《Universal and Unified Field Theory》

4. General Asymmetric Fields of Ontology and Cosmology

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Abstract: By discovering *Asymmetric World Equations*, this manuscript formulates astonishing results: the *Third Universal Field Equations,* which produce a consequence of the laws of asymmetric conservations and commutations, and characterize universal evolutions of *Ontology* and *Cosmology* as the following remarks:

a) *Asymmetric Flux Commutations and General Relativity*
   Interpret the asymmetric entangling commutation and *General Relativity*.

b) *Animation and Reproduction of Physical Ontology*
   Reveal the law of asymmetric conservation of scalar entangling commutation of the physical supremacy.

c) *Creation and Annihilation of Virtual Ontology*
   Decipher the law of asymmetric conservation of scalar entangling commutation of the virtual supremacy.

d) *Motion Dynamics of Cosmology*
   Reveal the law of asymmetric conservation of vector entangling commutation of the physical supremacy.

e) *Field Equations of Cosmology*
   Decipher the law of asymmetric conservation of vector entangling commutation of the virtual supremacy.

Finally, the philosophical terminology is outlined as the inspirational highlights of "*Universal and Unified Field Theory".*

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INTRODUCTION

In reality, the laws of nature strike an aesthetically harmony of duality not only between Y^-Y^+ symmetries, but also between symmetry and asymmetry. Because of the Y^-Y^+ duality, a symmetric system naturally consists of asymmetric ingredients or asymmetric constituents. Symmetry that exists in one horizon can be cohesively asymmetric in the other simultaneously without breaking its original ground symmetric system that coexists with its reciprocal opponents. An universe finely tuned, almost to absurdity is a miracle of asymmetry and symmetry together that give rise to the next horizon where a new symmetry is advanced and composed at another level of consistency and perpetuation. Similar to the Y^-Y^+ flux commutation and continuities of potential densities, a duality of symmetry and asymmetry represents the cohesive and progressive evolutions aligning with the working of the topological hierarchy of our nature.

The scope of this manuscript is where, based on *universal symmetry*, a set of formulae is constituted of, given rise to and conserved for ontological and cosmological horizons asymmetrically. Through the performances of the Y^-Y^+ symmetric actions, laws of conservation and continuity determine the asymmetric properties of interruptive transformations, dynamic transportations, entangle commutations, photon and graviton fields of *Ontology* and *Cosmology*.

17. ASYMMETRIC WORLD EQUATION

Asymmetry is an event process capable of occurring at a different perspective to its symmetric counterpart. The natural characteristics of the Y^-Y^+ asymmetry have the following basic properties:

1) Associated with its opponent potentials of scalar or vector fields, an asymmetric system is a dark fluxion flowing dominantly in one direction without its mirroring or equivalent fluxion from the other.
2) Asymmetry is a part of components to the symmetric fluxions of the underlining transform and transport infrastructure cohesively and persistently aligning with its systematic symmetry.
3) As a duality of asymmetry, the Y^- or Y^+ anti-asymmetry is another part of components for the dual asymmetric fluxions of the base infrastructure consistently aligning with the underlying Y^- or Y^+ symmetry.
4) Both of the Y^- and Y^+ asymmetries have the laws of conservation consistently and perpetually, that orchestrate their respective continuity locally and harmonize each other's movements externally in progressing towards the next level of symmetry.

The *World Equations* of (5.7) [1] can be updated and generalized in term of a pair of the Y^- and Y^+ asymmetric fields, vector fields, matrix fields, and higher orders of the tensor fields, shown straightforwardly as:

$$W_b = W_0^{\pm} + \sum_n h_n \left\{ \kappa_1 \big(\dot{\partial}_{\lambda 1}\big\rangle^{\pm} + \kappa_2 \dot{\partial}_{\lambda_2} \big(\dot{\partial}_{\lambda 1}\big\rangle_s^{\pm} + \kappa_3 \dot{\partial}_{\lambda_3} \big(\dot{\partial}_{\lambda 2}\big\rangle_v^{\pm} \cdots \right\} \quad (17.1)$$

where κ_n is the coefficient of each order n of the λ^n event. The symbol $(\ \rangle^{\mp}$ implies asymmetry of a Y^--supremacy or a Y^+-supremacy with the lower index $(\ \rangle_s^{\mp}$ for scalar fields, $(\ \rangle_v^{\mp}$ for vector fields and $(\ \rangle_M^{\mp}$ for matrix tensors. Because the above equations constitute a pair of the scalar density fields: $\varrho_\phi^{\pm} = \phi^{\pm}\ \varphi^{\mp}$ as one-way fluxion density without a symmetric engagement from its reciprocal pair, they define the density fields as Y^--asymmetry or Y^+-asymmetry, respectively.

For the asymmetric acceleration forces, the underlying system of the symmetric commutations and continuities do not change, but the motion dynamics in the world planes as a whole changes. In this view, the Y^-Y^- entanglements are independent at "internal" primacy during their formations, and their expressions can be formulated by (11.3-11.6) the asymmetric brackets [3]:

$$\big(\dot{\partial}_\lambda\big\rangle_s^{+} \equiv \psi_n^{+} \dot{\partial}_\lambda \psi_n^{-}, \qquad \big(\dot{\partial}_\lambda\big\rangle_s^{-} \equiv \psi_n^{-} \dot{\partial}_\lambda \psi_n^{+} \quad (17.2)$$

$$\big(\dot{\partial}_\lambda\big\rangle_v^{+} \equiv \psi_n^{+} \dot{\partial}_\lambda V_n^{-}, \qquad \big(\dot{\partial}_\lambda\big\rangle_v^{-} \equiv \psi_n^{-} \dot{\partial}_\lambda V_n^{+} \quad (17.3)$$

Obviously, asymmetry occurs when a fluxion flows without a correspondence to its mirroring opponent. In fact, as a one-way steaming of supremacy, an Y^- or Y^+ asymmetric fluxion is always consisted of, balanced with, and conserved by its conjugate potentials as a reciprocal opponent.

Since they are a part of the symmetric components, such fluxions not only are stable and consistent but also can dictate its own system's fate by determining its motion dynamics taken in a world plane. Therefore, the two entanglers have the freedom to control each of their own operations, asynchronously, independently and cohesively - another stunning example of the workings of the remarkable nature of our universe.

XVIII. FLUX COMMUTATION

For asymmetric fluxions, the entangling invariance requires that their fluxions are either conserved at motion acceleration or maintained by reactive forces. Normally, the divergence of Y^- fluxion is conserved by the virtual forces 0^+ and the divergence of Y^+ fluxion is balanced by physical dynamic curvatures. Together, they maintain each other's conservations and commutations cohesively and complementarily.

Under the environment of both Y^-Y^+ manifolds for a duality of fields, the event λ initiates its parallel transport, communicates along a direction with the first tangent vectors of each Y^+ and Y^- curvatures. Following the tangent curvature, the event λ operates the effects transporting $(\check{\partial}^\lambda, \hat{\partial}_\lambda)$ into its opponent manifold through the second tangent vectors of each curvature, known as *Normal Curvature or* perpendicular to the fist tangent vectors. The scalar communicates are defined by the *Commutator Bracket* $[\ ]^{\mp}_{\phi}$ of equations (11.3-11.4) [3].

As the horizon quantity of an object, a vector field forms and projects its motion potentials to its surrounding space, arisen by or acting on its opponent through a duality of reciprocal interactions. Because of the vector transport, both of the boost and spiral communications give rise to various tensors of the horizon fields aligned with the motions of dynamic curvatures and beyond. When an object has a rotation on the antisymmetric manifolds of the world $\{\mathbf{r} \pm i\,\mathbf{k}\}$ planes, the event naturally operates, constitutes or generates *Torsions*, balancing on the dual dynamic resources and appearing as the centrifugal or Coriolis forces on the objects such as particles, earth, and solar system. At the third horizon, acting upon the vector fields of $V^\mu = \partial^\mu \psi$ and $\dot{x}^\nu = \dot{x}_a J^+_{\nu a}$ or $V_m = \partial_m \psi$ and $\dot{x}_n = \dot{x}^\alpha J^-_{n\alpha}$, the event operates and gives rise to the tangent curvature $\dot{x}^\nu \partial^\nu$ and $\dot{x}_\nu \partial_\nu$, and vector rotations $\dot{x}_n \bar{\Gamma}^{m}_{sn} \dot{x}_s$ and $\dot{x}_n \bar{\Gamma}^{m}_{sn} \dot{x}_s$. The vector communicates are defined by the commutation of equations (11.5-11.6) [3].

Artifact 18.1: Scalar Commutation. Entangling between Y^-Y^+ manifolds, considering the parallel transport of a *Scalar* density of the fields $\rho{=}\phi^+\varphi^-$ around an infinitesimal parallelogram such that the first step along a direction with vector $\hat{\partial}^{\lambda_1}$ under potential ϕ^+, simultaneously followed by a step along a direction with tangent $\hat{\partial}^{\lambda_2}$, and then back parallel to the first curve $\check{\partial}_{\lambda_1}$ under potential φ^- and finally back along the second curve $\check{\partial}_{\lambda_2}$. The chain of this reaction can be interpreted by (3.11)-(3.12) [1] and formulated as the following:

$$\varphi^- \hat{\partial}^{\lambda_2}(\hat{\partial}^{\lambda_1}\phi^+) = \varphi^- \left((\dot{x}^\nu \partial^\nu)(\dot{x}^m \partial^m) + \dot{x}^\nu \overset{+}{\Gamma}{}^{m}_{\sigma\nu} \dot{x}^\sigma \partial^\sigma \right) \phi^+ \tag{18.1}$$

$$\phi^+ \check{\partial}_{\lambda_2}(\check{\partial}_{\lambda_1}\varphi^-) = \phi^+ \left((\dot{x}_\nu \partial_\nu)(\dot{x}_m \partial_m) + \dot{x}_\nu \overset{-}{\Gamma}{}^{m}_{s\nu} \dot{x}_s \partial_s \right) \varphi^- \tag{18.2}$$

Subtracting the two equations, it expresses an entangle commutation, called the Y^+ *Scalar Commutation of Spiral Entanglement*:

$$\left[\hat{\partial}^\lambda \hat{\partial}^\lambda, \check{\partial}_\lambda \check{\partial}_\lambda\right]^+_s = \dot{x}_\nu \dot{x}_m \Big(\frac{R}{2} g^{\nu m} + G^{\nu m}_\sigma\Big) \qquad : R^{\nu m} = \frac{R}{2} g^{\nu m} \tag{18.3}$$

$$R^{\nu m} \equiv \varphi^- \frac{(\dot{x}^\nu \partial^\nu)(\dot{x}^m \partial^m)}{\dot{x}^\nu \dot{x}^m} \phi^+ - \phi^+ \frac{(\dot{x}_\nu \partial_\nu)(\dot{x}_m \partial_m)}{\dot{x}^\nu \dot{x}^m} \varphi^- \tag{18.4}$$

$$G^{m\nu}_\sigma \equiv \varphi^- \frac{\dot{x}^\nu \hat{\Gamma}{}^{+m}_{\sigma\nu} \dot{x}^\sigma \partial^\sigma}{\dot{x}^\nu \dot{x}^m} \phi^+ - \phi^+ \frac{\dot{x}_\nu \overset{-}{\Gamma}{}^{m}_{s\nu} \dot{x}_s \partial_s}{\dot{x}^\nu \dot{x}^m} \varphi^- \tag{18.5}$$

where $g^{\mu\nu} = (\mathbf{b}^\mu, \mathbf{b}^\nu)$ is Y^+ metric, $G^{\mu\nu}_\sigma$ is the Y^+ *Stress Tensor*, and the *Ricci* tensor R is defined on any pseudo-*Riemannian* manifold as a trace of the *Riemann* curvature tensor, introduced in 1889 [4]. Like the metric itself, the *Ricci* tensor is a symmetric bilinear form on the tangent space of the manifolds. Similarly, its reciprocal pair exists as the following:

$$\left[\check{\partial}_\lambda \check{\partial}_\lambda, \hat{\partial}^\lambda \hat{\partial}^\lambda\right]^-_s = \dot{x}_\nu \dot{x}_m \Big(\frac{R}{2} g_{\nu m} + G_{\nu m}\Big) \qquad : R_{\nu m} = \frac{R}{2} g_{\nu m} \tag{18.6}$$

Therefore, the stationary curvature measures how movements ($\dot{x}$ and $\ddot{x}$) under the Y^-Y^+ *Scalar Fields* $\{\phi^-, \varphi^+\}$ and $\{\phi^+, \varphi^-\}$ are balanced with the inherent stress $G^{\mu\nu}_\sigma$ during a parallel transport between the Y^-Y^+ manifolds. It represents the Y^-Y^+ *Scalar Commutation of Spiral Entanglement.*

Artifact 18.2: Vector Commutation. Vector communications under physical primacy generally involve both boost and spiral movements entangling between the Y^-Y^+ manifolds. Considering the parallel transport around an infinitesimal parallelogram under the dual *Vector* fields of V^μ and V_m, the entanglements have the first step projecting a direction with vector $\hat{\partial}_{\lambda_1}$ at a potential V^μ of Y^+ manifold, simultaneously followed by transforming $\check{\partial}^{\lambda_2}$ from its opponent Y^- manifold along a directional tangent at potential V_m of Y^- manifold, bi-directionally. Because of the transformations of $\dot{x}^\nu \mapsto \dot{x}_a J^+_{\nu a}$ and $\dot{x}_n \mapsto \dot{x}^\alpha J^-_{n\alpha}$, its entanglements of the expressions are given by (3.14, 3.16) [1] as the following formulae:

$$\begin{aligned}\left[\check{\partial}^\lambda \hat{\partial}_\lambda, \hat{\partial}_\lambda \check{\partial}^\lambda\right]^+_v &= \Big[V_m \dot{x}^\alpha J^-_{n\alpha}\Big(\partial_n + \overset{-}{\Gamma}{}^{m}_{an}\Big)\dot{x}_a J^+_{\nu a}\Big(\partial^\nu V^\mu + \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu} V^\sigma\Big)\,, \\ &\qquad V^\mu \dot{x}_a J^+_{\nu a}\Big(\partial^\nu + \overset{+}{\Gamma}{}^{\mu}_{\alpha\nu}\Big)\dot{x}^\alpha J^-_{n\alpha}\Big(\partial_n V_m + \overset{-}{\Gamma}{}^{m}_{sn} V_s\Big)\Big]^+ \\ &= \dot{x}_\nu \dot{x}_n \Big([P] + [R] + \big[G\big] + \big[C\big]\Big)\end{aligned} \tag{18.7}$$

$$[P] = \left[\frac{1}{\dot{x}_\nu \dot{x}_n}(\dot{x}^\alpha J^-_{n\alpha}\partial_n)(\dot{x}_a J^+_{\nu a}\partial^\nu),\ \frac{1}{\dot{x}_\nu \dot{x}_n}(\dot{x}_a J^+_{\nu a}\partial^\nu)(\dot{x}^\alpha J^-_{n\alpha}\partial_n)\right]^+_v \tag{18.8}$$

$$[R] = \left[\frac{\dot{x}^\alpha J^-_{n\alpha}}{\dot{x}_\nu \dot{x}_n}\partial_n(\dot{x}_a J^+_{\nu a}\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu} V^\sigma),\ \frac{\dot{x}_a J^+_{\nu a}}{\dot{x}_\nu \dot{x}_n}\partial^\nu(\dot{x}^\alpha J^-_{n\alpha}\overset{-}{\Gamma}{}^{m}_{sn} V_s)\right]^+_v \tag{18.9}$$

$$\big[G\big] = \left[\frac{1}{\dot{x}_\nu \dot{x}_n}\dot{x}^\alpha J^-_{n\alpha}\overset{-}{\Gamma}{}^{m}_{sn}\dot{x}_a J^+_{\nu a}\partial^\nu,\ \frac{1}{\dot{x}_\nu \dot{x}_n}\dot{x}_a J^+_{\nu a}\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\dot{x}^\alpha J^-_{n\alpha}\partial_n\right]^+_v \tag{18.10}$$

$$\big[C\big] = \left[\frac{1}{\dot{x}_\nu \dot{x}_n}\dot{x}^\alpha J^-_{n\alpha}\overset{-}{\Gamma}{}^{n}_{ms}\dot{x}_a J^+_{\nu a}\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu},\ \frac{1}{\dot{x}_\nu \dot{x}_n}\dot{x}_a J^+_{\nu a}\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\dot{x}^\alpha J^-_{n\alpha}\overset{-}{\Gamma}{}^{n}_{ms}\right]^+_v \tag{18.11}$$

where $[P]$ is defined as *Commutative Potential*, an entanglement capacity of the dark energies; $[R]$ a *Transport Curvature*, a routing track of the communications; $\big[G\big]$ as *Connection Torsion*, a stress energy of the transportations; and $\big[C\big]$ as *Entangle Connector,* a connection of dark energy commutations. Since the manifolds are associated with the *Commutative Potentials* $[P]$ bidirectionally, alternatively and simultaneously, exhibitions of the entanglements $[\check{\partial}^\lambda, \hat{\partial}_\lambda]$ must expose to the transport paths of the networking curvature $[R]$, connection torsions $\big[G\big]$, and transportation contortions $\big[C\big]$, regardless of which manifolds are aligned with or observed from for any field relationships of scalars, vectors, and tensors.

Artifact 18.3: Rotational Transport. Consider a point object observed externally such that the $J^\pm_{\nu m}$ has the diagonal effects only. Following the commutation infrastructure of the equation (18.7), the event operations contract directly to the manifold communications ($m = \mu$, $s = \sigma$), which result in each of the components in the forms of the following expressions:

$$[P] = \frac{1}{\dot{x}_\nu \dot{x}_n}\Big(V_m(\dot{x}^n \partial_n)(\dot{x}_\nu \partial^\nu)V^\mu - V^\mu(\dot{x}_\nu \partial^\nu)(\dot{x}^n \partial_n)V_m\Big) \tag{18.12}$$

$$[R] = V_m \frac{1}{\dot{x}_\nu}\partial_n\Big(\dot{x}_\nu \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu} V^\sigma\Big) - V^\mu \frac{1}{\dot{x}_n}\partial^\nu\Big(\dot{x}^n \overset{-}{\Gamma}{}^{m}_{sn} V_s\Big) \tag{18.13}$$

$$\big[G\big] = V_m \overset{-}{\Gamma}{}^{\mu}_{\sigma n}\partial^\nu V^\mu - V^\mu \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\partial_n V_m \tag{18.14}$$

$$\big[C\big] = \frac{1}{\dot{x}_\nu \dot{x}_n}\Big(V_m \dot{x}^n \overset{-}{\Gamma}{}^{n}_{ms}\dot{x}_\nu \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu} V^\sigma - V^\mu \dot{x}_\nu \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\dot{x}^n \overset{-}{\Gamma}{}^{n}_{ms} V_s\Big) \tag{18.15}$$

The first item carries out *Ricci* tensor $R_{\mu\kappa}$ and scalar R curvature.

$$[P] \mapsto R_{n\nu} = \frac{1}{2} g_{n\nu} R \tag{18.16}$$

The second item, $[R]$, composes *Riemannian* $R^\mu_{n\nu\sigma}$ geometry, developed in 1859 [4], which is defined as the *Transportation Curvature*:

$$[R] = -R^\mu_{n\nu\sigma} = \partial_\nu \overset{-}{\Gamma}{}^{\mu}_{a\sigma}\partial_a \overset{+}{\Gamma}{}^{\mu}_{\nu\sigma} + \overset{-}{\Gamma}{}^{\rho}_{a\sigma}\overset{+}{\Gamma}{}^{\mu}_{\nu\rho} - \overset{+}{\Gamma}{}^{\rho}_{\nu\sigma}\overset{-}{\Gamma}{}^{\mu}_{a\rho} \tag{18.17}$$

The third item embraces the energy torsion twisted and accentuated by the tangent vector fields of the rotational potentials $\overset{-}{\Gamma}{}^{\mu}_{\sigma n}\partial_n \psi$ and $\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\partial_\nu \psi$, known as *Stress Tensor*:

$$\big[G\big] \ \mapsto\ G^\mu_{n\nu\sigma} \equiv \overset{-}{\Gamma}{}^{\mu}_{\sigma n}\partial_\nu - \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\partial_n \tag{18.18}$$

The fourth item contains the spiral entanglements of a Y^-Y^+ connector, which is a continuum of the internal entanglements:

$$\big[C\big] \ \mapsto C^{n\mu}_{\nu\sigma} \equiv \overset{-}{\Gamma}{}^{n}_{m\sigma}\overset{+}{\Gamma}{}^{\mu}_{\sigma\nu} - \overset{+}{\Gamma}{}^{\mu}_{\sigma\nu}\overset{-}{\Gamma}{}^{n}_{m\sigma} \tag{18.19}$$

Therefore, under the transport infrastructure between the manifolds, the *Commutation* relations of equation (18.7) is simplified to the following:

$$\left[\hat{\partial}_\lambda\hat{\partial}_\lambda, \check{\partial}^\lambda\check{\partial}^\lambda\right]_v^+ = \dot{x}_n\dot{x}_\nu\left(\frac{R}{2}g_{n\nu} - R^\mu_{n\nu\sigma} + G^\mu_{n\nu\sigma} + C^{n\mu}_{\nu\sigma}\right) \tag{18.20}$$

More precisely, the event presence of the Y^-Y^+ dynamics manifests infrastructure foundations and transportations of the potential, curvature, stress, torsion, and contorsion, which give rise to the interactional entanglements through the center of an object by following its geodesics of the underlying virtual and physical commutations.

Artifact 18.4: General Relativity. Generally, transportations between Y^-Y^+ manifolds are conserved dynamically. However, if the commutations between the Y^-Y^+ manifolds were balanced at in a statically frozen or inanimate state, the above equation formulates *General Relativity*:

$$G_{n\nu} = R_{n\nu} - \frac{1}{2}R\,g_{n\nu} \qquad : \left[\hat{\partial}_\lambda\hat{\partial}_\lambda, \check{\partial}^\lambda\check{\partial}^\lambda\right]_v^+ = 0,\ C^n_\nu = 0 \tag{18.21}$$

where $g_{n\nu} = (\mathbf{b}_n, \mathbf{b}_\nu)$ is Y^- metric, the two-dimensions of the world line are aggregated in the expression $R^\mu_{n\nu\sigma} \mapsto R_{n\nu}$, $G^\mu_{n\nu\sigma} \mapsto G_{n\nu}$ and $C^{n\mu}_{\nu\sigma} \mapsto C^n_\nu$. This is known as the *Einstein* field equation [5], discovered in November 1915. The theory has been one of the most profound discoveries of modern physics to account for general commutation in the context of classical forces. For a century, however, the philosophical interpretation remained a challenge until this infrastructure was discovered in 2016.

Artifact 18.5: Contorsion Tensor. In 1955, *Einstein* stated that "...the essential achievement of general relativity, namely to overcome 'rigid' space (ie the inertial frame), is only indirectly connected with the introduction of a *Riemannian* metric. The directly relevant conceptual element is the 'displacement field' Γ^l_{ik}, which expresses the infinitesimal displacement of vectors. It is this which replaces the parallelism of spatially arbitrarily separated vectors fixed by the inertial frame (ie the equality of corresponding components) by an infinitesimal operation. This makes it possible to construct tensors by differentiation and hence to dispense with the introduction of 'rigid' space (the inertial frame). In the face of this, it seems to be of secondary importance in some sense that some particular Γ field can be deduced from a *Riemannian* metric..." [6]. In this special case, stress tensor $G_{n\nu}$ of an object vanishes from or immune to its external fields while its internal commutations conserve a contorsion tensor of $T^\mu_{\sigma\nu}$ as a part of the life entanglements:

$$T^\mu_{\sigma\nu} = \Gamma^{-\mu}_{\sigma\nu} - \Gamma^{+\mu}_{\sigma\nu} \qquad : G^\mu_{\nu\sigma} \mapsto T^\mu_{\sigma\nu}\partial_\nu = \left(\Gamma^{-\mu}_{\sigma\nu} - \Gamma^{+\mu}_{\sigma\nu}\right)\partial_\nu \tag{18.22}$$

This extends the meaning to and is known as *Élie Cartan Torsion*, proposed in 1922 [6]. Besides spin generators, this tensor carries out the additional degrees of freedom for internal communications.

XIX. THIRD UNIVERSAL FIELD EQUATIONS

From two pairs of the scalar fields, Asymmetric fluxions consist of and operate a pair of the commutative entanglements consistently and perpetually. Similar to the derivative of the formulae (12.2) and (12.4), the Y^-Y^+ acceleration fields contrive a pair of the following commutations:

$$\mathbf{g}^-_a/\kappa^-_g = \left[\check{\partial}_\lambda\hat{\partial}_\lambda, \hat{\partial}^\lambda\check{\partial}^\lambda\right]^- = \left[\frac{W_0}{\kappa_2}\right]^- - \zeta^- \quad : \zeta^- = \left(\hat{\partial}^\lambda\check{\partial}^\lambda - \hat{\partial}^\lambda\check{\partial}_\lambda\right\rangle^- \tag{19.1}$$

$$\mathbf{g}^+_a/\kappa^+_g = \left[\hat{\partial}_\lambda\check{\partial}_\lambda, \check{\partial}^\lambda\hat{\partial}^\lambda\right]^+ = \left[\frac{W_0}{\kappa_2}\right]^+ - \zeta^+ \quad : \zeta^+ = \left(\hat{\partial}_\lambda\check{\partial}^\lambda - \check{\partial}_\lambda\hat{\partial}_\lambda\right\rangle^+ \tag{19.2}$$

$$W_0^\pm = c^2E_0^\mp, \quad \kappa_2 = \pm\frac{(\hbar c)^2}{2E_n^\mp}, \quad \left[\frac{W_0}{\kappa_2}\right]^\mp = \pm\frac{4}{\hbar^2}E_0^+E_0^-\Phi^\mp \tag{19.3}$$

named as the *Third Universal Field Equations*, introduced at 2:00am September 3rd 2017 Metropolitan Area of *Washington, DC* USA. As general formulae for asymmetric entanglements $\zeta^\mp$, it is this pair of continuity of the Y^-Y^+ asymmetry that constitutes the laws of conservations universal to all types of Y^-Y^+ interactional motions, curvatures, dynamics, forces, accelerations, transformations, and transportations on the world line of the dual manifolds. Therefore, these two equations above outline and define the ***General Asymmetric Equations***.

Artifact 19.1: Conservation of Ontology. An *Ontology* is the living types, properties, and interrelationships of the natural entities that exist in a primary domain of being, becoming, existence, or reality, which compartmentalizes the informational discourse or theory required for sets of formulation and establishment of the relationships between creation and reproduction, and between animation and annihilation. The commutations are one of the interpretable and residual features exchanging the information carried by the scalar fields (19.1)-(19.2):

$$\left[\check{\partial}_\lambda\hat{\partial}_\lambda, \hat{\partial}^\lambda\check{\partial}^\lambda\right]^-_s = 4\frac{E_0^-E_0^+}{\hbar^2}\Phi^- - \left(\hat{\partial}^\lambda\check{\partial}^\lambda - \hat{\partial}^\lambda\check{\partial}_\lambda\right\rangle^-_s \qquad : \Phi^- = \phi^-\varphi^+ \tag{19.4}$$

$$\left[\hat{\partial}_\lambda\check{\partial}_\lambda, \check{\partial}^\lambda\hat{\partial}^\lambda\right]^+_s = -4\frac{E_0^+E_0^-}{\hbar^2}\Phi^+ - \left(\hat{\partial}_\lambda\check{\partial}^\lambda - \check{\partial}_\lambda\hat{\partial}_\lambda\right\rangle^+_s \quad : \Phi^+ = \phi^+\varphi^- \tag{19.5}$$

where the index s refers to the *scalar* potentials. The first equation is defined as ***Physical Animation and Reproduction of Ontology***, and the second equation as ***Virtual Creation and Annihilation of Ontology***. As a general expectation, the ontology features the *Residual Dynamics* and closely resembles the objects under a duality of the real world.

Artifact 19.3: Conservation of Cosmology. A *Cosmology* is the living behaviors, motion dynamics, and interrelationships of the large scale natural objects that exist in the evolution and eventual trends of the universe as a whole, which compartmentalizes the infrastructural discourse or theory required for sets of formulation and constitution of the relationships between motion and dynamics, and between universal conformity and hierarchy. The commutations are one of the interpretable features exchanging the curvature dynamics carried by the vector fields:

$$\left[\check{\partial}_\lambda\hat{\partial}_\lambda, \hat{\partial}^\lambda\check{\partial}^\lambda\right]^-_v = 4\frac{E_0^-E_0^+}{\hbar^2}\Phi^-_v - \left(\hat{\partial}^\lambda\check{\partial}^\lambda - \hat{\partial}^\lambda\check{\partial}_\lambda\right\rangle^-_v \qquad : \Phi^-_v = \phi^-_vV^+_v \tag{19.6}$$

$$\left[\hat{\partial}_\lambda\check{\partial}_\lambda, \check{\partial}^\lambda\hat{\partial}^\lambda\right]^+_v = -4\frac{E_0^+E_0^-}{\hbar^2}\Phi^+_v - \left(\hat{\partial}_\lambda\check{\partial}^\lambda - \check{\partial}_\lambda\hat{\partial}_\lambda\right\rangle^+_v \quad : \Phi^+_v = \phi^+_vV^-_v \tag{19.7}$$

where the index v refers to the *vector* potentials. The first equation is defined as ***Physical Dynamics of Cosmology***, and the second equation as ***Virtual Curvatures of Cosmology***.

For convenience of expression, it is articulated by each of four distinctive conceptions that deliver the *Laws of Conservation* and *Commutation Equations* characterizing universal evolutions as each of the above subjects, namely: i) *Physical Animation* and *Reproduction*, ii) *Virtual Creation* and *Annihilation*, iii) Cosmological Motion Dynamics, and iv) Cosmological Field Equations. A consequence of these laws of conservations and commutations is that the perpetual motions, transformations, or transportations on the world line curvatures can exist only if its motion dynamics of energies are conserved, or that, without virtual symmetric and asymmetric fluxions, no system can deliver unlimited time of movements throughout its surroundings.

XX. GENERAL ONTOLOGICAL EQUATIONS

With the scalar potentials, the Y^- events conjure up the entanglements of eternal fluxions as a perpetual streaming for residual motions traveling on curvatures of the world lines, which is the persistence of an object without deviation in its situation of movements at its state and energies. Classically, the term "residual" is described by or defined as: an object not subject to any net external forced moves at a constant energy on the world plane, which means that an object continues moving at its current state inertially until some interactions causes its state or energy to change. Illustrated by equations of (18.6), the equation (19.4) can now be fabricated in the covariant form as the following, and named as the Y^- *Ontological Equations*, representing *Physical Animation and Reproduction of Ontology*:

$$\dot{x}_\nu\dot{x}_m\left(\frac{R}{2}g_{\nu m} + G_{\nu m}\right) = 4\frac{E_0^-E_0^+}{\hbar^2}\Phi^-_s - \frac{E_n^-}{\hbar}\hat{\partial}^\lambda\left(\check{\mathcal{F}}^{+n}_{m\alpha}\right\rangle^-_\times - c^2\Delta^- \tag{20.1}$$

where Δ^- is defined by $\hat{\partial}^\lambda\left(\check{\mathcal{F}}^{+n}_{m\alpha}\right\rangle^-_d E^-_n/\hbar$, $\left(\check{\mathcal{F}}^{+n}_{m\alpha}\right\rangle^- = \check{F}^{+n}_{m\alpha} + \check{T}^{+n}_{m\alpha} \equiv \check{\mathcal{F}}^{+n}_{m\alpha}$ is given by (7.8, 7.14) [2], or $(\ \rangle_d$ indicates the off-diagonal or diagonal elements of the tensor.

In parallel fashion, the Y^+ events conjures up the entanglements of eternal fluxions as another perpetual streaming for transformations on the world-line curvatures. Transformation between the complex manifolds of the Y^-Y^+ world planes redefines the invariable quantities of how commutations between the dual spaces are entangled under the conjugation framework in two referential frames traveling at a consistent velocity with respect to one another. In the (9.1) derivation [2], we had a similar approach in the following expression

$$\phi_n^+\hat{\partial}_\lambda\check{\partial}^\lambda\varphi_n^- = \phi_n^+\hat{\partial}_\lambda(\overbrace{\varphi_n^- \curlyvee \phi_n^+\check{\partial}^\lambda\varphi_n^-}^{breaking}) \mapsto \hat{\mathcal{F}}_{\mu\nu}^{+n}\hat{\mathcal{F}}_{\mu\nu}^{-n} + \check{\partial}_\lambda\hat{\mathcal{F}}_{\mu\nu}^{-n} \quad (20.2)$$

where $\hat{\mathcal{F}}_{m\alpha}^{\mp n} \equiv \hat{F}_{m\alpha}^{\mp n} + \hat{T}_{m\alpha}^{\mp n}$ is given by (7.11, 7.17) [2]. The last term $\check{\partial}_\lambda\hat{\mathcal{F}}_{\mu\nu}^{-n}$ is a part of the horizon force that the spontaneous breaking $\hat{\partial}_\lambda\check{\partial}^\lambda \overset{\curlyvee}{\mapsto} \check{\partial}_\lambda\hat{\partial}_\lambda$ transforms the $\check{\partial}^\lambda$ action back to $\check{\partial}_\lambda$, which balances between (9.1) and (19.5) and appears vanished. Consequently, with (18.3, 20.2), the (19.5) can be compacted in the covariant formula:

$$\dot{x}^\nu\dot{x}^m\left(\frac{R}{2}g^{\nu m} + G^{\nu m}\right) = -4\frac{E_0^- E_0^+}{\hbar^2}\Phi_s^+ - \frac{E_n^+ E_n^-}{\hbar^2}\hat{\mathcal{F}}_{\nu m}^{+n}\hat{\mathcal{F}}_{\nu m}^{-n} \quad (20.3)$$

Apparently, after the breaking process, the last term is converted to and becomes symmetry. The above equation can be named as the Y^+ *Ontological Equations*, representing *Virtual Creation and Annihilation of Ontology*.

At $\lambda = t$, the scalar *Wave Equation* of photons and gravitons is given by the diagonal components $\Delta^- \equiv \check{\partial}^\lambda\left(\check{\mathcal{F}}_{m\alpha}^{+n}\right)_d^- E_n^-/\hbar$, observed externally as below:

$$\Delta^- \equiv -\frac{1}{c^2}\left\langle\hat{\partial}^\lambda\check{\partial}_\lambda\right\rangle^- = -\frac{1}{c^2}\left\langle\check{\partial}_\lambda\hat{\partial}^\lambda\right\rangle^- = \left\langle\nabla^2 - \frac{1}{c^2}\frac{\partial^2}{\partial t^2}\right\rangle^- \quad (20.4a)$$

$$\Delta^+ \equiv -\frac{1}{c^2}\left\langle\hat{\partial}^\lambda\right\rangle^+\left\langle\check{\partial}_\lambda\right\rangle^+ = \frac{1}{c^2}\left\langle\check{\partial}_\lambda\right\rangle^+\left\langle\check{\partial}_\lambda\right\rangle^+ = \frac{1}{c^2}\left\langle\hat{\partial}^\lambda\right\rangle^+\left\langle\hat{\partial}^\lambda\right\rangle^+ \quad (20.4b)$$

The first equation Δ^- defines a *Wave Function* observable under the Y^- supremacy, and the second Δ^+ determines an entangling action or *Activator* under the Y^+ supremacy. Both of them are a part of the transport characteristics, especially observed externally to the system.

Generally, the diagonal components describe: a) that the transformation process initiated from the Y^+ manifold are conserved and carried out by the virtual area intensity for creations and annihilations, which serves as *Law of Conservation of Ontology*, and b) that, in the world planes, the stationary curvature R and Y^+ stress tensor $\mathbf{G}^+$ are dynamically sustained in the asymmetric transformation over the transport movements. The effective potential Φ_s in virtual wave schema $\Delta^\pm$ generates the asymmetric fluxions between the dual manifolds at a horizon rising from commutations of scalar potentials during their Y^-Y^+ entanglements. Usually, this equation describes the outcomes observable externally to the system.

Likewise, the off-diagonal components are the world-line fluxions entangling the scalar potentials to produce the asymmetric internal fields, cohesively and consistently. The conservation of energy fluxions sustains the resources, modulates the transform and transports potential messages.

Artifact 20.1: Y^- ***Ontological Dynamics***. The field components of (20.1) can be translated to the matrix forms:

$$\tilde{\mathbf{u}}^-\left(\frac{R}{2}\mathbf{g}^- + \mathbf{G}^-\right)\tilde{\mathbf{u}}^- = 4\frac{E_0^+ E_0^-}{(\hbar c)^2}\Phi_s^- + \mathbf{\Lambda}_s^- - \Delta_s^- \quad : \tilde{\mathbf{u}}^\mp = \mathbf{u}^\mp/c \quad (20.5)$$

where the contravariant metric $g_{\nu m}$ is mapped to $\mathbf{g}^-$, the contravariant stress tensor $G_{\nu m}$ to $\mathbf{G}^-$, and Δ^+ to Δ_s^+. The $\mathbf{\Lambda}^-$ is a Y^- *Ontological Modulator*, defined by (10.1b), and its potential densities are $\Phi_s^\mp$ as the following:

$$\mathbf{\Lambda}_s^- = -\frac{E_n^-}{\hbar}\hat{\partial}^\lambda\left(\check{\mathcal{F}}_{m\alpha}^{+n}\right)_{s\times}^- = -\frac{E_n^-}{\hbar c^2}\begin{pmatrix} -(\mathbf{u}^-\nabla)\cdot\mathbf{B}_s^- \\ \frac{\partial}{\partial t}\mathbf{B}_s^- + (\frac{\mathbf{u}^-}{c}\nabla)\times\mathbf{E}_s^- \end{pmatrix} \mapsto 0 \quad (20.6)$$

$$\Phi_s^- = \varphi_n^+\phi_n^-, \qquad \Phi_s^+ = \varphi_n^-\phi_n^+, \qquad \mathbf{u}^- = \dot{x}_\nu \quad \mathbf{u}^+ = \dot{x}^\nu \quad (20.7)$$

The *Strength Fields* $\mathbf{B}_s^\pm$ and *Twisting Fields* $\mathbf{E}_s^\pm$ are the asymmetric fluxions that are defined by (7.9), where the index s implies the ***scalar*** potentials given by equations (17.2). At the motion speed $\mathbf{u}$, the (20.5) equations represent the Y^- ***Conservation of Ontological Dynamics***, introduced at 2:00am September 3rd 2017 Metropolitan Area of *Washington, DC* USA. Connected with a stationary curvature R and stress tensor $\mathbf{G}$, the Y^- asymmetric fluxions give rise to the physical dynamics perpetually, entangling.The Y^- *Ontological Field* is simplified and shown by the following equation:

$$\frac{R}{2}\mathbf{g}^- + \mathbf{G}^- + \Delta_s^- = S_a^- + \mathbf{\Lambda}_s^- \qquad : S_a^\mp = 4\frac{E_0^+ E_0^-}{(\hbar c)^2}\Phi_s^\mp \quad \mathbf{(20.8)}$$

Although the virtual resource $\mathbf{\Lambda}_s^- \mapsto 0$ appears as if nothing, it plays a vital role for its internal entanglement as the Y^+ modulator $\mathbf{\Lambda}_s^+$. Upon the entanglement, the conservation of fluxions represents the physical radiation Δ_s^-, the stress $\mathbf{G}^-$ and metric $\mathbf{g}^-$ fields are cohesively and persistently driven by resources of the constant energy fluxion S_a^-, also known as the area entropy. This residual ontology in the thermal microscopy is equivalent to or known as *Black Hole* macroscopically. In a free space, it derives the equations of (8.21) and (13.19). Remarkably, this ontological energy operates physical animation and reproduction as the foundation of *Explicit Symmetry Breaking*, demonstrated by (9.13, 9.14) [2] for particle reproductions giving rise to the horizons.

Artifact 20.2: Y^+ ***Ontological Fields***. As composites of photons and gravitons, the (20.3) comes up the vector formation parallel to (20.5):

$$\tilde{\mathbf{u}}^+\left(\frac{R}{2}\mathbf{g}^+ + \mathbf{G}^+\right)\tilde{\mathbf{u}}^+ = \Delta_s^+ + \mathbf{\Lambda}_s^+ - S_a^+ \quad (20.9)$$

Since $\hat{\mathcal{F}}_{\nu m}^{+n} = \langle\hat{\mathcal{F}}_{\nu m}^{+n}\rangle_\times^+ + \langle\hat{\partial}^\lambda\rangle^+\hbar/E_n^+$, $\hat{\mathcal{F}}_{\nu m}^{-n} = \langle\hat{\mathcal{F}}_{\nu m}^{-n}\rangle_\times^+ + \langle\check{\partial}_\lambda\rangle^+\hbar/E_n^+$ and $\langle\hat{\partial}^\lambda\rangle^+\langle\hat{\mathcal{F}}_{\nu m}^{+n}\rangle_\times^+ = -\langle\check{\partial}_\lambda\rangle^+\langle\hat{\mathcal{F}}_{\nu m}^{-n}\rangle_\times^+$, the Y^+ *Ontological Modulator* $\mathbf{\Lambda}_s^+$ can be further delineated to the simpler formula below:

$$\mathbf{\Lambda}_s^+ = -\frac{E_n^+ E_n^-}{(\hbar c)^2}\left\langle\hat{\mathcal{F}}_{\nu m}^{+n}\right\rangle_\times^+\left\langle\hat{\mathcal{F}}_{\nu m}^{-n}\right\rangle_\times^+ \quad (20.10)$$

This is similar to the *Yang-Mills* action, illustrated by (9.5). Connected with a stationary curvature R and stress tensor $\mathbf{G}^+$, the Y^+ asymmetric fluxion constitutes the residual activator Δ_s^+ and motion modulator $\mathbf{\Lambda}_s^+$ acting upon or creating the transform generators $J_{\iota a}^+$ and transport coordinators $K_{\iota a}^+$, which institute the Y^+ ***Conservation of Ontological Fields***. The equation has the relative speed $\tilde{\mathbf{u}}^+$ in the Y^+ manifold. To convert it to the Y^- space at its associated speed $\mathbf{u}^+ \mapsto \mathbf{u}^-$, it might have the simple mapping $\dot{x}^\nu \mapsto \dot{x}_a\left(J_{\nu a}^+ + K_{\nu a}^+\right)$ of transformations and transportations. At the constant speed c, the field equation can be further compacted into:

$$\frac{R}{2}\mathbf{g}^+ + \mathbf{G}^+ + S_a^+ = \Delta_s^+ + \mathbf{\Lambda}_s^+ \qquad : \mathbf{u}^+ = -c \quad \mathbf{(20.11)}$$

Given rise from the scalar potential fields, the virtual world performs *Creation* and *Annihilation* that not only supplies the energy fluxion S_a^+, but also operates the modulator $\mathbf{\Lambda}_s^+$ with entanglements of boost transforms $\hat{F}_{m\alpha}^{\pm n}$ and spiral transports $\hat{T}_{m\alpha}^{\pm n}$. Apparently, virtual resources create, stream and transmit photons and gravitons with universal messages and particle transformations through the field breaking Δ_s^+ and in accomplice with the *Explicit Symmetry Breaking* and gauge invariance.

Artifact 20.3: Ontological Entanglement. Connected to the Y^-Y^+ entanglement, the dynamic fields of ontology are given by adding up (20.8) and (20.11) together as the following expression:

$$\frac{R}{2}\mathbf{g} + \mathbf{G}_s + S_a + \Delta_s^- = \Delta_s^+ + \mathbf{\Lambda}_s^+ \qquad : \mathbf{\Lambda}_s^- = 0 \quad (20.12)$$

where $\mathbf{g} = \mathbf{g}^+ + \mathbf{g}^-$, $\mathbf{G}_s = \mathbf{G}^+ + \mathbf{G}^-$ and $S_a = S_a^+ - S_a^-$. Apparently, it represents that the resources are composited of, supplied by or conducted with the residual activator Δ_s^+ and motion modulator $\mathbf{\Lambda}_s^+$ primarily in the virtual world. It implies that, in the physical world, the directly observable parameters are the static coverture R, stress tensor $\mathbf{G}_s$, area entropy S_a, and wave radiations Δ_s^- of photons and gravitons. The commutation of energy fluxions sustains the resources, modulates the transform and transports potential messages while performing actions and aligning with the dual world-lines of the universal topology.

Artifact 20.4: Ontological Accelerations. Generally, the accelerations are not zero: $\mathbf{g}_s^\pm \neq 0$. Connected to the Y^- or Y^+ entanglement, the dynamic accelerations $\mathbf{g}_s^\pm$ of ontology are given by (19.1) and (19.2) as the following expression:

$$\mathbf{g}_s^-/\kappa_g = \left[\check{\partial}_\lambda\check{\partial}_\lambda, \hat{\partial}^\lambda\hat{\partial}^\lambda\right]_s^- = S_a^- + \mathbf{\Lambda}_s^- - \Delta_s^- \quad (20.13)$$

$$\mathbf{g}_s^+/\kappa_g = \left[\hat{\partial}_\lambda\hat{\partial}_\lambda, \check{\partial}^\lambda\check{\partial}^\lambda\right]^+ = \Delta_s^+ + \mathbf{\Lambda}_s^+ - S_a^+ \quad (20.14)$$

$$\tilde{\mathbf{g}}_s = \mathbf{g}_s^- / \kappa_g + \mathbf{g}_s^+ / \kappa_g = \Delta_s^+ + \mathbf{\Lambda}_s^+ + \mathbf{\Lambda}_s^- - \Delta_s^- - S_a \tag{20.15}$$

where $\kappa_g = 1/(\hbar c)$ is a constance, $\tilde{\mathbf{g}}_s$ is a normalized acceleration of ontology. For a black hole, its core center may absorb the objects when $S_a > 0$. In a parallel fashion, a white hole emits objects at $S_a < 0$. To maintain the stability at $\tilde{\mathbf{g}}_s \approx 0$, a system usually has both a black core absorbing objects and a white core radiating Δ_s^- the photons and gravitons. At a primacy of the virtual world and with the residual activator Δ_s^+ and motion modulator $\mathbf{\Lambda}_s^+$, its activities appear more towards accelerations $\tilde{\mathbf{g}}_s \geq 0$, rather than deceleration $\tilde{\mathbf{g}}_s \leq 0$.

21. GENERAL COSMOLOGICAL EQUATIONS

Aligning with the continuously arising horizons, the events determine the derivative operations on the scalar potentials giving rise to the vector potential fields for further dynamic motions. Substituting by the vector potentials $V^{\mp}$ at the expressions of (3.9)-(3.10), the equations of (17.2) and (17.3) imply that the asymmetric fluxions of the *Universal Equations* of (19.1)-(19.2) be the generic processes of cosmology at the arising horizons. Generally, the accelerations are not zero: $\mathbf{g}_v^{\pm} \neq 0$.

By following the same formulations in deriving the *Y^- Ontological Equations* (20.1) and considering (18.20), we reformulate the equation (19.6) of motion dynamics compactly in the covariant formula, named as *Cosmological Motion Equations* at the acceleration $\mathbf{g}_v^- \mapsto 0$:

$$\dot{x}_\nu \dot{x}_m \Big(\frac{R}{2} g_{\nu m} - R^{-\sigma}_{\nu m\mu} + G^{-\sigma}_{\nu m\mu} + C^{-\sigma}_{m\mu\nu} \Big)_v = c^2 S_v^- - \frac{E_n^-}{\hbar} \partial^\lambda \big(\breve{\mathscr{F}}^{+n}_{m\alpha} \big)_v^- \tag{21.1}$$

where the lower index v indicates the vector potentials. The *Riemannian* curvature $R^{\mp\sigma}_{\nu m\mu}$ associates tensors to each world-line points of the Y^- and Y^+ manifolds that measures the extent to which the metric tensors are not locally isometric to its own manifold or, in fact, conjugate to each other's metric. The above equation also serves as *Law of Conservation of Y^- Cosmological Motion Dynamics* that associates curvature, stress and contorsion with area fluxions.

In a parallel fashion, by following the same approach in deriving the *Y^+ Ontological Equations* (20.3) and considering (18.20), we can fabricate compactly the contravariant formula, named as *Cosmological Field Equations* at the acceleration $\mathbf{g}_v^+ \mapsto 0$:

$$\dot{x}^\nu \dot{x}^m \Big(\frac{R}{2} g^{\nu m} - R^{+\sigma}_{\nu m\mu} + G^{+\sigma}_{\nu m\mu} + C^{+\sigma}_{m\mu\nu} \Big)_v$$

$$= -c^2 S_v^+ - \frac{E_n^+ E_n^-}{\hbar^2} \big(\hat{\mathscr{F}}^{+n}_{\nu m} \big)_v^+ \big(\hat{\mathscr{F}}^{-n}_{\nu m} \big)_v^+ \tag{21.2}$$

This equation servers as *Law of Conservation of Y^+ Cosmological Fields*, introduced at 17:16 September 7th 2017 that the Y^+ forces or acceleration fields of a world-line curvature are constituted of and modulated by asymmetric fluxions given rise from the vector potential fields not only to operate motion curvatures, but also to emit and transport photons and gravitons that carry messages and creators.

Artifact 21.1: Y^- Cosmological Dynamics. Rising from the vector potentials, the asymmetric fluxions constitute the acceleration or horizon field breaking traveling over the world-line curvatures. At a constant speed $\mathbf{u}^- = c$ and $\mathbf{g}_v^- \to 0$, the covariant formula (21.1) can be abridged and converted to:

$$\tilde{\mathbf{u}}^- \Big(\frac{R}{2} \mathbf{g}^- + \mathbf{G}^- - \mathfrak{R}^- + \mathbf{C}^- \Big)_v \tilde{\mathbf{u}}^- = S_v^- - \Delta^- + \mathbf{\Lambda}_v^- \tag{21.3}$$

where the covariant *Riemannian* geometry $R^{-\sigma}_{\mu\nu n}$ is mapped to the tensor $\mathfrak{R}^-$, the covariant stress tensor $G^{-\sigma}_{\nu n\mu}$ to $\mathbf{G}^-$, the metric $g_{\nu n}$ to $\mathbf{g}^-$, and the contorsion $C^{-\sigma}_{m\mu\nu}$ to $\mathbf{C}^-$. The area fluxions $S_v^{\mp}$ and *Cosmological Resource Modulator* $\mathbf{\Lambda}_v^-$ are defined by the following expressions:

$$S_v^{\mp} = 4 \frac{E_0^+ E_0^-}{(\hbar c)^2} \Phi_v^{\mp} \tag{21.4a}$$

$$\mathbf{\Lambda}_v^- = -\frac{E_n^-}{\hbar} \partial^\lambda \big(\breve{\mathscr{F}}^{+n}_{m\alpha} \big)_{v\times}^- = 0 \tag{21.4b}$$

where the resource modulator $\mathbf{\Lambda}_v^-$ is given by (10.1) [2], and the index v refers to the *vector* potentials. At the constant speed c, the field equation can be reduced to the following expression as the *Y^- Cosmological Motion Dynamics* that extends the *Einstein's* equation (18.21)

$$\mathfrak{R}^- + S_v^- + \mathbf{\Lambda}_v^- = \frac{R}{2} \mathbf{g}^- + \mathbf{G}^- + \mathbf{C}^- \qquad : \mathbf{u}^- = c \tag{21.5}$$

Logically, there are five types of components:

1) The *Y^- Cosmological Motion Equations* describes that the motions of metric $\mathbf{g}^-$, stress $\mathbf{G}^-$ and connector tensors $\mathbf{C}^-$ conserve the *Riemannian* curvature $\mathfrak{R}^-$ and area fluxion S_v^- travelling over the world lines and entangling by the modulator $\mathbf{\Lambda}_v^-$ virtually between the Y^-Y^+ manifolds.
2) These Y^- motion curvature $\mathfrak{R}^-$, stress $\mathbf{G}^-$ and contorsion $\mathbf{C}^-$ dynamically balance the transportation by the effective potential Φ_v^-, which, through the asymmetric fluxions S_v^- between the dual manifolds, radiates the waves $\mathbf{\Delta}_v^-$ of photons and gravitons.
3) At a horizon rising from commutations of vector potentials, this equation describes the outcomes of the Y^-Y^+ entanglements and accelerations observable externally to the system, including the *Explicit Breaking of S_v^-* and gauge invariance.
4) The off-diagonal elements compose the *Continuity of Cosmological Motion Equations* that the fluxion is entangling the vector potentials to produce the resource modulator $\mathbf{\Lambda}_v^-$ of the symmetric strength $\mathbf{B}_v^-$ and twisting $\mathbf{E}_v^-$ fields, conservatively and consistently.
5) The internal continuity of energy fluxion is hidden and convertible to and interruptible with its Y^+ opponent fields for the dynamic entanglements reciprocally throughout and within the system.

The Y^- cosmology has a supremacy of the physical characteristics dominant in the dynamic motions.

Artifact 21.2: Y^+ Cosmological Fields. At acceleration to zero $\mathbf{g}_v^+ \to 0$, the contravariant formula (21.2) can be translated into the following equation:

$$\tilde{\mathbf{u}}^+ \Big(\frac{R}{2} \mathbf{g}^+ + \mathbf{G}^+ - \mathfrak{R}^+ + \mathbf{C}^+ \Big)_v \tilde{\mathbf{u}}^+ = \Delta_v^+ + \mathbf{\Lambda}_v^+ - S_v^+ \tag{21.6}$$

where the contravariant *Riemannian* geometry $R^{+\sigma}_{\mu\nu n}$ is mapped to the tensor $\mathfrak{R}^+$, the contravariant stress tensor $G^{+\sigma}_{\nu n\mu}$ to $\mathbf{G}^+$, the contorsion $C^{+\sigma}_{m\mu\nu}$ to $\mathbf{C}^+$, the covariant metrics $g^{\nu n}$ to $\mathbf{g}^+$, and the activator Δ^+ to Δ_v^+. The tensor $\mathbf{\Lambda}_v^+$ is named as ***Cosmological Modulator*** and defined by and similar to (20.10) but in the forms of the vector potentials:

$$\mathbf{\Lambda}_v^+ = -\frac{E_n^+ E_n^-}{(\hbar c)^2} \big(\hat{\mathscr{F}}^{+n}_{\nu m} \big)_{v\times}^+ \big(\hat{\mathscr{F}}^{-n}_{\nu m} \big)_{v\times}^+ \tag{21.7}$$

At the constant speed c, the field equation is reduced to the expression, named as the *Y^+ Cosmological Field Equations*:

$$\mathfrak{R}^+ + \Delta_v^+ + \mathbf{\Lambda}_v^+ = \frac{R}{2} \mathbf{g}^+ + \mathbf{G}^+ + \mathbf{C}^+ + S_v^+ \tag{21.8}$$

It implies not only that the virtual world supplies energy resources in the forms of area fluxions S_A^+, but also that, besides the metric $\mathbf{g}^+$, stress $\mathbf{G}^+$ and contorsion $\mathbf{C}^+$ tensors, the cosmological modulator $\mathbf{\Lambda}_v^+$ has the intrinsic messaging secrets of dark energy formations, further outlined in the following statement:

1) The dynamic fields are internally adjustable through the potentials of the modulator $\mathbf{\Lambda}_v^+$ and energy fluxions S_v^+.
2) A cosmological system is governed by the modulator $\mathbf{\Lambda}_v^+$ symmetrically, the transport fluxion S_v^+ and the reactor Δ_v^+ asymmetrically.
3) During the Y^-Y^+ entanglements between the world planes, the asymmetric potentials dynamically operate the world-line curvatures $\mathfrak{R}^{\pm}$ and supply the area energy S_v^+ at a horizon rising from symmetric fluxions of vector potentials.
4) The activator Δ_v^+ evolutes, generates and gives rise to the horizons which integrate with the creation forces or annihilation collations.
5) Remarkably, the diagonal components of $S_v^{\pm}$ and Δ_v^+ embed and carryout the horizon radiations, wave transportations, as well as the reproduction generators, shown by the force equation (9.14) and known as the *Spontaneous and Explicit Breaking* [2] of gauge symmetry.

Usually, the matrix $\mathbf{\Lambda}_v^+$ describes outcomes of dynamic modulations internally while the area fluxion S_v^+ and the reactor Δ_v^+ are observable externally to the system. Besides, the antisymmetric strength $\mathbf{D}_v^\pm$ and twisting $\mathbf{H}_v^\pm$ fields of the off-diagonal $\mathbf{\Lambda}_v^+$ components are the motion entanglements throughout the system intrinsically, resourcefully and modulatively.

Artifact 21.3: Cosmological Entanglement. Connected to the Y^-Y^+ entanglement, the dynamic fields of cosmological are given by adding up (21.5) and (21.8) together as the following expression:

$$\frac{R}{2}\mathbf{g} + \mathbf{G}_v + \mathbf{C}_v + S_v + \Delta_v^- = \mathfrak{R} + \Delta_v^+ + \mathbf{\Lambda}_v^+ \tag{21.9}$$

where $\mathfrak{R} = \mathfrak{R}^+ + \mathfrak{R}^-$, $\mathbf{g} = \mathbf{g}^+ + \mathbf{g}^-$, $\mathbf{G}_v = \mathbf{G}^+ + \mathbf{G}^-$ and $S_v = S_v^+ - S_v^-$. Apparently, it represents that the resources are composited of, supplied by or conducted with the global curvature $\mathfrak{R}$, horizon activator Δ_v^+ and dynamic modulator $\mathbf{\Lambda}_v^+$ primarily under the virtual world. It implies that, in the physical world, the directly observable parameters are at horizons with the static coverture R, stress tensor $\mathbf{G}_v$, area entropy S_v, and wave radiations Δ_v^- of photons and gravitons.

Artifact 20.4: Cosmological Accelerations. For the accelerations at non-zero $\mathbf{g}_v^\pm \neq 0$, one has the following expression, similar to (20.13-20.15) of the ontological accelerations:

$$\mathbf{g}_v^- / \kappa_g = \left[\check{\partial}_\lambda \check{\partial}_\lambda, \hat{\partial}^\lambda \hat{\partial}^\lambda\right]_s^- = S_v^- + \mathbf{\Lambda}_v^- - \Delta_v^- \tag{21.10}$$

$$\mathbf{g}_v^+ / \kappa_g = \left[\hat{\partial}_\lambda \hat{\partial}_\lambda, \check{\partial}^\lambda \check{\partial}^\lambda\right]^+ = \Delta_v^+ + \mathbf{\Lambda}_v^+ - S_v^+ \tag{21.11}$$

$$\tilde{\mathbf{g}}_v = \mathbf{g}_v^- / \kappa_g + \mathbf{g}_v^+ / \kappa_g = \Delta_v^+ + \mathbf{\Lambda}_v^+ + \mathbf{\Lambda}_v^- - \Delta_v^- - S_v \tag{21.12}$$

where $\tilde{\mathbf{g}}_v$ is a normalized acceleration of cosmology. As a duality, a galaxy center may have a mixture of a black core absorbing objects and a white core radiating the photons and gravitons. For a blackhole, its core center may absorb the objects $S_v > 0$ in order to maintain its activities for its motion stability of annihilation. As reciprocal to a blackhole, a galaxy center may have more radiations $\mathbf{\Delta}_v^-$ instead of absorbing objects, which results in a brightness of its core to stabilize its highly functioning activators Δ_v^+ and operating modulators $\mathbf{\Lambda}_v^+$. Generally, an active galaxy shall appear as its acceleration at $\tilde{\mathbf{g}}_v > 0$ in order to sustain its life actives. Because the $\mathbf{\Lambda}_v^- \to 0$ is hidden in physical supremacy, it is the virtual world $\Delta_v^+ + \mathbf{\Lambda}_v^+$ that dominants our universal topology or world activities.

PHILOSOPHICAL TERMINOLOGY

In summary, 《Universal and Unified Field Theory》 abstracts some fundamental terminologies philosophically as the preliminary laws of universal topology outlined as the following:

Universe - The whole of everything in existence that operates under a topological system of natural laws for, but not limited to, physical and virtual events, states, matters, and actions. It constitutes and orchestrates various domains, called *World*, each of which is composed of hierarchical manifests for the events, operations, and transformations among the neighborhood zones or its subsets of areas, called *Horizon*.

World - An environment composed of events or constituted by hierarchical structures of both massless and massive objects, events, states, matters, and situations. These hierarchical structures of the global manifold are respectively defined as *Virtual World*, where it operates virtual event, or *Physical World*, where it performs physical actions. Together, the virtual and physical worlds form one integrated *World* as a domain of the universe and interoperates as the complementary opponents of all natural states and events. Traditionally, the virtual world is referred to as the inner world, the physical world as the outer world, and together they form holistic lives in universe. A world has a permanent form of global topology, localizes a region of the universe, and interacts with other worlds rising from one or the other with common ground in universal conservations. Furthermore, there are multiple levels of inner worlds and outer worlds. Inner worlds are instances of situations, with or without energy or mass formations, while outer worlds include physical mass of living beings and inanimate objects.

Duality - The complementary opponents of inseparable, reciprocal pairs of all natural states, energy, and events, constituted by the topological hierarchy of our world. Among them, the most fundamental duality is our domain resource of the universe, known as Yin and Yang, with neutral balance that appears as if there were nothing or dark energy. Yinyang presents the two-sidedness of any event, operations, or spaces, each dissolving into the other in an alternating stream that generates the life of situations, conceals the inanimacy of resources, operates the movement of actions through continuous helix-circulations, symmetrically and asymmetrically.

Manifold - Because of this yinyang nature, our world always manifests a mirrored pair in the imaginary part, a conjugate pair of a complex manifold, known as YinYang Manifolds. Various states of both virtual and physical spaces are describable at global domains which emerge as object events, operate in zone transformations, and transit between state energies and matter enclaves. The universal topology consists of two manifolds: *Yin Manifold* for the events of physical supremacy and *Yang Manifold* for the events of virtual supremacy, progressively and complementarily rising through various stages of alternating streams - *Entanglements*.

Operation - An event is naturally initiated by and interoperated among each of horizons, worlds, and universe. Together, they form the comprehensive situations of the horizon, life steams of the world, and entangle environments of the universe. As one of the universe domains, for example, our world is consisted by the laws of *YinYang* principles which represent the complementary opponents serving as the resource of the motion dynamics for all natural states, events and entanglements.

Horizon - The apparent boundary of a realm of perception or the like, where unique structures are evolved, topological functions are performed, various neighborhoods form complementary interactions, and zones of the world are composed through multi-functional transformations. Each horizon rises and contains specific fields as a construction of the symmetric and asymmetric dynamics within or beyond its own range. In other words, fields vary from one horizon to the others, each of which is part of and aligned with the universal topology of the world. In physics, for example, the microscopic and macroscopic zones are in the separate horizons, each of which emerges its own fields and aggregates or dissolves between each others.

Photon and ***Graviton*** - A duality of the boost and twist objects or dynamics of the *Wold Planes* is emanated in virtual word, conserved by yinyang phases, and confined by a timespace manifold of virtual world. In spacetime manifold of physical world, the speed of light or gravitation is only variable with time as a function of virtual position, not space, for all observers, regardless of the physical motion of the light or gravitation sources. The constant, c or c_g, denoting the speed of transportation, forms a dimension reflected from virtual world, with the property of being confined by yinyang phases in timespace and of appearing as a universal invariant constant in and only in physical space.

In physics, therefore, the objects are often virtual and physical matters, and the morphisms are dualities of the dialectical processes orchestrating a set or subsets of events, operations, and states in one regime rising, transforming, transporting, and alternating into states of the others: universal topology of the nature structure.

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