REFUTATIONS OF ECE THEORY : HIGGS BOSON

by

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ABSTRACT

The claim to have observed a "Higgs boson" is subjected to due scholarly scrutiny and it is shown that the theory contains many errors, adjustable parameters and misconceptions, so many as to render the idea meaningless. Some of these failings of standard physics have been known for nearly a century and they are reviewed briefly in thsi paper. ECE on the other hand is a self consistent and generally covariant unified field theory in which every particle has mass. So the Higgs mechanism is unnecessary and subjective, it is not a predictive theory.

Keywords: Refutations of ECE theory, refutations of Higgs boson theory and the Higgs mechanism.

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1. INTRODUCTION

The Einstein Cartan Evans (ECE) unified field theory is based rigorously on Cartan geometry {1 - 10} and produces all the equations of physics and chemistry from a unification of the four fundamental fields: gravitational, electromagnetic and weak and strong nuclear. The ECE theory produces photon mass and the fundamental B(3) field self consistently. The standard model of physics on the other hand has been obsolete for many years and is well known to be riddled with errors. Recently a claim has been made to have observed an entity known as the "Higgs boson", but there are many objections to this claim which are summarized in this introduction. The numerous failings in the U(1) sector of the so called standard model are discussed further in Section 2, and the failings in the electroweak sector pointed out in Section 3. These include a fundamental algebraic error which negates the entire theory.

It is immediately clear that the claim to have "observed" a boson is meaningless merely on consideration of the number of adjustable variables, these seem to vary from 19 to 26, so that effectively nothing is known. In some variations there seem to be over a hundred adjustable parameters, which is absurd. A true theory of physics has the fewest number of parameters possible. The standard model cannot account for the gravitational sector, so the oldest force field in physics is missing entirely. The claim to existence of the Higgs boson is still based on the obsolete U(1) sector, and the concept of the massless photon. This concept was rejected by as early as 1906 by Einstein, and also by de Broglie and their followers. The discovery of the B(3) field in 1992 finally confirmed the existence of photon mass experimentally. Deflection of light by gravitation also shows that the photon has mass. The arbitrary Gupta Bleuler condition is used to "remove" two polarizations out of four in four dimensional spacetime, so the U(1) massless photon theory is

not manifestly covariant, leading to many difficulties in canonical quantization {11}. The most general Lorentz transform of a massless particle leads to a nonsensical result, the E(2) Euclidean group {11} of rotations and translations confined to a two dimensional plane. The theory of a massless particle fails immediately. This failure is ignored in the standard model, and that is blatantly unscientific. The Proca equation for a photon with mass was introduced in 1934 {11} and it is well known {11} that it is not U(1) gauge invariant, so U(1) gauge invariance is counter indicated by light deflection by gravitation. The Lorenz condition and Lorenz gauge of the U(1) theory is entirely arbitrary, and was introduced well over a century ago. The inverse Faraday effect observed experimentally in 1964 {1 - 10} is not U(1) gauge invariant because the conjugate product of non linear optics is not gauge invariant. The inverse Faraday effect refutes the existence of the Higgs boson and shows the existence of photon mass through the B(3) field. The subsequent development of O(3) electrodynamics and ECE theory refutes the standard model in many ways, and these refutations are by now well known.

These numerous flaws in the U(1) sector are carried through into the electroweak sector, in which all particles are initially massless. Therefore all massless particles of the standard electroweak theory suffer from the fact that they behave unphysically under the most general Lorentz transform in the Wigner little group method {11}. The electroweak theory is set up to be incorrect. Masses are claimed to emanate from the Higgs mechanism, but this is merely an unprovable assertion that relies on the unobservable idea of degenerate vacua. These are set up so that they cannot be observed, so this is not Baconian science at all. The Higgs mechanism is a variation on the Klein Gordon equation, which has been shown {12} to be internally self inconsistent, and which was rejected by Dirac. The U(1) sector symmetry has been refuted in many ways by the antisymmetry laws of ECE theory in UFT131 ff. On www.aias.us. The proponents of Higgs theory continue to ignore all these well known

refutations in a wholly unscientific manner, thus endangering the scientific method with dogma. The fundamentals of the collision experiment used to claim the existence of the Higgs boson have been refuted in comprehensive detail in UFT158 ff. on www.aias.us, so any theory built on this flawed basis is also flawed and meaningless. The Einsteinian general relativity (EGR) has been refuted comprehensively in the 223 UFT source papers to date because of its lack of spacetime torsion. This means that all sectors of the standard physics have been refuted comprehensively by relatively simple but rigorous scholarship.

The photon mass has been estimated straightforwardly in recent UFT papers, and to claim the existence of any massless particle is unscientific. It is absurd to build a theory such as the electroweak theory on the existence of particles deliberately made massless, and then to add mass through degenerate vacua that cannot be observed at all. It is even more absurd to build this theory with so many adjustable parameters that nothing is known, and the greatest absurdity of all is to claim the "discovery" of the Higgs boson. Quantum electrodynamics and quantum chromodynamics also rely on zero photon mass, and also contain their adjustable parameters and unknowables, using integrals with thousands of terms to address the simplest problem. It is not even known that these integrals converge, and renormalization is a notoriously obscure method of removing infinities, described by Feynman as "hocus pocus". String theory is well known to have been rejected many times by many scholars as a non Baconian theory. This again has its numerous adjustable parameters and unknowables, with a multitude of unphysical dimensions. Some of its metrics have been refuted definitively during the course of development of ECE theory, notably in UFT120 and ref. (3). In recent ECE theory the Dirac equation has been shown to contain unobservables such as the Dirac sea and negative energy that can be removed straightforwardly with the ECE fermion equation. The electroweak theory and standard model still rely on the original Dirac equation, with Dirac's wrong choice of gamma matrices. The fermion equation

improves the successful Dirac equation. The theory of the Higgs boson produces a grossly absurd result in that the vacuum density is up to a hundred orders of magnitude too large. This is known as the vacuum problem, and indeed it is. So absurdity has been piled upon absurdity for more than half a century, until finally a non existent particle is found. In the strong nuclear sector the idea of approximate symmetry continues to be used, this is nonsense, a symmetry is exact or does not exist at all.

In Section 2, some of these criticisms of the U(1) sector and particle scattering theory are gone into in more detail, with a brief review of UFT175, which refuted the Heisenberg Uncertainty Principle, another incorrect aspect of the standard model, one which was immediately rejected by Einstein, Schroedinger, de Broglie and Dirac in 1927, and since then by the determinist school of physics. The concept split physics into two subjects, and the absurd claim to have observed the Higgs boson will do further great harm to Baconian natural philosophy. Finally it is shown in Section 3 that electroweak theory contains an algebraic error which is enough to refute its claims entirely.

2. SOME DEFINITIVE REFUTATIONS OF THE U(1) SECTOR.

Consider a hypothetically massless particle moving along the Z axis with wave vector {11}:

$$k^{\mu} = (k, 0, 0, k) \quad -(1)$$

It has been well known for many years that the most general Lorentz transform that leaves this invariant is not a rotation group as claimed in the standard model. It is the Euclidean group E(2) with Lie algebra {11}:

$$[L_1, L_2] = 0 \quad -(2)$$

$$[J_3, L_1] = -iL_2 \quad -(3)$$

$$[L_2, J_3] = iL_1 \quad -(4)$$

where:

$$L_1 = K_1 - J_2 \quad -(5)$$

$$L_2 = K_2 + J_1 \quad -(6)$$

This is the group of rotations generated by J_3 and translations in a plane. In four dimensional spacetime this group has no meaning at all. This means that the concept of massless particle has no meaning, and so the Higgs boson has no meaning. The Wigner little group method used to derive this meaningless result also asserts that a massless particle can be characterized by only two helicities, and only by two transverse circular polarizations out of four. This conclusion has been rejected by many scholars for many years. It is most clearly refuted in the discovery of the $\underline{B}^{(3)}$ field {1 - 10}, defined by:

$$\underline{B}^{(3)*} = -ig\,\underline{A}^{(1)} \times \underline{A}^{(2)} \quad -(7)$$

where $\underline{B}^{(3)}$ is a longitudinally polarized magnetic flux density, and where:

$$\underline{A}^{(1)} = \underline{A}^{(2)*} = \frac{A^{(0)}}{\sqrt{2}}\left(\underline{i} + i\underline{j}\right)\exp(i\phi) \quad -(8)$$

is the transversely polarized vector potential of the electromagnetic field, with phase ϕ. Elementary vector analysis shows that $\underline{B}^{(3)}$ must be aligned perpendicular to $\underline{A}^{(1)}$. It was pointed out by Vigier in 1993 that this finding implies photon mass, and that $\underline{B}^{(3)}$ refutes the standard model of physics entirely. The entire theory of the Higgs boson collapses because of the inverse Faraday effect in which B(3) is observed as a longitudinally directed magnetic flux density induced by the circularly polarized electromagnetic field. The standard model fails entirely to account for non-linear optics {1 - 10}, in which the conjugate product $\underline{A}^{(1)} \times \underline{A}^{(2)}$ is well known, and is a well known property of the electromagnetic field in the vacuum, or

free electromagnetic field in the absence of matter. The standard model results in an absurdity, that $\underline{A}^{(1)} \times \underline{A}^{(2)}$ cannot produce the longitudinal $\underline{B}^{(3)}$, i.e. that ordinary vector cross products do not exist. This absurdity is the result of the incorrect idea of zero photon mass, two helicities, and transverse polarizations only. As argued, the idea is incorrect because it results in E(2). Therefore $\underline{B}^{(3)}$ exists and is defined by Eq (7). The discovery of $\underline{B}^{(3)}$ in 1992 finally showed definitively that photon mass exists, and resulted in a comprehensive development of $\underline{B}^{(3)}$ type electrodynamics by several groups {1 - 10}. This effort is recorded in the Omnia Opera of www.aias.us and resulted in 2003 in the inference of ECE theory.

When photon mass is correctly incorporated the electrodynamics resulted in 1934 in the Proca equations:

$$F^{\mu\nu} = \partial^{\mu} A^{\nu} - \partial^{\nu} A^{\mu} \quad - (9)$$

$$\partial_{\mu} F^{\mu\nu} + \left(\frac{mc}{\hbar} \right)^2 A^{\nu} = 0 \quad - (10)$$

$$\partial_{\mu} A^{\mu} = 0 \quad - (11)$$

where $F^{\mu\nu}$ is the electromagnetic field tensor in special relativity and where m is the photon mass. Here c is the speed of light in vacuo, and $\hbar$ the reduced Planck constant. The Lorenz condition follows as a consequence of photon mass:

$$\partial_{\mu} A^{\mu} = 0 \quad - (12)$$

and is no longer arbitrary. The Proca lagrangian is:

$$\mathcal{L} = - \frac{1}{4} F^{\mu\nu} F_{\mu\nu} + \frac{1}{2} \left(\frac{mc}{\hbar} \right)^2 A_{\mu} A^{\mu} \quad - (13)$$

and this is not U(1) invariant as is well known {11}. It is also well known that photon mass results in self consistent canonical quantization.

The most comprehensive refutation of the U(1) sector of the standard model was

given in UFT131 ff using simple considerations of antisymmetry. The U(1) electromagnetic field tensor is:

$$F_{\mu\omega} = \partial_\mu A_\omega - \partial_\omega A_\mu \quad -(14)$$

But the standard model does not use its inherent antisymmetry:

$$\partial_\mu A_\omega = -\partial_\omega A_\mu \quad -(15)$$

which follows immediately from the standard model's own antisymmetry in the same indices μ and ω :

$$F_{\mu\omega} = -F_{\omega\mu}. \quad -(16)$$

In vector notation Eq. (15) becomes:

$$\underline{\nabla}\,\phi = \partial \underline{A} / \partial t, \quad -(17)$$

$$\frac{\partial A_j}{\partial x_i} = -\frac{\partial A_i}{\partial x_j}. \quad -(18)$$

These equations imply that:

$$\underline{\nabla} \times \frac{\partial \underline{A}}{\partial t} = \underline{\nabla} \times \underline{\nabla}\,\phi = \frac{\partial}{\partial t}\left(\underline{\nabla} \times \underline{A}\right) = \underline{0}. \quad -(19)$$

In the standard model:

$$\underline{E} = -\underline{\nabla}\,\phi - \frac{\partial \underline{A}}{\partial t}, \quad \underline{B} = \underline{\nabla} \times \underline{A} \quad -(20)$$

where ϕ is the scalar potential and $\underline{A}$ the vector potential, $\underline{E}$ the electric field strength and $\underline{B}$ the magnetic flux density.

From Eqs. (17) to (19):

$$\frac{\partial \underline{B}}{\partial t} = \underline{0} \quad -(21)$$

so the magnetic flux density cannot have a time dependence, a reduction to absurdity. In the standard model the Faraday law of induction is:

$$\underline{\nabla} \times \underline{E} + \frac{\partial \underline{B}}{\partial t} = \underline{0} \quad -(22)$$

so

$$\underline{\nabla} \times \underline{E} = \underline{0} \quad -(23)$$

and the electric field is always irrotational, another reduction to absurdity. For a static magnetic flux density:

$$\frac{\partial \underline{A}}{\partial t} = \underline{\nabla} \phi = \underline{0} \quad -(24)$$

and so:

$$\underline{E} = \underline{0} \quad -(25)$$

and the entire U(1) sector collapses because of the simple anstisymmetry law (15). The standard model asserts erroneously that the antisymmetry (15) does not exist, but at the same time asserts that the antisymmetry (16) exists, another reduction to absurdity.

The entire theory of the Higgs boson collapses with its U(1) sector.

The particle collision experiments used to claim the existence of a Higgs boson are based on the collision of two particles each having mass. In UFT158 ff of this series it was shown that the relativistic theory of such a collision is absurdly incorrect on the classical relativistic level. All calculations were checked by computer algebra. In UFT160 for example a particle of mass m_1 was considered to be scattered by an initially static particle of mass m_2. Considerations of energy and momentum conservation as in note 224(6) accompanying this paper resulted in:

$$x_2 = \frac{1}{\omega - \omega'}\left(\omega\omega' - \left(x_1^2 + \left(\omega^2 - x_1^2\right)^{1/2}\left(\omega'^2 - x_1^2\right)^{1/2}\cos\theta\right)\right) \quad -(26)$$

where ω' is the scattered frequency, ω the incoming frequency and θ the scattering angle. Here:

$$x_2 = \frac{m_2 c^2}{\hbar}, \quad x_1 = \frac{m_1 c^2}{\hbar} \quad -(27)$$

In the limit:

$$m_1 \to 0 \quad -(28)$$

eq. (26) reduces to the Compton scattering formula:

$$x_2 = \frac{\omega\omega'}{\omega - \omega'}(1 - \cos\theta) \quad -(29)$$

However, for any collision involving two finite masses, the Compton scattering formula becomes Eq. (26). As shown in UFT160 and other papers, Eq. (26) gives wildly erroneous results, and the entire theory of particle scattering collapses on the classical, relativistic level. Any elaborate theory built on that quicksand also collapses, and so the entire theory of the Higgs boson collapses.

The Heisenberg uncertainty "principle" has been most harmful to Baconian natural philosophy and was finally refuted in a clear way in UFT175. It can be stated as:

$$\langle [\hat{q}, \hat{p}] \rangle = i\hbar \quad -(30)$$

where $\hat{q}$ and $\hat{p}$ are operator pairs in quantum mechanics. It was asserted randomly by Heisenberg that this equation indicates non Baconian features known as indeterminacy, in that quantities can be absolutely unknowable. These ideas were rejected immediately in 1927

by Einstein, de Broglie, Schroedinger, Dirac and many others, and have been rejected by the deterministic school of physics since then. In UFT175 the anticommutator equation was inferred:

$$[\hat{x}^2, \hat{p}^2]\phi = 2i\hbar\{\hat{x}, \hat{p}\}\phi \quad -(31)$$

where $\hat{x}$ is the position and $\hat{p}$ the momentum operator and ϕ the wavefunction. Eq. (31) was evaluated by direct computation using exact solutions of the Schroedinger equation: the harmonic oscillator, particle on a ring, spherical harmonics and hydrogen atom. The following were calculated:

$$[\hat{x}, \hat{p}_x], [x, \hat{p}_x^2], [\hat{x}^2, \hat{p}_x], [\hat{x}^2, \hat{p}_x^2]; \quad -(32)$$
$$\{\hat{x}, \hat{p}_x\}, \{x, \hat{p}_x^2\}, \{\hat{x}^2, \hat{p}_x\}, \{\hat{x}^2, \hat{p}_x^2\}$$

for each exact solution using computer algebra. For the harmonic oscillator for example:

$$\langle [\hat{x}^2, \hat{p}_x^2] \rangle = 0 \quad -(33)$$

and also for some other exact solutions. In the Heisenberg or Copenhagen dogma Eq. (33) means that x^2 and p_x^2 are knowable simultaneously. However, from Eq. (30) the dogma asserts that x and p_x can be absolutely unknowable. if x is completely knowable then p_x is completely unknowable. However, if for example x is completely unknowable form Eq. (30) it becomes completely knowable again from eq. (33) for the same wavefunction, an exact solution of the Schroedinger equation. Since x^2 must be constructed form x this is a clear refutation of the Copenhagen dogma. No plausible theory of physics can produce such nonsense, so the standard model of physics has been discarded by many scholars. The Higgs boson is just another in a long series of unscientific assertions that are easily refuted.

3. DEFINITIVE REFUTATION OF THE ELECTROWEAK THEORY

The electroweak theory is based on a wavefunction which can be written as:

$$\psi = \begin{bmatrix} R \\ L \end{bmatrix} = \begin{bmatrix} e_R \\ \nu_e \\ e_L \end{bmatrix} \quad -(34)$$

where R and L denote right and left handed. Here e_R and e_L denote the right and left handed electron components and ν_e the left handed parity violating neutrino, which is assumed to mix only with the left handed electron. It is a theory in which a Dirac type lagrangian is set up that does not have mass:

$$\mathcal{L}_1 = i\overline{R}\gamma^\mu D_\mu R + i\overline{L}\gamma^\mu D_\mu L \quad -(35)$$

where D_μ are covariant derivatives and where:

$$\overline{R} = \overline{e_R}\ , \quad \overline{L} = \left[\overline{\nu_e}, \overline{e_L}\right]. \quad -(36)$$

The covariant derivatives are introduced after a series of assumptions involving many adjustable parameters are described in notes 224(1) to 224(3) accompanying this paper on www.aias.us. Here we are interested primarily in a scholarly evaluation of the basic algebraic correctness of the theory. The covariant derivatives are:

$$D_\mu R = \partial_\mu R + ig' X_\mu R \quad -(37)$$

and:

$$D_\mu L = \left(\partial_\mu + \frac{i}{2} g' X_\mu - \frac{i}{2} g \underline{\tau} \cdot \underline{W}_\mu\right) L \quad -(38)$$

where:

$$\underline{\tau} \cdot \underline{W}_\mu = \begin{bmatrix} W_\mu^3 & W_\mu^1 - iW_\mu^2 \\ W_\mu^1 + iW_\mu^2 & -W_\mu^3 \end{bmatrix} \quad -(39)$$

The notation is explained further in refs (1) to (10). Evaluating the algebra the lagrangian is:

$$\mathcal{L}_1 = i\bar{e}_R \gamma^\mu \left(\partial_\mu + ig' X_\mu\right) e_R + i\left[\bar{\nu}_e \; \bar{e}_L\right] \gamma^\mu \left(\left(\partial_\mu + \frac{i}{2} g' X_\mu \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \frac{ig}{2} \begin{bmatrix} W_\mu^3 & W_\mu^1 - iW_\mu^2 \\ W_\mu^1 + iW_\mu^2 & -W_\mu^3 \end{bmatrix} \right) \begin{bmatrix} \nu_e \\ e_L \end{bmatrix}$$

$$= -g' X_\mu \bar{e}_R \gamma^\mu e_R - \frac{g'}{2} X_\mu \bar{e}_L \gamma^\mu e_L + g W_\mu^3 \bar{e}_L \gamma^\mu e_L + \frac{g}{2} \ldots \quad -(39)$$

The electron part of the lagrangian is therefore:

$$\mathcal{L}_{1e} = -g' X_\mu \bar{e}_R \gamma^\mu e_R - \frac{1}{2}\left(g' X_\mu + g W_\mu^3\right) \bar{e}_L \gamma^\mu e_L \quad -(40)$$

The Higgs field of the electroweak theory is:

$$\phi = \begin{bmatrix} 0 \\ \eta + \frac{\sigma}{\sqrt{2}} \end{bmatrix} \quad -(41)$$

which is arrived at using arbitrary assumptions of local gauge invariance and sponteanous symmetry breaking. The covariant derivative of the Higgs field is:

$$D_\mu \phi = \left(\partial_\mu - \frac{i}{2} g \underline{\tau} \cdot \underline{W}_\mu - \frac{i}{2} g' X_\mu\right) \phi \quad -(42)$$

and the Higgs lagrangian is:

$$\mathcal{L}_2 = (D_\mu \phi)^T (D_\mu \phi) - \frac{m^2}{2} \phi^T \phi - \frac{\lambda}{4} \left(\phi^T \phi\right)^2 - G_e \left(\bar{L} \phi R + \bar{R} \phi^T L\right) \quad -(43)$$

in which:

$$D_\mu \phi = \begin{bmatrix} 0 \\ \frac{1}{\sqrt{2}} \partial_\mu \phi \end{bmatrix} - \left[\frac{ig}{2} \begin{bmatrix} W_\mu^3 & W_\mu^1 - iW_\mu^2 \\ W_\mu^1 + iW_\mu^2 & -W_\mu^3 \end{bmatrix} + \frac{ig'}{2} X_\mu \right] \begin{bmatrix} 0 \\ \eta + \frac{v}{\sqrt{2}} \end{bmatrix} \quad -(43)$$

Therefore:

$$(D_\mu \phi)^T (D_\mu \phi) = \frac{1}{2} (\partial_\mu \phi)^2 + \frac{g^2 v^2}{4} \left((W_\mu^1)^2 + (W_\mu^2)^2 \right) + \frac{v^2}{4} \left(g W_\mu^3 - g' X_\mu \right)^2 + \ldots \quad -(44)$$

On this flimsy basis it is claimed that the W_μ^1 and W_μ^2 bosons have mass $gv/2$ and that there exists a boson of mass $v/2$ imparted by the Higgs mechanism. From Eq. (44) this boson can only be:

$$Z_\mu = g W_\mu^3 - g' X_\mu . \quad -(45)$$

From Eq. (40) it is claimed that the U(1) electromagnetic potential is associated with a massless particle, the photon. However, Eq. (40) gives two choices, one for e_R and one for e_L. For e_R the electromagnetic potential can only be:

$$e A_{\mu R} = g' X_\mu \quad -(46)$$

while for e_L it can only be:

$$e A_{\mu L} = \frac{1}{2} \left(g' X_\mu + g W_\mu^3 \right) . \quad -(47)$$

This is all the theory gives.

It cannot "predict" the masses of the W and Z bosons as it claims because there is no way of determining g, g', X^μ and η. Also there are many other parameters,

about seventeen, in the complete theory. In a textbook such as ref. (11), eq. (8.85), page 302, 2nd edition, it is claimed that Eq. (40) gives the term:

$$\mathcal{L}_{1e} = ? \; \frac{-g g' A_\mu \bar{e} \gamma^\mu e}{(g^2 + g'^2)^{1/2}} \qquad -(48)$$

where:

$$A_\mu = ? \; \frac{g' W_\mu^3 + g X_\mu}{(g^2 + g'^2)^{1/2}} \qquad -(49)$$

but e , denoting a wavefunction, is nowhere defined by Ryder and the result (48) is algebraically incorrect. The rest of the electroweak theory is sequentially erroneous because it stems from the incorrect algebra (48) that:

$$e = g \sin\theta_W \qquad -(50)$$

where the so called Weinberg angle is:

$$\sin\theta_W = \frac{g'}{(g^2 + g'^2)^{1/2}} \qquad -(51)$$

It is then claimed incorrectly that this incorrect algebra accounts for muon decay

$$\mu^- \rightarrow e^- + \bar{\nu}_e + \nu_\mu \qquad -(52)$$

It is clear that the entire structure of Higgs boson theory is incorrect.

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REFERENCES

{1} M .W. Evans, Ed., "Definitive Refutations of the Einsteinian General Relativity" (Cambridge International Science Publishing, CISP, 2012), issue six of reference (2).

{2} M. W. Evans, Ed., J. Found. Phys. Chem., six issues a year.

{3} M. W. Evans, S. Crothers, H. Eckardt and K. Pendergast, "Criticisms of the Einstein Field Equation" (CISP, 2011).

{4} M. W. Evans, H .Eckardt and D. W. Lindstrom, "Generally Covariant Unified Field Theory" (Abramis, 2005 to 2011) in seven volumes.

{5} M. W. Evans, H. Eckardt and D. W. Lindstrom, papers in Physica B, Acta Physica Polonica and Journals of the Serbian Academy of Sciences.

{6} L .Felker, "The Evans Equations of Unified Field Theory" (Abramis, 2007, translated into Spanish by Alex Hill on www.aias.us).

{7} K. Pendergast, "The Life of Myron Evans" (CISP, 2011).

{8} M . W. Evans and S. Kielich, Eds., "Modern Nonlinear Optics" (Wiley, 1992, 1993, 1997 and 2001) in six volumes and two editions.

{9} M .W. Evans and L. B. Crowell, "Classical and Quantum Electrodynamics and the B(3) Field" (World Scientific 2001); M . W. Evans and A. A. Hasanein "The Photomagneton in Quantum Field Theory" (World Scientific 1994).

{10} M. W. Evans and J. - P. Vigier, "The Enigmatic Photon" (Kluwer, 1994 to 2002), in ten volumes hardback and softback.

{11} L. H. Ryder, "Quantum Field Theory" (Cambridge Univ. Press, 1996,2nd. Ed.).

{12} E. Comay, Prog. Phys., 4, 91 (2009).