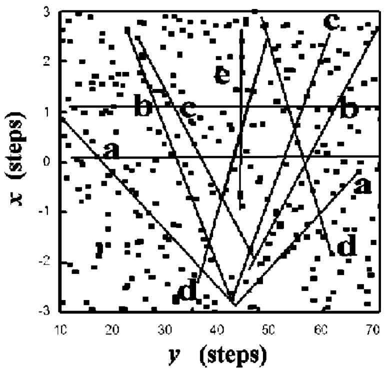

Figure 4: Distribution of coherent photons if source moving away focused view.

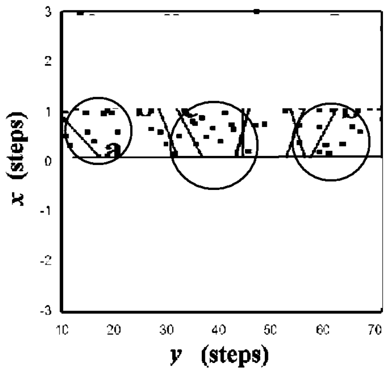

Figure 5: Distribution of coherent photons if source moving away focused view with the concentrated areas circled.

The change in decay rate may be an indication of the cause of decay.

6 Time dilation

Another phenomenon attributed to time dilation is two different photons traveling through the plenum with different ρ. For example, the Shapiro delay of the photons traveling closer to the Sun is traveling through a lower ρ than the photon traveling farther from the Sun. The STOE suggest the time difference is because the slower speed of the photons traveling closer to the Sun. Therefore, the delay is the slower speed not time dilation. Another phenomenon is the bending of light around massive objects. The inner photons travel slower. This is consistent with the Hodge diffraction experiment (Hodge 2015c).

7 Discussion and Conclusion

The list of problematical observations that the STOE explains continues to grow with an improved understanding of the universe (Hodge 2015d, 2016).

The scalar ρ depends on all the masses, sources and sinks in the universe. The $\vec{\nabla}\rho$ gives the "gravity" and Mach's Principle. The STOE Relativity considers the accelerated frame indistinguishable from the inertial frame. This has already been used to calculate the galaxy redshift and the Pioneer Anomaly. This gives the Poisson Equation. The STOE extends into General Relativity scales by considering the changes in position of the masses, sources, and sinks which will yield the d'Alembert's Equation without the complexity of tensor General Relativity which involves the conversion to geometry and the inverse conversion to gain physical observations.

The STOE calculates all physical quantities as invariant under velocity except as specifically calculated or as caused by changes in ρ. Therefore, the laws of nature are scale invariant. Therefore, the relation of gravity and scale invariance becomes clear.

The STOE rejects the notion of space-time because of the arrow-of-time. The STOE arrives at the Equivalence Principle by a particle structure argument (Hodge 2015e). Therefore, geometric gravity and space-time are unnecessary.

Each of the STOE axioms has been used in the development of models of observations in the big and the small. The strength of the Scalar Theory Of Everything (STOE) is its ability to describe an extremely wide range of observations and to predict observations. The axioms that replace Special Relativity are: (1) Time progression ($\mathrm{d}t$) is a constant in the universe rather than the speed of light. (2) The diameter of the hods is the same throughout the universe. (3) The distance between hods in a particle is related to plenum densityρ. Higher ρ reduces the distance between hods. (4) The speed of photons and hods is the greatest of any matter in a given environment. And (5) The speed of the plenum wave is much faster than the speed of the hods. The STOE passes the tests of Special Relativity and does much more. The STOE is a major paradigm shift.

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