The Scientific Principles of Natural Philosophy

To Those in Search of the Truth
To Generations of Civilization

# 【UNIVERSAL AND UNIFIED FIELD THEORY】

## Philosophical and Analytical Overview

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Wei XU
wxu@virtumanity.us
Metropolitan Area of Washington DC, USA

# AGENDA

1. Generations of Physics
2. Mission Overview
3. Universal Topology
4. Topological Framework
5. Quantum Mechanics
6. Photon, Light and Electromagnetism
7. Law of Conservation of Light
8. Horizon Forces and Standard Model
9. General Symmetric Dynamics
10. Graviton and Gravitational Fields
11. Law of Conservation of Gravitation
12. Asymmetric Fields of Ontology and Cosmology
13. Our Challenges and Glorious Future

1. **First Generation: Classical Physics**
   - From Euclidean space to Newtonian mechanics in 1687: Motion and Force, Space and time are individual parameters without interwoven relationship
   - Basic concept for *Real Existence* of space and *Virtual Existence* of time without expression of virtual reality
   - **Unification** – *Maxwell's Equations* of Analytical Physics in 1861
2. **Second Generation: Modern Physics**
   - Limited to physical existence only, Quantum and Relativity are pioneered since 1838 without using the interwoven continuum of quantum state fields
   - Coupled virtual existence of time with real existence of space into an interwoven continuum: spacetime Manifold *introduced* in1905.
   - **Unification** - *Virtual and Physical Entanglements* of *Topological Duality in* 2018
3. **Third Generation: *New Era* of Physics**
   - *Virtual Formation* of elementary particles (e.g. quarks, leptons, bosons) in 1961
   - *Virtual Massage Compositions*, introduced as ***Universal Massaon*** in 2012
   - Biological and Metaphysical Formulations …

# GENERATIONS OF PHYSICS

# MISSION OVERVIEW

## UNIFICATION OF THE SECOND GENERATION

1. Unified Fields - superseding and imposing an integrity of all empirical models of relativity, quantum, light, electromagnetism, graviton, gravitation, thermodynamics, cosmology, and others.

2. Universal Theory - evolving and prevailing an generality of all ubiquitous laws of topology, event, duality, horizon, conservation, continuity, symmetry, asymmetry, entanglement, and beyond.

# Universal Topology and Topological Framework

1. Generations of Physics
2. Mission Overview
3. **Universal Topology**
4. **Topological Framework**
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8. Horizon Forces and Standard Model
9. General Symmetric Dynamics
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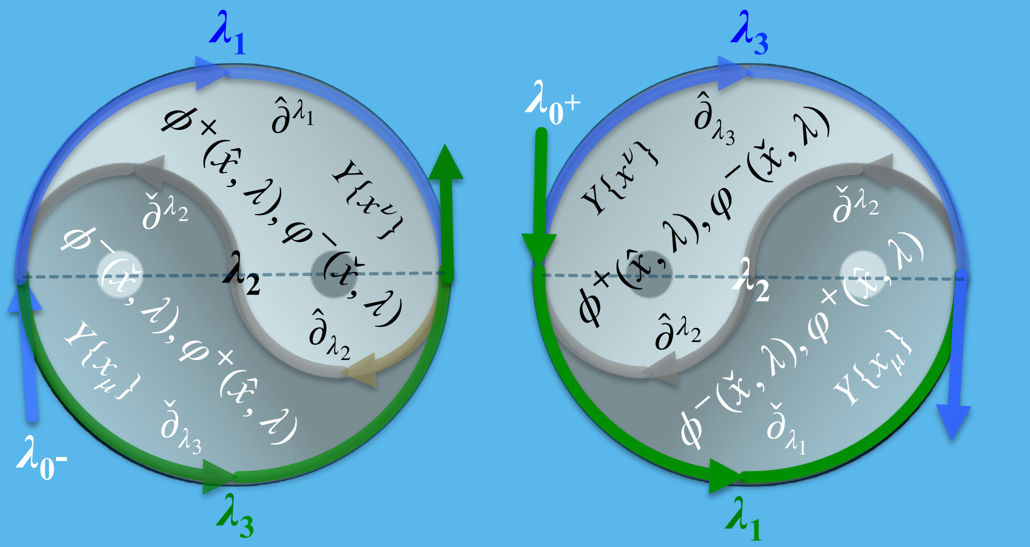
Reference: http://vixra.org/abs/1709.0308

## *Virtual and Physical Worlds*

- *A world is an environment composed of events or constituted by hierarchical structures of massless objects, massive matters, or both.*
- *These hierarchical structures can be respectively defined as virtual world, physical world, and together: the universe.*
- *Because of this duality nature, a universe manifold always has a mirrored pair in the imaginary part, a conjugate pair of complex manifolds, or reciprocal Manifolds of Yin and Yang*

**UNIVERSAL TOPOLOGY**

## Law of Event Evolutions



$$W^+ : (\hat{\partial}^{\lambda_1} \to \hat{\partial}_{\lambda_2}), (\check{\partial}^{\lambda_2} \to \check{\partial}_{\lambda_3}) \qquad W^- : (\check{\partial}_{\lambda_1} \to \check{\partial}^{\lambda_2}), (\hat{\partial}^{\lambda_2} \to \hat{\partial}_{\lambda_3})$$

The universal **topology** institutes a mathematical ***framework*** that animate physical reality of dynamical movement flows of the **streaming processes** represent in-depth of and evolving into the general theory of the *world equations:* ***Unified Field Equations***.

# UNIVERSAL TOPOLOGY AND FRAMEWORK

# TOPOLOGICAL FRAMEWORK

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| Contents | Description | Formulations | Elevations | Formulations | References |
| Manifold Topology | *Minkowski Spacetime* | $\{\mathbf{r}-\mathbf{k}\}$ $\quad \mathbf{k}=\begin{cases} x_0 = -ct \\ x_0 = ct \end{cases}$ | *Virtual and Physical Manifolds* | $\{\mathbf{r} \pm i\mathbf{k}\}$ $\quad i\mathbf{k} = ict = x_0 = -x^0$ | Eq. (1.1)<br>Eq. (1.2) |
| Scalar Fields | *A Pair of Scalar Fields* | $\phi, \phi^*$ | *Two Pairs of Scalar Fields* | $\phi^+(\hat{x},\lambda), \varphi^-(\check{x},\lambda)$ $\quad \phi^-(\check{x},\lambda), \varphi^+(\hat{x},\lambda)$ | Eq. (2.1)<br>Eq. (2.2) |
| Operations | *Math Operators* | $\partial_m \in \{\partial_\kappa = \partial/\partial x_0, \partial_r = \nabla\}$ | *Event Operations* | $\hat{\partial}^\lambda \psi = \dot{x}^\mu \partial^\mu \psi \quad \check{\partial}_\lambda \psi = \dot{x}_m \partial_m \psi$ | Eq. (3.1)<br>Eq. (3.2) |
| Scalar Transformation | *N/A* | | *Event Operations (Boost and Torque)* | $\hat{\partial}_\lambda \psi = \dot{x}_a \left(J^+_{\mu a} + K^+_{\mu a}\right) \partial^\mu \psi$<br>$\check{\partial}^\lambda \psi = \dot{x}^\alpha \left(J^-_{m\alpha} + K^-_{m\alpha}\right) \partial_m \psi$ | Eq. (3.5)<br>Eq. (3.7) |
| Entangle Generators | *N/A* | | *Boost and Torque Tensors* | $J^\pm_{\mu a} = \partial x^\mu / \partial x_a \quad K^\pm_{\mu a} = \Gamma^{\pm\sigma}_{\mu a} x_\sigma$ | Eq. (3.5)<br>Eq. (3.7) |
| Event Evolutions | *Loop Events* | *Loop Quantum Gravity, String Theory, etc.* | *Yin Yang Evolution* | $W^+ : (\hat{\partial}^{\lambda_1} \to \hat{\partial}_{\lambda_2}), (\check{\partial}^{\lambda_2} \to \check{\partial}_{\lambda_3})$<br>$W^- : (\check{\partial}_{\lambda_1} \to \check{\partial}^{\lambda_2}), (\hat{\partial}^{\lambda_2} \to \hat{\partial}_{\lambda_3})$ | Fig. 4.1<br>Eq. (4.1)<br>Eq. (4.2) |
| Motion Operation | *Euler-Lagrange Equation* | $\frac{\partial \mathscr{L}}{\partial f_i} - \frac{\mathrm{d}}{\mathrm{d}x}\left(\frac{\partial \mathscr{L}}{\partial f_i'}\right) = 0_i$ | *Dual Motion Entanglements* | $\check{\partial}^-\left(\frac{\partial W}{\partial(\hat{\partial}^+\phi)}\right) - \frac{\partial W}{\partial \phi} = 0 \quad \hat{\partial}^+\left(\frac{\partial W}{\partial(\check{\partial}^-\phi)}\right) - \frac{\partial W}{\partial \phi} = 0$ | Eq. (4.3)<br>Eq. (4.4) |
| Geodesic Equation | *Single World-line* | $\ddot{x}_m + \Gamma^m_{ab} \dot{x}_a \dot{x}_b = 0$ | *Dual World-lines* | $\ddot{x}^\mu + \overset{+}{\Gamma}{}^\mu_{\alpha\beta} \dot{x}^\alpha \dot{x}^\beta = 0 \quad \ddot{x}_m + \overset{-}{\Gamma}{}^m_{ab} \dot{x}_a \dot{x}_b = 0$ | Eq. (4.5) |
| Generic Equations | *Lagrangians* | $\mathscr{L}(\varphi, \nabla\varphi, \partial\varphi/\partial t, \mathbf{x}, t)$ | *World Equations* | $W = k_w \int d\Gamma \sum_n h_n \left[W_n^\pm + \kappa_1 \dot{\partial}_{\lambda_1} + \kappa_2 \dot{\partial}_{\lambda_2} \dot{\partial}_{\lambda_1} \cdots\right] \phi_n^+ \phi_n^-$ | Eq. (5.7) |
| First Universal Fields (Yang) | *N/A* | | $\kappa_1 \left(\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\right)\phi_n^+ + \kappa_2 \left(\check{\partial}_{\lambda_3}\check{\partial}^{\lambda_2} + \hat{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2} - \check{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2}\right)\phi_n^+ = W_n^+ \phi_n^+$ | | Eq. (6.7) |
| | *N/A* | | $\kappa_1 \left(\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_1}\right) \varphi_n^+ + \kappa_2 \left(\check{\partial}^{\lambda_2}\check{\partial}_{\lambda_1} + \hat{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1} - \check{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1}\right) \varphi_n^+ = W_n^+ \varphi_n^+$ | | Eq. (6.8) |
| First Universal Fields (Yin) | *N/A* | | $\kappa_1 \left(\hat{\partial}^{\lambda_1} - \check{\partial}_{\lambda_1}\right)\phi_n^- + \kappa_2 \left(\hat{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1} + \check{\partial}^{\lambda_2}\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_2}\check{\partial}_{\lambda_1}\right)\phi_n^- = W_n^- \phi_n^-$ | | Eq. (6.12) |
| | *N/A* | | $\kappa_1 \left(\hat{\partial}_{\lambda_2} - \check{\partial}^{\lambda_2}\right) \varphi_n^- + \kappa_2 \left(\hat{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2} + \check{\partial}_{\lambda_3}\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_3}\check{\partial}^{\lambda_2}\right) \varphi_n^- = W_n^- \varphi_n^-$ | | Eq. (6.13) |

Reference: http://vixra.org/abs/1709.0308

1. From a pair of the manifolds (1.1-1.2) and two pairs of the scalar potentials (2.1-2.2), the universal **topology** institutes a mathematical ***framework*** (3.1-3.16) of the foundations that animate physical reality.
2. The duality of ***event loops*** (Figure 4.1) of the streaming processes (4.1-4.2) represent in-depth of and evolving into the general theory of the ***world equations*** (5.7).
3. The duality of event flows, in which each of the two sides switches into the other by an alternating stream, implies the principle of least-actions of the ***motion operations*** (4.3-4.4) n its life entanglement!
4. The principle of duality operates a series of actions modeled in a system of equations for all physical fields (6.7-6.8, 6.12-6.13), the ***Unified Field Equations***.

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# QUANTUM MECHANICS

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| Contents | Description | Formulations | Elevations | Formulations | References |
| General Quantum Equations ( First Universal Field Equations) | *N/A* | $\hat{\mathbf{p}} = -i\hbar\nabla \qquad \hat{E} = i\hbar\partial/\partial t$ | $\frac{-\hbar^2}{2E_n^+}\hat{\partial}_\lambda\hat{\partial}_\lambda\phi_n^+ - \frac{\hbar}{2}\left(\hat{\partial}_\lambda - \check{\partial}^\lambda\right)\phi_n^+ + \frac{\hbar^2}{2E_n^+}\check{\partial}_\lambda\left(\hat{\partial}_\lambda - \check{\partial}^\lambda\right)\phi_n^+ = E_n^-\phi_n^+$ | | Eq. (8.1) |
| | *N/A* | | $\frac{\hbar^2}{2E_n^-}\check{\partial}^\lambda\check{\partial}^\lambda\varphi_n^- - \frac{\hbar}{2}\left(\check{\partial}^\lambda - \hat{\partial}_\lambda\right)\varphi_n^- + \frac{\hbar^2}{2E_n^-}\left(\check{\partial}_\lambda - \hat{\partial}_\lambda\right)\check{\partial}^\lambda\varphi_n^- = E_n^+\varphi_n^-$ | | Eq. (8.2) |
| | *N/A* | | $\frac{\hbar^2}{2E_n^-}\check{\partial}^\lambda\check{\partial}_\lambda\phi_n^- - \frac{\hbar}{2}\left(1 + \frac{\hbar}{E_n^-}\hat{\partial}^\lambda\right)\left(\check{\partial}_\lambda - \hat{\partial}^\lambda\right)\phi_n^- = \frac{W_n^-}{c^2}\phi_n^-$ | | Eq. (8.4) |
| | *N/A* | | $\frac{-\hbar^2}{2E_n^+}\hat{\partial}^\lambda\hat{\partial}^\lambda\varphi_n^+ - \frac{\hbar}{2}\left(1 - \frac{\hbar}{E_n^+}\check{\partial}^\lambda\right)\left(\hat{\partial}^\lambda - \check{\partial}_\lambda\right)\varphi_n^+ = \frac{W_n^+}{c^2}\varphi_n^+$ | | Eq. (8.5) |
| Dynamic Equations | *Lagrangians* | $\mathscr{L}(\varphi, \nabla\varphi, \partial\varphi/\partial t, \mathbf{x}, t)$ | *Yin Yang Lagrangians* | $\hat{\mathscr{L}}^+ = \frac{-\hbar^2}{2E_n^+E_n^-}\varphi^-\left(\hat{\partial}_\lambda\hat{\partial}_\lambda + \check{\partial}^\lambda\check{\partial}^\lambda\right)\phi^+$ $\hat{\mathscr{L}}^- = \frac{-\hbar^2}{2E_n^+E_n^-}\phi^+\left(\check{\partial}^\lambda\check{\partial}^\lambda + \hat{\partial}_\lambda\hat{\partial}_\lambda\right)\varphi^-$ | Eq. (8.6) |
| Mass Energy | *Einstein Equation* | $E = mc^2$ | *Virtual Duality* | $E_n^\mp = \pm\, i\, m c^2$ | Eq. (8.7) |
| Lorentz Generator | *Between Frames* | $J_m^- = L_m + iK_m \qquad J_\mu^+ = L_\mu - iK_\mu$ | *Entangle Generators* | *Derived the Same* | Eq. (7.1) |
| Representation Theory | *Between Fields* | $\phi^-(\check{x}) = S(\Lambda^+)\,\phi^+\left((\Lambda^+)^{-1}\check{x}\right)$ | *Scalar Fields* | *Derived the Same* | Eq. (7.4) |
| | *Field Transform* | $S(\Lambda^\pm) = exp\left(\frac{1}{2}\sigma_\kappa\theta_\kappa \mp \frac{i}{2}\sigma_\kappa\varphi_\kappa\right)$ | *Manifold Field Transform* | *Derived the Same* | Eq. (7.5) |
| | *Base Transform* | $\check{x} = \Lambda^+\hat{x}$ $\hat{x} = \Lambda^-\check{x}$ $\qquad \Lambda^\pm = exp\left(\frac{\omega_k}{2}J_\kappa^\pm\right)$ | *Manifold Base Transform* | *Derived the Same* | Eq. (7.4) Eq. (7.5) |
| Spinor | *Pauli Matrix* | $\sigma_\kappa = \left[\begin{pmatrix}1&0\\0&1\end{pmatrix}_0, \begin{pmatrix}0&1\\1&0\end{pmatrix}_1, \begin{pmatrix}0&-i\\i&0\end{pmatrix}_2, \begin{pmatrix}1&0\\0&-1\end{pmatrix}_3\right]$ | *Lorentz Boost 2D Generator* | *Derived the Same* | Eq. (7.4) Eq. (7.5) |
| Relativistic Wave Equation | *Dirac Equation* | $(i\hbar\gamma^\nu\partial^\nu - mc)\,\varphi_n^- = 0$ | *Yang Interaction* | *Derived the Same* | Eq. (8.8) Eq. (8.10) |
| Spinor Fields | *Weyl Spinor* | $I_2\frac{1}{c}\frac{\partial\psi}{\partial t} + \sigma_x\frac{\partial\psi}{\partial x} + \sigma_y\frac{\partial\psi}{\partial y} + \sigma_z\frac{\partial\psi}{\partial z} = 0$ | *Spin Generators* | *Derived the Same* | Eq. (8.14) |
| Wave-Practical Equation | *Schrödinger Equation* | $i\hbar\frac{\partial\psi_n}{\partial t} = \hat{H}\psi_n \qquad \hat{H} \equiv -\frac{\hbar^2}{2m}\nabla^2 + \hat{V}(\mathbf{r})$ | *Yin Interaction* | *Derived the Same* | Eq. (8.17) |
| Energy-Momentum Conservation | *Klein–Gordon* | $\frac{1}{c^2}\frac{\partial^2\phi_n}{\partial t^2} - \nabla^2\phi_n + \left(\frac{mc}{\hbar}\right)^2\phi_n = 0$ | *Yin Yang Conservation* | $-\frac{1}{c^2}\frac{\partial^2\Phi_n^-}{\partial t^2} + \nabla^2\Phi_n^- = 4\frac{E_n^-E_n^+}{(\hbar c)^2}\Phi_n^-$ | Eq. (8.21) |

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# PHOTON, LIGHT AND ELECTROMAGNETISM

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| Contents | Description | Formulations | Elevations | Formulations | References |
| General Equations | *N/A* | | *Continuity Equations* | $\check{\partial}_\lambda \hat{F}_{\nu\mu}^{-n} = (\mathbf{u}\rho_q \quad \mathbf{J}_q)$ | Eq. (10.1a) |
| | *N/A* | | | $\check{\partial}_\lambda (\check{F}_{m\alpha}^{+n})_\times = 0$ | Eq. (10.1b) |
| Electromagnetic Fields | *Magnetic Flux* | $\nabla \cdot \mathbf{B}_q = 0$ | *Yin Continuity* | $(\mathbf{u}\nabla) \cdot \mathbf{B}_q^- = 0$ | Eq. (10.5) |
| | *Farads's Law* | $\nabla \times \mathbf{E}_q + \frac{\partial \mathbf{B}_q}{\partial t} = 0$ | | $\frac{\partial \mathbf{B}_q^-}{\partial t} + \left(\frac{\mathbf{u}}{c}\nabla\right) \times \mathbf{E}_q^- = 0$ | Eq. (10.6) |
| | *Electric Flux* | $\nabla \cdot \mathbf{D}_q = \rho_q$ | *Yang Continuity* | $(\mathbf{u}\nabla) \cdot \mathbf{D}_q^+ = \mathbf{u}\rho_q$ | Eq. (10.3) |
| | *Ampère's Circuital Law* | $\nabla \times \mathbf{H}_q - \frac{\partial \mathbf{D}_q}{\partial t} = \mathbf{J}_q$ | | $\frac{\mathbf{u}\cdot\mathbf{u}}{c^2}\nabla \times \mathbf{H}_q^+ - \frac{\partial \mathbf{D}_q^+}{\partial t} = \mathbf{J}_q + \mathbf{H}_q^+ \cdot \left(\frac{\mathbf{u}}{c}\nabla\right) \times \frac{\mathbf{u}}{c}$ | Eq. (10.4) |
| | *Lorentz Force* | $\mathbf{F}_q = Q\left(\mathbf{E}_q^- + \mathbf{u}_q \times \mathbf{B}_q^-\right)$ | *Yin Fluxion Force* | *Derived the Same* | Eq. (13.8) |
| Photon | *Planck's Law* | $S_A(\omega_c, T) = \left(\frac{\omega_c^2}{4\pi^3 c^2}\right)$ | *Area Entropy* | $S_A(\omega_c, T) = \eta_c \left(\frac{\omega_c}{c}\right)^2 \mapsto 4\frac{E_c^- E_c^+}{(\hbar c)^2}$ | Eq. (8.23) |
| | *Planck and Einstein Relations* | $E = mc^2 \rightleftharpoons \hbar\omega$ | *Dual States of Triplet Quacks* | $E_c^\pm = \mp i \frac{1}{2}\hbar\omega_c \qquad \eta_c = \pi^{-3} \approx 33\,\%$ | Eq. (8.24) |
| Conservation of Light | *Constant Speed* | *c* | *YinYang Boost Entanglements* | *Law of Conservation of Light* | Artifact 8.9 |

Reference: http://vixra.org/abs/1709.0358

# LAW OF CONSERVATION OF LIGHT

1. *Light remains constant and conserves over time during its transportation*
2. *Light consists of virtual energy duality as its irreducible unit: the photon*
3. *Light has at least two photons for entanglement at zero net momentum*
4. *Light transports and performs a duality of virtual waves and real objects*
5. *A light energy of potential density neither can be created nor destroyed*
6. *Light transforms from one form to another carrying potential messages*
7. *Without an energy supply, no light can be delivered to its surroundings*
8. *The net flow across a region is sunk to or drawn from physical resources*

Reference: http://vixra.org/abs/1709.0358

1. By applying to the full-scale of quantum and particle physics, the theoretical foundation illustrates the desired result, **Unified Field Theory**.
2. It begins with a pair of Lorentz generators (7.1) and its presentation (7.4), the spin fields (7.5) of particles, a set of Pauli matrices (7.6), two pairs of electromagnetic tensors (7.8, 7.11) and two pairs of torsion tensors (7.14, 7.17).
3. The entanglements demonstrate the ***Law of Virtual Creation and Annihilation*** (8.1, 8.2), and the ***Law of Physical Animation and Reproduction*** (8.4, 8.5), giving rise to the Dirac equation (8.10) and Schrödinger equation (8.17).
4. It also implies the ***Law of Conservation of Light*** (8.9) and connects precisely to the triple-state coupling (8.23) of black body radiation (8.23), transported with a pair of photons (8.24).

# QUANTUM MECHANICS

# QED, QCD AND STANDARD MODEL

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| Contents | Description | Formulations | Elevations | Formulations | References |
| General Equations | *N/A* | | *Yin Yang Lagrangians* | $\hat{\mathscr{L}}^{+} = i\frac{c^2}{E_n^-}\varphi_n^-\left(i\frac{\hbar}{c}\gamma^\nu\hat{\partial}^\nu + m\right)\phi_n^+ - \frac{\hbar}{E_n^-}\breve{\partial}_\lambda\hat{F}_{\nu\mu}^{+n} - \frac{1}{2}\hat{F}_{\nu\mu}^{-n}\hat{F}_{\nu\mu}^{+n}$ | Eq. (9.1) |
| | *N/A* | | | $\hat{\mathscr{L}}^{-} = \frac{c^2}{iE_n^+}\phi_n^+\left(i\frac{\hbar}{c}\gamma_\nu\breve{\partial}_\nu - m\right)\varphi_n^- + \frac{\hbar}{2E_n^+}\breve{\partial}_\lambda\hat{F}_{\nu\mu}^{-n}$ | Eq. (9.2) |
| Breaking Invariance | *N/A* | | *Field Breaking* | $\varphi_n^-\breve{\partial}^\lambda\breve{\partial}^\lambda\phi_n^+ \mapsto \varphi_n^-\breve{\partial}^\lambda(\overbrace{\psi_n^+\psi_n^-}^{breaking}\ \breve{\partial}^\lambda\phi_n^+)$ | Eq. (9.3) |
| | *Spontaneous Symmetry Breaking* | $\breve{\partial}_\lambda \mapsto cD_\nu$ <br> $\tilde{\rho}_n \mapsto \psi_n^\pm \mp \sqrt{\lambda_0}D^\nu\psi_n^\pm/m$ | *Spontaneous & Explicit Field Breaking* | *Derived the Same* <br> $\breve{\mathscr{L}}_{Force}^{-SU2} \propto 4\frac{E_n^-E_n^+}{(\hbar c)^2}\Phi_n^+\Phi_n^- \mapsto \lambda_0 D^\nu\varphi_n^+D_\nu\phi_n^- - m^2\varphi_n^+\phi_n^-$ | Eq. (9.4a) <br> Eq. (9.9) <br> Eq. (9.14) |
| | *Gauge Invariance* | $F_{\nu\mu}^a = \partial_\nu A_\mu^a - \partial_\mu A_\nu^a + g f^{abc}A_\nu^b A_\mu^c$ | *Gauge Invariance* | *Derived the Same* | Eq.(9.4b) |
| QED + QCD + Standard Model | *Yang-Mills Theory* | $\mathscr{L}_{gf} = \frac{-1}{2}\mathrm{Tr}(F^2) = \frac{-1}{4}F^{a\mu\nu}F_{\mu\nu}^a$ | *Dual States of Triplet Quarks* | $2\mathscr{L}_{QED} = \hat{\mathscr{L}}^+ + 2\hat{\mathscr{L}}^-$ <br> $\mathscr{L}_{QED} = \bar{\psi}_n\left(i\frac{\hbar}{c}\gamma_\nu\breve{\partial}_\lambda - m\right)\varphi_n^- - \frac{1}{4}\hat{F}_{\nu\mu}^{-n}\hat{F}_{\nu\mu}^{+n}$ | Eq. (9.5) |
| | *Weak Fields* | $\hat{\mathscr{L}}_{WF} = \bar{\psi}_n\left(i\hbar\gamma_\nu D_\nu - m\right)\varphi_n^- - \frac{1}{4}\hat{W}_{\nu\mu}^{-n}\hat{W}_{\nu\mu}^{+n} - \frac{1}{4}\hat{F}_{\nu\mu}^{-n}\hat{F}_{\nu\mu}^{+n}$ | | *Derived the Same* | Eq. (9.6) |
| | *Gauge Forces* | $\hat{\mathscr{L}}_{SD} = \bar{\psi}_n\left(i\hbar\gamma_\nu D_\nu - m\right)\varphi_n^- - \frac{1}{4}G_{\nu\mu}^n G_{\nu\mu}^n + \hat{\mathscr{L}}_{CP}$ | | $D_\nu = \partial_\nu + i\frac{e}{c}A_\nu$ <br> $G_{\nu\mu}^a = \partial_\nu A_\mu^a - \partial_\mu A_\nu^a + g f^{abc}A_\nu^b A_\mu^c$ <br> *Derived the Same* | Eq. (9.8) <br> Eq. (9.9) |
| | *Field Interactions* | $\hat{\mathscr{L}}_{CP} = -\bar{\psi}_n\gamma^\mu\left(g_1\frac{1}{2}Y_W B_\mu + g_2\frac{1}{2}\sigma_\nu W_{\nu\mu} + g_3\frac{1}{2}\lambda_a G_\nu^a\right)\varphi_n^-$ | | *Derived the Same* | Eq. (9.12) |
| | *Strong Forces* | $\breve{\mathscr{L}}_{Force}^{-SU3} = \kappa_f\left(\lambda_0\partial^\nu\varphi_n^+\partial_\nu\phi_n^- - m^2\phi_n^2 + \lambda_2\phi_n^2\psi_n^2\right)$ | | *Derived the Same* | Eq. (9.14) <br> Eq. (9.16) |

Reference: http://vixra.org/abs/1709.0358

5. By a physically accurate interpretation of *Lagrangians* (8.6, 9.1-9.2), the quantum theory is further transformed and materializes at the subatomic level where the Universal Topology has a conventional physical interpretation.
6. The Spontaneous Field Breaking lands at Yang–Mills gauge theory (9.5), which opens the door to quantum electromagnetism (9.6), the Standard Model (9.8), weak (9.12) and strong (9.13) forces of chromodynamics,
7. Finally, the Maxwell equations (10.7-10.10).

Consequently, giving rise to the magnificent giants of modern physics.

# QED, QCD AND STANDARD MODEL

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Reference: http://vixra.org/abs/1709.0385

# GENERAL SYMMETRIC DYNAMICS

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| General Equations | *N/A* | | *Second Universal Field Equations* | $\dot{\partial}_{\lambda}\mathbf{f}_s^+ = \langle W_0 \rangle^+ - \left[\left(\kappa_1 + \kappa_2 \check{\partial}_{\lambda_3}\right)\left(\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\right)\right]^+ + \kappa_2 \zeta^+$ | Eq. (12.2) |
| | *N/A* | | | $\dot{\partial}_{\lambda}\mathbf{f}_s^- = \langle W_0 \rangle^- + \kappa_1\left[\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_1}\right]^- + \kappa_2\left\langle\left(\hat{\partial}^{\lambda_2} - \check{\partial}^{\lambda_2}\right)\check{\partial}_{\lambda_1}\right\rangle^- + \kappa_2 \zeta^-$ | Eq. (12.4) |
| Symmetric Commutation | *Commutator, Anti-commutator* | $[A_1, A_2]$ $\langle A_1, A_2 \rangle$ | *Commutator and Density Fluxion* | $[\ ]^{\mp}$ $\langle\ \rangle^{\mp}$ | Eq. (11.1) ---- (11.4) |
| Asymmetric Commutation | *Quantum State* | $\langle m \mid \lambda \mid n \rangle$ | *Asymmetry & Anti-asymmetry* | $\langle \dot{\lambda} )^{\pm} = \varphi_n^{\mp} \hat{\lambda} \phi_n^{\pm}$ $( \dot{\lambda} \rangle^{\pm} = \phi_n^{\pm} \hat{\lambda} \varphi_n^{\mp}$ | Eq. (11.3) Eq. (11.4) |
| Field Entanglements | *The 4-potential* | $\partial_{\nu} D_{\mu} - \partial_{\mu} D_{\nu}$ | *Boost Generator* | $[F_{\mu\alpha}]^{\mp} = \pm\,[\dot{x}^{\alpha} J_{\mu\alpha}^- \partial_{\mu}, \dot{x}_{\alpha} J_{\mu\alpha}^+ \partial^{\mu}]^{\mp}$ | Eq. (11.9) |
| | *N/A* | | *Torque Generator* | $[T_{\mu\alpha}]^{\mp} = \pm\,[\dot{x}^{\alpha} K_{\mu\alpha}^- \partial_{\mu}, \dot{x}_{\alpha} K_{\mu\alpha}^+ \partial^{\mu}]^{\mp}$ | Eq. (11.10) |
| General Symmetric Dynamics | *N/A* | | *Boost Transform and Spiral Transport* | $\nabla \cdot \mathbf{B}_s^- = 0^+$ $\mathbf{B}_s^- = \mathbf{B}_q^- + \eta \mathbf{B}_g^-$ $\eta = c_g / c$ | Eq. (13.15) |
| | *N/A* | | | $\nabla \cdot \mathbf{D}_s^+ = \rho_q - 4\pi G \eta \rho_g$ $\mathbf{D}_s^+ = \mathbf{D}_q^+ + \eta \mathbf{D}_g^+$ | Eq. (13.16) |
| | *N/A* | | | $\frac{\partial \mathbf{B}_s^-}{\partial t} + \nabla \times \mathbf{E}_s^- = 0^+$ $\mathbf{E}_s^- = \mathbf{E}_q^- + \eta \mathbf{E}_g^-$ | Eq. (13.17) |
| | *N/A* | | | $\nabla \times \left(\mathbf{H}_q^+ + \eta^2 \mathbf{H}_g^+\right) - \frac{\partial}{\partial t}\left(\mathbf{D}_q^+ + \eta^2 \mathbf{D}_g^+\right) = \mathbf{J}_q - 4\pi G \mathbf{J}_g$ | Eq. (13.18) |
| | *Lorentz Force* | $\mathbf{F}_q^+ = Q\left(\mathbf{E}_c^- + \mathbf{u} \times \mathbf{B}_c^-\right)$ | *Motion and Torque Entanglements* | *Derived the Same* | Eq. (13.8) |
| | *Lorentz's Theory (LITG)* | $\mathbf{F}_m = m\left(\mathbf{\Gamma} + \mathbf{v}_m \times \mathbf{\Omega}\right)$ | | $\mathbf{F}_g = M\mu_g\left(c_g^2 \mathbf{D}_g^+ + \mathbf{u}_g \times \mathbf{H}_g^+\right) = M\left(\mathbf{E}_g^- + \mathbf{u}_g \times \mathbf{B}_g^-\right)$ | Eq. (14.5) |
| Thermo-Dynamics | *Boltzmann Distribution* | $p_n^{\pm} = \frac{h_n^{\pm}}{\sum h_m} = \frac{e^{i\beta E_n}}{Z}$ $Z \equiv \sum_m e^{i\beta E_m}$ | *Horizon Factor* | *Derived the Same* | Eq. (15.8) |
| | *Thermal Eq.* | $dS = \frac{1}{T}\left(dE + PdV - \sum_n \mu_n dN_n^{\pm}\right)$ | *Maximum Yin Supremacy* | $d\rho_E^- = Td\rho_s^- + \sum_i \mu_i d\rho_{n_i}^-$ | Eq. (15.14) |
| | | | *Minimum Yang Supremacy* | $P + \rho_E^+ = T\rho_s^+ + \sum_i \mu_i \rho_{n_i}^+$ | Eq. (15.15) |
| | *Bloch Density Equations* | $-i\frac{\partial \rho^-}{\partial \beta} = \hat{H}\rho^-$ $-h_{\beta}\frac{\partial^2 \rho}{\partial \beta^2} = \hat{H}\rho$ | *Density of Yang Supremacy* | *Derived the Same* | Eq. (15.16) |

Reference: http://vixra.org/abs/1709.0385

A. Starting from natural continuities and entangle commutations, the definitions of the mathematical model (11.1-11.6) animate the dynamics **symmetrically** and asymmetrically.

B. This implies logical formulations of area flux entropy (11.7), transform (11.9) and torque (11.10) entanglements.

C. The theoretical model above further abstracts the World Equations (5.7) into the horizon expression (12.1), called the ***Second Universal Equations*** (12.2, 12.4).

D. Consistently, it represents a pair of acceleration tensors (12.6, 12.7).

E. The last chapter briefly introduces a duality of thermodynamics and area entropy of black hole radiations (16.1-16.2).

# GENERAL SYMMETRIC DYNAMICS

# GRAVITON AND GRAVITATIONAL FIELDS

| Category | Classical and Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| Contents | Description | Formulations | Elevations | Formulations | References |
| *Weak Fields* | *Lorentz's Theory (LITG)* | $\nabla \cdot \mathbf{\Omega} = 0$ | *Conservation of Yin Fluxion* | $\left(\mathbf{u}_g \nabla\right) \cdot \mathbf{B}_g^- = 0$ | Eq. (14.1) |
| | | $\frac{\partial \mathbf{\Omega}}{\partial t} + \nabla \times \mathbf{\Gamma} = 0$ | | $\frac{\partial}{\partial t}\mathbf{B}_g^- + \left(\frac{\mathbf{u}_g}{c_g}\nabla\right) \times \mathbf{E}_g^- = 0$ | Eq. (14.3) |
| | | $\nabla \cdot \mathbf{\Gamma} = -4\pi G\rho$ | *Conservation of Yang Fluxion* | $\mathbf{u}_g \nabla \cdot \mathbf{D}_g^+ = -4\pi G \mathbf{u}_g \rho_g$ | Eq. (14.2) |
| | | $\nabla \times \mathbf{\Omega} = \frac{1}{c_g^2}\left(-4\pi G\mathbf{J} + \frac{\partial \mathbf{\Gamma}}{\partial t}\right)$ | | $\frac{\mathbf{u}_g \cdot \mathbf{u}_g}{c^2}\nabla \times \mathbf{H}_g^+ - \left(\frac{c_g}{c}\right)^2 \frac{\partial \mathbf{D}_g^+}{\partial t} = -4\pi G\mathbf{J}_g + \mathbf{H}_g^+ \cdot \left(\frac{\mathbf{u}_g}{c}\nabla\right) \times \frac{\mathbf{u}_g}{c}$ | Eq. (14.4) |
| *Gravitational Force* | *Lorentz's Theory (LITG)* | $\mathbf{F}_m = m\left(\mathbf{\Gamma} + \mathbf{v}_m \times \mathbf{\Omega}\right)$ | *Yin Fluxion Force* | $\mathbf{F}_g = M\mu_g\left(c_g^2\mathbf{D}_g^+ + \mathbf{u}_g \times \mathbf{H}_g^+\right) = M\left(\mathbf{E}_g^- + \mathbf{u}_g \times \mathbf{B}_g^-\right)$ | Eq. (14.5) |
| *Continuity of Gravitation* | *N/A* | | *Conservation of YinYan Fluxion* | $-\frac{1}{c_g^2}\frac{\partial^2 \Phi_g^-}{\partial t^2} + \nabla^2 \Phi_g^- = 4\frac{E_g^- E_g^+}{(\hbar c_g)^2}\Phi_g^-$ | Eq (14.8) |
| *Black Hole Entropy* | *Bekenstein-Hawking* | $S_A(\omega_g, T) = 4\left(\frac{c_g^3}{4\hbar G}\right)$ | *YinYang Area Entanglements* | $\mathcal{S}_g = 4\frac{E_g^- E_g^+}{(\hbar c_g)^2}\Phi_g$ | Eq. (14.9) |
| *Graviton* | *N/A* | | *A pair of Gravitons* | $E_g^{\pm} = \mp i\frac{1}{2}E_p \qquad E_p = \sqrt{\hbar c_g^5/G}$ | Eq. (14.10) |
| *Conservation of Gravitation* | *N/A* | | *Law of Conservation* | *Law of Conservation of Gravitation* | Artifact 14.7 |
| *Force of Gravity* | *Newton's Law of Gravity* | $\mathbf{F}^- = -m\nabla\Phi_g = -mG\rho_g\frac{\mathbf{r}}{r^2}$ | *Restricted Law of Conservation* | *Derived the Same* | Eq. (14.6) Eq. (14.7) |

Reference: http://vixra.org/abs/1709.0385

# LAW OF CONSERVATION OF GRAVITATION

1. *Gravitation remains constant and conserves over time during its transportation*
2. *Gravitation transports in wave formation virtually and acts on objects physically*
3. *A gravitation energy of potential density neither can be created nor destroyed*
4. *Gravitation consists of virtual energy duality as an irreducible unit: the graviton*
5. *Gravitation has at least two gravitons for entanglement at zero net momentum*
6. *Gravitation transports from one form to another carrying potential messages*
7. *Without an energy supply, no gravitation can be delivered to its surroundings*
8. *The net flow across a region is sunk to or drawn from the physical resources*
9. *External to objects, gravity is inversely proportional to the square of the distance*



Reference: http://vixra.org/abs/1709.0385

1) The General Symmetric Fields (13.15-13.18) are a set of the coupled electromagnetic fields (10.7-10.10), gravitational fields (14.1-14.5), and Newton's Law (14.7).

2) The law of conservation of gravitation (14.8) demonstrates nine principles,

3) Among them significantly the **two-state coupling** of gravitational radiation (14.9), graviton energy (14.10) and gravitational momentum (14.11).

# GRAVITON AND GRAVITATIONAL FIELDS

# AGENDA

1. Generations of Physics
2. Mission Overview
3. Universal Topology
4. Topological Framework
5. Quantum Mechanics
6. Photon, Light and Electromagnetism
7. Law of Conservation of Light
8. Horizon Forces of and Standard Model
9. General Symmetric Dynamics
10. Graviton and Gravitational Fields
11. Law of Conservation of Gravitation
12. Asymmetric Fields of Ontology and Cosmology
13. Our Challenges and Glorious Future

Reference: http://vixra.org/abs/1802.0195

# GENERAL ASYMMETRIC FIELDS

| Category | Contemporary Physics | | Universal and Unified Field Theory | | |
|---|---|---|---|---|---|
| *General Asymetric Equations* | *N/A* | | *World Equations* | $W_b = W_0^{\pm} + \sum_n h_n \left\{ \kappa_1 \left\langle \partial_\lambda \right)^{\pm} + \kappa_2 \partial_{\lambda_2} \left\langle \partial_{\lambda 1} \right)_s^{\pm} + \kappa_3 \partial_{\lambda_3} \left\langle \partial_{\lambda 2} \right)_v^{\pm} \cdots \right\}$ | Eq. (17.1) |
| *Scalar Commutation* | *Stress Tensor* | $G^{\mu}_{n\nu\sigma} \equiv \Gamma^{-\mu}_{\sigma n} \partial_\nu - \Gamma^{+\mu}_{\sigma \nu} \partial_n$ | *Yin Entanglement* | $\left[\check{\partial}_\lambda \check{\partial}_\lambda, \hat{\partial}^\lambda \hat{\partial}^\lambda\right]_s^- = \dot{x}_\nu \dot{x}_m \left(\frac{R}{2} g_{\nu m} + G_{\nu m}\right)$ | Eq. (18.3)<br>Eq. (18.18) |
| *Vector Commutation* | *Riemannian Ricci Tensors* | $R^{\mu}_{n\nu\sigma}$ $R_{n\nu} = \frac{1}{2} g_{n\nu} R$ | *Yang Entanglement* | $\left[\hat{\partial}_\lambda \hat{\partial}_\lambda, \check{\partial}^\lambda \check{\partial}^\lambda\right]_v^+ = \dot{x}_n \dot{x}_\nu \left(\frac{R}{2} g_{n\nu} - R^{\mu}_{n\nu\sigma} + G^{\mu}_{n\nu\sigma} + C^{n\mu}_{\nu\sigma}\right)$ | Eq. (18.20)<br>Eq. (18.16) |
| *Ontology* | *N/A* | | *Yin Fields* | $\frac{R}{2}\mathbf{g}^- + \mathbf{G}^- + \Delta_s^- = S_a^- + \mathbf{\Lambda}_s^-$ $\Delta^- \equiv \left(\nabla^2 - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\right\rangle^-$ | Eq. (20.8)<br>Eq. (20.4a) |
| | *N/A* | | *Yang Fields* | $\frac{R}{2}\mathbf{g}^+ + \mathbf{G}^+ + S_a^+ = \Delta_s^+ + \mathbf{\Lambda}_s^+$ $S_a^{\mp} = 4\frac{E_0^+ E_0^-}{(\hbar c)^2}\Phi_s^{\mp}$ | Eq. (20.11) |
| | *N/A* | | *Ontological Modulators* | $\mathbf{\Lambda}_s^+ = -\frac{E_n^+ E_n^-}{(\hbar c)^2}\left(\hat{\mathscr{F}}^{+n}_{\nu m}\right\rangle_\times^+ \left(\hat{\mathscr{F}}^{-n}_{\nu m}\right\rangle_\times^+$ $\mathbf{\Lambda}_s^- \mapsto 0$ | Eq. (20.10) |
| | *N/A* | | *Entanglement* | $\frac{R}{2}\mathbf{g} + \mathbf{G}_s + S_a + \Delta_s^- = \Delta_s^+ + \mathbf{\Lambda}_s^+$ | Eq. (20.12) |
| | *N/A* | | *Acceleration* | $\tilde{\mathbf{g}}_s = \Delta_s^+ + \mathbf{\Lambda}_s^+ + \mathbf{\Lambda}_s^- - \Delta_s^- - S_a$ | Eq. (20.15) |
| *Cosmology* | *General Relativity* | $G_{n\nu} = R_{n\nu} - \frac{1}{2} R\, g_{n\nu}$ | *Yin Fields* | $\mathfrak{R}^- + S_v^- = \frac{R}{2}\mathbf{g}^- + \mathbf{G}^- + \mathbf{C}^-$ | Eq. (21.5)<br>Eq. (18.21) |
| | *N/A* | | *Yang Fields* | $\mathfrak{R}^+ + \Delta_v^+ + \mathbf{\Lambda}_v^+ = \frac{R}{2}\mathbf{g}^+ + \mathbf{G}^+ + \mathbf{C}^+ + S_v^+$ | Eq. (21.8) |
| | *N/A* | | *Cosmological Modulator* | $\mathbf{\Lambda}_v^+ = -\frac{E_n^+ E_n^-}{(\hbar c)^2}\left(\hat{\mathscr{F}}^{+n}_{\nu m}\right\rangle_{\nu\times}^+ \left(\hat{\mathscr{F}}^{-n}_{\nu m}\right\rangle_{\nu\times}^+$ $\Delta^+ \equiv -\frac{1}{c^2}\left(\hat{\partial}^\lambda\right\rangle^+ \left(\check{\partial}_\lambda\right\rangle^+$ | Eq. (21.7)<br>Eq. (21.4b) |
| | *N/A* | | *Entanglement* | $\frac{R}{2}\mathbf{g} + \mathbf{G}_v + \mathbf{C}_v + S_v + \Delta_v^- = \mathfrak{R} + \Delta_v^+ + \mathbf{\Lambda}_v^+$ | Eq. (21.9) |
| | *N/A* | | *Acceleration* | $\tilde{\mathbf{g}}_v = \Delta_v^+ + \mathbf{\Lambda}_v^+ + \mathbf{\Lambda}_v^- - \Delta_v^- - S_v$ | Eq. (21.12) |

Reference: http://vixra.org/abs/1802.0195

1. The flux commutation reveals that General Relativity (18.21) describes in a statically frozen or inanimate state of universe.
2. Embedded in the scalar potentials, ontological fields present formulations and processes between ***physical animation or reproduction*** (19.4) and ***virtual creation or annihilation*** (19.5).
3. Coded with the vector potentials, cosmological fields generate fluxions between physical motion dynamics (20.8, 21.5) and virtual photon and graviton transportations (20.11, 21.8) with the emanative messages.
4. Virtual world supplies energies and modulators (20.10, 21.7), operates motion curvatures, and generates photons and gravitons for ***message transport*** and ***particle creations*** through spontaneous breakings (9.14).

# GENERAL ASYMMETRIC FIELDS OF ONTOLOGY AND COSMOLOGY

# AGENDA

1. Generations of Physics
2. Mission Overview
3. Universal Topology
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10. Graviton and Gravitational Fields
11. Law of Conservation of Gravitation
12. Asymmetry of Ontology and Cosmology
13. **Our Challenges and Glorious Future**

***Everything turned out to be simple and concise, yet extremely challenge — desensitized by its puzzling complexity of current traditional concepts***

- Our challenge is, in fact, to leave behind the ambiguous philosophy that we were born with.
- Our challenge is to open up our minds to the facts hidden in the fabric of daily life.
- Our challenge is to soften our metaphysical prejudices, for the assumption that there is no metaphysical reality is also a metaphysics itself
- Our challenge is all the ignominious desensitized by the clamor of the excessive hype.

**OUR CHALLENGE IS EVEN GREATER**

# OUR GLORIOUS FUTURE

- No mater

  Where you come from, where you are, and where you go,

Human society is at the dawn of a series of revolutions for a new era.

1. **Advancing scientific philosophies to the next generation**
2. **Standardizing topological frameworks for modern physics**
3. **Developing information technologies through virtual reality**
4. **Theorizing biology and biophysics in innovative life sciences**
5. **Reformulating metaphysics on the basis of scientific naturalism**

- It is time to reevaluate and give **Rise of the Ancient Philosophy**
- It is time to teamwork together to **Back to the Scientific Future**…

Mr. *Wei XU* is a highly organized, resourceful and focused entrepreneur. From software engineer to tech guru, from executive to entrepreneur, he has over thirty years of extensive experiences in delivering comprehensive innovations in information technologies. From scientist to philosopher, his focus is to uncover whole structures of *Elementary Particles*, *Dark Energy*, and fundamental theories, known as *Unified, Universal* and *Cosmological Physics*.

Author

Funded by White House in 1993 to secure the first website of whitehouse.gov, Wei developed one of the top application firewalls in June 1994: Gauntlet Firewall, initiating the third generation firewalls. Upon his successful completion of IPSec research, he released the first commercial VPN product in the IT industry market in December 1994. As a pioneer of information security, Wei founded Spontaneous Networks in 1999, where he created the secure cloud on-demand transformable at the click of a button. Since then, he served as a Chief Architect in many organizations and delivered thousands of virtual secure datacenter networks nationally and internationally. Today, he is developing the groundbreaking innovations: Virtual Productive Forces, enlightened by his recent scientific discoveries.

During the two years in 2009 and 2010, Wei received a set of books in the old classic manuscripts: *Worlds in Universe*. Appeared initially as the profound topology of universe in philosophy, it has gradually and concisely revealed the theoretical physics: i) the constitution of *Elementary Particles* including *Dark Matters in 2012*, ii) the model of *Dark Energy* in 2014 coincident with ESA Planck data at the errors less than 3%, iii) the Universal Topology and Framework in 2015, iv) groundbreakings in theorizing "*Law of Conservation of Photon*", "*Law of Conservation of Graviton*", and "*Laws of Conservation of Ontological and Cosmological Dynamics*" in 2017.

Mr. Xu holds his BS and his first MS degrees in Theoretical Physics from Ocean University of China and Tongji University, and his second MS degree in Electrical and Computer Engineering from University of Massachusetts.

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A branch of sciences in dialectics of virtual and physical existences

wxu@virtumanity.us

Missions Impossible

Never is there an end