IOSR Journal Of Applied Physics (IOSR-JAP)
e-ISSN: 2278-4861.Volume 12, Issue 6 Ser. III (Nov. – Dec. 2020), PP 18-22
www.Iosrjournals.Org

Hubble's Law Based on Wu's Spacetime Shrinkage Theory and Principle of Parallelism

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[Abstract]
Wu's Spacetime Shrinkage Theory is proposed based on aging of the universe in compliance with Cosmic Microwave Background Radiation (CMB). Principle of Parallelism is one of key foundations of Wu's Spacetime Theories. Both Wu's Spacetime Shrinkage Theory and Principle of Parallelism are used in the derivation of Hubble's Law without Dark Energy. A detailed interpretation and analysis of the derivation is presented. In addition, Wu's Spacetime Reverse Expansion Theory is proposed and Wu's Spacetime Shrinkage Rate is discussed.

[Keywords]
Yangton and Yington, Wu's Pairs, Wu's Spacetime Shrinkage, Wu's Spacetime Equation, Universe Expansion, Principle of Parallelism, Reverse Expansion, Cosmic Microwave Background, Cosmological Redshift, Hubble's Law

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Date of Submission: 01-12-2020 Date of Acceptance: 15-12-2020

I. Yangton and Yington Theory

Yangton and Yington Theory [1] is a hypothetical theory based on a pair of super fine Antimatter particles named "Yangton and Yington" with an inter-attractive force named "Force of Creation" forming a permanent circulating particle pair named "Wu's Pair" that is proposed as the fundamental building blocks of the universe. The theory explains the formation of all the substances in the universe and the correlations between space, time, energy and matter.

II. Wu's Spacetime Shrinkage Theory

According to the Five Principles of the Universe [2] based on Yangton and Yington Theory, through aging of the universe, Wu's Pair is getting smaller and the distance between Yangton and Yington is getting closer, and eventually Yangton will recombine with Yington to destroy each other such that everything will go back to Nothing. This phenomenon is named "Time Effect of Wu's Spacetime Shrinkage" which is in compliance with Cosmic Microwave Backgound Radiation (CMB) [3].

On the other hand, Wu's Pair can expand with gravitational field. This phenomenon is named "Gravity Effect of Wu's Spacetime Shrinkage" which is in compliance with black hole and general relativity. Both above effects are named "Wu's Spacetime Shrinkage Theory" [4].

As a result, because of the aging of the universe or due to the reduction of the gravitational field, Spacetime [x, y, z, t](l_{yy}, t_{yy}) is shrinking and the diameter of Wu's Pair l_{yy} (Wu's Unit Length) is getting smaller, also the period of the circulation of Wu's Pair t_{yy} (Wu's Unit Time) is shrinking at 3/2 power of l_{yy} based on Wu's Spacetime Equation ($t_{yy} = \gamma l_{yy}^{3/2}$) [5].

III. Principle of Parallelism

When an object or event moves slowly under equilibrium conditions from one location (with a fixed gravitational field and aging of the universe) to another location (with a fixed gravitational field and aging of the universe), or one identical objects or events takes place at two locations (each with a fixed gravitational field and aging of the universe), these objects are called "Corresponding Identical Object" and these events are called "Corresponding Identical Event". Similarly, the identical lengths of the corresponding identical objects at two locations are called "Corresponding Identical Length" and the identical times of the corresponding identical events at two locations are called "Corresponding Identical Time".

When two different corresponding identical objects or events move slowly under equilibrium conditions from one location (one equilibrium state) to another location (another equilibrium state), or for each of the two identical objects or events take place at two different locations (two different equilibrium states), the correlation between two properties in the same category (such as velocity), each from one of the two corresponding identical objects or events, remains unchanged no matter of gravitational field and aging of the universe. Or in simple words, "The correlation between the quantities of the properties of two different corresponding identical objects or events remains unchanged at all locations". This theory is named "Principle of Parallelism" [6].

IV. Hubble's Law

Although Hubble's Law can be used to explain the expansion of the universe that is derived successfully from the Acceleration Doppler Effect, it is hard to believe that a star can move faster than light speed also with an acceleration pumped by a mysterious Dark Energy. To avoid these problems, Wu's Spacetime Reverse Expansion Theory based on Wu's Spacetime Shrinkage Theory is proposed to interpret Hubble's Law.

According to Wu's Spacetime Shrinkage Theory, the shrinkage of the circulation period (t_{yy}) and orbital size (l_{yy}) of Wu's Pairs are caused by the aging of the universe. As a consequence, a photon emitted from a star more than 5 billion years ago has a larger wavelength than that on the present earth, which causes redshift and obeys Hubble's Law.

To derive Hubble's Law from Wu's Spacetime Shrinkage Theory is not difficult, however, I have made some mistakes in my previous publications [67][82][97]. With a careful analysis, a new approach is presented as follows:

First, let's address some important facts in the simulated model:

1. The photons that causing redshift comes from a star 5 billion years ago.
2. The initial stage is defined as at 5 billion years ago on earth and the final stage is defined as at present time on earth.
3. λ_i is the wave length of the photons generated from the same reference light sources on both the star and earth 5 billion years ago. Assuming both light sources have the same gravitational fields, then the same λ_i can be assured in both light sources.
4. According to Wu's Spacetime shrinkage Theory, Wu's Unit Length (l_{yy}) on earth reduced from l_{yyi} to l_{yyf}. Meanwhile the normal unit length used for measurement on earth reduced from L_i (meter of 5 billion years ago) to L_f (meter at present time).
5. The distance X between the star and the earth remains unchanged at all times.
6. The vision of star (the traveling distance of the star observed on earth) is D_E, the distance from M_iL_f to M_fL_f, where M_i and M_f are the amount of normal unit length measured by L_i and L_f on earth respectively.
7. The velocity of the star observed on earth is LdM/dt.
8. According to Principle of Parallelism, the correlations between the quantities of the properties of different corresponding identical objects or events maintain unchanged at each location (equilibrium state), no matter the gravitational field and aging of the universe. For example, $L \propto l_{yy} \propto \lambda$, in which L is the normal unit length, l_{yy} is the Wu's Unit Length and λ is the wavelength of different corresponding identical objects or events at a location in its equilibrium state of a fixed gravitational field and aging of the universe.
9. Redshift is dependent on gravitational field and aging of the universe no matter of the light source [98]. Since the gravitational field doesn't change on earth, therefore redshift is only the function of aging of the universe.

Figure C shows a schematic diagram of the visions of star on earth. In the initial stage (when photon is emitted from the star at 5 billion years ago), the distance X between the star and earth is the multiplication of the normal unit length L_i and the amount of normal unit length M_i measured on earth. At the final stage on the present earth (when the photon reaches earth), the distance of the star X becomes the multiplication of the normal unit length L_f and the amount of normal unit length M_f measured on earth. The distance of the star X stays the same, but the vision of the star D_E is changing which reflects the distance of the star moving virtually from initial distance M_iL_f to the final distance M_fL_f. Because M_fL_f is much bigger than M_iL_f, the vision of light at the final stage D_{Ef} is approximately equal to the distance X between the star and earth (Fig. C).

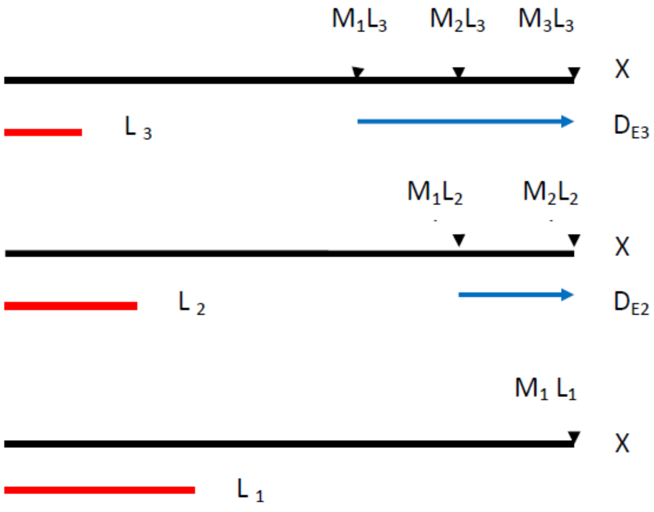

Fig. C The distance of a star measured by a shrinking ruler on earth.

Because

$D_E = ML - M_iL = X - M_iL$

$d(D_E) = d(X - M_iL)$

$$dD_E = -M_i dL$$

Also,

$X = ML$

$$dM = X\,dL^{-1}$$

Where X and M_i are constants associated to the star.

According to Principle of Parallelism, the correlations between the quantities of the properties of different corresponding identical objects or events maintain unchanged at a location in their equilibrium states of a fixed gravitational field and aging of the universe.

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

Where L is the normal unit length, l_{yy} is the Wu's Unit Length and λ is the wavelength of different corresponding identical objects or events at a location in their equilibrium states of a fixed gravitational field and aging of the universe.

Therefore,

$$dD_E = -k_1 M_i\, d\lambda$$

$$dM = k_2 X\, d\lambda^{-1}$$

Where k_1 and k_2 are constants no matter of object or event.

Apply integration to dD_E,

$D_{Ef} - D_{Ei} = k_1 M_i (\lambda_i - \lambda_f)$

Because

$D_{Ei} = 0$

Therefore,

$$D_{Ef} = k_1 M_i (\lambda_i - \lambda_f)$$

Where D_{Ef} is the vision of the star, λ_f is the wavelength of the reference light source at the final stage on the present earth and λ_i is the wavelength of the reference light source on earth (also on star) at the initial stage. M_i is the amount of normal unit length of distance X at the initial stage on earth.

D_{Ef} is dependent on M_i which is the amount of normal unit length of distance X at the initial stage on earth. Therefore D_{Ef} is a function of the star.

Given

$D = D_{Ef}$

Therefore,

$$D = k_1 M_i (\lambda_i - \lambda_f)$$

Apply integration to dM,

$M_f - M_i = k_2 X (1/\lambda_f - 1/\lambda_i)$

Therefore,

$$M_f - M_i = k_2 X (\lambda_i - \lambda_f)/\lambda_i \lambda_f$$

Where M_f is the amount of normal unit length of distance X on earth at the final stage on the present earth, M_i is the amount of normal unit length of distance X at the initial stage on earth, X is the distance between the star and earth, λ_f is the wavelength of the reference light source at the final stage on the present earth and λ_i is the wavelength of the reference light source at the initial stage on earth (also on star).
The visual traveling speed "V" of the star can be represented by:

$$V = (M_f - M_i)\, L_f/t$$

Where M_f is the amount of normal unit length at the final stage on the present earth, M_i is the amount of normal unit length of distance X at the initial stage on earth, L_f is the normal unit length at the final stage on the present earth, t is the visual traveling time of the star from initial stage to the final stage. V is dependent on M_i which is the amount of normal unit length of distance X at the initial stage on earth. Therefore V is also a function of the star.
Because
$M_f - M_i = k_2X\, (\lambda_i - \lambda_f)/\lambda_i\, \lambda_f$
$D = k_1M_i\, (\lambda_i - \lambda_f)$
$X = M_iL_i$
Therefore,
$V = (k_2/k_1)\, (L_fL_i/\lambda_i\, \lambda_f)\, D/t$
Where k_1 and k_2 are constants, L_f is the normal unit length at the final stage on the present earth and λ_f is the wavelength of the reference light source at the final stage on the present earth, L_i is the normal unit length at the initial stage on earth and λ_i is the wavelength of the reference light source at initial stage on earth, V is the visual traveling speed of the star, D is the vision of the star (visual traveling distance of the star), t is the visual traveling time of the star from the initial stage to the final stage.
According to Principle of Parallelism, L_f/λ_f are equal to L_i/λ_i. Also, because L_f/λ_f is a constant,
Given
$k = (k_2/k_1)\, (L_fL_i/\lambda_i\, \lambda_f)$
Therefore,

$$V = kD/t$$

Given

$$H_0 = k/t$$

Therefore,

$$V = H_0D$$

Where k is a constant, D is the vision of the star (visual traveling distance of the star) which is approximately equal to X the distance between the star and earth, "V" is the visual traveling speed of the star and H_0 is Hubble Constant which is dependent on time.
As a result, instead of the expansion of the universe caused by Acceleration Doppler Effect, Hubble's Law can also be derived from Wu's Spacetime Shrinkage Theory based on aging of the universe.

V. Wu's Spacetime Shrinkage Rate

According to Principle of Parallelism, L is the corresponding identical normal unit length, l_{yy} is the corresponding identical Wu's Unit Length and λ is the corresponding identical wavelength of different objects or events at two locations (each in its equilibrium states of a fixed gravitational field and aging of the universe).

$$L \infty\, l_{yy} \infty\, \lambda$$

Because

$$dD \infty -dL$$

Therefore,

$$dD = k\,(-d\, l_{yy})$$

$$dD/dt = k\,(-d\, l_{yy}/dt)$$

$$V \infty - S$$

Where D is the vision of the star (visual traveling distance of the star), V is the visual traveling speed of star moving away from earth, S is the shrinkage rate of Wu's Unit Length l_{yy} of a reference object or event on earth.

Because the star is visually moving away from earth in an acceleration speed ($dV/dt > 0$), therefore Wu's Unit Length shrinkage rate is also getting more faster ($dS/dt < 0$). However, people can't tell the differences because everything on earth is shrinking proportionally at the same time.

In theory, Wu's Spacetime shall shrink to a critical size before Yangton and Yington can recombine and destroy each other. Then, the whole universe will become nothing (None) – no matter, energy, time and space. Although we know Wu's Spacetime is shrinking with acceleration, but we don't know how far it can go before the end of the universe. One possible answer can be found in Singularity where the critical density can trigger the destruction of everything in the black hole. It is believed that the recombination and Annihilation between Yangton and Yington in Wu's Pairs can also happen for the same reason.

VI. Wu's Spacetime Reverse Expansion Theory Versus Universe Expansion Theory

During Wu's Spacetime shrinkage process, the potential energy of Yangton and Yington circulating pairs can be converted to their kinetic energy with no need of external energy. Also, the distance between the star and earth remains unchanged at all time. There is no such thing as that the star is accelerating by Dark Energy and moving away from earth at a speed faster than light speed. Because of these reasons, it is believed that Wu's Spacetime Shrinkage Theory based on aging of the universe is more realistic than Universe Expansion Theory in explanation of Cosmological Redshift and Hubble's Law. "The universe doesn't expand, it always stays unchanged, and only Wu's Spacetime on earth is shrinking at all time" – This theory is named "Wu's Spacetime Reverse Expansion Theory" [7].

VII. Conclusion

Wu's Spacetime Shrinkage Theory is proposed based on aging of the universe in compliance with Cosmic Microwave Background Radiation (CMB). Principle of Parallelism is one of key foundations of Wu's Spacetime Theories. Both Wu's Spacetime Shrinkage Theory and Principle of Parallelism are used in the derivation of Hubble's Law without Dark Energy. A detailed interpretation and analysis of the derivation is presented. In addition, Wu's Spacetime Reverse Expansion Theory is proposed and Wu's Spacetime Shrinkage Rate is discussed.

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