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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April of 2019

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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 (20 min, 11p)

II. Natural Principles of Universal Topology (40 min, 10p)

III. Visualization of Unification of Physics (40 min, 15p)

Agenda

AGENDA – I

11 SLIDES IN 20 MIN

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

$$\mathcal{L}_{YM} \equiv -\frac{1}{4}(F^i_{\mu\nu})^2$$

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

Yang–Mils, Gauge of Standard Model, 1954

$$i\hbar \frac{\partial \Phi(\mathbf{r},\mathbf{t})}{\partial t} = \hat{H}\Phi(\mathbf{r},\mathbf{t})$$

Schrödinger Equation, 1926

$$\frac{1}{c^2}\frac{\partial^2 \Phi_n}{\partial t^2} - \nabla^2 \Phi_n^+ + \left(\frac{mc}{\hbar}\right)^2 \Phi_n = 0$$

Dirac Equation, 1926

$$\frac{d}{dt}A(t) = \frac{i}{\hbar}\left[H, A(t)\right] + \left(\frac{\partial A}{\partial t}\right)_H$$

Heisenberg Picture, 1925

$$\frac{8\pi G_0}{c^4} T_{\mu\nu} = R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} + \Lambda g_{\mu\nu}$$

Einstein General Relativity, 1915

$\nabla \cdot \mathbf{E} = \frac{\rho_v}{\varepsilon}$	(Gauss' Law)
$\nabla \cdot \mathbf{H} = 0$	(Gauss' Law for Magnetism)
$\nabla \times \mathbf{E} = -\mu \frac{\partial \mathbf{H}}{\partial t}$	(Faraday's Law)
$\nabla \times \mathbf{H} = \mathbf{J} + \varepsilon \frac{\partial \mathbf{E}}{\partial t}$	(Ampere's Law)

Maxwell equations, 1861

$$dS = \frac{1}{T}\left(dE + PdV - \sum_n \mu_n dN_n^{\pm}\right)$$

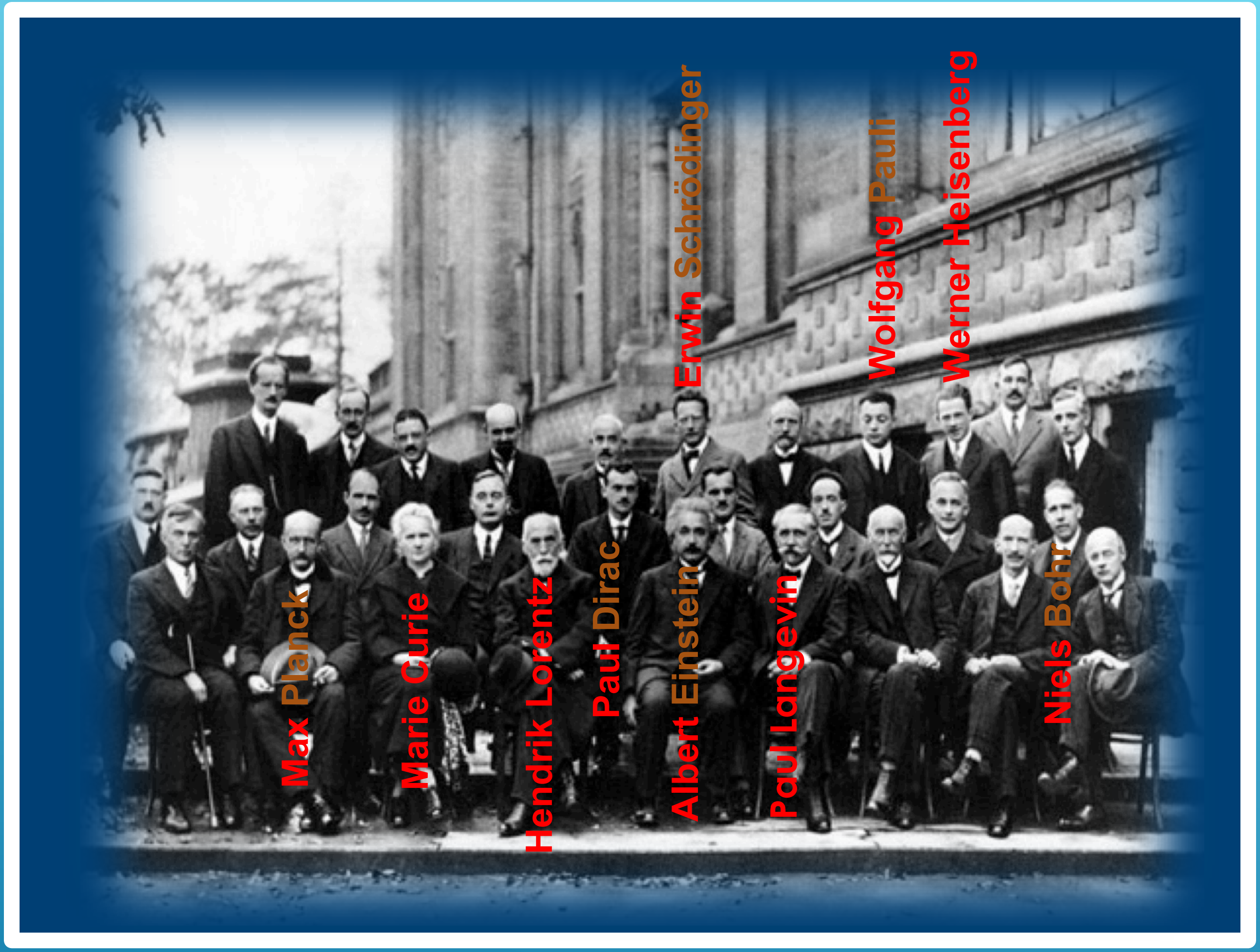
Thermodynamics, **Carnot** 1824 - **Kelvin** 1854

$$F(\mathbf{r}) = m\mathbf{g}(\mathbf{r}) = -mm_0 G_0 \frac{\mathbf{r}}{r^2}$$

Newton's Law and Gravity, 1687

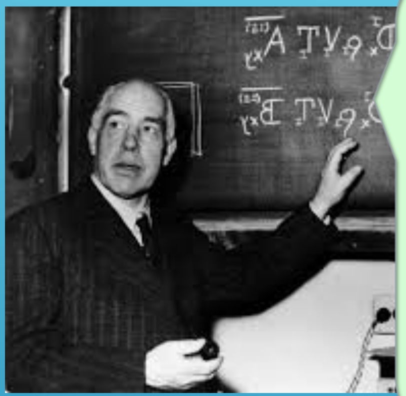
Glorious History of Physics

17 OF 29 ATTENDEES WERE OR BECAME NOBEL PRIZE WINNERS



Remaining Issues since Solvay Conference of 1927 ?

Perhaps the most famous conference of Fifth Solvay International Conference on Electrons and Photons, 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.

Niels Bohr:
Stop telling God what he can and can't do.

Einstein (1879-1955):

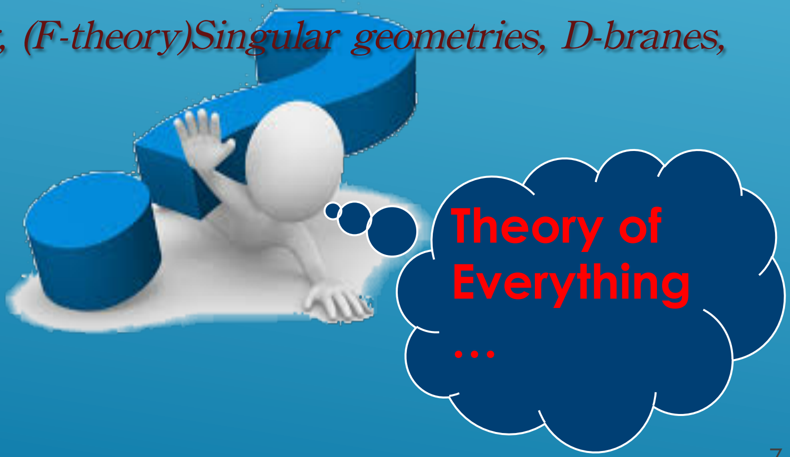
- Disenchanted with Heisenberg's "Uncertainty Principle," remarked "God does not play dice."
- if quantum mechanics were correct then the world would be crazy.

Werner Karl Heisenberg (1901–1967):

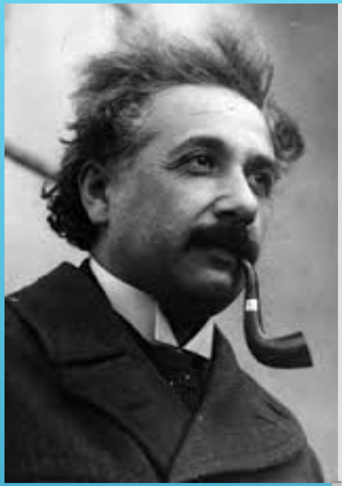
- The more precise the measurement of position, the more imprecise the measurement of momentum, and vice versa.
- Light and matter are both single entities, and the apparent duality arises in the limitations of our language.

What were these physicists Arguing About ???

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)*
3. Standard Model, "Theory of Almost Everything" – 66 years
   - *Since 1950 (Lack of gravity, dark matter, neutrino mass, …)*
4. Grand Unified Theory to merge 4-forces into one – 42 years
   - *Since 1974 (A single force of gauge symmetry without gravity)*
5. Fairy-tale theories (since1970) – 46 years
   - *String, 11-dimensional M-theory, superstring, (F-theory)Singular geometries, D-branes, flux compactification and warped geometry.*



Quest for Unified Theory



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 on 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**. "

- Albert Einstein, "*On the generalized theory of gravitation*" April 1950
(35 years after General Relativity of 1915)

Lack of basic concepts from the beginning !

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

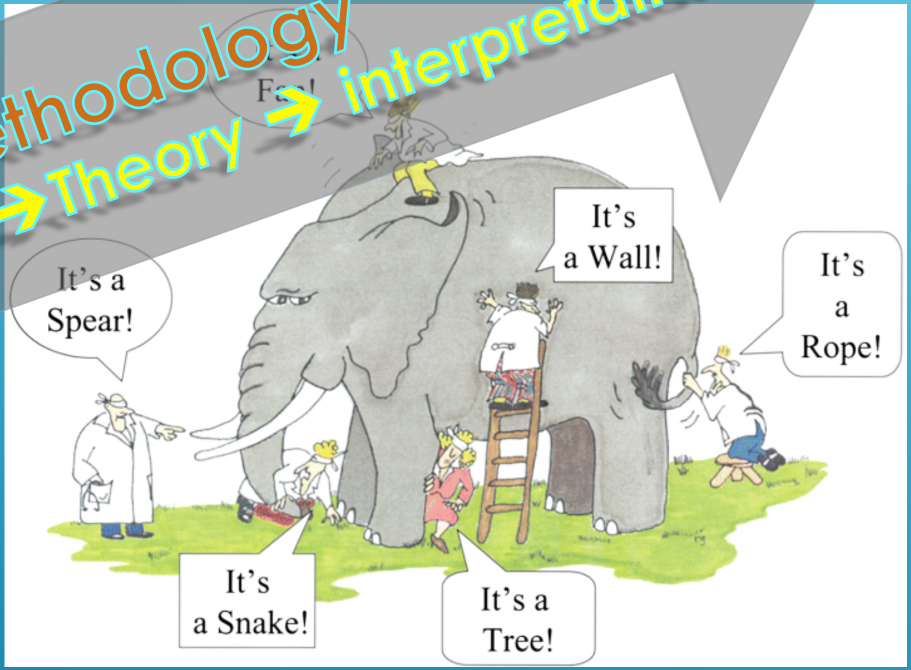
Science ?

Bottom Up

- A body of empirical, theoretical, and practical knowledge about the natural world, emphasized on the observation, explanation, and prediction of real world phenomena.

Empirical Methodology

Experiments ←→ Math ←→ Theory → interpretation



Methodology In Search of The 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* 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 Messaons"* in 2012
   - Biophysical Formulations and Metaphysical Reformulation …

GENERATIONS OF PHYSICS

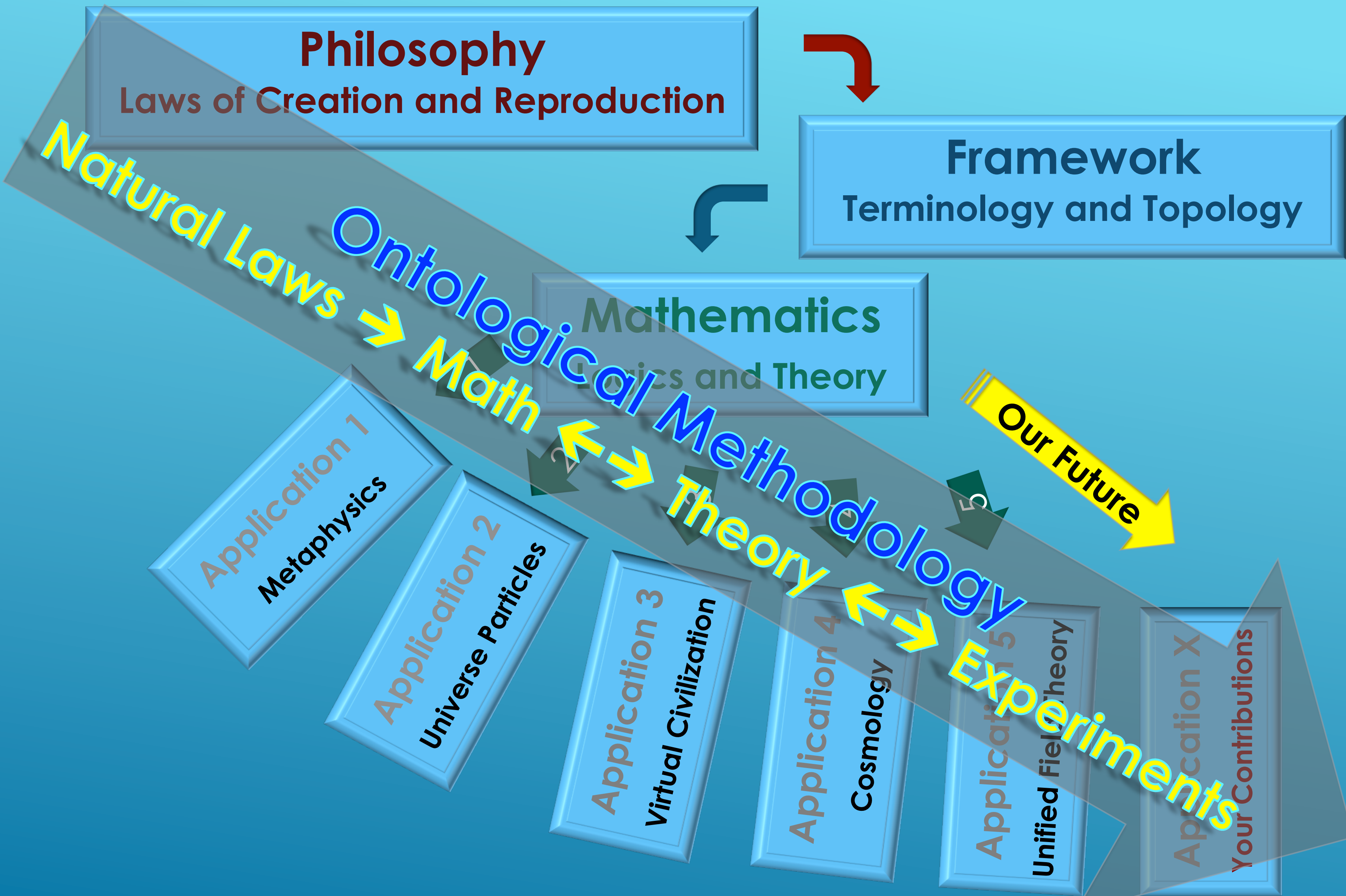
MISSION Overview

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.

Manuscripts downloadable at http://vixra.org/author/wei_xu



Vertical Hierarchy in the Search for Truth

Top Down

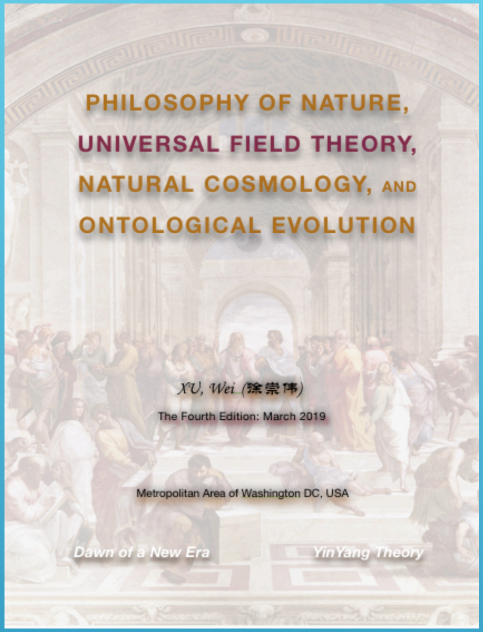
- ★ Nature is systematically composed of building blocks, dualities, which take on an abstract form as simple as Yin and Yang, and as sophisticated as Virtual and Physical existence.
- ✓ Our ancestors discovered that duality orchestrated and harmonized their reality since 5000 years ago.
- ✓ Everywhere 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.

Horizontal Concepts in the Search for Truth

AGENDA – II

10 SLIDES IN 40 MIN

2016-2018年



http://vixra.org/abs/1903.0487

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

Universal Fields : Highlights of Groundbreakings

Mathematical Solutions of the Sciences

How to describe our universe in mathematics?

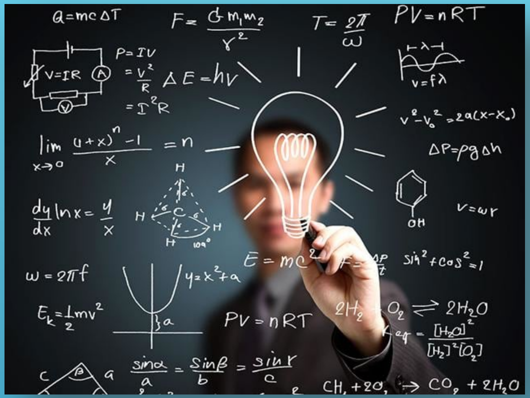
@ {0, ±1, ±2, ···, ±n} ?

$$x^2 = 1$$

$$x = ?$$

$$y^2 = a^2 + b^2$$

$$y = ?$$



Answers by Today's Science:

$$x_1 = 1, \ x_2 = -1$$

$$y_1 = \sqrt{(a^2 + b^2)}$$

$$y_2 = -\sqrt{(a^2 + b^2)}$$

Answers by Future Science:

x[redacted]

Dialectics of Ontological and Scientific Epistemology

Philosophical Impact to Mathematical Principles

Math Principles of Ontology

Philosophy: World = Physical Space + Virtual Phase

$$W^{\pm} = We^{\pm i\theta} = P(\text{Events})\, e^{i\, V(\text{Events})}$$

Change = ∂ **Event =** λ

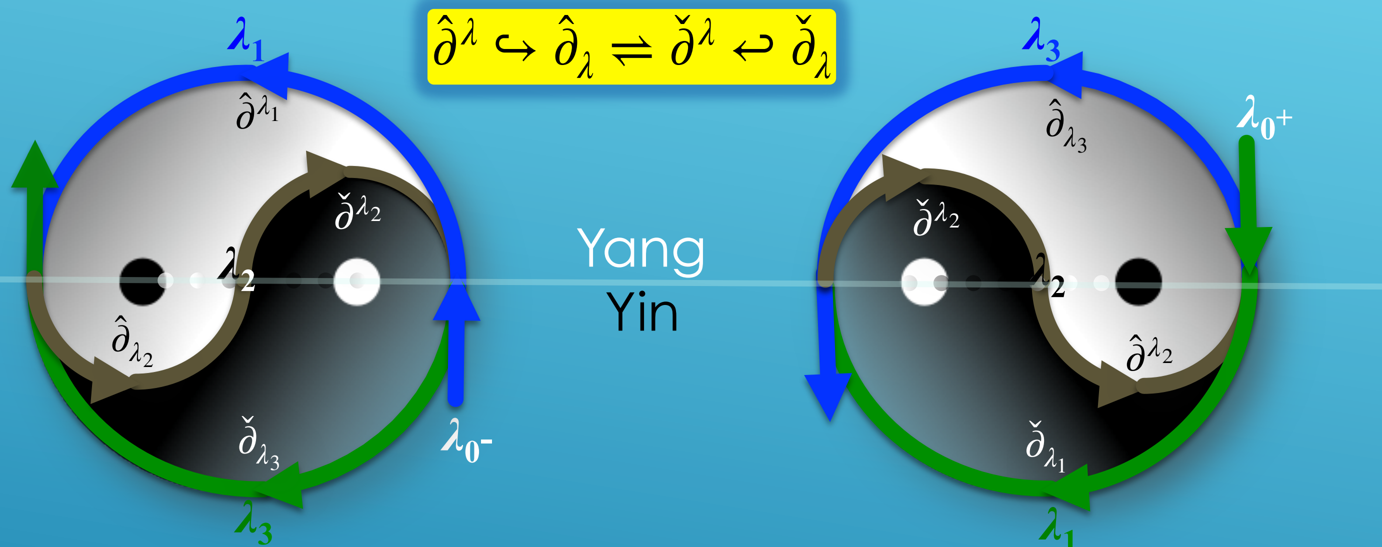
Science: Physical Events, Virtual Events

$\check{\partial}$: $\{\check{\partial}_{\lambda}\ \check{\partial}^{\lambda}\}$: $\hat{\partial}$ $\{\hat{\partial}^{\lambda}\ \hat{\partial}_{\lambda}\}$

Truth is Simple！

World = Physical $\check{\partial}_\lambda \, \check{\partial}^\lambda$ + Virtual $\hat{\partial}^\lambda \, \hat{\partial}_\lambda$

Universal Topology : YinYang Events of World Equations



Yang Primacy

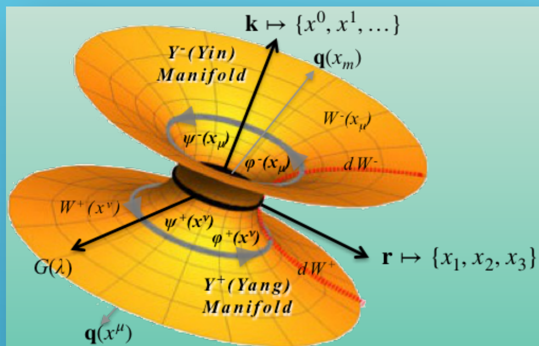
$$W^+ : (\hat{\partial}^{\lambda_1} \to \hat{\partial}_{\lambda_2}), (\check{\partial}^{\lambda_2} \to \check{\partial}_{\lambda_3})$$

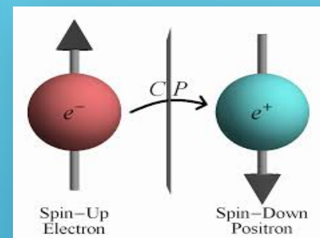
Yin Primacy

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

First Principle of Ontology : Event Operations

1. Dual Manifolds





ξ Generator

$$\hat{\partial}^\lambda \hookrightarrow \hat{\partial}_\lambda \rightleftharpoons \check{\partial}^\lambda \hookleftarrow \check{\partial}_\lambda$$

$$\Downarrow$$

$$\zeta^\nu = \gamma^\nu + \chi^\nu$$

$$\gamma^\nu = \left[\begin{pmatrix} \sigma_0 & 0 \\ 0 & -\sigma_0 \end{pmatrix}_0, \begin{pmatrix} 0 & \sigma_1 \\ -\sigma_1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & \sigma_2 \\ -\sigma_2 & 0 \end{pmatrix}_2, \begin{pmatrix} 0 & \sigma_3 \\ -\sigma_3 & 0 \end{pmatrix}_3 \right]$$

$$\chi^\nu = \left[\begin{pmatrix} \varsigma_0 & 0 \\ 0 & -\varepsilon_0 \end{pmatrix}_0, \begin{pmatrix} 0 & \varsigma_1 \\ -\varsigma_1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & \varsigma_2 \\ -\varsigma_2 & 0 \end{pmatrix}_2, \begin{pmatrix} 0 & \varsigma_3 \\ -\varsigma_3 & 0 \end{pmatrix}_3 \right]$$

$$\sigma_0 = s_0 \qquad \sigma_1 = s_1 \qquad \sigma_2 = i s_2 \qquad \sigma_3 = -s_3$$

$$\varsigma_0 = \tilde{r}^2 \epsilon_0 \qquad \varsigma_1 = \tilde{r}\tilde{\vartheta}\epsilon_1 \qquad \varsigma_2 = i\tilde{r}\tilde{\vartheta}\epsilon_2 \qquad \varsigma_3 = -\tilde{r}^2\epsilon_3$$

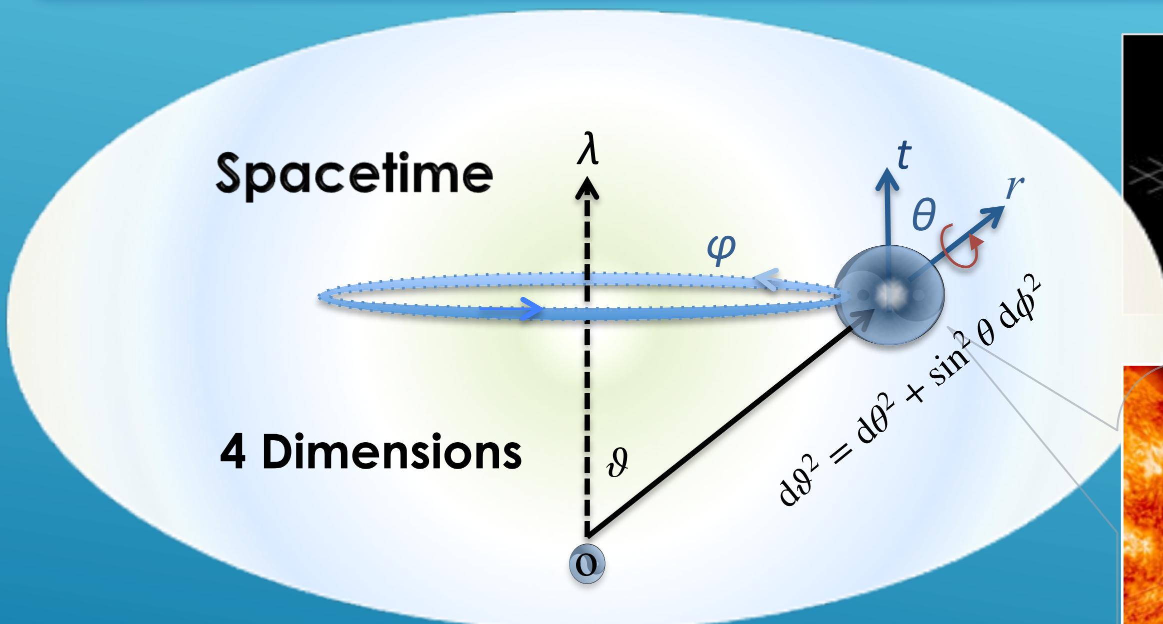
2. *Boost Generators, photon*

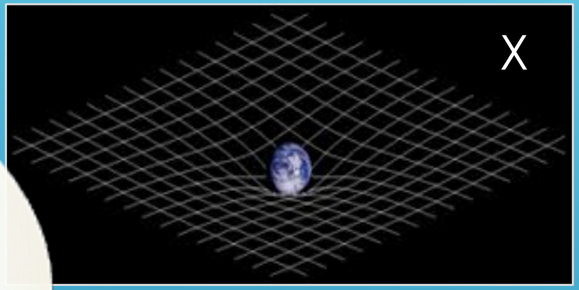
$$s_\kappa = \left[\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}_0, \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}_2, \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}_3 \right]$$

3. *Torque Generators, graviton*

$$\epsilon_\kappa = \left[\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_0, \begin{pmatrix} 0 & 0 \\ 0 & -1 \end{pmatrix}_1, \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}_2, \frac{1}{\tilde{r}^2}\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_3 \right]$$

4. No Torque r-Singularity on wordline of 2D Manifolds. Superposing Interruption of light and energy at eternal curvature
5. Enhanced Mass-energy Equivalence $E_n^{\mp} = \pm\, i\, m\, c^2$
6. Torque Singularity in physical-freedom of the 4D Spacetime





GALAXY : 2D World Planes

7. Mass Acquisition & Annihilation

Dirac harmonic oscillator between horizons at exponential ratio 1 : 3

$$\varphi_0^+ = \left(\frac{m\omega}{\pi\hbar}\right)^{1/4} e^{-\frac{m\omega r_w^2}{2\hbar}}$$

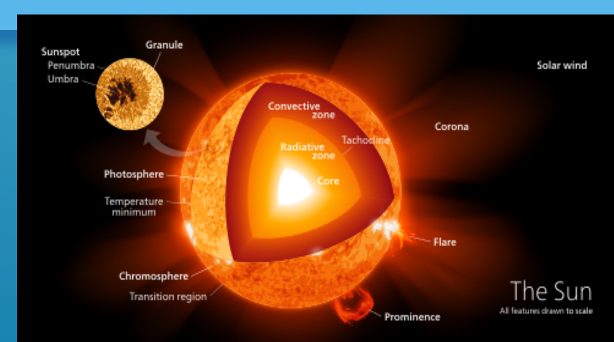
$$\phi_0^- = 2\left(\frac{m\omega}{\pi\hbar}\right)^{3/4} e^{-\frac{m\omega}{2\hbar} r_s^2}$$

$$\rho^- \approx \phi_0^- \varphi_0^+ = 2\frac{m\omega}{\pi\hbar} exp\left[-\frac{m\omega}{2\hbar}(r_s^2 + r_w^2)\right]$$

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 a horizon of the topology between Earth at the 3rd horizon and center blackhole, blackhole at 1st horizon (virtual). It has about 11 solar rotations.

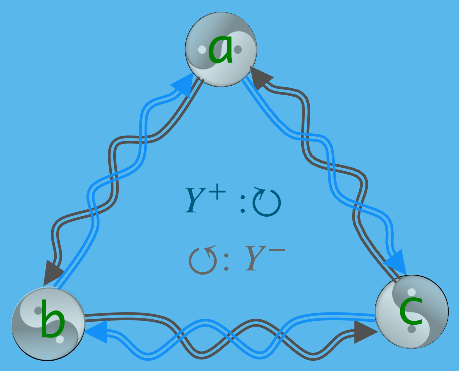
The core of Sun extends from the center to about 20–25% of the solar radius.

ACQUISITION & ANNIHILATION



Second Principle of Ontology：Loop Entanglement

Horizon of Force Fields $\tilde{\mathscr{L}}_h^a = \mathscr{L}_D^{-a} + \overline{\psi}_j(\hat{\partial} \wedge \check{\partial})\psi_k$



Double-Loop Triple Entangles

Gauge Theory（Yang-Mills）

$$\mathscr{L}_{YM} \equiv -\frac{1}{4}(F^i_{\mu\nu})^2$$

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

Yang–Mills

Horizon Commutation of **Triple Entangles**

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

Jacobi identity of Gauge invariance

Invariance **of Triple Entanglements**

$$ABA = BAB$$

$$a \pm ib \mapsto re^{\pm i\theta}$$

Yang–Baxter Equation

Reverse **Double-Loop** Invariance

Third Principle of Ontology: Evolutionary Forces

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

Unification of Forces:

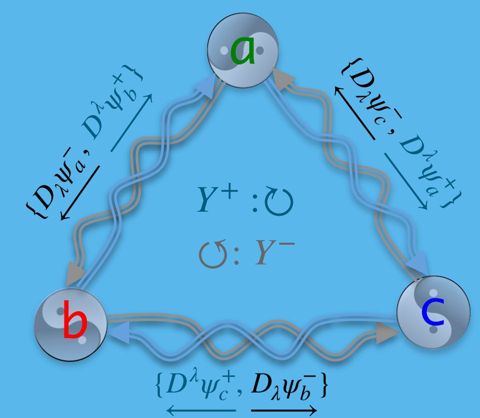
$$\tilde{\mathscr{L}}_h^a = \mathscr{L}_D^{-a} + \bar{\psi}_j(\hat{\partial}\wedge\check{\partial})\psi_k$$

$$\check{\partial} = \dot{x}_\nu\zeta_\nu D_\nu = \dot{x}_\nu\zeta_\nu\partial_\nu + i\dot{x}_\nu\zeta_\nu(\Theta_\nu + \tilde{\kappa}_2^-\dot{\Theta}_{\mu\nu} + \cdots)$$

$$\Theta_\nu = \frac{\partial\vartheta(\lambda)}{\partial x_\nu} \qquad \dot{\Theta}_{\nu\mu} = \frac{\partial A_\mu}{\partial x_\nu} - \frac{\partial A_\nu}{\partial x_\mu} = F^{-n}_{\nu\mu}$$

$$\check{\partial} = \dot{x}_\nu\zeta_\nu D_\nu = \dot{x}_\nu\zeta_\nu\partial_\nu + i\dot{x}_\nu\zeta_\nu\left(\frac{e}{\hbar}A_\nu + \frac{1}{2}F^{+n}_{\nu\mu} + \cdots\right)$$

$$\hat{\partial} = \dot{x}^\nu\dot{\zeta}^\nu D^\nu = \dot{x}^\nu\zeta^\nu\partial^\nu - i\dot{x}^\nu\zeta^\nu\left(\frac{e}{\hbar}A^\nu + \frac{1}{2}F^{-n}_{\nu\mu} + \cdots\right)$$



Double-Loop Triple-Entanglement

$$\mathscr{L}_Y^a = -\frac{1}{4}F^{+j}_{\nu\mu}F^{-k}_{\mu\nu} - \frac{1}{4}W^{+j}_{\mu\nu}W^{-k}_{\nu\mu}$$

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

8. Yang–Mills Actions

Double-Loop Fields

(Weak Force)

$$\zeta^\nu = \gamma^\nu + \chi^\nu$$

$$\mathscr{L}_{QCD}(\chi) = -\frac{1}{4}G^n_{\nu\mu}G^n_{\nu\mu} - \frac{e}{c}(\bar{\psi}_n^+\chi_\nu A_\nu\psi_n^-)_{jk}$$

$$\mathscr{L}^{SU3}_{ST} = \kappa_f\Big(\lambda_0(\partial^\nu\varphi_b^+)(\partial_\nu\phi_a^-) - m^2\phi_{bc}^2 + \lambda_2\phi_{bc}^2\phi_{ca}^2\Big)$$

9. Quantum Chromodynamics

Triple-Entanglement Forces

(Strong Force)

10. Conservation of Speed of light and of gravitation

$$C_{rr}^{\pm} = ce^{\mp i\vartheta} \qquad G_{\nu\mu}^{-} = c_g \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} e^{i\vartheta}$$

11. Thermodynamic Emissions of Graviton and of Photon

$$E_c^{\pm} = \mp \frac{i}{2} \hbar \omega_c \qquad E_g^{\pm} = \mp \frac{i}{2} \sqrt{\hbar c_g^5 / G}$$

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

$$\mathscr{R}_{\nu m s}^{-\sigma} + \Lambda_{\nu m}^{+\sigma} = \frac{R}{2} g_{\nu m} + G_{\nu m}^{s\sigma} + C_{\nu m}^{s\sigma}$$

13. Unification of Fundamental Forces

$$\hat{W}_{jk} = \psi^{+}\psi^{-} + J_s + \left(\dot{x}^{\mu}\zeta^{\mu}D^{\lambda}\psi_j^{+}\right) \wedge \left(\dot{x}_{\nu}\zeta_{\mu}D_{\lambda}\psi_k^{-}\right)$$

14. Evolutionary Field Equations of Ontology

$$\frac{R}{2} g_{\nu m} + G_{\nu m}^{-\sigma s} + \Theta_{\nu m}^{-\sigma s} = \mathscr{O}_{m\nu}^{+\zeta}$$

GROUNDBREAKING OF UNIVERSAL AND UNIFIED FIELDS

Fourth Principle of Ontology: Superphase Events

$$\frac{R}{2} g_{\nu m} + G^{-\sigma s}_{\nu m} + \Theta^{-\sigma s}_{\nu m} = \mathcal{O}^{+\zeta}_{m\nu}$$

$$\Theta^{+\sigma s}_{\nu m} = i\,\Xi^{+}_{\nu m} + i\,\frac{e}{\hbar} F^{+}_{\nu m} - i\,\eth^{+s\sigma}_{m\nu} - \circledS^{+}_{\nu m}$$

$$\Xi^{\pm}_{\nu m} = \mp \frac{1}{\dot{x}^{\nu}\dot{x}^{m}} \left[\dot{x}^{\nu}\Theta^{\nu}\dot{x}^{m}\partial^{m}, \dot{x}_{m}\Theta_{m}\dot{x}_{\nu}\partial_{\nu}\right]^{\pm}_{s}$$

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

$$\eth^{\pm s\sigma}_{m\nu} = \pm \frac{1}{\dot{x}^{\nu}\dot{x}^{m}} \left[\dot{x}^{m}\Gamma^{+\sigma}_{\nu m}\dot{x}^{\sigma}\Theta^{\sigma}, \dot{x}_{m}\Gamma^{-s}_{m\nu}\dot{x}_{s}\Theta_{s}\right]^{\pm}_{s}$$

$$\circledS^{\pm}_{\nu m} = \pm \frac{1}{\dot{x}^{\nu}\dot{x}^{m}} \left[\dot{x}^{\nu}\Theta^{\nu}\dot{x}^{m}\Theta^{m}, \dot{x}_{m}\Theta_{m}\dot{x}_{\nu}\Theta_{\nu}\right]^{\pm}_{s}$$

$$\Theta^{\nu} = \frac{e}{\hbar} A^{\nu} \qquad \mathcal{O}^{+\sigma}_{\nu\mu} = 2\mathcal{O}^{+}_{d} - 2\left(\partial^{t} \quad \mathbf{u}^{+}\nabla\right)\begin{pmatrix} 0 & \mathbf{D}^{+}_{a} \\ -\mathbf{D}^{*}_{a} & \frac{\mathbf{u}^{+}}{c^{2}} \times \mathbf{H}^{+}_{a} \end{pmatrix} \qquad \Theta_{\nu} = \frac{e}{\hbar} A_{\nu}$$

$$\rho_{a} = \frac{1}{4\pi G} \nabla \cdot \mathbf{D}^{*}_{a} \qquad p_{a} = c^{2} Tr(\mathbf{J}^{+}_{a}) \qquad 4\pi G \mathbf{J}^{+}_{a} = \frac{\partial}{\partial t}\mathbf{D}^{+}_{a} - \nabla \times \mathbf{H}^{+}_{a}$$

Ontological Field Equations

AGENDA – III

15 SLIDES IN 40 MIN

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

Unification of Physics: Overview Highlights

Universal Event Operations of World Horizons

1. A pair of World Eq.

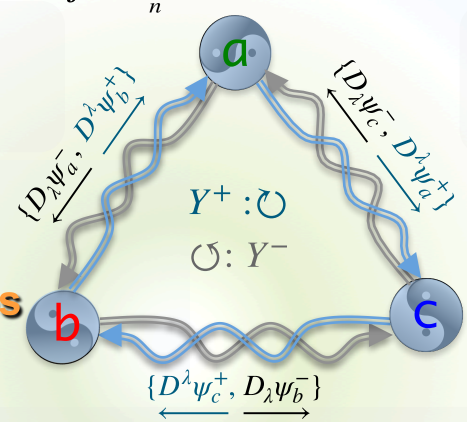
$$\check{W}^{\pm} = k_w \int d\Gamma \sum_n h_n \left[W_n^{\pm} + \kappa_1 \dot{\partial}_{\lambda_1} + \kappa_2 \dot{\partial}_{\lambda_2} \dot{\partial}_{\lambda_1} \cdots \right] \psi_n^{+}(\hat{x}) \psi_n^{-}(\check{x})$$

Horizon Eq. of Ontological Evolution

$$\hat{W}_n = \psi^{+}\psi^{-} + k_J J_s + k_{\wedge}\left(\hat{\partial}\psi^{+}\right) \wedge \left(\check{\partial}\psi^{-}\right)$$

Lagrangians of Force Unification

$$\tilde{\mathscr{L}}_h^a = \mathscr{L}_D^{-a} + \left(\overline{\psi}_c^{-} \frac{\dot{x}_\nu}{c} \zeta^\nu D^\lambda \psi_a^{+}\right) \wedge \left(\overline{\psi}_b^{+} \frac{\dot{x}^\mu}{c} \zeta_\mu D_\lambda \psi_a^{-}\right)$$



2. Two Event Operations

Double-Loops Triple-Entangles

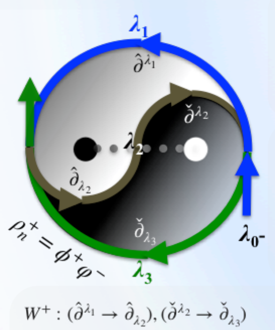
YinYang Event Processes

3. Three Horizon Fields

Asymmetry

Symmetry

Quantum



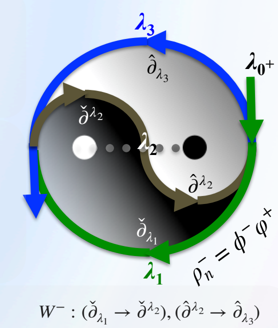
Third Universal Fields - Asymmetric Cosmic Fields

$$\mathbf{g}_a^-/\kappa_g^- = \left[\hat{\partial}^\lambda \check{\partial}^\lambda, \hat{\partial}_\lambda \hat{\partial}_\lambda\right]_x^+ + \zeta^+ \qquad \mathbf{g}_a^+/\kappa_g^+ = \left[\check{\partial}_\lambda \check{\partial}_\lambda, \hat{\partial}^\lambda \hat{\partial}^\lambda\right]_x^- + \zeta^-$$

Second Universal Fields - Symmetric EM and Gravitation

$$\dot{\partial}_\lambda \mathbf{f}_s^+ = \langle \hat{\partial}_\lambda \hat{\partial}_\lambda, \check{\partial}^\lambda \check{\partial}^\lambda \rangle_s^+ = \langle W_0^+ \rangle - \kappa_1 \left[\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\right]_s^+ + \kappa_2 \left\langle \check{\partial}_{\lambda_3}\left(\hat{\partial}_{\lambda_2} - \check{\partial}^{\lambda_2}\right)\right\rangle_s^+ + \mathbf{g}_a^-/\kappa_g^-$$

$$\dot{\partial}_\lambda \mathbf{f}_s^- = \langle \check{\partial}_\lambda \check{\partial}_\lambda, \hat{\partial}^\lambda \hat{\partial}^\lambda \rangle_s^- = \langle W_0^- \rangle + \kappa_1 \left[\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_1}\right]_s^- + \kappa_2 \left\langle \check{\partial}_{\lambda_1}\left(\hat{\partial}^{\lambda_2} - \check{\partial}^{\lambda_2}\right)\right\rangle_s^- + \mathbf{g}_a^+/\kappa_g^+$$



First Universal Fields – Quantum Horizon Fields

$$\kappa_1\left(\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\right)\phi_n^+ + \kappa_2\left(\check{\partial}_{\lambda_3}\check{\partial}^{\lambda_2} + \hat{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2} - \check{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2}\right)\phi_n^+ = W_n^+\phi_n^+$$

$$\kappa_1\left(\hat{\partial}_{\lambda_2} - \check{\partial}^{\lambda_2}\right)\varphi_n^- + \kappa_2\left(\hat{\partial}_{\lambda_3}\hat{\partial}_{\lambda_2} + \check{\partial}_{\lambda_3}\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_3}\check{\partial}^{\lambda_2}\right)\varphi_n^- = W_n^-\varphi_n^-$$

$$\kappa_1\left(\hat{\partial}^{\lambda_1} - \check{\partial}_{\lambda_1}\right)\phi_n^- + \kappa_2\left(\hat{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1} + \check{\partial}^{\lambda_2}\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_2}\check{\partial}_{\lambda_1}\right)\phi_n^- = W_n^-\phi_n^-$$

$$\kappa_1\left(\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_1}\right)\varphi_n^+ + \kappa_2\left(\check{\partial}^{\lambda_2}\check{\partial}_{\lambda_1} + \hat{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1} - \check{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1}\right)\varphi_n^+ = W_n^+\varphi_n^+$$

Universal Fields: Three Unified Topologies

Fundamental Equations of Universal Fields

1. Generators

$$s_\kappa = \left[\begin{pmatrix}1&0\\0&1\end{pmatrix}_0, \begin{pmatrix}0&1\\1&0\end{pmatrix}_1, \begin{pmatrix}0&-1\\1&0\end{pmatrix}_2, \begin{pmatrix}-1&0\\0&1\end{pmatrix}_3\right] \quad \epsilon_\kappa = \left[\begin{pmatrix}0&1\\1&0\end{pmatrix}_0, \begin{pmatrix}0&0\\0&-1\end{pmatrix}_1, \begin{pmatrix}0&0\\0&1\end{pmatrix}_2, \frac{1}{\tilde{r}^2}\begin{pmatrix}0&1\\1&0\end{pmatrix}_3\right]$$

2. Mass-Energy

$$E_n^{\mp} = \pm\, imc^2$$ Photon speed: $C_{rr}^{\pm} = ce^{\mp i\vartheta}$ Graviton Speed: $G_{\nu\mu}^{-} = c_g \begin{pmatrix}0&1\\1&0\end{pmatrix} e^{i\vartheta}$

3. Thermo Emission

$$\nabla^2 - \frac{1}{c^2}\frac{\partial^2}{\partial t^2} = 4\frac{E_n^- E_n^+}{(\hbar c)^2}$$ Photon: $E_c^{\pm} = \mp \frac{i}{2}\hbar\omega_c$ Graviton: $E_g^{\pm} = \mp \frac{i}{2}\sqrt{\hbar c_g^5/G}$

4. Mass Creation-Annihilations

$$\rho^- \approx \phi_0^- \varphi_0^+ \qquad \phi_0^- = 2\left(\frac{m\omega}{\pi\hbar}\right)^{3/4} e^{-\frac{m\omega}{2\hbar}r_s^2} \qquad \varphi_0^+ = \left(\frac{m\omega}{\pi\hbar}\right)^{1/4} e^{-\frac{m\omega r_w^2}{2\hbar}}$$

5. Horizon Evolution

$$\hat{W}_n = \psi^+\psi^- + k_J J_s + k_\wedge\left(\check{\partial}\psi^+\right) \wedge \left(\check{\partial}\psi^-\right)$$
$$\check{\partial} = \dot{x}_\nu\zeta_\nu D_\nu = \dot{x}_\nu\zeta_\nu\partial_\nu + i\dot{x}_\nu\zeta_\nu\left(\frac{e}{\hbar}A_\nu + \frac{1}{2}F_{\nu\mu}^{+n} + \cdots\right)$$
$$\hat{\partial} = \dot{x}^\nu\dot{\zeta}^\nu D^\nu = \dot{x}^\nu\zeta^\nu\partial^\nu - i\dot{x}^\nu\zeta^\nu\left(\frac{e}{\hbar}A^\nu + \frac{1}{2}F_{\nu\mu}^{-n} + \cdots\right)$$

6. Force Evolution

$$\tilde{\mathscr{L}}_h^a = \mathscr{L}_D^{-a} + \left(\overline{\psi}_c^- \frac{\dot{x}_\nu}{c}\zeta^\nu D^\lambda \psi_a^+\right) \wedge \left(\overline{\psi}_b^+ \frac{\dot{x}^\mu}{c}\zeta_\mu D_\lambda \psi_a^-\right)$$
$$(D_\mu F_{\nu\kappa})^a + (D_\kappa F_{\mu\nu})^b + (D_\nu F_{\kappa\mu})^c = 0$$
$$\mathscr{L}_Y^a = \left(\bar{\psi}_j^{\mp} i\frac{\hbar}{c}\gamma^\nu D_\nu \psi_i^{\pm}\right)_{jk} - \frac{1}{4}F_{\nu\mu}^{+j}F_{\mu\nu}^{-k} - \frac{1}{4}W_{\mu\nu}^{+j}W_{\nu\mu}^{-k}$$

7. Cosmic Ontology

$$\frac{R}{2}\mathbf{g}^- + \mathbf{G} = \mathbf{O}^+ \qquad \mathcal{O}_{\nu\mu}^{+\sigma} = \mathcal{O}_d^+ - \kappa_o^+\left(\partial^t \quad \mathbf{u}^+\nabla\right)\begin{pmatrix}0 & \mathbf{D}_a^+\\ -\mathbf{D}_a^* & \frac{\mathbf{u}^+}{c^2}\times\mathbf{H}_a^+\end{pmatrix}$$
$$\nabla\cdot\mathbf{D}_a^* = 4\pi G\rho_a \qquad 4\pi G\mathbf{J}_a^+ = \frac{\partial}{\partial t}\mathbf{D}_a^+ - \nabla\times\mathbf{H}_a^+$$

8. Cosmological Fields

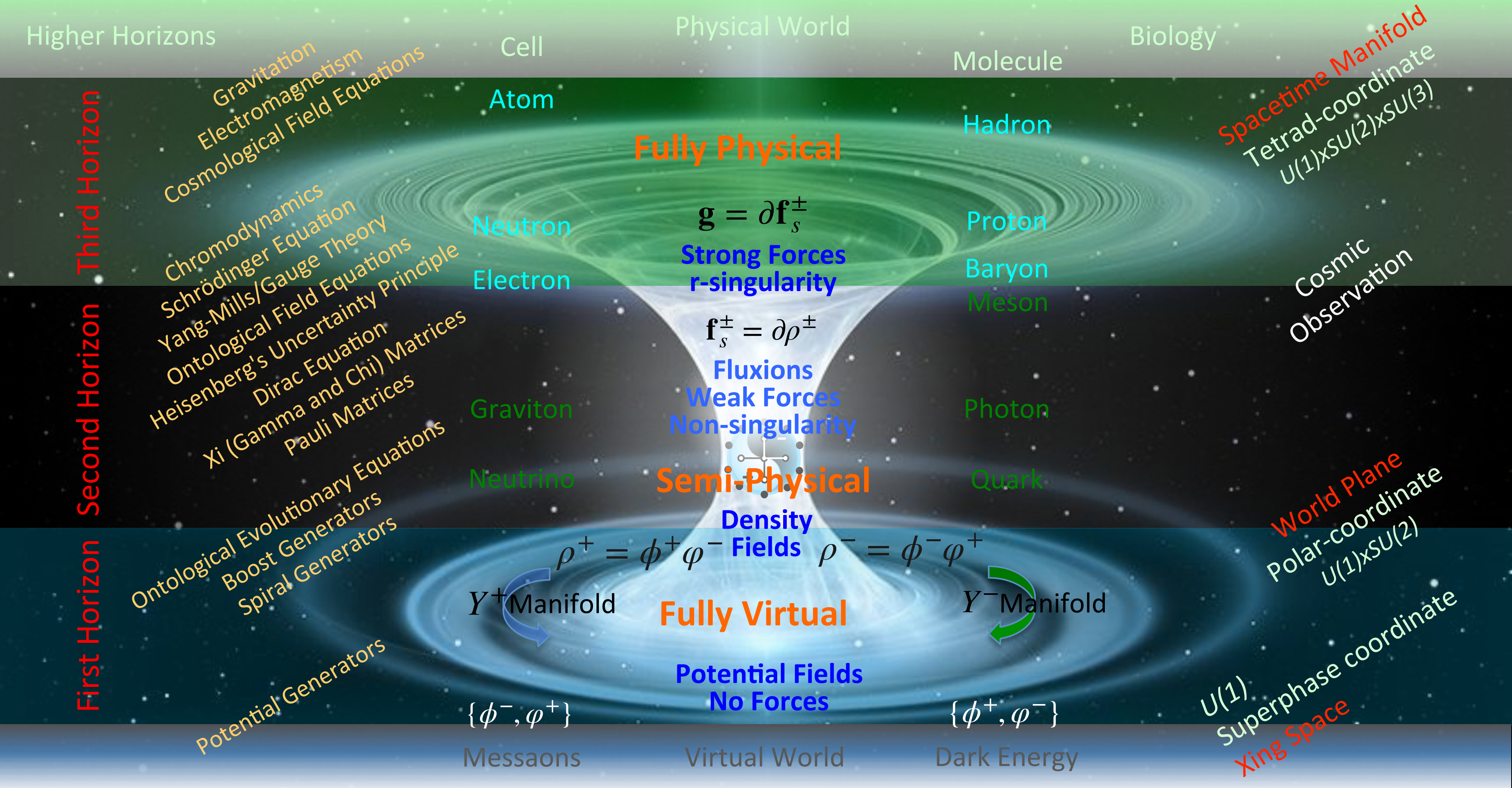
$$\mathfrak{R}^- + \mathbf{\Lambda}^+ = \frac{R}{2}\mathbf{g}^- + \mathbf{G} + \mathbf{C}^- \qquad \Lambda_{\nu\mu}^{+\sigma} = \Lambda_d^+ - \kappa_\Lambda^+\begin{pmatrix}-(\mathbf{u}^+\nabla)\cdot\mathbf{D}_\nu^*\\ \frac{\partial}{\partial t}\mathbf{D}_\nu^+ + \frac{\mathbf{u}^+}{c}\nabla\left(\frac{\mathbf{u}^+}{c}\times\mathbf{H}_\nu^+\right)\end{pmatrix}$$

9. Ontological Fields

$$\frac{R}{2}g_{\nu m} + G_{\nu m}^{-\sigma s} + \Theta_{\nu m}^{-\sigma s} = \mathcal{O}_{m\nu}^{+\zeta} \qquad \Theta_{\nu m}^{\pm\sigma s} = i\Xi_{\nu m}^{\pm} + i\frac{e}{\hbar}F_{\nu m}^{\pm} - i\eth_{m\nu}^{\pm s\sigma} - Ⓢ_{\nu m}^{\pm}$$

Universal Fields: Nine Sets of Essential Equations

Horizon Infrastructure of the Universe



Horizon Infrastructure of the Universe

Universal and Unified Fields (I) - Topology

Category	Classical and Contemporary Physics		Universal and Unified Field Theory		
Contents	Description	Formulations	Elevations	Formulations	References
Manifold Topology	*Minkowski Spacetime*	$\{\mathbf{r}-\mathbf{k}\}$ $\quad \mathbf{k} = \begin{cases} x_0 = -ct \\ x_0 = ct \end{cases}$	*Dual Manifolds*	$w^+ = r - ik = Re^{i\Omega}$ $\quad \{\mathbf{r} \pm i\,\mathbf{k}\}$ $\quad k = ic\lambda$ $w^- = r + ik = Re^{-i\Omega}$ $\quad R\sin\Omega = ic\lambda$	Eq. (1.6.1) Eq. (1.6.2)
Scalar Fields	*A Pair of Scalar Fields*	ϕ, ϕ^*	*Two Pairs of Scalar Fields*	$\psi^+ = \psi^+(\hat{x})\ exp[i\hat{\vartheta}(\lambda)]$ $\quad \psi^+ = \{\phi^+, \varphi^+\}$ $\psi^- = \psi^-(\check{x})\ exp[i\check{\vartheta}(\lambda)]$ $\quad \psi^- = \{\phi^-, \varphi^-\}$	Eq. (1.7.1) Eq. (1.7.2)
Math Framework	*Math Operators*	$\partial_m \in \{\partial_\kappa = \partial/\partial x_0, \partial_r = \nabla\}$	*(Boost and Torque) Event Operations*	$\hat{\partial}^\lambda\psi = \dot{x}^\mu X^{\nu\mu}\big(\partial^\nu - i\Theta^\mu(\lambda)\big)\psi$ $\quad X^{\nu\mu} = S_2^+ + R_2^+$ $\check{\partial}_\lambda\psi = \dot{x}_m X_{nm}\big(\partial_n + i\Theta_m(\lambda)\big)\psi$ $\quad X_{nm} = S_2^- + R_2^-$	Eq. (2.6.2) Eq. (2.6.3)
Scalar Transformation	*N/A*			$\hat{\partial}_\lambda\psi = \dot{x}_a X^\nu{}_a\big(\partial^\nu - i\Theta^\nu(\lambda)\big)\psi$ $\quad X_m{}^\alpha = S_1^- + R_1^-$ $\check{\partial}^\lambda\psi = \dot{x}^\alpha X_m{}^\alpha\big(\partial_m + i\Theta_m(\lambda)\big)\psi$ $\quad X^\nu{}_a = S_1^+ + R_1^+$	Eq. (2.6.5) Eq. (2.6.6)
Entangle Generators	*N/A*		*Boost /Torque Generators*	$S_2^+ = \frac{\partial x^\nu}{\partial x^\mu}$ $\quad S_2^- = \frac{\partial x_n}{\partial x_m}$ $\quad S_1^+ = \frac{\partial x^\nu}{\partial x_a}$ $\quad S_1^- = \frac{\partial x_m}{\partial x^\alpha}$ $R_2^+ = x^\mu\Gamma^+_{\nu\mu a}$ $\quad R_2^- = x_m\Gamma^-_{nma}$ $\quad R_1^+ = x^\mu\Gamma^{+\nu}_{\mu a}$ $\quad R_1^- = x_s\Gamma^{-m}_{s\alpha}$	Eq. (2.6.2)- Eq. (2.6.6)
Event Operations	*Loop Events*		*Yin Yang Operations*	$W^+ : (\hat{\partial}^{\lambda_1} \to \hat{\partial}_{\lambda_2}), (\check{\partial}^{\lambda_2} \to \check{\partial}_{\lambda_3})$ $W^- : (\check{\partial}_{\lambda_1} \to \check{\partial}^{\lambda_2}), (\hat{\partial}^{\lambda_2} \to \hat{\partial}_{\lambda_3})$	Fig. 2.6 Eq. (2.6.1)
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*	$\check{\partial}^-(\frac{\partial W}{\partial(\hat{\partial}^+\phi)}) - \frac{\partial W}{\partial\phi} = 0$ $\quad \hat{\partial}^+(\frac{\partial W}{\partial(\check{\partial}^-\phi)}) - \frac{\partial W}{\partial\phi} = 0$	Eq. (2.5.1) Eq. (2.5.2)
Event Evolutions	*N/A*		*Event Sequence*	$f(\lambda) = f(\lambda_0) + f'(\lambda_0)(\lambda-\lambda_0)\cdots + f^n(\lambda_0)(\lambda-\lambda_0)^n/n!$	Eq. (1.8.1)
Generic Equations	*Lagrangians*	$\mathscr{L}(\varphi, \nabla\varphi, \partial\varphi/\partial t, \mathbf{x}, t)$	*World Equations*	$\hat{W}_n = \psi_n^+(\lambda,\hat{x})\psi_n^-(\lambda,\check{x})$ $\psi_n^\mp(\lambda,x) = \big(1 \pm \tilde{\kappa}_1\dot{\partial}_{\lambda_1} \pm \tilde{\kappa}_2\dot{\partial}_{\lambda_2}\dot{\partial}_{\lambda_1}\ \cdots\big)\psi_n^\mp(\lambda,x)\rvert_{\lambda=\lambda_0}$	Eq. (2.4.1) Eq. (2.4.2)
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. (1.8.10a)
	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. (2.8.21a)
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. (2.8.21b)
	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. (1.8.10b)

Universal and Unified Fields (II) – Quantum Fields

Category	Classical and Contemporary Physics		Universal and Unified Field Theory		
Contents	Description	Formulations	Elevations	Formulations	References
General Quantum Equations (First Universal Field Equations)	*Operators*	$\hat{\mathbf{p}} = -i\hbar\nabla \qquad \hat{E} = i\hbar\partial/\partial t$		$\frac{-\hbar^2}{2E_n^+}\hat{\partial}_\lambda\hat{\partial}_\lambda\phi_n^+ - \frac{\hbar}{2}\left(\hat{\partial}_\lambda - \check{\partial}^\lambda\right)\phi_n^+ + \frac{\hbar^2}{2E_n^+}\check{\partial}_\lambda\left(\hat{\partial}_\lambda - \check{\partial}^\lambda\right)\phi_n^+ = \frac{W_n^+}{c^2}\phi_n^+$	Eq. (3.6.1)
	N/A			$\frac{\hbar^2}{2E_n^-}\check{\partial}^\lambda\check{\partial}^\lambda\varphi_n^- - \frac{\hbar}{2}\left(\check{\partial}^\lambda - \hat{\partial}_\lambda\right)\varphi_n^- + \frac{\hbar^2}{2E_n^-}\left(\check{\partial}_\lambda - \hat{\partial}_\lambda\right)\check{\partial}^\lambda\varphi_n^- = \frac{W_n^-}{c^2}\varphi_n^-$	Eq. (3.6.2)
	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. (3.6.4)
	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. (3.6.5)
Dynamic Equations	*Lagrangians*	$\mathscr{L}(\varphi, \nabla\varphi, \partial\varphi/\partial t, \mathbf{x}, t)$	*Yin Yang Lagrangians*	$\tilde{\mathscr{L}}_L^\pm = -\frac{1}{c^2}\left[\hat{\partial}^\lambda\hat{\partial}^\lambda, \check{\partial}_\lambda\check{\partial}_\lambda\right]_x^\pm$ $\tilde{\mathscr{L}}_I^\pm = -\frac{1}{c^2}\left[\hat{\partial}_\lambda\hat{\partial}_\lambda, \check{\partial}^\lambda\check{\partial}^\lambda\right]_x^\pm$	Eq. (2.2.7) Eq. (2.2.8)
Mass Energy	*Einstein Equation*	$E = mc^2$	*Virtual Duality*	$E_n^\mp = \pm\, i m c^2$	Eq. (1.4.1)
Generators	*N/A*		*Boost*	$s_\kappa = \left[\begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix}_0, \begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}_1, \begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix}_2, \begin{pmatrix}-1 & 0\\ 0 & 1\end{pmatrix}_3\right]$	Eq. (3.2.5)
	N/A		*Spiral*	$\epsilon_\kappa = \left[\begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}_0, \begin{pmatrix}0 & 0\\ 0 & -1\end{pmatrix}_1, \begin{pmatrix}0 & 0\\ 0 & 1\end{pmatrix}_2, \frac{1}{\tilde{r}^2}\begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}_3\right]$	Eq. (3.3.7)
	Pauli Matrix	$\sigma_\kappa = \left[\begin{pmatrix}1 & 0\\ 0 & 1\end{pmatrix}_0, \begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}_1, \begin{pmatrix}0 & -i\\ i & 0\end{pmatrix}_2, \begin{pmatrix}1 & 0\\ 0 & -1\end{pmatrix}_3\right]$		*Derived the Same*	Eq. (3.2.7)
Relativistic Wave Equation	*Dirac Equation*	$\left(i\hbar\gamma^\nu\partial^\nu - mc\right)\varphi_n^- = 0$	*Generator Fields*	$\frac{\hbar}{2}\left(\dot{x}_\nu\zeta_\mu D_\nu - \dot{x}^\mu\zeta^\mu D^\mu\right)\psi_n^\pm \mp E_n^\pm\psi_n^\pm = 0$	Eq. (3.8.1)
Spinor Fields	*Pauli Equation*	$i\hbar\frac{\partial}{\partial t}\lvert\psi\rangle = \left\{\frac{1}{2m}\left(\mathbf{p} - e\mathbf{A}\right)^2 - \frac{e\hbar}{2m}\boldsymbol{\sigma}\cdot\mathbf{B} + \tilde{V}\right\}\lvert\psi\rangle \equiv \check{H}\lvert\psi\rangle$	*Spinor Fields*	*Derived the Same*	Eq. (3.10.6)
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. (3.9.4)
Energy-Momentum	*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 Propagation*	$-\frac{1}{c^2}\frac{\partial^2\Phi_n^-}{\partial t^2} + \nabla^2\Phi_n^- = 4\frac{E_n^- E_n^+}{(\hbar c)^2}\Phi_n^-$	Eq. (4.4.3)
Mass Acquisition	*N/A*		*YinYang Density*	$\phi_0^- = 2\left(\frac{m\omega}{\pi\hbar}\right)^{3/4} e^{-\frac{m\omega}{2\hbar}r_s^2} \qquad \varphi_0^+ = \left(\frac{m\omega}{\pi\hbar}\right)^{1/4} e^{-\frac{m\omega r_w^2}{2\hbar}}$	Eq. (3.12.7)
Speed of Energy	*Light*	c	*Photon* *Graviton*	$C_{rr}^\pm = ce^{\mp i\vartheta} \qquad G_{\nu\mu}^- = c_g\begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}e^{i\vartheta}$	Eq. (3.14.4) Eq. (3.15.4)

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Universal and Unified Fields (III) – Force Unification

Category	Classical and Contemporary Physics		Universal and Unified Field Theory		
Contents	Description	Formulations	Elevations	Formulations	References
General Equations	*N/A*		*Lagrangians*	$\hat{W}_n = \psi^+\psi^- + k_J J_s + k_\wedge\left(\hat{\partial}\psi^+\right) \wedge \left(\check{\partial}\psi^-\right)$	Eq. (7.2.1)
	N/A		*Yin Field Evolutions*	$\check{\partial} = \dot{x}_\nu\zeta_\nu D_\nu = \dot{x}_\nu\zeta_\nu\partial_\nu + i\dot{x}_\nu\zeta_\nu\left(\frac{e}{\hbar}A_\nu + \frac{1}{2}F_{\nu\mu}^{+n} + \cdots\right)$	Eq. (7.1.5)
	N/A		*Yang Field Evolutions*	$\hat{\partial} = \dot{x}^\nu\dot{\zeta}^\nu D^\nu = \dot{x}^\nu\zeta^\nu\partial^\nu - i\dot{x}^\nu\zeta^\nu\left(\frac{e}{\hbar}A^\nu + \frac{1}{2}F_{\nu\mu}^{-n} + \cdots\right)$	Eq. (7.1.6)
Breaking Invariance	*Spontaneous Symmetry Breaking*	$\check{\partial}_\lambda \mapsto c\,D_\nu$ $\tilde{\rho}_n \mapsto \psi_n^\pm \mp \sqrt{\lambda_0}\,D^\nu\psi_n^\pm/m$	*Triple-Entangle Explicit Fields*	$\mathscr{L}_{ST}^{SU3} = \kappa_f\left(\lambda_0(\partial^\nu\varphi_b^+)(\partial_\nu\phi_a^-) - m^+m^-\phi_{bc}^2 + \lambda_2\phi_{bc}^2\phi_{ca}^2\right)$	Eq. (7.7.4)
	Gauge Invariance	$F_{\nu\mu}^a = \partial_\nu A_\mu^a - \partial_\mu A_\nu^a + g\,f^{abc}A_\nu^b A_\mu^c$	*Double-Loop Invariance*	$\mathscr{L}_F(\gamma) = i\frac{e}{\hbar}\left[\gamma_\mu\partial_\mu(\gamma^\nu A_a^\nu), \gamma^\nu\partial^\nu(\gamma_\mu A_\mu^a)\right]^- - \frac{e^2}{\hbar^2}\left(\gamma_\mu A_\mu^b\gamma^\nu A_c^\nu\right)$	Eq. (7.4.1)
QED + QCD + Standard Model	*Yang-Mills Theory*	$\mathscr{L}_{\text{gf}} = \frac{-1}{2}\,\text{Tr}(F^2) = \frac{-1}{4}F^{a\mu\nu}F_{\mu\nu}^a$	*Dual States of Triplet Quarks*	$\mathscr{L}_M(\gamma) \approx -\frac{1}{4}\left(\gamma^\nu F_{\nu\mu}^{+n}\gamma_\mu F_{\mu\nu}^{-n}\right)_{jk} = -\frac{1}{4}F_{\nu\mu}^{+j}F_{\mu\nu}^{-k}$	Eq. (7.3.2)
	Weak Fields	$\hat{\mathscr{L}}_{WF} = \bar{\psi}_n\left(i\hbar\gamma_\nu D_\nu - m\right)\varphi_n^- - \frac{1}{4}\hat{W}_{\nu\mu}^{-n}\hat{W}_{\nu\mu}^{+n} - \frac{1}{4}\hat{F}_{\nu\mu}^{-n}\hat{F}_{\nu\mu}^{+n}$			Eq. (7.3.3)
	Gauge Forces	$\hat{\mathscr{L}}_{SD} = \bar{\psi}_n\left(i\hbar\gamma_\nu D_\nu - m\right)\varphi_n^- - \frac{1}{4}G_{\nu\mu}^n G_{\nu\mu}^n + \hat{\mathscr{L}}_{CP}$		$G_{\nu\mu}^a = i\frac{e}{\hbar}\left[\chi_\mu\partial_\mu(\chi^\nu A_a^\nu), \chi^\nu\partial^\nu(\chi_\mu A_\mu^a)\right]^- - \frac{e^2}{\hbar^2}\left(\chi_\mu A_\mu^b\chi^\nu A_c^\nu\right)$	Eq. (7.5.1) Eq. (7.5.2)
	Field Interactions	$\hat{\mathscr{L}}_{CP} = -\bar{\psi}_n\gamma^\mu\left(g_1\frac{1}{2}Y_W B_\mu + g_2\frac{1}{2}\sigma_\nu W_{\nu\mu} + g_3\frac{1}{2}\lambda_a G_\nu^a\right)\varphi_n^-$		$\hat{\partial} \wedge \check{\partial} = \dot{x}^\mu\dot{x}_\nu\left(\hat{D}\cdot\check{D} + i\zeta^\mu\cdot\hat{D}\times\check{D}\right)$	Eq. (7.5.5)
	Strong Forces	$\check{\mathscr{L}}_{Force}^{-SU2} \propto 4\frac{E_n^-E_n^+}{(\hbar c)^2}\Phi_n^+\Phi_n^- \mapsto$		$\mathscr{L}_{ST}^{SU3} = \kappa_f\left(\lambda_0(\partial^\nu\varphi_b^+)(\partial_\nu\phi_a^-) - m^+m^-\phi_{bc}^2 + \lambda_2\phi_{bc}^2\phi_{ca}^2\right)$	Eq. (7.7.4)

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Universal and Unified Fields (IV) – Electromagnetism

Category	Classical and Contemporary Physics		Universal and Unified Field Theory		
Contents	Description	Formulations	Elevations	Formulations	References
Electromagnetic Fields	*Continuity*	$c\partial_\nu F^{\nu\mu} = j^\mu$ $j^\mu = ec\bar{\phi}\gamma^\mu\partial_\nu\varphi$	*Yin Continuity*	$-\frac{\hbar c}{2E^+}\left\langle \check{\partial}_\lambda\left(\hat{\partial}_\lambda - \check{\partial}^\lambda\right)\right\rangle_\nu^+ = c\check{\partial}_\lambda \mathbf{F}^+$	Eq. (10.2)
	Lorenz Gauge	$-\frac{1}{c^2}\frac{\partial^2 A_\nu^+}{\partial t^2} + \nabla^2 A_\nu^+ = \frac{e}{c}\bar{\phi}_n\gamma^\nu\hat{\partial}^\lambda\varphi_n^-$	*Conservation of Yang Fluxion*	$\check{\partial}_\lambda\hat{\partial}^\lambda A_\nu^+ = \check{\partial}_\lambda\hat{F}_{\nu\mu}^{-n}$	Eq. (10.13)
	Magnetic Flux	$\nabla\cdot\mathbf{B}_q = 0$	*Yin Continuity*	$(\mathbf{u}\nabla)\cdot\mathbf{B}_q^- = 0$	Eq. (5.5.8)
	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. (5.5.9)
	Electric Flux	$\nabla\cdot\mathbf{D}_q = \rho_q$	*Yang Continuity*	$(\mathbf{u}\nabla)\cdot\mathbf{D}_q^+ = \mathbf{u}\rho_q$	Eq. (5.5.10)
	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. (5.5.11)
	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. (5.4.7)
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. (4.6.2)
	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. (4.6.5)
Conservation of Light	*Constant Speed*	c	*YinYang Boost Entanglements*	*Law of Conservation of Light*	Ch 4, Sec 7

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Universal and Unified Fields (V) – Gravitation

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. (5.7.1)
		$\frac{\partial \mathbf{\Omega}}{\partial t} + \nabla \times \mathbf{\Gamma} = 0$		$\frac{\partial}{\partial t}\mathbf{B}_g^- + \left(\frac{\mathbf{u}_g}{c_g}\nabla\right) \times \mathbf{E}_g^- = 0$	Eq. (5.7.2)
		$\nabla \cdot \mathbf{\Gamma} = -4\pi G\rho$	*Conservation of Yang Fluxion*	$\mathbf{u}_g \nabla \cdot \mathbf{D}_g^+ = -4\pi G \mathbf{u}_g \rho_g$	Eq. (5.7.3)
		$\nabla \times \mathbf{\Omega} = \frac{1}{c_g^2}\left(-4\pi G\mathbf{J} + \frac{\partial \mathbf{\Gamma}}{\partial t}\right)$		$\frac{\mathbf{u}_g \cdot \mathbf{u}_g}{c^2}\nabla \times \mathbf{H}_g^+ - \left(\frac{c_g}{c}\right)^2 \frac{\partial \mathbf{D}_g^+}{\partial t} = -4\pi G\mathbf{J}_g + \mathbf{H}_g^+ \cdot \left(\frac{\mathbf{u}_g}{c}\nabla\right) \times \frac{\mathbf{u}_g}{c}$	Eq. (5.7.4)
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. (5.4.8)
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 (4.4.3)
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. (4.8.1)
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. (4.8.3)
Conservation of Gravitation	*N/A*		*Law of Conservation*	*Law of Conservation of Gravitation*	Ch. 4 Sec. 9
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. (5.7.6)

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Universal and Unified Fields (VI) – Symmetric Fields

Category	Classical and Contemporary Physics		Universal and Unified Field Theory		
General Equations	*N/A*		*Second Universal Field Equations*	$\dot{\partial}_\lambda \mathbf{f}_\nu^+ = \langle W_0^+ \rangle - \kappa_1 \left[\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\right]_\nu^+ + \kappa_2 \left\langle \check{\partial}_{\lambda_3}\left(\hat{\partial}_{\lambda_2} - \check{\partial}^{\lambda_2}\right)\right\rangle_\nu^+$	Eq. (5.2.2)
	N/A			$\dot{\partial}_\lambda \mathbf{f}_\nu^- = \langle W_0^- \rangle + \kappa_1 \left[\check{\partial}_{\lambda_1} - \hat{\partial}^{\lambda_1}\right]_\nu^- + \kappa_2 \left\langle \check{\partial}_{\lambda_1}\left(\hat{\partial}^{\lambda_2} - \check{\partial}^{\lambda_2}\right)\right\rangle_\nu^-$	Eq. (5.2.3)
Symmetric Commutation	*Commutator, Anti-commutator*	$[A_1, A_2] \quad \langle A_1, A_2 \rangle$	*Commutator and Density Fluxion*	$[\ \ ]^\mp \qquad \langle\ \ \rangle^\mp$	Eq. (2.7.1)- Eq. (2.7.8)
Asymmetric Commutation	*Quantum State*	$\langle m \vert \lambda \vert n \rangle$	*Asymmetry & Anti-asymmetry*	$\langle \dot{\lambda})^\pm = \varphi_n^\mp \dot{\lambda} \phi_n^\pm \qquad (\dot{\lambda} \rangle^\pm = \phi_n^\pm \dot{\lambda} \varphi_n^\mp$	Eq. (2.7.6)- Eq. (2.7.8)
Field Entanglements	*The 4-potential*	$\partial_\nu D_\mu - \partial_\mu D_\nu$	*Boost Generator*	$T_{\nu\mu}^{-n}(L) = \left(L_{\nu\mu}^- \partial_\nu A_\mu - L_{\mu\nu}^+ \partial^\mu A^\nu\right)_n$	Eq. (3.11.6)
	N/A		*Torque Generator*	$\Upsilon_{\nu\mu}^{-n}(L) = \left(L_{\nu\mu}^- \partial_\nu V_\mu - L_{\mu\nu}^+ \partial^\mu V^\nu\right)_n$	Eq. (3.11.7)
General Symmetric Dynamics	*N/A*		*Boost Transform and Spiral Transport*	$\nabla \cdot \mathbf{B}_s^- = 0^+ \qquad \mathbf{B}_s^- = \mathbf{B}_q^- + \eta \mathbf{B}_g^- \qquad \eta = c_g / c$	Eq. (5.5.4)
	N/A			$\nabla \cdot \mathbf{D}_s^+ = \rho_q - 4\pi G \eta \rho_g \qquad \mathbf{D}_s^+ = \mathbf{D}_q^+ + \eta \mathbf{D}_g^+$	Eq. (5.5.5)
	N/A			$\frac{\partial \mathbf{B}_s^-}{\partial t} + \nabla \times \mathbf{E}_s^- = 0^+ \qquad \mathbf{E}_s^- = \mathbf{E}_q^- + \eta \mathbf{E}_g^-$	Eq. (5.5.6)
	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. (5.5.7)
	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. (5.4.5)
	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. (5.4.6)
Thermo-Dynamics	*Boltzmann Distribution*	$p_n^\pm = \frac{h_n^\pm}{\sum h_m} = \frac{e^{i\beta E_n}}{Z} \quad Z \equiv \sum_m e^{i\beta E_m}$	*Horizon Factor*	$h_n^\pm = \frac{N_n^\pm}{N} = \frac{1}{e^{\pm\beta E_n^\pm} + 1}$	Eq. (4.10.7)
	Thermal Eq.	$dS = \frac{1}{T}\left(dE + PdV - \sum_n \mu_n dN_n^\pm\right)$	*Maximum Yin Supremacy*	$d\rho_E^- = T d\rho_s^- + \sum_i \mu_i d\rho_{n_i}^-$	Eq. (4.1.4)
			Minimum Yang Supremacy	$P + \rho_E^+ = T\rho_s^+ + \sum_i \mu_i \rho_{n_i}^+$	Eq. (4.1.5)
	Bloch Density Equations	$-i\frac{\partial \rho^-}{\partial \beta} = \hat{H}\rho^- \quad -h_\beta \frac{\partial^2 \rho}{\partial \beta^2} = \hat{H}\rho$	*Density of Yang Supremacy*	*Derived the Same*	Eq. (4.1.6)

Universal and Unified Fields (VII) – Asymmetric Fields

Category	Contemporary Physics		Universal and Unified Field Theory		
General Asymmetric Equations	*N/A*		*Third Universal Field Equations*	$\mathbf{g}_a^-/\kappa_g^- = \left[\check{\partial}^\lambda\check{\partial}^\lambda, \hat{\partial}_\lambda\hat{\partial}_\lambda\right]_x^+ + \zeta^+ \quad \zeta^+ = \left(\hat{\partial}_{\lambda_2}\check{\partial}^{\lambda_2} - \hat{\partial}_{\lambda_2}\check{\partial}_{\lambda_3}\right\rangle^+$ $\mathbf{g}_a^+/\kappa_g^+ = \left[\check{\partial}_\lambda\check{\partial}_\lambda, \hat{\partial}^\lambda\hat{\partial}^\lambda\right]_x^- + \zeta^- \quad \zeta^- = \left(\check{\partial}^{\lambda_2}\hat{\partial}^{\lambda_1} - \hat{\partial}^{\lambda_2}\check{\partial}_{\lambda_1}\right\rangle^-$	Eq. (2.10.1) Eq. (2.10.2)
Scalar Commutation	*Stress Tensor*	$G^\mu_{\nu\sigma} \equiv \overset{-}{\Gamma}{}^\mu_{\sigma n}\partial_\nu - \overset{+}{\Gamma}{}^\mu_{\sigma\nu}\partial_n$	*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. (6.5.5) Eq. (6.5.8)
Vector Commutation	*Riemannian Ricci Tensors*	$R^\mu_{n\nu\sigma} \quad R_{n\nu} = \frac{1}{2}g_{n\nu}R$	*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. (6.6.7)
Ontology of Cosmic Fields and Modulators (World Planes 2-Dimensions)	*N/A*		*Yin Cosmic Fields*	$\frac{R}{2}g_{\nu m} + G^{\sigma s}_{\nu m} = \mathcal{O}^{+\sigma}_{\nu m} \quad \mathcal{O}^{+\sigma}_{\nu\mu} = \mathcal{O}^+_d - \kappa^+_o\left(\partial^t \quad \mathbf{u}^+\nabla\right)\begin{pmatrix} 0 & \mathbf{D}^+_a \\ -\mathbf{D}^*_a & \frac{\mathbf{u}^+}{c^2}\times\mathbf{H}^+_a \end{pmatrix}$	Eq. (6.9.5) Eq. (6.9.7)
	N/A		*Yang Comic Fields*	$\tilde{R}^{\nu m} + \tilde{G}^{\sigma s}_{\nu m} = \mathcal{O}^{-\sigma}_{\nu m} \quad \mathcal{O}^{-\sigma}_{\nu m} = \mathcal{O}^-_d - \kappa^-_o\left(\partial^t \quad \mathbf{u}^-\nabla\right)\begin{pmatrix} 0 & \mathbf{B}^-_a \\ -\mathbf{B}^*_a & \frac{\check{\mathbf{b}}}{c}\times\mathbf{E}^-_a \end{pmatrix}$	Eq. (6.9.6) Eq. (6.9.8)
	N/A		*Ontological Fields*	$\frac{R}{2}g_{\nu m} + G^{-\sigma s}_{\nu m} + \Theta^{-\sigma s}_{\nu m} = \mathcal{O}^{+\zeta}_{m\nu}$	Eq. (7.8.12)
	N/A		*Ontological Modulators*	$\Theta^{\pm\sigma s}_{\nu m} = i\Xi^\pm_{\nu m} + i\frac{e}{\hbar}F^\pm_{\nu m} - i\eth^{\pm s\sigma}_{m\nu} - Ⓢ^\pm_{\nu m}$	Eq. (7.8.7)
	N/A		*Acceleration*	$\mathbf{g}_s^-/\kappa_g^- = \left[\check{\partial}^\lambda\check{\partial}^\lambda, \hat{\partial}_\lambda\hat{\partial}_\lambda\right]_s^- - \mathbf{O}^+$	Eq. (6.11.1)
Cosmology (Spacetime 4-Dimensions)	*General Relativity*	$R_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{R}{2}g_{\mu\nu} + G_{\mu\nu}$	*Yin Fields*	$\mathscr{R}^{-\sigma}_{\nu ms} + \Lambda^{+\sigma}_{\nu m} = \frac{R}{2}g_{\nu m} + G^{s\sigma}_{\nu m} + C^{s\sigma}_{\nu m}$	Eq. (6.12.4)
	Cosmological Constant	Λ	*Off-diagonal Modulator*	$\Lambda^{+\sigma}_{\nu\mu} = \Lambda^+_d - \kappa^+_\Lambda\begin{pmatrix} -(\mathbf{u}^+\nabla)\cdot\mathbf{D}^*_v \\ \frac{\partial}{\partial t}\mathbf{D}^+_v + \frac{\mathbf{u}^+}{c}\nabla\left(\frac{\mathbf{u}^+}{c}\times\mathbf{H}^+_v\right) \end{pmatrix}$	Eq. (6.12.3)
	Horizon Equations			$3H_2^2 + 3\frac{kc^2}{a^2} = c^2\Lambda^+_{tt} + 4\pi G\rho \quad H_2 = \frac{\dot{a}}{a} \quad H_3 = \frac{\ddot{a}}{\dot{a}} \quad \rho = 2\rho_0 + \rho_{tt} \quad p = 2p_0 + \frac{1}{3}p_{rr} \quad \nabla\cdot\mathbf{D}^*_v = 4\pi G\rho_v$ $3H_2H_3 = c^2\Lambda^+_{rr} - \frac{4\pi G}{c^2}(\rho c^2 + 3p) \quad p_v = p_{tt} + p_{rr} = c^2Tr(\mathbf{J}^+_v) \quad \frac{\partial}{\partial t}\mathbf{D}^+_v - \nabla\times\mathbf{H}^+_v = 4\pi G\mathbf{J}^+_v$	Eq. (6.14.5)-Eq. (6.14.10)
	N/A		*Cosmic Emissions*	$\nabla^2\psi_n - \frac{1}{c^2}\frac{\partial^2}{\partial t^2} = 4\frac{E^-_nE^+_n}{(\hbar c)^2}N^c_n\eta_n\psi_n$	Eq. (6.15.1)
	N/A		*Acceleration*	$\mathbf{g}_v^-/\kappa_g^- = \left[\check{\partial}^\lambda\check{\partial}^\lambda, \hat{\partial}_\lambda\hat{\partial}_\lambda\right]_v^- - \mathbf{\Lambda}^+$	Eq. (6.13.3)

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Worldline Cosmic Fields

$$\mathcal{O}^{+\sigma}_{\nu\mu} = \mathcal{O}^{+}_{d} - \kappa^{+}_{o}\begin{pmatrix} -(\mathbf{u}^{+}\nabla)\cdot\mathbf{D}^{*}_{a} \\ \frac{\partial}{\partial t}\mathbf{D}^{+}_{a} + \frac{\mathbf{u}^{+}}{c}\nabla\left(\frac{\mathbf{u}^{+}}{c}\times\mathbf{H}^{+}_{a}\right)\end{pmatrix}$$

$$\frac{R}{2}\mathbf{g}^{+} + \mathbf{G} = \mathbf{O}^{-}$$

$$4\pi G\mathbf{J}^{+}_{a} = \frac{\partial}{\partial t}\mathbf{D}^{+}_{a} - \nabla\times\mathbf{H}^{+}_{a}$$

$$\frac{\ddot{a}}{a} + \left(\frac{\dot{a}}{a}\right)^{2} + \frac{kc^{2}}{a^{2}} = \mathcal{O}^{+}_{d} + \frac{4\pi G}{c^{2}}(\rho c^{2} - p)$$

$$\rho_{a} = \frac{1}{4\pi G}\nabla\cdot\mathbf{D}^{*}_{a} \qquad p_{a} = c^{2}Tr(\mathbf{J}^{+}_{a})$$

$$\rho = 2\rho_{0} + \rho_{a} \qquad p = 2p_{0} + p_{a}$$

$$\psi_{n} \in \{\varphi^{-}_{n}, \phi^{+}_{n}\}$$

$$E^{\mp}_{m} = \pm imc^{2} \qquad \eta_{m} = 66.6\,\%$$

$$E^{\pm}_{c} = \mp\frac{i}{2}\hbar\omega_{c} \qquad \eta_{c} = 2/\pi = 63.7\,\%$$

$$\eta_{g} = 100\,\% \qquad E^{\pm}_{g} = \mp\frac{i}{2}E_{p} \qquad E_{p} = \sqrt{\hbar c^{5}_{g}/G}$$

$$\eta_{e} = \pi^{-3} = 3.2\,\% \qquad E^{\pm}_{e} = \mp\frac{i}{2}\hbar\omega_{e}$$

$$Tr(\mathcal{O}^{-}_{d}) = \left[S_{A}(T,\omega_{c})N^{\pm}_{n} + S_{A}(T,\omega_{g})N\right]$$

$$N^{c}_{n} = h^{c}_{n}N = \frac{1}{e^{iE^{c}_{n}/k_{B}T} + 1}N$$

$$\nabla^{2}\psi_{n} - \frac{1}{c^{2}}\frac{\partial^{2}}{\partial t^{2}}\psi_{n} = 4\frac{E^{-}_{n}E^{+}_{n}}{(\hbar c)^{2}}N^{c}_{n}\eta_{n}\psi_{n}$$

$$-i\hbar\frac{\partial}{\partial t}\psi_{n} = -i\frac{(\hbar c)^{2}}{2E^{-}_{n}}\nabla^{2}\psi_{n} + V(r,\vartheta)\psi_{n}$$

$$\frac{\hbar}{2}\left(\dot{x}_{\nu}\zeta_{\mu}D_{\nu} - \dot{x}^{\mu}\zeta^{\mu}D^{\mu}\right)\psi^{\pm}_{n} \mp E^{\pm}_{n}\psi^{\pm}_{n} = 0$$

$$ict = r\cos(\vartheta) \qquad \nabla^{2} = \frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial}{\partial r}\right) + \frac{1}{r^{2}}\frac{\partial^{2}}{\partial\vartheta^{2}}$$

Superphase Propagation of Non-dispersive Wave Packets

Worldline Cosmology

Spacetime Asymmetric Fields

$$3H_2^2 + 3\frac{kc^2}{a^2} = c^2\Lambda^+_{tt} + 4\pi G\rho$$

$$\mathfrak{R}^- + \mathbf{\Lambda}^+ = \frac{R}{2}\mathbf{g}^- + \mathbf{G} + \mathbf{C}^-$$

$$\Lambda^{+\sigma}_{\nu\mu} = \Lambda^+_d - \kappa^+_\Lambda \begin{pmatrix} -(\mathbf{u}^+\nabla)\cdot\mathbf{D}^*_v \\ \frac{\partial}{\partial t}\mathbf{D}^+_v + \frac{\mathbf{u}^+}{c}\nabla\left(\frac{\mathbf{u}^+}{c}\times\mathbf{H}^+_v\right) \end{pmatrix}$$

$$3H_2H_3 = c^2\Lambda^+_{rr} - \frac{4\pi G}{c^2}(\rho c^2 + 3p)$$

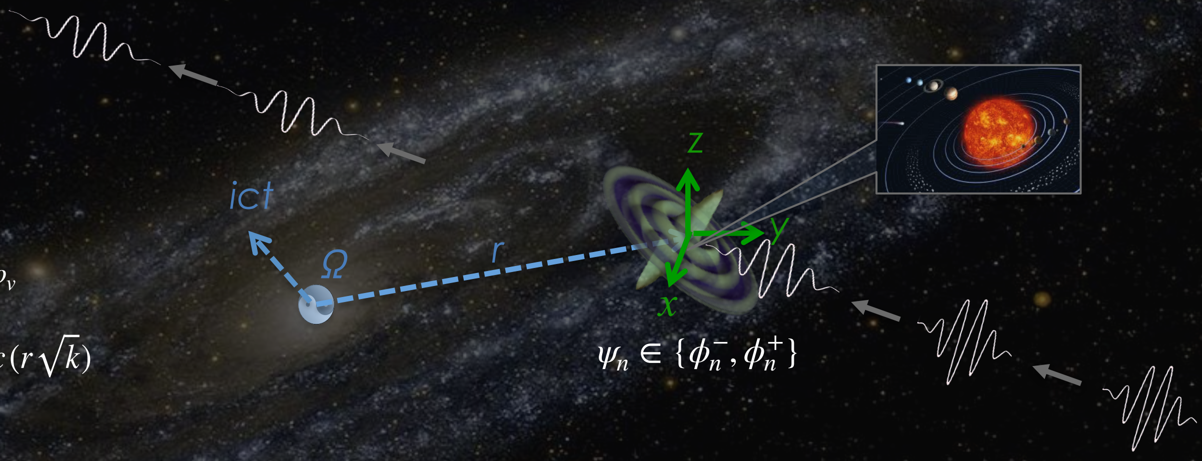
$$\rho = 2\rho_0 + \rho_{tt} \qquad p = 2p_0 + \frac{1}{3}p_{rr}$$

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

$$\frac{\partial}{\partial t}\mathbf{D}^+_v - \nabla\times\mathbf{H}^+_v = 4\pi G\mathbf{J}^+_v \qquad \nabla\cdot\mathbf{D}^*_v = 4\pi G\rho_v$$

$$\mathrm{d}\Sigma^2 = \mathrm{d}r^2 + S_k(r)^2\,\mathrm{d}\vartheta^2 \qquad S_k(r) = sinc(r\sqrt{k})$$

$$\mathrm{d}\vartheta^2 = \mathrm{d}\theta^2 + \sin^2\theta\,\mathrm{d}\phi^2$$



$$\psi_n \in \{\phi^-_n, \phi^+_n\}$$

$$\tilde E^{\pm} = \pm\, iE^{\pm}_n\left(\frac{1}{2} + \frac{1}{e^{\pm iE^{\pm}_n/k_BT} - 1}\right)$$

$$\nabla^2\psi_n - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\psi_n = 4\frac{E^-_nE^+_n}{(\hbar c)^2}N^c_n\eta_n\psi_n$$

$$\hat H \equiv -\,i\frac{(\hbar c)^2}{2E^-_n}\nabla^2 + V(\mathbf{r},t)$$

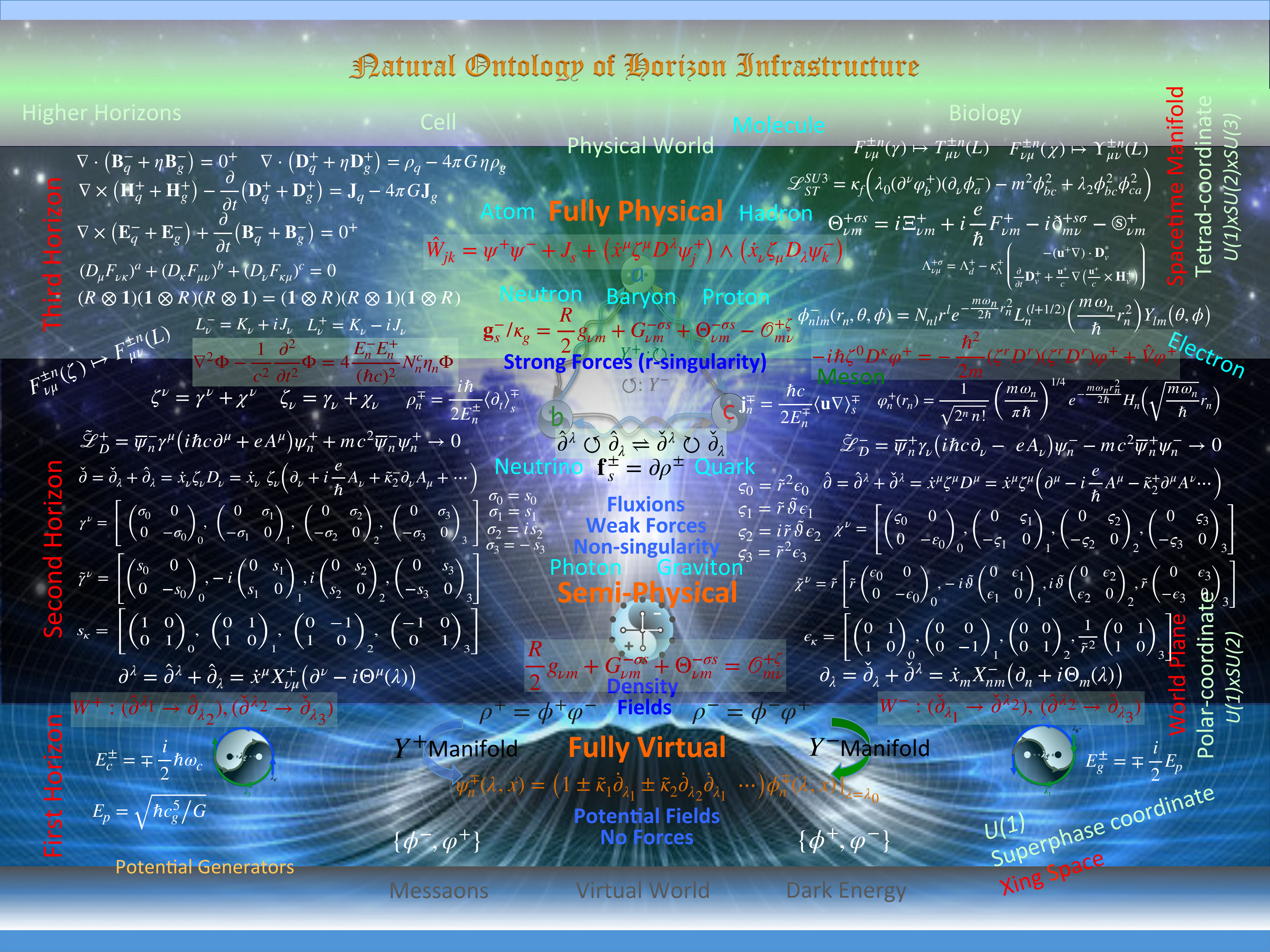
$$\nabla^2 = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} + \frac{\partial^2}{\partial z^2}$$

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

$$\nabla^2 = \frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2\frac{\partial}{\partial r}\right) + \frac{1}{r^2\sin\theta}\frac{\partial}{\partial\theta}\left(\sin\theta\frac{\partial}{\partial\theta}\right) + \frac{1}{r^2\sin^2\theta}\frac{\partial^2}{\partial\varphi^2}$$

Propagation of Dispersive Wave Packets

Spacetime Cosmology



Natural Ontology of Horizon Infrastructure
Higher Horizons
Cell
Molecule
Biology
Physical World
Third Horizon
$\nabla \cdot (\mathbf{B}_q^- + \eta \mathbf{B}_g^-) = 0^+ \quad \nabla \cdot (\mathbf{D}_q^+ + \eta \mathbf{D}_g^+) = \rho_q - 4\pi G \eta \rho_g$
$\nabla \times (\mathbf{H}_q^+ + \mathbf{H}_g^+) - \frac{\partial}{\partial t}(\mathbf{D}_q^+ + \mathbf{D}_g^+) = \mathbf{J}_q - 4\pi G \mathbf{J}_g$
$\nabla \times (\mathbf{E}_q^- + \mathbf{E}_g^-) + \frac{\partial}{\partial t}(\mathbf{B}_q^- + \mathbf{B}_g^-) = 0^+$
$(D_\mu F_{\nu\kappa})^a + (D_\kappa F_{\mu\nu})^b + (D_\nu F_{\kappa\mu})^c = 0$
$(R \otimes \mathbf{1})(\mathbf{1} \otimes R)(R \otimes \mathbf{1}) = (\mathbf{1} \otimes R)(R \otimes \mathbf{1})(\mathbf{1} \otimes R)$
$L_\nu^- = K_\nu + iJ_\nu \quad L_\nu^+ = K_\nu - iJ_\nu$
$F_{\nu\mu}^{\pm n}(\zeta) \mapsto F_{\mu\nu}^{\pm n}(L)$
$\nabla^2 \Phi - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\Phi = 4\frac{E_n^- E_n^+}{(\hbar c)^2} N_n^c \eta_n \Phi$
$\zeta^\nu = \gamma^\nu + \chi^\nu \quad \zeta_\nu = \gamma_\nu + \chi_\nu \quad \rho_n^\mp = \frac{i\hbar}{2E_n^\mp}\langle \partial_t \rangle_s^\mp$
$F_{\nu\mu}^{\pm n}(\gamma) \mapsto T_{\mu\nu}^{\pm n}(L) \quad F_{\nu\mu}^{\pm n}(\chi) \mapsto \Upsilon_{\mu\nu}^{\pm n}(L)$
$\mathscr{L}_{ST}^{SU3} = \kappa_f \left(\lambda_0 (\partial^\nu \varphi_b^+)(\partial_\nu \phi_a^-) - m^2 \phi_{bc}^2 + \lambda_2 \phi_{bc}^2 \phi_{ca}^2 \right)$
$\Theta_{\nu m}^{+\sigma s} = i\Xi_{\nu m}^+ + i\frac{e}{\hbar}F_{\nu m}^+ - i\eth_{m\nu}^{+s\sigma} - \circledS_{\nu m}^+$
$\Lambda_{\nu\mu}^{+\sigma} = \Lambda_d^+ - \kappa_\Lambda^+ \begin{pmatrix} -(\mathbf{u}^+ \nabla) \cdot \mathbf{D}_\nu^* \\ \frac{\partial}{\partial t}\mathbf{D}_\nu^+ + \frac{\mathbf{u}^+}{c}\nabla\left(\frac{\mathbf{u}^+}{c} \times \mathbf{H}_\nu^+\right) \end{pmatrix}$
$\phi_{nlm}^-(r_n, \theta, \phi) = N_{nl} r^l e^{-\frac{m\omega_n}{2\hbar}r_n^2} L_n^{(l+1/2)}\left(\frac{m\omega_n}{\hbar}r_n^2\right) Y_{lm}(\theta, \phi)$
$-i\hbar\zeta^0 D^\kappa \varphi^+ = -\frac{\hbar^2}{2m}(\zeta^r D^r)(\zeta^r D^r)\varphi^+ + \hat{V}\varphi^+$
Spacetime Manifold
Tetrad-coordinate
U(1)xSU(2)xSU(3)
Atom
Fully Physical
Hadron
$\hat{W}_{jk} = \psi^+ \psi^- + J_s + (\dot{x}^\mu \zeta^\mu D^\lambda \psi_j^+) \wedge (\dot{x}_\nu \zeta_\mu D_\lambda \psi_k^-)$
a
Neutron
Baryon
Proton
$\mathbf{g}_s^- / \kappa_g = \frac{R}{2} g_{\nu m} + G_{\nu m}^{-\sigma s} + \Theta_{\nu m}^{-\sigma s} - \mathscr{O}_{m\nu}^{+\zeta}$
Strong Forces (r-singularity)
$\circlearrowleft : Y^-$
Electron
Meson
b
c
$\mathbf{j}_n^\mp = \frac{\hbar c}{2E_n^\mp}\langle \mathbf{u}\nabla \rangle_s^\mp \quad \varphi_n^+(r_n) = \frac{1}{\sqrt{2^n n!}}\left(\frac{m\omega_n}{\pi\hbar}\right)^{1/4} e^{-\frac{m\omega_n r_n^2}{2\hbar}} H_n\left(\sqrt{\frac{m\omega_n}{\hbar}} r_n\right)$
$\hat{\partial}^\lambda \circlearrowleft \hat{\partial}_\lambda \rightleftharpoons \check{\partial}^\lambda \circlearrowright \check{\partial}_\lambda$
Second Horizon
$\tilde{\mathscr{L}}_D^+ = \overline{\psi}_n^- \gamma^\mu (i\hbar c \partial^\mu + eA^\mu)\psi_n^+ + mc^2 \overline{\psi}_n^- \psi_n^+ \to 0$
$\tilde{\mathscr{L}}_D^- = \overline{\psi}_n^+ \gamma_\nu (i\hbar c \partial_\nu - eA_\nu)\psi_n^- - mc^2 \overline{\psi}_n^+ \psi_n^- \to 0$
Neutrino
$\mathbf{f}_s^\pm = \partial \rho^\pm$
Quark
$\check{\partial} = \check{\partial}_\lambda + \hat{\partial}_\lambda = \dot{x}_\nu \zeta_\nu D_\nu = \dot{x}_\nu \zeta_\nu \left(\partial_\nu + i\frac{e}{\hbar}A_\nu + \tilde{\kappa}_2^- \partial_\nu A_\mu + \cdots\right)$
$\hat{\partial} = \hat{\partial}^\lambda + \check{\partial}^\lambda = \dot{x}^\mu \zeta^\mu D^\mu = \dot{x}^\mu \zeta^\mu \left(\partial^\mu - i\frac{e}{\hbar}A^\mu - \tilde{\kappa}_2^+ \partial^\mu A^\nu \cdots\right)$
$\sigma_0 = s_0 \quad \sigma_1 = s_1 \quad \sigma_2 = is_2 \quad \sigma_3 = -s_3$
$\varsigma_0 = \tilde{r}^2 \epsilon_0 \quad \varsigma_1 = \tilde{r}\tilde{\vartheta}\epsilon_1 \quad \varsigma_2 = i\tilde{r}\tilde{\vartheta}\epsilon_2 \quad \varsigma_3 = \tilde{r}^2 \epsilon_3$
Fluxions
Weak Forces
Non-singularity
Photon
Graviton
$\gamma^\nu = \left[\begin{pmatrix} \sigma_0 & 0 \\ 0 & -\sigma_0 \end{pmatrix}_0, \begin{pmatrix} 0 & \sigma_1 \\ -\sigma_1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & \sigma_2 \\ -\sigma_2 & 0 \end{pmatrix}_2, \begin{pmatrix} 0 & \sigma_3 \\ -\sigma_3 & 0 \end{pmatrix}_3 \right]$
$\chi^\nu = \left[\begin{pmatrix} \varsigma_0 & 0 \\ 0 & -\varepsilon_0 \end{pmatrix}_0, \begin{pmatrix} 0 & \varsigma_1 \\ -\varsigma_1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & \varsigma_2 \\ -\varsigma_2 & 0 \end{pmatrix}_2, \begin{pmatrix} 0 & \varsigma_3 \\ -\varsigma_3 & 0 \end{pmatrix}_3 \right]$
$\tilde{\gamma}^\nu = \left[\begin{pmatrix} s_0 & 0 \\ 0 & -s_0 \end{pmatrix}_0, -i\begin{pmatrix} 0 & s_1 \\ s_1 & 0 \end{pmatrix}_1, i\begin{pmatrix} 0 & s_2 \\ s_2 & 0 \end{pmatrix}_2, \begin{pmatrix} 0 & s_3 \\ -s_3 & 0 \end{pmatrix}_3 \right]$
$\tilde{\chi}^\nu = \tilde{r}\left[\tilde{r}\begin{pmatrix} \epsilon_0 & 0 \\ 0 & -\epsilon_0 \end{pmatrix}_0, -i\tilde{\vartheta}\begin{pmatrix} 0 & \epsilon_1 \\ \epsilon_1 & 0 \end{pmatrix}_1, i\tilde{\vartheta}\begin{pmatrix} 0 & \epsilon_2 \\ \epsilon_2 & 0 \end{pmatrix}_2, \tilde{r}\begin{pmatrix} 0 & \epsilon_3 \\ -\epsilon_3 & 0 \end{pmatrix}_3 \right]$
Semi-Physical
$s_\kappa = \left[\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}_0, \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_1, \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}_2, \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}_3 \right]$
$\epsilon_\kappa = \left[\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_0, \begin{pmatrix} 0 & 0 \\ 0 & -1 \end{pmatrix}_1, \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix}_2, \frac{1}{\tilde{r}^2}\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}_3 \right]$
$\frac{R}{2} g_{\nu m} + G_{\nu m}^{-\sigma s} + \Theta_{\nu m}^{-\sigma s} = \mathscr{O}_{m\nu}^{+\zeta}$
World Plane
Polar-coordinate
U(1)xSU(2)
$\partial^\lambda = \hat{\partial}^\lambda + \hat{\partial}_\lambda = \dot{x}^\mu X_{\nu\mu}^+ (\partial^\nu - i\Theta^\mu(\lambda))$
$\partial_\lambda = \check{\partial}_\lambda + \check{\partial}^\lambda = \dot{x}_m X_{nm}^- (\partial_n + i\Theta_m(\lambda))$
Density
Fields
$W^+ : (\hat{\partial}^{\lambda_1} \to \hat{\partial}_{\lambda_2}), (\check{\partial}^{\lambda_2} \to \check{\partial}_{\lambda_3})$
$W^- : (\check{\partial}_{\lambda_1} \to \check{\partial}^{\lambda_2}), (\hat{\partial}^{\lambda_2} \to \hat{\partial}_{\lambda_3})$
$\rho^+ = \phi^+ \varphi^- \quad \rho^- = \phi^- \varphi^+$
First Horizon
$E_c^\pm = \mp \frac{i}{2}\hbar\omega_c$
Y^+ Manifold
Fully Virtual
Y^- Manifold
$E_g^\pm = \mp \frac{i}{2} E_p$
$\psi_n^\mp(\lambda, x) = (1 \pm \tilde{\kappa}_1 \dot{\partial}_{\lambda_1} \pm \tilde{\kappa}_2 \dot{\partial}_{\lambda_2} \dot{\partial}_{\lambda_1} \cdots)\phi_n^\mp(\lambda, x)|_{\lambda=\lambda_0}$
$E_p = \sqrt{\hbar c_g^5 / G}$
Potential Fields
No Forces
$\{\phi^-, \varphi^+\}$
$\{\phi^+, \varphi^-\}$
U(1)
Superphase coordinate
Xing Space
Potential Generators
Messaons
Virtual World
Dark Energy

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 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 groundbreakings 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.

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References

Missions Impossible

Return to Scientific Future

A branch of sciences in dialectics of virtual and physical existences

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Virtumanity