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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Ladies and Gentlemen,
It is a great honor to present to you a message that will make history.

- Debate on quantum effects, giving rise to the scientific ontology
- Uncover secrets of Universal and Unified Field for a hundred years

I. Glorious and Crisis in Search for Truth (30 min, 13p)
II. Natural Principles of Universal Topology (45 min, 11p)
III. Visualization of Unification of Physics (40 min, 15p)

Agenda
AGENDA – I

1. Glorious of Physical Sciences
2. Historical Essentials of Physics
3. Research Methodology
4. Quest for a Unified Theory

Glorious and Crisis of Physics
Yesterday and Today
Newton’s Law and Gravity, 1687

$F(r) = mg(r) = -mm_0G_0 \frac{r}{r^2}$

Schrödinger Equation, 1926

Dirac Equation, 1926

Heisenberg Picture, 1925

Einstein General Relativity, 1915

Maxwell equations, 1861

Thermodynamics, Carnot 1824 - Kelvin 1854

Yang-Mills, Gauge of Standard Model, 1954

Glorious History of Physics
Remaining Issues since Solvay Conference of 1927?
Perhaps the most famous conference of Fifth Solvay International Conference on Electrons and Photons,
17 OF 29 ATTENDEES WERE OR BECAME NOBEL PRIZE WINNERS
Bohr-Einstein debates on quantum mechanics were a series of public disputes remembered for revealing that there is no consensus to the Philosophy of Modern Sciences ...

**Niels Bohr** (1885–1962):  
- Everything we call real is made of things that cannot be regarded as real.

**Werner Karl Heisenberg** (1901–1967):  
- The more precise the measurement of position, the more imprecise the measurement of momentum, and vice versa.
- Light and matter are both single entities, and the apparent duality arises in the limitations of our language.

**Einstein** (1879-1955):  
- Disenchanted with Heisenberg’s "Uncertainty Principle," remarked "God does not play dice."
- If quantum mechanics were correct then the world would be crazy.

What were these physicists Arguing About ???
Stephen Hawking
the renowned physicist (January 8, 1942, age 74, Oxford)

1. Declared that “Philosophy is dead. Philosophers have not kept up with modern developments in science. Particularly physics.”

2. Claimed that “Scientists have become the bearers of the torch of discovery in our quest for knowledge.”

3. Stated that “new, bigger Hadron Collider the size of the Milky Way was needed to collect more data …”

►– Google talk May 17th, 2011

Our Current Crisis
1. The first classical unified field theory (UFT) - 44 years
   - From 1820 Oersted to 1864 Maxwell (Successful)
2. The 2nd UFT of gravity and electromagnetism - 39 years
   - From 1916 to 1955 Einstein (Failed)
   - Since 1950 (Lack of gravity, dark matter, neutrino mass, …)
4. Grand Unified Theory to merge 4-forces into one – 46 years
   - Since 1974 (A single force of gauge symmetry without gravity)
5. Fairy-tale theories (since 1970) – 50 years
   - String, 11-dimensional M-theory, superstring, (F-theory)
   - Singular geometries, D-branes, flux compactification and warped geometry.
Science?

Definition 1: the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through \textit{observation} and \textit{experiment}.

Definition 2: body of empirical, theoretical, and practical knowledge about the natural world, emphasized on the \textit{observation}, \textit{explanation}, and \textit{prediction} of real world phenomena.
‘Copernican Revolution’ in the 20th Century

✓ When the experiment can no longer provide enough data, the empirical methodology in search of the truth is simply a disaster. (For example, it is hardly feasible to derive General Relativity from Newton’s law)

✓ Subversion of the Reversed Physics

Experiment-Theory-Symmetry(Invariance)
Symmetry(Invariance)-Theory-Experiment

Symmetry has changed from the by-product of a theory to the core of the principle. The experiment has shifted from the basis of the original inductive theory to a tool of verification.

✓ From this idea, Einstein derived General Relativity from invariance of the generalized coordinate symmetry.

✓ This thought process was later carried forward by Yang Chen-Ning, and the scientific community has reached a consensus of "symmetric principle of interaction."
Albert Einstein (March 14th, 1879 – April 18th, 1955)

For the time being, we have to admit that we do not possess any general theoretical basis for physics, which can be regarded as its logical foundation. It is agreed on all hands that the only principle which could serve as the basis of quantum theory would be one that constituted a translation of the field theory into the scheme of quantum statistics. Whether this will actually come about in a satisfactory manner, nobody can say.

- Albert Einstein, Science, 1940 (25 years after General Relativity of 1915)

“The general theory of relativity is as yet incomplete … to the total field. We do not yet know with certainty, by what mathematical mechanism the total field in space is to be described and what the general invariant laws are to which this total field is subject. …”

- Albert Einstein, “The theory of relativity” 1949 (34 years after General Relativity of 1915)

“... all attempts to obtain a deeper knowledge of the foundations of physics seem doomed to me unless the basic concepts are in accordance with general relativity from the beginning. “


Lack of basic concepts from the beginning!
Ontological Methodology
in the Search for the Truth
Nature is systematically composed of building blocks, dualities, which take on an abstract form as simple as Yin and Yang, and as sophisticated as Virtual and Physical existence.

Our ancestors discovered that duality orchestrated and harmonized their reality since 5000 years ago.

Everywhere our world shines with a beautiful nature. In every fraction of every creature, we shall find the principles and laws of physics, biology, metaphysics, information technology, and all other sciences.

Eastern Philosophy
Top-Down

Western Science
Bottom Up

Dialectics in the Search for Truth
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 in 1905.
   - 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 Message Compositions, introduced as “Universal Messaons” in 2012
   - Biophysical Formulations and Metaphysical Reformulation …
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, ontology, and beyond.

Manuscripts downloadable at http://vixra.org/author/wei_xu
AGENDA – II

1. Natural Ontology in Mathematics
2. Topology of Physical World
3. Groundbreaking of Unified Theory

Universal Fields: Highlights of Groundbreakings

http://vixra.org/abs/1903.0487
Dialectics of Ontological and Scientific Epistemology
Philosophical Impact to Mathematical Principles

Mathematical Solutions of the Sciences

How to describe our universe in mathematics? @ \{0, \pm1, \pm2, \ldots, \pm n\}?

$\begin{align*}
x^2 &= 1 \\
\quad x &= ? \\
y^2 &= a^2 + b^2 \\
\quad y &= ?
\end{align*}$

Answers by Today’s Science:

$\begin{align*}
x_1 &= 1, \quad x_2 = -1 \\
y_1 &= \sqrt{(a^2 + b^2)} \\
y_2 &= -\sqrt{(a^2 + b^2)}
\end{align*}$

Answers by Future Science:

$\begin{align*}
x &= \pm \text{[solution]} \\
y &= \pm \text{[solution]}
\end{align*}$

How to enhance Einstein Mass-Energy equivalence: $E = mc^2$ ?

Collapsed states
Math Principles of Ontology

Philosophy: World = Physical Space + Virtual Phase

\[ W^\pm = W e^{\pm i \theta} = P(\text{Events}) e^{i V(\text{Events})} \]

Change = \( \partial \)  
Event = \( \lambda \)

Science: Physical Events, Virtual Events

\( \partial : \{ \partial_1, \partial^2 \} \)  
\( \hat{\partial} : \{ \hat{\partial}^1, \hat{\partial}^2 \} \)

Truth is Simple!
World = Physical $\hat{\partial}^\lambda \hat{\partial}^\lambda$ + Virtual $\hat{\partial}^\lambda \hat{\partial}^\lambda$

Law of YinYang Dynamics of Event Operations

First Principle of Ontology: Event Operations
1. Dual Manifolds

2. Boost Generators, photon

\[
S_k = \begin{pmatrix}
1 & 0 \\
0 & 1 \\
0 & 1
\end{pmatrix}
\begin{pmatrix}
0 & 1 \\
1 & 0 \\
1 & 0
\end{pmatrix}
\begin{pmatrix}
0 & -1 \\
-1 & 0 \\
0 & 0
\end{pmatrix}
\begin{pmatrix}
-1 & 0 \\
0 & 1 \\
0 & 1
\end{pmatrix}
\]

3. Torque Generators, graviton

\[
\varepsilon_k = \begin{pmatrix}
0 & 1 \\
1 & 0 \\
0 & -1
\end{pmatrix}
\begin{pmatrix}
0 & 0 \\
0 & 0 \\
1 & \frac{1}{r^2}
\end{pmatrix}
\begin{pmatrix}
0 & 1 \\
1 & 0 \\
0 & 1
\end{pmatrix}
\]

\[
\zeta^\nu = \gamma^\nu + \chi^\nu
\]

\[
\chi^\nu = \begin{pmatrix}
\varphi_0 & 0 \\
0 & \varphi_0 \\
-\varphi_0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \varphi_1 \\
\varphi_1 & 0 \\
0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \varphi_2 \\
\varphi_2 & 0 \\
0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \varphi_3 \\
\varphi_3 & 0 \\
0 & 0
\end{pmatrix}
\]

\[
\gamma^\nu = \begin{pmatrix}
\sigma_0 & 0 \\
0 & -\sigma_0 \\
-\sigma_0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \sigma_1 \\
-\sigma_1 & 0 \\
0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \sigma_2 \\
-\sigma_2 & 0 \\
0 & 0
\end{pmatrix}
\begin{pmatrix}
0 & \sigma_3 \\
-\sigma_3 & 0 \\
0 & 0
\end{pmatrix}
\]

\[
\begin{align*}
\sigma_0 &= \sigma_1 \\
\sigma_2 &= -\sigma_3 = \sigma_3
\end{align*}
\]
4. No Torque r-Singularity on wordline of 2D Manifolds. Superposing Interruption of light and energy at eternal curvature

5. Enhanced Mass-energy Equivalence

\[ E_n^\pm = \pm imc^2 \]

6. Torque Singularity in physical-freedom of the 4D Spacetime

**GALAXY:**

2D World Planes

4D Spacetime Curvatures
7. Mass Acquisition & Annihilation

Dirac harmonic oscillator between horizons at exponential ratio 1:3

\[
\phi_0^+ = \left( \frac{m \omega}{\pi \hbar} \right)^{1/4} e^{-\frac{m \omega}{2 \hbar} r^2} \\
\phi_0^- = 2 \left( \frac{m \omega}{\pi \hbar} \right)^{3/4} e^{-\frac{m \omega}{2 \hbar} r^2}
\]

\[
\rho^- \approx \phi_0^- \phi_0^+ = 2 \frac{m \omega}{\pi \hbar} \exp \left[ -\frac{m \omega}{2 \hbar} (r_s^2 + r_w^2) \right]
\]

Example: Most of galaxies have its topological hierarchy that operates interruption between physical and virtual worlds. Our milky way, the Galactic Center communicates with Earth through Sun of Solar System. At the 2nd horizon (semi-virtual), the Sun is at the horizons of the topology between Earth at the 3rd horizon and center blackhole at 1st horizon (virtual). The Sun has about 11 solar rotations.

The core of Sun extends from the center to about 20–25% of the solar radius.
Second Principle of Ontology: Horizon Fields

Horizon of Loop Fields

\[ (D_\mu F_{\nu \kappa})^a + (D_\kappa F_{\mu \nu})^b + (D_\nu F_{\kappa \mu})^c = 0 \]

Jacobi Identity of Gauge Invariance of Triple Entanglements

\[ \mathcal{L}_{YM} = -\frac{1}{4} (F^i_{\mu \nu})^2 \]

\[ F^i_{\mu \nu} \equiv \partial_\mu A^i_\nu - \partial_\nu A^i_\mu + g f^{ijk} A^j_\mu A^k_\nu \]

Yang–Mills Horizon Commutation of Triple Entangles

\[ ABA = BAB \]

Yang–Baxter Equation

Reverse Double-Loop Invariance

8. Gauge Theory (Yang-Mills)
Third Principle of Ontology: Evolutionary Forces

(Grand Unification of Weak, Strong, Electromagnetic and gravitation)

9. Unification of Forces:

\[ \mathcal{L}_h = \mathcal{L}_D - \bar{\psi}_f (\partial \wedge \partial \psi_k) \]

\[ \begin{align*}
\dot{\mathcal{E}}^a &= \frac{\partial \Theta}{\partial x_v} \\
\dot{\Theta}_\nu &= \frac{\partial A_\mu}{\partial x_v} - \frac{\partial A_\nu}{\partial x_\mu} = F_{\nu\mu}^n \\
\dot{\mathcal{E}}^u &= \frac{\partial A_v}{\partial x_v} + \frac{1}{2} F_{v\mu}^n + \cdots \\
\dot{\mathcal{E}}^\nu &= \frac{\partial A_\nu}{\partial x_v} + \frac{1}{2} F_{v\mu}^n + \cdots
\end{align*} \]

8. Yang–Mills Actions

Double-Loop Fields
(Weak Force)

\[ \mathcal{L}^a_Y = -\frac{1}{4} F_{\nu\mu}^+ F_{\mu\nu}^- - \frac{1}{4} W_{\mu\nu}^+ W_{\mu\nu}^- \\
F_{\mu\nu}^i \equiv \partial_{\mu} A^i_{\nu} - \partial_{\nu} A^i_{\mu} + g f_{ijk} A^j_{\mu} A^k_{\nu} \]

\[ \zeta^\nu = \gamma^\nu + \chi^\nu \]

9. Quantum Chromodynamics

Triple-Entanglement Forces
(Strong Force)

\[ \mathcal{L}_{QCD}(\chi) = -\frac{1}{4} G_{\nu\mu}^n G_{\mu\nu}^n - \frac{e}{c} (\bar{\psi}_n A_{\nu} \psi_n^-)_{jk} \]

\[ \mathcal{L}_{SUT}^{SU3} = \kappa_f \left( \lambda_0 (\partial^0 \phi^+_b)(\partial^0 \phi^-_a) - m^2 \phi_{hc}^2 + \lambda_2 \phi_{hc}^2 \phi_{cd}^2 \right) \]
10. Conservation of Speed of light and of gravitation
\[ C_{rr}^\pm = c e^{\mp i\theta} \quad G_{\nu\mu}^- = c_g \left( \begin{array}{cc} 0 & 1 \\ 1 & 0 \end{array} \right) e^{i\theta} \]

11. Thermodynamic Emissions of Graviton and of Photon
\[ E_c^\pm = \mp \frac{i}{2} h \omega_c \quad E_g^\pm = \mp \frac{i}{2} \sqrt{h c g / G} \]

12. Enhanced Einstein General Relativity
\[ R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} + \Lambda g_{\mu\nu} = G_{\mu\nu} \]
into Theory of Cosmic Asymmetric Dynamics
\[ \mathcal{R}_{\nu\mu} - \Sigma = \frac{R}{2} g_{\nu\mu} + G_{\nu\mu}^\sigma + C_{\nu\mu}^\sigma \]

13. Unification of Fundamental Forces
\[ \hat{W}_{jk} = \psi^+ \psi^- + J_s + (\hat{x}_\mu \zeta^\mu D\hat{\psi}_j^+) \wedge (\hat{x}_\nu \zeta^\nu D\hat{\psi}_k^-) \]

14. Evolutionary Field Equations of Ontology
\[ \frac{R}{2} g_{\nu\mu} + G_{\nu\mu}^- + \Theta_{\nu\mu}^- = \delta_{\mu\nu}^{+\zeta} \]

**GROUNDBREAKING OF UNIVERSAL AND UNIFIED FIELDS**
Fourth Principle of Ontology: Superphase Events

\[ \frac{R}{2} s_{\nu m} + G_{\nu m}^{-\sigma s} + \Theta_{\nu m}^{-\sigma s} = \Theta_{m\nu}^{+\zeta} \]

\[ \Theta_{\nu m}^{+\sigma s} = i \Xi_{\nu m}^+ + i \frac{e}{\hbar} F_{\nu m}^+ - i \delta_{m\nu}^{+s\sigma} - \mathcal{S}_{\nu m}^+ \]

\[ \Xi_{\nu m}^\pm = \mp \frac{1}{\dot{x}_{\nu} \dot{x}_m} \left[ \dot{x}^\nu \Theta^\nu \dot{x}^m \partial^m, \dot{x}^\nu \Theta^m \partial^m \right]_{s}^\pm \]

\[ F_{\nu m}^\pm = \pm \frac{1}{e} \frac{\hbar}{\dot{x}_{\nu} \dot{x}_m} \left[ \dot{x}^\nu \partial^\nu (\dot{x}^m \Theta^m), \dot{x}^m \partial^m (\dot{x}^\nu \Theta^\nu) \right]_{s}^\pm \]

\[ \delta_{m\nu}^{+s\sigma} = \pm \frac{1}{\dot{x}_{\nu} \dot{x}_m} \left[ \dot{x}^m \Gamma_{\nu m}^{+\sigma} \dot{x}^\sigma, \dot{x}^m \Gamma_{m\nu}^{-s\sigma} \dot{x}^\sigma \right]_{s}^\pm \]

\[ \mathcal{S}_{\nu m}^\pm = \pm \frac{1}{\dot{x}_{\nu} \dot{x}_m} \left[ \dot{x}^\nu \Theta^\nu \dot{x}^m \Theta^m, \dot{x}^m \Theta^m \partial^m \right]_{s}^\pm \]

\[ \Theta^\nu = \frac{e}{\hbar} A^\nu \]

\[ \Theta^\nu_{ij} = \Theta^+_d - \kappa^+_d \left( \frac{\partial}{\partial t} \mathbf{D}_a^* + \frac{u^+}{c} \nabla (\frac{u^+}{c} \times \mathbf{H}_a^+) \right) \]

\[ \mathcal{O}^\nu = \frac{e}{\hbar} A^\nu \]

\[ \rho_a = \frac{1}{4\pi G} \nabla \cdot \mathbf{D}_a^* \]

\[ p_a = c^2 \text{Tr}(\mathbf{J}_a^+) \]

\[ 4\pi G J_a^+ = \frac{\partial}{\partial t} D_a^+ - \nabla \times H_a^+ \]
Unification of Physics: Overview Highlights

1. Three Unified Topologies of the Nature
2. Nine Sets of Essential Equations
3. Horizon Infrastructure of the Universe
4. Six sets of Scientific Groundbreakings
5. Visualization of Worldline Cosmology
6. Visualization of Spacetime Cosmology
Universal Event Operations of World Horizons

1. A pair of World Eq.

\[ \tilde{W}^\pm = k_w \int d\Gamma \sum_n h_n \left[ W_n^\pm + \kappa_1 \partial_{\lambda_1} + \kappa_2 \partial_{\lambda_2} \partial_{\lambda_1} \cdots \right] \psi_n^+(\widetilde{x}) \psi_n^-(\widetilde{x}) \]

Horizon Eq. of Ontological Evolution

\[ \tilde{W}_n = \psi^+ \psi^- + k_J \psi + k_A (\partial \psi^+) \wedge (\partial \psi^-) \]

Lagrangians of Force Unification

\[ \mathcal{F}_{\mu} = \mathcal{D}_{\mu} + \left( \frac{\psi}{c} \frac{x^\mu}{c} \mathcal{D}^* \psi^+ \right) \wedge \left( \frac{\overline{\psi}}{c} \frac{\overline{x}^\mu}{c} \mathcal{D} \psi^+ \right) \]

2. Two Event Operations

Double-Loops Triple-Entangles

YinYang Event Processes

Third Universal Fields - Asymmetric Cosmic Fields

\[ g_a^+/k_{S}^+ = \left[ \partial_{\lambda_1}^+ \partial_{\lambda_2}^+ \partial_{\lambda_3}^+ \right] x + \zeta^+ \]

Second Universal Fields - Symmetric EM and Gravitation

\[ g_a^-/k_{S}^- = \left[ \partial_{\lambda_1}^- \partial_{\lambda_2}^- \partial_{\lambda_3}^- \right] x + \zeta^- \]

First Universal Fields – Quantum Horizon Fields

\[ \kappa_1 (\partial_{\lambda_1} - \partial_{\lambda_2}) \phi_n^+ + \kappa_2 (\partial_{\lambda_1} \partial_{\lambda_2} - \partial_{\lambda_2} \partial_{\lambda_1}) \phi_n^+ = W_n^+ \phi_n^+ \]

\[ \kappa_1 (\partial_{\lambda_2} - \partial_{\lambda_3}^+) \phi_n^- + \kappa_2 (\partial_{\lambda_2} \partial_{\lambda_3}^- + \partial_{\lambda_3} \partial_{\lambda_2}^- - \partial_{\lambda_1} \partial_{\lambda_2}^-) \phi_n^- = W_n^- \phi_n^- \]

\[ \kappa_1 (\partial_{\lambda_3} - \partial_{\lambda_1}^-) \phi_n^+ + \kappa_2 (\partial_{\lambda_3}^+ \partial_{\lambda_1}^- + \partial_{\lambda_1}^- \partial_{\lambda_3}^+) \phi_n^+ = W_n^+ \phi_n^+ \]

\[ \kappa_1 (\partial_{\lambda_1} - \partial_{\lambda_3}^-) \phi_n^- + \kappa_2 (\partial_{\lambda_1} \partial_{\lambda_3}^+ + \partial_{\lambda_3}^+ \partial_{\lambda_1}^- - \partial_{\lambda_2} \partial_{\lambda_1}^-) \phi_n^- = W_n^- \phi_n^- \]

3. Three Horizon Fields

Asymmetry

Symmetry

Quantum

Universal Fields: Three Unified Topologies
Universal Fields: Nine Sets of Essential Equations
### Universal and Unified Fields (I) - Topology

<table>
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<th>Classical and Contemporary Physics</th>
<th>Universal and Unified Field Theory</th>
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<td><strong>Description</strong></td>
<td><strong>Formulations</strong></td>
</tr>
<tr>
<td>Manifold Topology</td>
<td>Minkowski Spacetime</td>
<td>${ r - k } \quad k = \begin{cases} x_0 = -ct \ x_0 = ct \end{cases}$</td>
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<tr>
<td>Scalar Fields</td>
<td>A Pair of Scalar Fields</td>
<td>$\hat{\phi}, \phi^*$</td>
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<tr>
<td>Math Framework</td>
<td>Math Operators</td>
<td>$\partial_m \in { \partial_x = \partial/\partial x_0, \partial_r = \nabla }$</td>
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<tr>
<td>Scalar Transformation</td>
<td>N/A</td>
<td>$S^+ = \frac{\partial x^r }{\partial x^m}, S^- = \frac{\partial x^m }{\partial x^r}, S_1^+ = \frac{\partial x^r }{\partial x_1}, S_1^- = \frac{\partial x_1 }{\partial x^r}$</td>
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<tr>
<td>Entangle Generators</td>
<td>N/A</td>
<td>$W^+ : (\hat{\partial}^4 \rightarrow \hat{\partial}^2), (\hat{\partial}^2 \rightarrow \hat{\partial}_3)$</td>
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<tr>
<td>Event Operations</td>
<td>Loop Events</td>
<td>$\hat{\partial}^-(\frac{\partial W}{\partial(\partial^+ \phi)}) = 0, \hat{\partial}^+(\frac{\partial W}{\partial(\partial^- \phi)}) = 0$</td>
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<tr>
<td>Motion Operation</td>
<td>Euler-Lagrangian Equation</td>
<td>$W^+_n = \psi^+_n(\lambda, x) W_n^+(\lambda, x)$</td>
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<tr>
<td>Event Evolutions</td>
<td>N/A</td>
<td>$f(\lambda) = f(\lambda_0) + f'(\lambda_0)(\lambda - \lambda_0) + \cdots + f^{(n)}(\lambda_0)(\lambda - \lambda_0)^n/n!$</td>
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<tr>
<td>Generic Equations</td>
<td>Lagrangians</td>
<td>$\mathcal{L}(\phi, \nabla \phi, \phi/\partial t, x, t)$</td>
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<tr>
<td>First Universal Fields</td>
<td>N/A</td>
<td>$k_1 (\hat{\partial}^4_{\lambda_2} - \hat{\partial}^2_{\lambda_2}) \phi^+<em>n + k_2 (\hat{\partial}^2</em>{\lambda_2} \hat{\partial}<em>{\lambda_2} + \hat{\partial}</em>{\lambda_2} \hat{\partial}^2_{\lambda_2} - \hat{\partial}^2_{\lambda_2} \hat{\partial}_{\lambda_2}) \phi^-_n = W_n^+ \phi^+_n, W_n^- \phi^-_n$</td>
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http://vixra.org/abs/1903.0487
### Universal and Unified Fields (II) – Quantum Fields

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<td><a href="http://vixra.org/abs/1903.0487">Eq. (2.2.8)</a></td>
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<td>Virtual Duality</td>
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<td>Boost</td>
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<td><strong>Pauli Matrix</strong></td>
<td>Spiral</td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.3.7)</a></td>
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<td>Relativistic Wave Equation</td>
<td><strong>Dirac Equation</strong></td>
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<td>Spinor Fields</td>
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<td><strong>Pauli Equation</strong></td>
<td>Derived the Same</td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.10.6)</a></td>
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<td>Wave-Practical Equation Energy-Momentum</td>
<td><strong>Schrödinger Equation</strong></td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.9.4)</a></td>
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<td><strong>Klein–Gordon Equation</strong></td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.3.7)</a></td>
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<td><strong>Mass Acquisition</strong></td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.12.7)</a></td>
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<td><strong>Speed of Energy</strong></td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.14.4)</a></td>
<td><a href="http://vixra.org/abs/1903.0487">Eq. (3.15.4)</a></td>
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**References**
- Eq. (2.2.7)
- Eq. (2.2.8)
- Eq. (1.4.1)
- Eq. (3.2.5)
- Eq. (3.2.7)
- Eq. (3.3.7)
- Eq. (3.3.7)
- Eq. (3.9.4)
- Eq. (3.9.4)
- Eq. (3.3.7)
- Eq. (3.10.6)
- Eq. (3.12.7)
- Eq. (3.14.4)
- Eq. (3.15.4)
### Universal and Unified Fields (III) – Force Unification

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<td>Yang Field Evolutions</td>
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<tr>
<td><strong>Yang-Mills Theory</strong></td>
<td>F(\alpha\mu\nu) = \partial_\alpha \alpha^\mu - \partial_\mu \alpha^\alpha + g f^{abc} A^a_\nu A^b_\mu A^c_\alpha</td>
<td>Double-Loop Invariance</td>
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<td><strong>Weak Fields</strong></td>
<td>(\mathcal{L}<em>{\text{WF}} = \frac{1}{2} \text{Tr}(F^2) = \frac{1}{4} F</em>{\mu\nu} F^{\mu\nu} )</td>
<td>Dual States of Triplet Quarks</td>
</tr>
<tr>
<td><strong>Gauge Forces</strong></td>
<td>(\mathcal{L}<em>{\text{SD}} = \frac{1}{4} G^{\alpha\mu\nu} G</em>{\alpha\mu\nu} + \mathcal{L}_{\text{CP}} )</td>
<td>(\mathcal{L}<em>{M}(\gamma) \approx \frac{1}{4} \left( Y^2 F</em>{\mu\nu} F^{\mu\nu} + F_{\mu\nu} F^{\mu\nu} \right) )</td>
</tr>
<tr>
<td><strong>Field Interactions</strong></td>
<td>(\mathcal{L}<em>{\text{CP}} = -\frac{1}{4} \gamma^\mu \left( g</em>{\frac{1}{2}} Y_{\text{W}} B_\mu + g_{\frac{1}{2}} \gamma^\mu W_\mu + g_{\frac{1}{2}} \gamma^\mu G_\nu^a \right) )</td>
<td>(\mathcal{L}<em>{\text{SU2}} \propto \frac{E</em>{\mu} E_{\nu}}{(hc)^2} \Phi^\dagger_{\mu} \Phi_{\nu} )</td>
</tr>
<tr>
<td><strong>Strong Forces</strong></td>
<td>(\mathcal{L}_{\text{SU3}} = \frac{1}{4} \left( \gamma^\mu \gamma^\nu \gamma^\rho \right) )</td>
<td>(\mathcal{L}_{\text{SU3}} = \frac{1}{4} \left( \gamma^\mu \gamma^\nu \gamma^\rho \right) )</td>
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References:
- Eq. (7.2.1)
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- Eq. (7.5.2)
- Eq. (7.5.5)
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### Universal and Unified Fields (IV) – Electromagnetism

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<td><strong>Continuity</strong></td>
<td>( c \partial_t F^{\mu \nu} = j^\nu )</td>
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<td></td>
<td><strong>Lorenz Gauge</strong></td>
<td>(-\frac{1}{c^2} \frac{\partial^2 A_\perp}{\partial t^2} + \nabla^2 A_\perp = \frac{e}{c} \partial_\perp \partial_\perp q_\perp )</td>
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<tr>
<td></td>
<td><strong>Magnetic Flux</strong></td>
<td>( \nabla \cdot B_q = 0 )</td>
</tr>
<tr>
<td></td>
<td><strong>Farads's Law</strong></td>
<td>( \nabla \times E_q + \frac{\partial B^\perp_q}{\partial t} = 0 )</td>
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<tr>
<td></td>
<td><strong>Electric Flux</strong></td>
<td>( \nabla \cdot D_q = \rho_q )</td>
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<tr>
<td></td>
<td><strong>Ampère's Circuital Law</strong></td>
<td>( \nabla \times H_q - \frac{\partial D^+_q}{\partial t} = J_q )</td>
</tr>
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<td></td>
<td><strong>Lorentz Force</strong></td>
<td>( F_q = Q \left( E_q + u_q \times B^-_q \right) )</td>
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<tr>
<td>Photon</td>
<td><strong>Planck's Law</strong></td>
<td>( S_A(\omega_c, T) = \left( \frac{\omega_c^2}{4\pi^3 c^2} \right) )</td>
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<tr>
<td></td>
<td><strong>Planck and Einstein Relations</strong></td>
<td>( E = mc^2 = \hbar \omega )</td>
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<td><strong>Conservation of Light</strong></td>
<td>( c )</td>
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# Universal and Unified Fields (V) – Gravitation

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</table>
| Weak Fields                   | Lorentz’s Theory (LITG)\[\nabla \cdot \mathbf{\Omega} = 0\]
\[\frac{\partial \mathbf{\Omega}}{\partial t} + \nabla \times \mathbf{\Gamma} = 0\]
\[\nabla \times \mathbf{\Omega} = \frac{1}{c^2} \left( -4\pi G J + \frac{\partial \mathbf{\Gamma}}{\partial t} \right) \]
Lorentz’s Theory (LITG)\[\nabla \cdot \mathbf{\Gamma} = -4\pi G \rho \]
Continuation of Gravitation
Continuation of Gravitation
Black Hole Entropy
Graviton
Conservation of Gravitation
Force of Gravity
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<td>(\mathbf{\nabla} \cdot \mathbf{\Omega} = 0)</td>
<td>Conservation of Yin Fluxion</td>
<td>(\mathbf{u}_g \nabla \cdot \mathbf{B}^- = 0)</td>
<td>Eq (5.7.1)</td>
</tr>
<tr>
<td></td>
<td>(\frac{\partial \mathbf{\Omega}}{\partial t} + \nabla \times \mathbf{\Gamma} = 0)</td>
<td>Conservation of Yang Fluxion</td>
<td>(\frac{\partial}{\partial t} \mathbf{B}^- + \left( \frac{\mathbf{u}_g}{c} \nabla \times \mathbf{B}^- \right) = 0)</td>
<td>Eq (5.7.2)</td>
</tr>
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</table>
|                              | \(\nabla \times \mathbf{\Omega} = \frac{1}{c^2} \left( -4\pi G J + \frac{\partial \mathbf{\Gamma}}{\partial t} \right) \)
Lorentz’s Theory (LITG)\[\mathbf{F}_m = m \left( \mathbf{\Gamma} + \mathbf{v}_m \times \mathbf{\Omega} \right)\]
Yin Fluxion Force             | \(\mathbf{F}_g = M \mu_g \left( c_g^2 \mathbf{D}_g^+ + \mathbf{u}_g \times \mathbf{H}_g^+ \right) = M \left( \mathbf{E}_g^- + \mathbf{u}_g \times \mathbf{B}_g^- \right)\)
|                              | \(\mathbf{u}_g \nabla \cdot \mathbf{D}^+ = -4\pi G \mathbf{u}_g \rho_g\)                           |                                                                                                      |                                                                                                      | Eq (5.7.3) |
|                              | \(\nabla \cdot \mathbf{\Gamma} = -4\pi G \rho\)                                                  |                                                                                                      |                                                                                                      | Eq (5.7.4) |
|                              | \(\nabla \times \mathbf{\Omega} = \frac{1}{c^2} \left( -4\pi G J + \frac{\partial \mathbf{\Gamma}}{\partial t} \right) \)
Continuation of Gravitation
Black Hole Entropy
Graviton
Conservation of Gravitation
|                              | \(S_A(\omega_k, T) = 4 \left( \frac{c_g^3}{4\hbar G} \right)\)                                       | Conservation of YinYan Fluxion                                                                     | \(\frac{1}{c^2} \frac{\partial^2 \Phi^-}{\partial t^2} + \nabla^2 \Phi^- = 4 \left( \frac{E_g^-}{\hbar c^2} \right)^2 \Phi^-\)
|                              | \(E_g^\pm = \mp i \frac{1}{2} E_p\) \(E_p = \sqrt{\hbar c^3/G}\)                                    |                                                                                                      |                                                                                                      | Eq (4.4.3) |
|                              |                                                                                                      | A pair of Gravitons                                                                                | \(E_g^\pm = \mp i \frac{1}{2} E_p\) \(E_p = \sqrt{\hbar c^3/G}\)                                    | Eq (4.8.1) |
|                              |                                                                                                      | Law of Conservation                                                                               |                                                                                                      | Ch. 4 Sec. 9 |
|                              |                                                                                                      | Law of Conservation                                                                               | Derived the Same                                                                                     | Eq (5.7.5) |

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## Universal and Unified Fields (VI) – Symmetric Fields

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<td>Symmetric Commutation</td>
<td>Commutator, Anti-commutator [A₁, A₂] 〈A₁, A₂〉</td>
<td>Eq. (2.7.1) III Eq. (2.7.8)</td>
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<tr>
<td>Symmetric Commutation</td>
<td>Quantum State 〈m</td>
<td>〈λ</td>
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<td>Field Entanglements</td>
<td>The 4-potential 〈∂₁Dₛ - ∂₄D₁〉</td>
<td>Eq. (3.11.6)</td>
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<tr>
<td>N/A</td>
<td>Boost Generator 〈L⁻₁⁻μ⁺⁴λ⁺A⁺⟩</td>
<td>Eq. (3.11.7)</td>
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<td>N/A</td>
<td>Torque Generator 〈L⁻₁⁻μ⁺⁴V⁺⟩</td>
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<td>General Symmetric Dynamics</td>
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<td>Lorentz Force</td>
<td>F⁺ₗ = Q(E⁺ₗ u × B⁻ₗ)</td>
<td>Derived the Same Eq. (5.4.5)</td>
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<tr>
<td>Lorentz Theory (LITG)</td>
<td>Fₗ = m(Γ + vₗ × Ω)</td>
<td>Derived the Same Eq. (5.4.5)</td>
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<td>Boltzmann Distribution</td>
<td>ρ⁺ₗ = h⁺ₗ / Z = e⁻¹²E⁺ₗ / Z</td>
<td>Eq. (4.10.7)</td>
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<td>Thermal Eq.</td>
<td>dS = 1 / T dE + PdV - ∑ₙρₙdN⁺ₙ</td>
<td>Eq. (4.1.4)</td>
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<tr>
<td>Bloch Density Equations</td>
<td>-iD⁻ρ / Dβ = 〈H⁻ρ⁻ + h⁻²D⁻ρ⁻ / Dβ² = 〈H⁻ρ⁻</td>
<td>Eq. (4.1.6)</td>
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### Universal and Unified Fields (VII) – Cosmic Fields

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<td>Scalar Commutation</td>
<td>Stress Tensor $G_{\mu\nu} \equiv \Gamma_{\sigma}^{-\mu} \partial_\nu - \Gamma_{\sigma}^{+\mu} \partial_\mu$</td>
<td>Yin Entanglement $\nabla_\alpha \nabla_\beta \vec{x}<em>\gamma = \frac{R}{2} \left( g</em>{\nu \lambda} + G_{\nu \lambda} \right)$ Eq. (2.10.1) Eq. (2.10.2)</td>
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<tr>
<td>Vector Commutation</td>
<td>Riemannian Ricci Tensors $R_{\mu \nu \sigma} = R_{\mu \nu} = \frac{1}{2} g_{\nu \mu} R$</td>
<td>Yang Entanglement $\left[ \partial_\beta \partial_\gamma \partial^2 \partial^\gamma \right] = \vec{x}<em>\alpha \vec{x}</em>\beta \left( \frac{R}{2} g_{\nu \mu} - R_{\nu \lambda \sigma} \right) + G^\mu_{\nu \lambda \sigma} + C^\mu_{\nu \lambda \sigma}$ Eq. (6.5.5) Eq. (6.5.8)</td>
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<td>Ontology of Cosmic Fields and Modulators</td>
<td>N/A</td>
<td>Yin Cosmic Fields $\frac{R}{2} g_{\nu \mu} + G^\nu_{\nu \mu} + G^\nu_{\nu \lambda \sigma} + C^\nu_{\nu \lambda \sigma}$ Eq. (6.9.5) Eq. (6.9.7)</td>
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<td>(World Planes 2-Dimensions)</td>
<td>N/A</td>
<td>Yang Cosmic Fields $\nabla_\alpha \nabla_\beta \vec{x}<em>\gamma = \frac{R}{2} \left( g</em>{\nu \lambda} + G_{\nu \lambda} \right)$ Eq. (6.9.6) Eq. (6.9.8)</td>
</tr>
<tr>
<td>N/A</td>
<td>Acceleration $\Theta^\mu_{\nu \lambda} = i e^\nu_{\lambda \mu} + i e^\chi_{\lambda \mu} - i \partial^\nu_{\mu \lambda} - \Theta^\nu_{\mu \lambda}$ Eq. (6.9.1)</td>
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<td>General Relativity</td>
<td>$R_{\mu \nu} + \Lambda g_{\mu \nu} = \frac{R}{2} g_{\mu \nu} + G_{\mu \nu}$</td>
<td>Yin Fields $\mathcal{R}^\lambda_{\nu \mu \sigma} + \Lambda^\lambda_{\nu \mu \sigma} = \frac{R}{2} g_{\nu \mu} + G_{\nu \mu} + C_{\nu \mu}$ Eq. (6.12.4)</td>
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<tr>
<td>Cosmological Constant</td>
<td>$\Lambda$</td>
<td>Off-diagonal Modulator $\Lambda^\mu_{\nu \lambda} = \Lambda^\lambda_{\nu \mu} - \kappa^\mu_{\nu \lambda} \left( \frac{u^\alpha}{a} \partial_\alpha + \frac{u^\nu}{a} \nabla \left( u^\nu \cdot H \right) \right)$ Eq. (6.12.3)</td>
</tr>
<tr>
<td>Cosmology (Spacetime 4-Dimensions)</td>
<td>$3H^2 + \frac{k c^2}{a^2} = c^2 \Lambda^+ + 4 \pi G \rho$</td>
<td>$H_2 = \frac{\ddot{a}}{a}$ $H_3 = \frac{\ddot{a}}{a}$ $\rho = 2 \rho_0 + \rho_\gamma$ $p = 2 p_0 + \frac{1}{3} p_{\gamma}$ $\nabla \cdot D_v = 4 \pi G \rho_v$ Eq. (6.14.5) Eq. (6.14.10)</td>
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<tr>
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<td>Horizon Equations</td>
<td>$3H_2 = c^2 \Lambda^+ - \frac{4 \pi G}{c^2} (\rho c^2 + 3p)$ $p_v = p_{\mu \gamma} + p_{\mu \gamma} = c^2 Tr(J_{\mu \gamma})$ $\nabla^2 \varphi_n - \frac{\sigma^2}{c^2 \alpha^2} = 4 \frac{E_n}{E_n^+} \frac{N^+<em>{n \alpha} \eta_n \eta</em>{n+}}{(hc)^2}$ Eq. (6.15.1) Eq. (6.13.3)</td>
</tr>
<tr>
<td>N/A</td>
<td>Cosmic Emissions</td>
<td>Acceleration $\frac{g^\nu_{\mu}}{\kappa^\nu_{\mu}} = \left[ \partial^\nu \partial^\mu \partial^2 \partial^\mu \right] - \Lambda^+$ Eq. (2.10.1) Eq. (2.10.2)</td>
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Worldline Cosmic Fields

\[ \frac{R}{2} g^+ + G = 0^- \]

\[ \frac{\dot{a}}{a} + \left(\frac{\dot{a}}{a}\right)^2 + \frac{k c^2}{a^2} = \mathcal{G}^+ + \frac{4 \pi G}{c^2} (\rho c^2 - p) \]

\[ \rho = 2 \rho_0 + \rho_a \quad p = 2 p_0 + p_a \]

\[ \eta_s = 100 \% \quad E_s^\pm = \pm \frac{1}{2} E_p \quad E_p^\pm = \pm \frac{\hbar c}{\sqrt{\eta_s}} \]

\[ \eta_e = \pi/3 = 3.2 \% \quad E_e^\pm = \pm \frac{1}{2} \hbar \omega_e \]

\[ E_{m} = \pm \frac{1}{2} \hbar \omega_e \quad \eta_m = 66.6 \% \]

\[ E_{c} = \pm \frac{i}{2} \hbar \omega_e \quad \eta_c = 2 \pi / \pi = 63.7 \% \]

\[ \nabla^2 \psi_n - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \psi_n = \frac{4 E_n^2 E_{n+1}^2}{(\hbar c)^2} N^n N_{n+1} \eta_n \eta_{n+1} \psi_n \]

\[ \frac{\hbar}{2} \left( x_{\mu} D_{\mu} - x_{\mu} x_{\nu} D_{\nu} \right) \psi_n^\pm + E_n^\pm \psi_n^\pm = 0 \]

\[ i \hbar \frac{\partial}{\partial t} \psi_n = -i \left( \frac{\hbar c}{2} \right)^2 \nabla^2 \psi_n + V(r, \theta) \psi_n \]

\[ ic \tau = r \cos(\theta) \quad \nabla^2 = \frac{1}{r} \frac{\partial}{\partial r} \left( r \frac{\partial}{\partial r} \right) + \frac{1}{r^2} \frac{\partial^2}{\partial \theta^2} \]

Superphase Propagation of Non-dispersive Wave Packets
Spacetime Asymmetric Fields

\[ 3H_2^2 + \frac{k c^2}{a^2} = c^2 \Lambda_+^+ + 4 \pi G \rho \]

\[ 3H_2 H_3 = c^2 \Lambda_+^+ - \frac{4 \pi G}{c^2} (\rho c^2 + 3p) \]

\[ \rho = 2 \rho_0 + \rho_n \quad p = 2 \rho_0 + \frac{1}{3} \rho_r \]

\[ G_{\mu \nu} = \frac{8 \pi G}{c^4} T_{\mu \nu} \quad H_2 = \frac{\dot{a}}{a} \quad H_3 = \frac{\ddot{a}}{a} \]

\[ \frac{\partial}{\partial t} D_\nu^+ - \nabla \times H_\nu^+ = 4 \pi \rho G \]

\[ \nabla \cdot D_\nu^+ = 4 \pi \rho G \]

\[ d\Sigma^2 = dr^2 + S_k(r)^2 d\theta^2 \quad S_k(r) = \sin c(r \sqrt{k}) \]

\[ d\theta^2 = d\theta^2 + \sin^2 \theta d\phi^2 \]

\[ \hat{E}_\nu^+ = \pm i E_\nu^+ \left( \frac{1}{2} + \frac{1}{e^{\pm i E_\nu^+ / k_B T} - 1} \right) \]

\[ V^2 \psi_n - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \psi_n = \frac{E_n^+ - E_n^-}{(hc)^2} N_n^+ \psi_n \]

\[ -i \hbar \frac{\partial}{\partial t} \psi = \hat{H} \psi \]

\[ \hat{H} \equiv -\frac{\hbar c^2}{2 E_n} \nabla^2 + V(r, t) \]

\[ V^2 = \frac{1}{r^2} \frac{\partial}{\partial r} \left( r^2 \frac{\partial}{\partial r} \right) + \frac{1}{r^2 \sin \theta} \frac{\partial}{\partial \theta} \left( \sin \theta \frac{\partial}{\partial \theta} \right) + \frac{1}{r^2 \sin^2 \theta} \frac{\partial^2}{\partial \phi^2} \]

\[ \Lambda_+^+ = \Lambda_+ - \kappa_\Lambda \left\{ - (u^+ \nabla) \cdot D_\nu^+ + \frac{\kappa}{\rho} \nabla \left( \frac{u^+}{c} \times H_\nu^+ \right) \right\} \]

Spacetime Cosmology

Propagation of Dispersive Wave Packets
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 matter

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 ontological 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.

Funded by the 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 cloud service security on-demand transformable at the click of a button. Since then, he served as a Chief Architect in many commercial and government organizations and delivered thousands of virtual secure datacenter networks nationally and internationally. Today, he is developing the groundbreaking innovations: Virtual Productive Forces and next generation of Internet Protocols, enlightened by his recent scientific discoveries.

During the two years in 2009 and 2010, Wei received a set of the divine books in the old classic manuscripts: Worlds in Universe. Appeared initially as the profound topology of universe in philosophy, it turns gradually out groundbreaking and has concisely revealed the theoretical physics: i) the constitution of Elementary Particles including Virtual Dark Energy in 2013, ii) Universal Topology and Framework in 2015, iii) Universal and Unified Physics in 2018 [f], iv) Framework of “Natural Cosmology” in 2018, and v) inception of “Ontology of Nature” in 2019.

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.
References

- Xu, Wei (2019) 《Universal and Unified Field Theory》
  - http://vixra.org/abs/1903.0487
- Xu, Wei (2019) 《Philosophy of Nature, Universal Field Theory, Natural Cosmology, and Ontological Evolution》
  - http://vixra.org/abs/1903.0182
- Xu, Wei (2019) 《Universal and Unified Field Theory》
  - http://vixra.org/abs/1812.0363
- Xu, Wei (2018) 《Universal and Unified Physics》
  - http://vixra.org/abs/1810.0016

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c. https://en.wikipedia.org/wiki/Firewall_(computing)#Third_generation:_application_layer
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