Inertia according to the STOE

J.C. Hodge[1]*

[1]Retired, 477 Mincey Rd., Franklin, NC, 28734

Abstract

The Scalar Theory of Everything (STOE) model of photons is extended to model the inertia of mass. The characteristic of the plenum, hods, and their interactions yields the Newtonian characteristics of gravitational mass and inertial mass. The Equivalence Principle is derived from these characteristics rather having to be assumed. The characteristics have been used to derive the STOE photon diffraction model. An experiment has rejected all other diffraction models.

keywords: Inertia, Newtonian Interpretation, STOE

1 INTRODUCTION

The Newtonian model recognizes two effects of mass. Inertial mass m_i of body m is the proportionality constant in the mapping of a body's measurement of acceleration a to a math mapping of inertial force $F_i = m_i a$. Gravitational mass M_g of body M is the body's measurable characteristic effect on other bodies on a math mapping of gravitational force $F_g = G m_i M_g / r^2$ where G is a proportionality constant and r is the distance between the center of masses of the bodies. The transformed forces are then combined and inverse transformed to determine the trajectory of a body. This method requires the Equivalence Principle that equates the inertial and gravitational mass of a body. The problem is that the Equivalence Principle relates fundamental characteristics of matter but seems to have no more fundamental principle about the characteristics of the universe then this necessity to make the Newtonian method work.

The Scalar Theory Of Everything (STOE) was developed to model cosmological problems (Hodge 2015d). Hodge (2004) posited the hods were two dimensional round surfaces that maintained a plenum density $\rho = 0$. The equipotential surfaces form oblate spheroids with the minor axis along the normal through the center of the hods z-axis. The streamlines that are lines of force are confocal hyperbolae lines. The rising $\vec{\nabla}\rho$ from the surface of the hod obeys the inverse radius law where each equipotential surface has the same total potential energy over the total surface.

*E-mail: jchodge@frontier.com

Hodge (2013b, and references therein) expanded on the hod and plenum interaction and particle formation by describing the photon and positing the interaction of the hods and plenum. The fractal and one universe principles is a corollary of the Reality Principle. All the mathematics of the models have their analogy in our everyday life (Hodge 2015d). The action of the plenum on the hod surface was posited to be analogous to the Newtonian movement of a body through a medium (Hodge 2013b, section 2.2) in the direction perpendicular to the hod surface. The plenum from other hods effect on the test hod is through the force generated by $\vec{\nabla}\rho_{\text{other}}$ which is the gravitational force. Another force to dampen this movement was necessary to prevent the hod from achieving a velocity of light speed perpendicular to its forward motion. The dampening model was of a non–turbulent flow. Experiment confirmed the model by predicting and not rejecting the STOE model by the observation of diffraction and interference experiments (Hodge 2015c). This experiment rejected all other models of the diffraction experiments.

This Paper suggests the "dampening force" is the inertial force of inertial mass in the Newtonian equations. The model of hods and plenum interaction is discussed in section 2. The Discussion and Conclusion are in section 3.

2 The model

The inertial force is the second term on the right of Hodge (2013b, Eq. 6)

$$\vec{F}_{\text{i}} = -K_{\text{d}}m_{\text{s}}\rho_{\text{other}}\vec{v_{\text{n}}}, \tag{1}$$

where K_{d} is the proportionality constant, m_{s} is the surface area presented to the ρ_{other}, and $\vec{v_{\text{n}}}$ is the component of velocity that is normal to the hod surface. The m_{s} in the photon is the number of hods in the photon times the surface area presented to $\vec{\nabla}\rho_{\text{other}}$.

3 Discussion and Conclusion

The m_{s} is the same for both the inertial force of Eq. 1 and the surface for the action of the ρ field caused by other hods (the gravitational field). The Equivalence Principle is then derived from this characteristic.

References

Hodge, J.C., 2004, *Changing universe model with applications*, http://www.arxiv.org/PS_cache/astro-ph/pdf/0409/0409765v1.pdf

Hodge, J.C., 2013a, *Scalar Theory of Everything model correspondence to the Big Bang model and to Quantum Mechanics*, IntellectualArchive, Vol.3, No. 1, P. 20,. http://intellectualarchive.com/?link=item&id=1175

Hodge, J.C., 2013b, *Photon diffraction and interference*, IntellectualArchive, Vol.1, No. 3, P. 15, http://intellectualarchive.com/?link=item&id=597

Hodge, J.C., 2015a, *Single Photon diffraction and interference*, http://intellectualarchive.com/?link=item&id=1557

Hodge, J.C., 2015b, *Light diffraction experiments that confirm the STOE model and reject all other models*, http://intellectualarchive.com/?link=item&id=1578

Hodge, J.C., 2015c, *Diffraction experiment and its STOE photon simulation program rejects wave models of light*, http://intellectualarchive.com/?link=item&id=1594

Hodge, J.C., 2015d, *Universe according to the STOE*, http://intellectualarchive.com/?link=item&id=1648