PREFACE

The proposed theory used to be regarded as going strongly against some of the conventional wisdom of modern physics, although it seems that several key physicists are proposing ideas with which the proposed theory is compatible. With the 2012 discovery of the Higgs boson supporting a Higgs field and mechanism I fell that I am on the playing field so to speak In this preface I am going to provide several pieces of information upon which the model draws or with which the proposed ideas are at least consistent. The hope is that the reader will read the model and whether or not he or she agrees with the model, at least support doing a key test of it.

1. Mainstream quantum mechanics (QM) regards the photon as an alloy [(34)]of two quanta being roughly 80% Bº and 20% Wº.

2. The sphere of influence of photons shrink[(34)] as they are energized and their wavelengths shrink.

3. Hidden symmetries; the living vacuum as evidenced by the Casimir effect, and background fields such as the Higgs field[(34)], in which screening creates effective mass are all consistent with main stream QM. The effective mass is presumed not to be a property of particles, but of the interaction with the surrounding background.

4. Quantum mechanics accepts that the fine structure constant, the electric charge and the strong force vary depending on the strength[(34)] with which they are probed. The true value of the electrical charge, for example, is assumed to be masked by the living vacuum.

5. The strength of the strong force is masked[(34)] by the fact that quarks do not exist free in nature, but always come packaged in groups of two or more in nature. Just as an atom containing powerful electric charges appears to be electrically neutral, nucleons and their even stronger forces do likewise unless approached very closely by another nucleon.

6. Modern cosmology posits that the permittivity of the vacuum[(18)] varies with the expansion of the universe.

7. Both Newtonian physics and General Relativity (GM) have light obey gravity with GM having gravity bend light at twice the rate that Newtonian physics, as calculated by Soldner, was assumed to do. The Shapiro time[(19)] delay is an experimentally demonstrated impact of gravity upon light.

8. Recent work by qualified physicists have indicated that free quarks created the Relativistic Heavy Ion Collider in conditions believed to similar to those existing at the time of the big bang[(36)] behaved as a liquid.

9. Black hole[(37)] modeling reveals that the propagation of sound in an uneven liquid flow is closely analogous to the propagation of light in curved spacetime.

10. Bose- Einstein condensates[38] can be regarded as a quantum fluids.

11.. Steven Weinberg proposed in his text *Gravitation and Cosmology*[21] that the Principle of Equivalence of Gravitation and Inertia provided a better bridge between gravity and particle physics than Einstein's geometrical approach.

> ".....At one time it was even hoped that the rest of physics could be brought into a geometric formulation, but this hope has met with disappointment, and the geometric interpretation of the theory of gravity has dwindled to a mere analogy, which lingers in our language like 'metric', 'affine connection' and 'curvature', but is not otherwise very useful....."

12. Newton[13] posited in a 1675 letter to Oldenburg, the Secretary of the Royal Society, and later to Robert Boyle, that gravity was the result of a *condensation causing a flow of an ether with a corresponding thinning of the ether density associated with the increased velocity of flow.* He also asserted that such a process was consistent with all his other work and Kepler's Laws of Motion.

13. No matter how created, Newton, general relativity, and quantum mechanics regard gravitational fields as associated with and traveling with the massive bodies. The fields can be regarded as entrained.

14. The Michelson-Morley experiment was conducted on the surface of the earth, thus deep in the earth's gravitational field where light was under the strong influence of the earth's gravitational field. Thus, it was incapable of measuring the drift of the earth through any background ether, because of the effects of the earth's entrained gravitational field.

15. Robert Kirkwood[4] showed some fifty years ago that a flowing ether model yielded the *Schwarzschild line element* in Einstein's theory. Herbert Ives[6] had done the same thing several years earlier. It is generally accepted that *any theory which produces the Schwarzschild line element will produce the same results as General Relativity* for the key tests of General Relativity:

16. I show in the proposed model that if gravity is the result of a process similar to what Newton suggested, it would bend light by the same amount as general relativity proposes and that the velocity of light would vary with position in the gravitational field as Einstein[2] once proposed in his book *Relativity* (1916):

> "A curvature of rays of rays of light *can only take place when the velocity of propagation of light varies with position*." (Italics added.) Einstein goes on to note that the constant velocity of light is restricted to special relativity i.e. absent a gravitational field.

Einstein changed his mind, but I suspect that the reason was that the variation in velocity is masked by the underlying dynamics. I believe that the most direct interpretation of the Shapiro time delay[19], as revealed by the Viking landers on Mars, already supports this premise. I propose another test that will be unambiguous.

17. I propose that the velocity of light be measured twice, once on the surface of the earth and once in orbit. For reasons of experimental control the ideal situation would use the same apparatus in the same spaceship on earth and in orbit. It is absolutely essential that the measurements be made tangentially to the surface of the earth and to the spaceship's orbit. That is, the measurements must be made perpendicular to the radius of the gravitational field i.e. following a geodesic.

If the speed of light is truly constant then no change will be detected between the two sets of measurements and Einstein's later thinking will be once again confirmed. That should be sufficient justification for the experiment. But if they are different a richer understanding of gravity will result, the horizon and flatness problems will be solved, and I suspect it may help bridge GR and particle physics. It is not specified whether the measurement of the velocity of light in space will be *greater or lesser* than on the surface of the earth for the following reasons.

The proposed model posits that the inflow of the spatial medium is faster near the surface of than in space, but that the velocity of photons *through it* is inversely slower near surface than in outer space. Think of event horizon of black holes, which the model posits is the zone where the swallowing of space matches the speed of light through it. Inside the event horizon light cannot travel fast enough to escape. The resultant density of the spatial medium is posited to be thinner near a black hole or the surface of the earth than in space.

But since I have never been near or in a black hole, I allow for the possibility that the dynamics may be one of condensation and accretion resulting in an inverse relationship to my expectations. Scientist dealing with photonegatives, inverted images on the retina or footprint or skeletal castes in paleontology should be used to dealing with such inverse relationships. It is noteworthy that the Higgs boson was not seen directly but was proven by the imprint of such "castes" etc.

19. There are several phenomena that serves as good analogies suggesting the existence of a superverse or megaverse of which two will be referenced here. (a) Sunspot dynamics and (b) Images varying in size on a pixelated computer monitor or TV screen.

(a) I used the sun and its sunspots as an analogy of the relationship between a superverse and local universes. Sunspots are driven by electrodynamics and thermodynamics. But what really counts for illustrative purposes here is that sunspots are temporary creations of and dependent on the sun.

(b) Observations suggest that the energy density of the vacuum remains constant as our local universe expands, just as the densities of pixels inside two circles of different sizes is the same on a computer or TV monitor.