IOSR Journal Of Applied Physics (IOSR-JAP)
e-ISSN: 2278-4861.Volume 13, Issue 4 Ser. III (Jul. – Aug. 2021), PP 43-47
www.Iosrjournals.Org

Einstein's Spacetime Interpreted by Principle of Correspondence based on Yangton and Yington Theory

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[Abstract]
In Einstein's General Relativity, both space and time are not absolute quantities. They can change with local gravity and become bigger at a massive gravitational field. In comparison, based on Yangton and Yington Theory and Principle of Equilibrium, both space (dimension) and time (duration) as the properties of an object or event, are dependent on the local gravitational field at constant aging of the universe. In addition, in compliance with Principle of Correspondence, both space (dimension) and time (duration) of a corresponding identical object or event can become bigger in a larger gravitational field at constant aging of the universe. This is because that large gravitational field implies heavy bombardment of gravitons which can cause the slowdown of Yangton and Yington circulation, also increase the period and decrease the cycles of the circulation, in other words, time slows down. This agrees very well with Einstein's General Relativity and Gravitational Time Dilation.
As a result, the space and time in Einstein's General Relativity are actually the space (dimension) and time (duration) of the corresponding identical object or event at the same location. Instead of being absolute quantities, they are in fact reflecting Wu's Unit Length (diameter) and Wu's Unit Time (period) of a reference corresponding identical subatomic particle at the same location, which like Einstein's space and time, can change with local gravity and become bigger at a massive gravitational field.
[Keywords]
General Relativity, Gravitational Time Dilation, Spacetime, Yangton and Yington, Wu's Pairs, Wu's Spacetime Equation, Wu's Spacetime Shrinkage Theory, Subatomic Equilibrium, Principle of Equilibrium, Principle of Correspondence,

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Date of Submission: 25-08-2021 Date of Acceptance: 09-09-2021

I. What is Space?

According to Yangton and Yington Theory, it is proposed that "Space" and "Energy" ("Matter" is a cluster of energy) are cogenerated simultaneously from "None" (nothing – no space, time, energy, or matter) at Singularity in Big Bang 13.8 billion years ago. They can coexist in the universe for long time until the recombination and cancellation of each other in the black holes under massive gravitational force or in Wu's Pairs after trillion years aging of the universe, such that they could eventually go back to None [1].

Space is an absolute quantity. It doesn't change with anything at all. Space provides room to place and distribute energy and matter (a cluster of energy). An object composed of matter occupies certain amount of space known as "Volume" (Length in one dimension) and takes a defined position in space known as "Location". The space between two objects or points is called "Distance". A three dimensional Cartesian system with a reference point and three perpendicular axes is used to coordinate the position of an object (or point), also to correlate the positions between two objects (or points) in space.

II. What is Time?

Once "Space" and "Energy" (and "Matter") are generated from "None", "Time" is automatically formed to reflect the sequence of changes of the distribution of energy and motion of matter in space. Time is an absolute quantity. It doesn't change with anything at all. Time is continuous because that the circulation of Wu's Pairs is continuous. The process changing distribution of a group of objects is called "Event". The period of time proceeded in an event between two stages is called "Duration".

III. Variability of Space and Time

Space and Time are absolute quantities. They don't change with anything at all. However, the dimension and duration of a corresponding identical object or event can change with the local gravitational field and aging of the universe. Also subject to the unit quantities used for the measurements, such as normal unit length (meter) and normal unit time (second), or Wu's Unit Length (l_{yy}) and Wu's Unit Time (t_{yy}) of a reference subatomic particle at a gravitational field and aging of the universe, the amounts of unit quantities of the object or event can vary with the measurements.

IV. Subatomic Equilibrium

As a subatomic particle in a stable atomic structure at a constant local gravitational field and aging of the universe, because of the bombardment of gravitons due to graviton radiation and contact interaction [2], also the shrinkage of Wu's Pairs caused by aging of the universe [3] in accordance with CMB [4], Wu's pairs of the subatomic particle should come to a fixed quantum energy state with a fixed diameter (Wu's Unit Length) and circulation period (Wu's Unit Time). This principle is named "Subatomic Equilibrium" [5]. It can be represented as follows:

$$Q_1 = F_1 (S_1, R_1, G, A)$$

$$l_{yy11} = F_2 (S_1, R_1, G, A)$$

Where F_1 and F_2 are functions, l_{yy11} is Wu's Unit Length, S_1 is a subatomic particle, R_1 is the atom containing the subatomic particle, Q_1 is a Quantum Energy State, G is the local gravitational field and A is the local aging of the universe.

Since both l_{yy11} and Q_1 are functions of the same variables. Wu's Unit Length l_{yy} of the Wu's Pair in the subatomic particle is a function of the quantum energy state of the Wu's Pair in the subatomic particle. For example, a photon released from the electron transferred from 2S orbit to 1S orbit in a hydrogen atom has a fixed frequency ν and kinetic energy E (difference of quantum energy states between Wu's Pair in 2S electron and photon (free Wu's Pair), as is between electrons in 2S orbit and 1S orbit),

$E = h\nu$

$t_{yy} = 1/\nu$

Because of Wu's Spacetime Equation [3],

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

And

$l_{yy} = (\gamma\ \nu)^{-2/3}$

Therefore, Subatomic Equilibrium can also be represented by a function as follows:

$$l_{yy11} = F_4 (S_1, Q_1, G, A)$$

Where F_3 and F_4 are functions, l_{yy11} is Wu's Unit Length, S_1 is a subatomic particle, Q_1 is a Quantum Energy State, G is the local gravitational field and A is the local aging of the universe.

Since all the properties of a subatomic particle in an atom are also exclusively dependent on the subatomic particle and its quantum energy state (also Wu's Unit Length), therefore, each property of the subatomic particle should come to a fixed value dependent on the local gravitational field and aging of the universe. This can be represented by a function as follows:

$$P_{11} = F_5 (S_1, l_{yy11})$$

$$P_{11} = F_6 (S_1, Q_1, G, A)$$

Where F_5 and F_6 are functions, l_{yy11} is Wu's Unit Length, S_1 is a subatomic particle, Q_1 is a Quantum Energy State, G is the local gravitational field and A is the local aging of the universe.

V. Principle of Equilibrium

A subatomic particle in an atom at a local gravitational field and aging of the universe can stay in a group of quantum energy states (also Wu's Unit Lengths) by probability subject to the temperature of the environment. Since an object or event is composed of a number of atoms and each atom is made of a bunch of subatomic particles, therefore each property P of an object or event is a function of a group of variables containing the amount n_{ij} of each subatomic particle S_i at each quantum energy state Q_j, as well as the local gravitational field G and aging of the universe A.

$$P = F_7 (n_{11}, S_1, l_{yy11}, n_{12}, S_1, l_{yy12} \ldots n_{ij}, S_i, l_{yyij})$$

$$P = F_8 (n_{11}, S_1, Q_1, n_{12}, S_1, Q_2 \ldots n_{ij}, S_i, Q_j, G, A)$$

At a constant temperature, the amounts of each subatomic particle at each quantum energy state are all constants. Therefore at a constant temperature, each property of an object or event should have a fixed value dependent on the local gravitational field and aging of the universe. This is called "Principle of Equilibrium" [6], which can be represented as follows:

$$P = F (G, A)$$

Where P is a property, F is a function, G is the local gravitational field and A is the local aging of the universe.

VI. Reference Subatomic Particle

Because all the properties including length, time, velocity and acceleration of an object or event are dependent on the local gravitational field and aging of the universe. Also, Wu's Unit Length of a reference subatomic particle at a quantum energy state is dependent on the local gravitational field and aging of the universe. Therefore, all the properties of an object or event are dependent on Wu's Unit Length of a reference subatomic particle at a quantum energy state of the same location (same gravitational field and aging of the universe) [4].

VII. Duration of Event

"Duration" is a period of time proceeded between two stages (a property) of an event at subatomic equilibrium. According to Principle of Equilibrium, it has a fixed quantity (Nature Quantity) dependent on the local gravitational field and aging of universe. "Unit Time" is the duration of a specific reference event such as the vibration period of a quartz resonator or the period of electronic transition of an atomic clock at a specific gravitational field and aging of universe.

Duration of an event can be measured by the "Unit Time" of a specific reference event at the same location and time, it can be also measured by the "Unit Time" of a specific reference event at different location and time. Duration of an event can be represented by the "Amount of Unit Time" multiplied by the "Unit Time" which is called "Measured Quantity". For different measurement methods, the "Amount of Unit Time" can be different based on the Nature Quantity of the "Unit Time".

VIII. Length of Object

Similarly, "Length" is the size (a property) of an object. According to Principle of Equilibrium, it has a fixed quantity (Nature Quantity) dependent on the local gravitational field and aging of universe. "Unit Length" is the size of a specific reference object such as the diameter of Wu's Pairs (Wu's Unit Length) of a reference subatomic particle or the length of a human foot at a specific gravitational field and aging of universe.

Length of an object can be measured by the "Unit Length" of a specific reference object at the same location and time. It can also be measured by the "Unit Length" of a specific reference object at different locations and times. Length of an object can be represented by the "Amount of Unit Length" multiplied by the "Unit Length" which is called "Measured Quantity". For different measurement methods, the "Amount of Unit Length" can be different based on the Nature Quantity of the "Unit Length".

Distance between two objects (or two points) is an independent quantity to the two objects. Therefore it is not a function of location and time, neither that of the gravitational field and aging of the universe.

IX. Wu's Units

Since Wu's Pairs are the building blocks of all matter, therefore, for the measurements of the properties of an object or event, the following Wu's Units of a reference subatomic particle at a reference location and time (or gravitational field and aging of the universe, either at the same or different locations and times as that of the object or event), can be used as the basic unit mass, basic unit time and basic unit length [3].

(1) Wu's Unit Mass (m_{yy}) – the mass of a single Wu's Pair
(2) Wu's Unit Time (t_{yy}) – the circulation period of Wu's Pair
(3) Wu's Unit Length (l_{yy}) – the diameter of Wu's Pair

X. Corresponding Identical Object and Event

As an object or event moves slowly under subatomic equilibrium conditions at a constant temperature from one location to the other location, or two identical objects or events take place at two different locations at the same temperature, the amounts of each subatomic particle at each different quantum energy states remain unchanged. These objects or events are called "Corresponding Identical Object or Event".

One exception is that when a photon (free Wu's Pairs) intruded into earth at an extremely high speed from a far distance star, it carries and maintains the Wu's Unit Length and Wu's Unit Time influenced by the gravitational field and aging of the universe of its original light source (for example H_α) in the star, which is different from that of the photon generated from the same light source (H_α) on the present earth. In other words, the intruded photon is quenched from its original quantum energy state at the gravitational field and aging of the universe of the star which is not in subatomic equilibrium with the gravitational field and aging of the universe on the present earth. This "quenching effect" is the reason that causes Cosmological Redshift and Gravitational Redshift.

As an object or event moves from one location to the other location under subatomic equilibrium conditions, temperature should remain unchanged, or otherwise, some subatomic particles could move to different quantum energy states to cause property changes, for examples, thermal expansion and phase transition. However, under normal conditions, those changes can be neglected comparing to the effects caused by gravitational field and aging of the universe.

XI. Principle of Correspondence

At a constant temperature, for a corresponding identical object or event, the amount of unit quantity of a property measured by the unit quantity of the property of a reference corresponding identical object or event at the same location and time (or the same gravitational field and aging of the universe) remains unchanged no matter the location and time. This is named "Principle of Correspondence" [7], which can be represented as follows:

$$P = m\ P_u$$

Where at a constant temperature, P is the quantity of the property of a corresponding identical object or event, m is the amount of the unit quantity of the property and m is a constant, P_u is the unit quantity of the property of a reference corresponding identical object or event at the same location and time (or the same 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 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 movie, where each picture runs by a unit time, the total amount of pictures doesn't change, but the duration of each picture and the total playing time could be different subject to the running speed of the movie. 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 photons emitted from electrons in the covalent bond of a compound or the photons emitted from electrons in the conduction band of a semiconductor. A typical example can be found in H_2 absorption spectrum where each characteristic line in the spectrum represents the wavelength of a specific photon emitted from a light source such as H_α. The wavelength is the property and the photon emitted from H_α is the 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.

XII. Correspondence of Time

Based on Principle of Correspondence, the time (duration) of a corresponding identical event measured by the unit time of a reference corresponding identical event at the same location and time should have a constant "Amount of Unit Time" no matter the location and time. This phenomenon is named "Correspondence 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.

XIII. Correspondence of Length

Similarly, Based on Principle of Correspondence, the length of a corresponding identical object measured by the unit length of a reference corresponding identical object at the same location and time should have a constant "Amount of Unit Length" no matter the location and time. This phenomenon is named "Correspondence 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.

XIV. Principle of Correspondence versus General Relativity

In Einstein's General Relativity, both space and time are not absolute quantities. They can change with local gravity and become bigger at a massive gravitational field. In comparison, based on Yangton and Yington Theory and Principle of Equilibrium, both space (dimension) and time (duration) as the properties of an object or event, are dependent on the local gravitational field at constant aging of the universe. In addition, in compliance with Principle of Correspondence, both space (dimension) and time (duration) of a corresponding identical object or event can become bigger in a larger gravitational field at constant aging of the universe. This is because that large gravitational field implies heavy bombardment of gravitons which can cause the slowdown of Yangton and Yington circulation, also increase the diameter and period while decreasing the cycles of the circulation [3], in other words, time slows down. This agrees very well with Einstein's General Relativity and Gravitational Time Dilation.

As a result, the space and time in Einstein's General Relativity are actually the space (dimension) and time (duration) of the corresponding identical object or event at the same location. Instead of being absolute quantities, they are in fact reflecting Wu's Unit Length (diameter) and Wu's Unit Time (period) of a reference corresponding identical subatomic particle at the same location, which like Einstein's space and time, can change with local gravity and become bigger at a massive gravitational field.

XV. Einstein's General Relativity – Gravitation or Acceleration?

Einstein's General Relativity [8] claimed that acceleration is the principle factor in the universe. Because time can be influenced by acceleration and acceleration can be changed by gravitational force, therefore, clocks that is far from massive bodies, or at higher gravitational potential, run more quickly and clocks close to massive bodies or at lower gravitational potential run more slowly. This phenomenon is known as "Gravitational Time Dilation" [9].

Time is measured by the cycles of a fundamental process in the universe. Since Wu's Pairs are the building blocks of all matter, its circulation cycle is the natural clock of all processes and events. According to Yangton and Yington Theory, large gravitational field implies heavy bombardment of gravitons which can cause the slowdown of Yangton and Yington circulation so as to increase the period and decrease the cycles of the circulation (time slows down). This agrees with Einstein's General Relativity and Gravitational Time Dilation.

However, because acceleration is dependent on the total force, and gravitational force is only one of the Four Basic Forces, Einstein's general relativity is true only when acceleration is solely caused by the gravitational force. In addition, Einstein missed totally the influence caused by the aging of the universe, all because that he has absolutely no idea about Wu's Pairs and Yangton and Yington Theory in his time of 1910s.

XVI. Conclusion

The space and time in Einstein's General Relativity are actually the space (dimension) and time (duration) of the corresponding identical object or event at the same location. Instead of being absolute quantities, they are in fact reflecting Wu's Unit Length (diameter) and Wu's Unit Time (period) of a reference corresponding identical subatomic particle at the same location, which like Einstein's space and time, can change with local gravity and become bigger at a massive gravitational field.

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