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Principle of Equilibrium, Principle of Correspondence and Principle of Parallelism as the Foundations of Wu's Spacetime Theories

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[Abstract]
Principle of Equilibrium, Principle of Correspondence and Principle of Parallelism define the correlation of a property of an object or event to the environment (gravitational field and aging of the universe); the constant correlation between two properties of an object or event in different environments; and the constant correlation between two properties, each of one object or event, in different environments respectively. These three principles are the foundations of Wu's Spacetime Theories. They can be used to explain many phenomena such as Perihelion Precession of Mercury caused by reducing velocity in the large gravitational field of sun and Deflection of Light caused by reducing light speed in the large gravitational field of a star, in addition to Cosmological Redshift caused by the long wavelength from a star of early aging of the universe and Gravitational Redshift caused by the long wavelength from the high gravitational field of a massive star. Furthermore, they are used in the derivation of Wu's Spacetime Equation.

[Keywords]
Yangton and Yington Theory, Wu's Pairs, Wu's Spacetime Theory, Cosmological Redshift, Gravitational Redshift, Light Speed, Principle of Equilibrium, Principle of Correspondence, Principle of Parallelism.

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I. Principle of Equilibrium

According to Yangton and Yington Theory, Wu's Pairs are the building blocks of all matter (objects and events) in the universe. For each object or event, the short range structure based on string force and four basic forces defines Wu's Unit Length (size of Wu's Pair) and Wu's Unit Time (period of Wu's Pair) of the object or event and thus dominates all major properties of the objects and events. However, the environment, mainly the gravitational field and aging of the universe, can also influence Wu's Unit Length and Wu's Unit Time of the object or event to make some differences in the physical properties of the object and event such as time, length, speed and acceleration, etc.

An object or event with short range structure generated from an environment shall also be in equilibrium with the environment. In other words, the object or event shall stay at an equilibrium state depending on the environment. Since Wu's Pairs are the building blocks of all objects and events, Wu's Pairs of the object or event shall also be in equilibrium with the environment, or stay at an equilibrium state depending on the environment. As a consequence, Wu's Unit Length l_{yy} and Wu's Unit Time $t_{yy} = \gamma l_{yy}^{3/2}$ of the object or event shall be a specific function depending on the gravitational field and aging of the universe of the environment. Furthermore, based on Wu's Unit Length and Wu's Unit Time, all other quantities and properties of the object or event shall also be functions depending on the gravitational field and aging of the universe of the environment. The fact that all quantities and properties of an object or event are functions of gravitational field and aging of the universe is named "Principle of Equilibrium".

However, for those photons (free Wu's Pairs) intruded into the local environment (earth) at an extremely high speed from a far distance origin (star), they carry and maintain the equilibrium states of Wu's Pairs in their origin (star) long before they can be converted to the equilibrium states of Wu's Pairs in the local environment (earth). For example, the flash light (photons) generated on earth has an equilibrium state of Wu's Pairs of the light source (LED) depending on the earth gravity G and aging of the universe 13.8 billion years, in comparison to that of the star light (photons) generated from a star say having an equilibrium state of Wu's Pairs of the light source (H_2) depending on the star gravity 100G and aging of the universe 8 billion years. Because the star light travels at a light speed $3x10^8$ m/s which is much larger than the diameter of earth, the star light remains at its original equilibrium state rather than that the LED light generated on earth. This is the reason that causes Cosmological Redshift for different aging of the universe and Gravitational Redshift for different gravitational fields.

II. Definition of Time

"Time" is the duration of an event (a quantity of event). It is a "Nature Quantity" and has an absolute value at an equilibrium state depending on the gravitational field and aging of the universe of the environment.

Time can be measured by a "Unit Time" and presented by the "Amount of Unit Time" multiplied by the "Unit Time" which is known as "Measured Quantity". Unit Time is the period of a specific repeating process such as the circulation period of Wu's Pairs (Wu's Unit Time) of a specific object, or the period of electronic transition in an atomic clock. Unit Time is also a nature quantity of a specific event, which is a function depending on the gravitational field and aging of the universe.

The time duration of an event doesn't change, but with different measurements, the amount of unit time could be different subject to the duration of the Unit Time. For a Corresponding Identical Object or Event (an object or event in various equilibrium states), the Amount of Corresponding Identical Unit Time is the same, but the Corresponding Identical Unit Time is different depending on the gravitational field and aging of the universe.

III. Definition of Length

Similarly, "Length" is the size of an object (a quantity of object). It is a "Nature Quantity" and has an absolute value at an equilibrium state depending on the gravitational field and aging of the universe of the environment.

Length can be measured by a "Unit Length", and presented by the "Amount of Unit Length" multiplied by the "Unit Length" as the measured quantity [Annex 36]. Unit Length is the length of a specific object such as the diameter of Wu's Pairs (Wu's Unit Length) or human's foot. Unit Length is also a nature quantity of a specific object, which is a function depending on the gravitational field and aging of the universe.

The length of an object doesn't change, but with different measurements, the amount of Unit Length could be different subject to the size of the Unit Length. For a Corresponding Identical Object or Event (an object or event in various equilibrium states), the Amount of Corresponding Identical Unit Length is the same, but the Corresponding Identical Unit Length is different depending on the gravitational field and aging of the universe.

IV. The Basic Units of Wu's Pairs

The measurement of a physical quantity such as mass, time and length contain two components: Unit and the Amount of Unit.

Since Wu's Pairs [1] are the building blocks of all matter, Wu's Unit Mass (m_{yy}) – the Wu's Pair, Wu's Unit Time (t_{yy}) – the circulation period of Wu's Pair and Wu's Unit Length (l_{yy}) – the diameter of Wu's Pair of a specific object or event can be used as the basic unit mass, basic unit time and basic unit length for the measurements of the properties of the objects and events at the same location (in the same equilibrium state with the same gravitational field and aging of the universe).

Because of the Conservation of Mass, Wu's Unit Mass m_{yy}, the mass of a single Wu's Pair, stays constant at all time. However, for an object or event, according to Wu's Spacetime Theory [2] that Wu's Unit Time depends on Wu's Unit Length ($t_{yy} = \gamma\ l_{yy}^{3/2}$), also Wu's Spacetime Shrinkage Theory [3] that Wu's Unit Length increases with the gravitational field and decreases with the aging of the universe, Wu's Unit Time and Wu's Unit Length of the object or event could be different depending on the gravitational field and aging of the universe at the reference point.

V. Corresponding Identical Object and Event

When an object or event (the same object or event) moves slowly from one location (one equilibrium state) to another location (another equilibrium state), or two identical objects or events are appeared at two different locations (two different equilibrium states), these objects are called "Corresponding Identical Object" and these events are called "Corresponding Identical Event". Similarly, the unit lengths in two locations are called "Corresponding Identical Unit Length" and the unit times in two locations are called "Corresponding Identical Unit Time" [4].

Principle of Correspondence

In case an object or event (the same object or event) moves slowly from one location (one equilibrium state) to another location (another equilibrium state) to keep equilibrium with its environment, or two identical objects or events are appeared at two different locations (two different equilibrium states), and a property is measured by the corresponding identical unit quantity at two locations respectively, the "Amount of Unit Quantity" are always the same no matter of the gravitational field and aging of the universe. This theory is named "Principle of Correspondence" [4]. For example, for any corresponding identical object or event, the Amount of Unit Length and the Amount of Unit Time are always constant no matter of the gravitational field and aging of the universe. Even though, the Corresponding Identical Unit Length and Corresponding Identical Unit Time change with the gravitational field and aging of the universe.

Corresponding identical object likes a stretched rope of rubber bands. Each rubber band has a unit length. The total amount of rubber bands doesn't change, but the length of each rubber band (corresponding identical unit length) and the total length of the rope could be different subject to the stretching force. Corresponding identical object also likes the giant in "Jack and the Beanstalk", and the dwarfs in "Snow White", they have the same features as that of a normal man except in different sizes.

Corresponding identical event on the other hand likes a motion pictures, where each picture runs by a unit time, the total amount of pictures doesn't change, but the duration of each picture (corresponding identical unit time) and the total playing time could be different subject to the moving speed. Corresponding identical event also likes the Mickey Mouse cartoon pictures, the entire show can be completed by different time durations subject to the rolling speed of the pictures.

A corresponding Identical Object or Event can be the electron in the covalent bond of a compound or the electron in the conduction band of a semiconductor. A typical example is the H_2 absorption spectrum where each line in the spectrum represents a photon of specific wavelength either emitted from or absorbed by an electron of specific chemical bonds known as a corresponding identical object or event.

It is obvious that Principle of Correspondence cannot be true without the fact that Wu's Pairs are the building blocks of the universe.

Principle of Time

Based on the principle of correspondence, a corresponding identical events measured by the corresponding identical unit time should have a constant "amount of corresponding identical unit time", no matter where the event takes place and how the corresponding identical unit time is different from one location to the other due to the gravitational field and aging of the universe. This theory is named "Principle of Time". For example, a 3000 cycles pendulum swing event on Saturn takes the same amount of cycles but more slowly than that on earth because the pendulum swing on Saturn is slower with longer period (Saturn second) than that on earth (Earth second), due to Saturn's large gravity.

Principle of Length

Similarly, a corresponding identical object measured by the corresponding identical unit length should have a constant "amount of corresponding identical unit length", no matter where the object is and how the corresponding identical unit length is different from one location to the other due to the gravitational field and aging of the universe. This theory is named "Principle of Length". For example, a man on Saturn can have the same six foot height but actually be taller than his twin on earth, because one foot on Saturn (Saturn foot) is longer than that on earth (Earth foot) due to Saturn's large gravity.

Principle of Parallelism

When two different corresponding identical objects or events move slowly from one location (one equilibrium state) to another location (another equilibrium state), or for each of them two identical objects or events are appeared at two different locations (two different equilibrium states), the correlation between the two unit quantities, each from one of the two different corresponding identical objects or events maintains unchanged no matter of the gravitational field and aging of the universe. This phenomenon is named "Principle of Parallelism" [5]. A typical example is the redshift patterns observed in H_2 absorption spectrum of a far distance star, where the same redshift value can be found across the whole spectrum. This principle can also apply to two unit quantities in one corresponding identical object or event. For example, the ratio between Normal Unit Length and Wu's Unit Length of an object or event is always a constant no matter of the gravitational field and aging of the universe.

It is obvious that Principle of Parallelism cannot be true without the fact that Wu's Pairs are the building blocks of the universe.

Definition of Spacetime

In the universe, the length and time of an object or event can be measured and presented by a four dimensional Spacetime System $[x, y, z, t](l_s, t_s)$ at a reference point. In which $[x, y, z]$ are the position coordinates representing the amounts of unit length (l_s) on three perpendicular axes measured at the reference point (Cartesian coordinate system) and $[t]$ is the time coordinate representing the amount of unit time (t_s) measured at the reference point. For the same object or event, their lengths and durations do not change with the Spacetime or any other measurement method. However, subject to different Spacetime systems, different amounts of lengths and durations can be measured by different unit lengths and unit times.

Wu's Spacetime

Wu's Spacetime [x, y, z, t](l_{yy}, t_{yy}) [2] is a special four dimensional system that is defined by the Wu's Unit Length l_{yy} (the diameter of Wu's Pairs) and Wu's Unit Time t_{yy} (the period of Wu's Pairs) at the reference point. Both Wu's Unit Length and Wu's Unit Time are a range of numbers with peak values that are dependent on the gravitational field and aging of the universe at the reference point. Also, they are correlated to each other by Wu's Spacetime Theory ($t_{yy} = \gamma l_{yy}^{3/2}$) [2].

VI. Three Principles of Wu's Spacetime

Principle of Equilibrium, Principle of Correspondence and Principle of Parallelism are three fundamental principles of Wu's Spacetime.

1. Principle of Equilibrium – defines the correlation of the quantity (property) of an object or event to the environment: The quantities (properties) of an object or event are functions of the gravitational field and aging of the universe of the environment.
2. Principle of Correspondence – defines the constant correlation between two quantities (properties) of an object or event in different environments: The correlation between two quantities in the same dimension or a quantity and its unit quantity (the amount of unit quantity) of an object or event maintains constant no matter of gravitational field and aging of the universe.
3. Principle of Parallelism – defines the constant correlation of two quantities (properties) of two objects or events in different environments: The correlation between two quantities (for example, Wu's Unit Length and inch) of the same object or event, or that one quantity from each of the two different objects or events in the same dimension, maintains constant no matter of gravitational field and aging of the universe.

According to Yangton and Yington Theory, a single beam Redshift can be explained nicely by Principle of Correspondence in which the amount of unit quantity of a corresponding identical object or event remains constant for all equilibrium states. However, for a wide spectrum Redshift, it can only be interpreted by combining both Principle of Correspondence and Principle of Parallelism in which the correlation between the unit quantities of two different corresponding identical objects or events maintains constant for all equilibrium states.

VII. Velocity and Spacetime

Because of "Wu's Spacetime Theory",

$t_{yy} = \gamma l_{yy}^{3/2}$

Therefore,

$$l_{yy}/t_{yy} = \gamma^{-1} l_{yy}^{-1/2}$$

For a moving object,

$V = v\,(l_s/t_s)$

$l_s = m l_{yy}$

$t_s = n t_{yy}$

$V = v\,(m/n)(\,l_{yy}/t_{yy})$

Therefore,

$$V = v\, m\, n^{-1}\, \gamma^{-1}\, l_{yy}^{-1/2}$$

Where V is the velocity, "v" is the Amount of Normal Unit Velocity, γ is the Wu's Spacetime constant, m is the constant of Normal Unit Length, n is the constant of Normal Unit Time and l_{yy} is Wu's Unit Length of the object or event (can be different from one spot to other spot subject to the local short range structure).

For a corresponding identical motion, the Amount of Normal Unit Velocity "v" is a constant, therefore the velocity V is proportional to $l_{yy}^{-1/2}$.

A detailed analysis based on Principle of Parallelism [5] such as the method using Wu's Unit Length of the emission line of Krypton – 86 and Wu's Unit Time of Cesium atomic clock to measure the velocity of a corresponding identical object can be interpreted as follows:

Because

$V = v\, l_s/t_s$

$l_s = m' l_{yyR}$

$l_{yyR} = \alpha\, l_{yy}$

$t_s = n' t_{yyA}$

$t_{yyA} = \beta\, t_{yy}$

Therefore,

$$V = v\,(m'\alpha/n'\beta)(l_{yy}/t_{yy})$$

Where l_s is the normal unit length (meter), t_s is the normal unit time (second), l_{yyR} is the Wu's Unit Length of the emission line of Krypton – 86, t_{yyA} is the Wu's Unit Time of the Cesium atomic clock, l_{yy} is the Wu's Unit

Length and t_{yy} is the Wu's Unit Time of the object or event (can be different from one spot to other spot subject to the local short range structure).
Because of Wu's Spacetime Theory
$t_{yy} = \gamma l_{yy}^{3/2}$
Given
$m = m'\alpha$ and $n = n'\beta$
Therefore,

$$V = v\, m\, n^{-1}\, \gamma^{-1}\, l_{yy}^{-1/2}$$

Where V is the velocity of the object or event, v is the amount of normal unit velocity. m', n', α, β are constants according to Principle of Parallelism, m is the constant of normal unit length, n is the constant of normal unit time, γ is Wu's Spacetime Constant and l_{yy} is the Wu's Unit Length of the object or event (can be different from one spot to other spot subject to the local short range structure).
For a corresponding identical object or event, v is a constant, therefore,

$$V \propto l_{yy}^{-1/2}$$

This correlation can be used to explain "Perihelion Precession of Mercury" [6], in which Mercury's speed is reduced by the big Wu's Unit Length caused by the large gravitational field of sun.

Photon and Spacetime
For photon emission from a light source,
$\nu = 1/t_{yy}$
Also Wu's Spacetime Theory
$t_{yy} = \gamma l_{yy}^{3/2}$
Therefore,

$$\nu = \gamma^{-1}\, l_{yy}^{-3/2}$$

Where γ is Wu's Spacetime Constant and l_{yy} is the Wu's Unit Length of the light source.
Because photon separation process is an Inertia Transformation, also the separation force is a fixed string force, therefore at an equilibrium state with the gravitational field and aging of the universe, the Absolute Light Speed observed from the light source is always constant ($3 x 10^8$ m/s) no matter of the light source.
According to Principle of Correspondence, photon emitted from a light source at different equilibrium states should have the same amount of normal unit velocity of light speed. Also, based on Principle of Parallism, the ratios between different unit quantities should maintain the same. Therefore,

$$C = c\, m\, n^{-1}\, \gamma^{-1}\, l_{yy}^{-1/2}$$

$$c = 3 \times 10^8$$

$$C \propto l_{yy}^{-1/2}$$

Where c is the amount of normal unit velocity of light speed, m is the constant of Normal Unit Length, n is the constant of Normal Unit Time and l_{yy} is Wu's Unit Length of another object or event such as a ruler (not the photon and the light source) at the same location (same gravitational field and aging of the universe). This correlation can be used to explain "Deflection of Light" [6] in which the light speed is reduced by the big Wu's Unit Length caused by the large gravitational field of the star.
Similarly,

$$\lambda = \lambda_a\, m\, l_{yy}$$

$$\lambda \propto l_{yy}$$

Where λ_a is the amount of Normal Unit Length of light wavelength, m is the constant of normal unit length and l_{yy} is Wu's Unit Length of another object or event such as a ruler (not the photon and the light source) at the same location (same gravitational field and aging of the universe). This correlation can be used to explain "Cosmological Redshift" [3] which is due to the long wavelength from a star in the early aging of the universe, as well as "Gravitational Redshift [7] that is caused by the long wavelength from the high gravitational field of a massive star.
Also,

$$\nu = \nu_a\, n^{-1} t_{yy}^{-1} = \nu_a\, n^{-1}\, \gamma^{-1}\, l_{yy}^{-3/2}$$

$$\nu \propto l_{yy}^{-3/2}$$

Where ν_a is the amount of Normal Unit Frequency, n is the constant of normal unit time, γ is Wu's Spacetime constant and l_{yy} is Wu's Unit Length of another object or event such as a ruler (not the photon and the light source) at the same location (same gravitational field and aging of the universe).

Acceleration and Spacetime
Because of "Wu's Spacetime Theory",
$t_{yy} = \gamma l_{yy}^{3/2}$
Therefore,

$l_{yy}/t_{yy}^2 = \gamma^{-2} l_{yy}^{-2}$
For an accelerating object or event,
$A = a\,(l_s/t_s^2)$
$l_s = ml_{yy}$
$t_s = nt_{yy}$
$A = a\,(m/n^2)(l_{yy}/t_{yy}^2)$
Therefore,

$$A = a\,m\,n^{-2}\,\gamma^{-2}\,l_{yy}^{-2}$$

Where A is the acceleration, a is the Amount of Normal Unit Acceleration, γ is the Wu's Spacetime constant, m is the constant of Normal Unit Length, n is the constant of Normal Unit Time and l_{yy} is Wu's Unit Length of the object or event (can be different from one spot to other spot subject to the local short range structure).
For a corresponding identical acceleration, the Amount of Normal Unit Acceleration "a" is a constant, therefore,

$$A \propto l_{yy}^{-2}$$

As a result, for a corresponding identical acceleration at high gravitational field or in ancient universe, because the size (l_{yy}) of Wu's Pair is bigger, therefore the acceleration is slower.
Similar to the correlation between velocity and spacetime, a detailed analysis based on Principle of Parallelism [5] such as the method using Wu's Unit Length of the emission line of Krypton – 86 and Wu's Unit Time of Cesium atomic clock to measure the acceleration of a corresponding identical object can be interpreted as follows:
Because
$A = a\,l_s/t_s^2$
$l_s = m' l_{yyR}$
$l_{yyR} = \alpha\,l_{yy}$
$t_s = n' t_{yyA}$
$t_{yyA} = \beta\,t_{yy}$
Therefore,

$$A = a\,(m'\alpha/n'^2\beta^2)(l_{yy}/t_{yy}^2)$$

Where l_s is the normal unit length (meter), t_s is the normal unit time (second), l_{yyR} is the Wu's Unit Length of the emission line of Krypton – 86, t_{yyA} is the Wu's Unit Time of the Cesium atomic clock, l_{yy} is the Wu's Unit Length and t_{yy} is the Wu's Unit Time of the object or event.
Because of Wu's Spacetime Theory
$t_{yy} = \gamma l_{yy}^{3/2}$
Given
$m = m'\alpha$ and $n = n'\beta$
Therefore,

$$A = a\,m\,n^{-1}\,\gamma^{-1}\,l_{yy}^{-1/2}$$

Where A is the acceleration of the object or event, a is the amount of normal unit velocity. m', n', α, β are constants according to Principle of Parallelism, m is the constant of normal unit length, n is the constant of normal unit time, γ is Wu's Spacetime Constant and l_{yy} is the Wu's Unit Length of the object or event (can be different from one spot to other spot subject to the local short range structure).

Wu's Spacetime Field Equations
Any object "m" at a distance "R" from a massive star "M" can have an acceleration "A" generated from the gravitational force "F" between the object and the star.

Because of Newton's Second Law of Motion and Newton's Law of Universal Gravitation,

$F = m\,A$

$F = G\,m\,M/R^2$

Therefore,

$$A = GM/R^2$$

Where GM/R^2 is the gravitational field surrounding the massive star, this equation is called "Field Equation".

According to Yangton and Yington Theory, the acceleration of an object can be measured by the Wu's Unit Length of an object or event at the reference point:

$$A = a\ m\ n^{-2}\ \gamma^{-2}\ l_{yy}^{-2}$$

Where A is acceleration, a is the Amount of Normal Unit Acceleration, γ is the Wu's Spacetime constant, m is the constant of Normal Unit Length, n is the constant of Normal Unit Time and l_{yy} is Wu's Unit Length of an object or event at the reference point.

Because,

$A = GM/R^2$

$A = a\ m\ n^{-2}\ \gamma^{-2}\ l_{yy}^{-2}$

Also,

$C \propto l_{yy}^{-1/2}$

$C^{-4} \propto l_{yy}^{2}$

Therefore,

$$a = \sigma\ \gamma^2\ l_{yy}^2\ G\ M/R^2$$

$$a = \delta\ \gamma^2\ C^{-4}\ G\ M/R^2$$

These are named "Wu's Spacetime Field Equations" [8]. Where a is the Amount of Normal Unit Acceleration, σ and δ are constants, γ is Wu's Spacetime constant, G is the gravitational constant, l_{yy} is Wu's Unit Length of an object or event and C is the Absolute Light Speed ($C \propto l_{yy}^{-1/2}$) at the reference point.

Wu's Spacetime Field Equation represents the Amount of Normal Unit Acceleration "a" measured based on Wu's Unit Length l_{yy} of a light source at the reference point, which reflects the distribution of energy and momentum of matter. Instead of Wu's Unit Length l_{yy} which is an unknown quantity, Absolute Light Speed ($C \propto l_{yy}^{-1/2}$) can be measured by redshift and used in Wu's Spacetime Field Equation.

Spacetime and Aging of the Universe – Cosmological Redshift

When the universe was young, for an object or event, the circulation orbit (2r) of Wu's Pair was bigger. Since V^2r is always a constant ($V^2r = k$) for an inter-attractive circulating pair such as Wu's Pair, the circulation speed (V) of Wu's Pairs was slower. The circulation period ($T = 2\pi r/V$) of Wu's Pairs was also bigger. In other words, when the universe was young, for an object or event, both Wu's Unit Length ($l_{yy} = 2r$) and Wu's Unit Time ($t_{yy} = T$) were bigger, which means the length was longer, time ran slower, and velocity was slower compared to that on earth today. As a result, light coming from a star greater than 5 billion years ago (5 billion light years away), travels at a slower speed ($C \propto l_{yy}^{-1/2}$) with lower frequency ($\nu \propto l_{yy}^{-3/2}$) and a larger wavelength ($\lambda \propto l_{yy}$). This phenomenon is known as "Cosmological Redshift" [2][9].

Because of the shrinkage of Wu's Spacetime with the aging of the universe [3], Wu's Spacetime Reverse Expansion Theory [10] can be derived to explain Hubble's Law and the expansion of the universe without the Dark Energy for acceleration neither the Cosmological Constant for Field Equations.

Spacetime and Gravitational Field – Gravitational Redshift

When a gravitational field increases, for an object or event, the attractive force between gravitons also increases. Thus the circulation speed (V) of a Wu's Pair becomes slower. Since V^2r is always a constant ($V^2r = k$) for an inter-attractive circulating pair such as a Wu's Pair, the size of the circulation orbit (2r) of Wu's Pair gets bigger. And the circulation period ($T = 2\pi r/V$) of Wu's Pair also gets bigger. In other words, when the gravitational field increases, for an object or event, both Wu's Unit Length ($l_{yy} = 2r$) and Wu's Unit Time ($t_{yy} = T$) become greater, meaning time runs more slowly, length is longer and velocity is slower compared to that on earth. As a result, light comes from a large gravitational field traveling at a slower speed with a lower frequency and a larger wavelength. This phenomenon is known as "Gravitational Redshift" [11].

VIII. Conclusion

Principle of Equilibrium, Principle of Correspondence and Principle of Parallelism define the correlation of a property of an object or event to the environment (gravitational field and aging of the universe); the constant correlation between two properties of an object or event in different environments; and the constant correlation between two properties, each of one object or event, in different environments respectively. These three principles are the foundations of Wu's Spacetime Theories. They can be used to explain many phenomena such as Perihelion Precession of Mercury caused by reducing velocity in the large gravitational field of sun and Deflection of Light caused by reducing light speed in the large gravitational field of a star, in addition to Cosmological Redshift caused by the long wavelength from a star of early aging of the universe and Gravitational Redshift caused by the long wavelength from the high gravitational field of a massive star. Furthermore, they are used in the derivation of Wu's Spacetime Equation.

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