Time-Space with Energy

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Abstract: Time is a concept we want to understand much more. In this paper, we set up a model to describe a photon with the velocity of light pushed by one unit energy. Under this process, we define the time **t** ,rotating with velocity of light time $\dfrac{1}{\sum\limits_{N} v_i}$ and Space with Energy time τ. It is interesting to use this model we can analyze the relationship between time and space time with quantum scale and cosmic dimensions. We hope to throw a little bit light on the big picture of uniting the quantum mechanics and General relative theory.

Keywords: time, space time, light, Plank constant

0. Introduction

Time is a basic concept in physics. But till now, we have no idea to use mathematical model to describe the structure of **" Time"**. In Newton's system, Time is an independent existence with space. But in Einstein's system, Time and Space are bonded together just considering the Velocity of Light is a constant **C(m/s).** And then for a Quantum system, we consider the energy is discrete and the "**Time contentiousness"** disappeared in this system. But we can get that the **Dimension** of Plank's constant **h(J.s) is also including the unit of Time .**

So we think that if we may construct a Dimension system of Time-Space with energy based on two priori conditions: the velocity of light is a constant **C and** the

unit of **energy with Time** is **a** constant **h, Plank constant.** Maybe we can get a

mathematical model to describe more physics details of the basic structure of
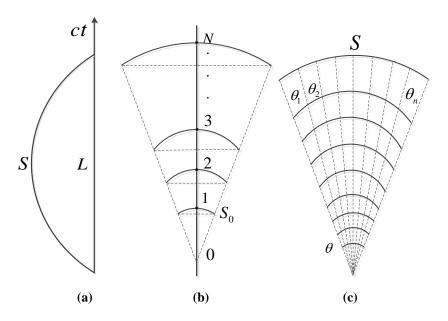
Time-space with energy.

1. Time-Space Modeling

Fig. 1 Times definition in a space with energy

We will define C as the velocity of Light, h is Planck constant and a_F is

Acceleration or the strength of field (m/s^2).

$$S_L \sim ct$$

$$S_L \sim \tfrac{1}{2} a_F t^2$$

$$\text{So } t \sim \frac{2c}{a_F} \tag{1}$$

$$\tau \sim N h (0,1,2) \tag{2}$$

τ only at the points 1,2,3,..., have the value h, the Plank constant!

And $d\theta_1 + d\theta_2 + d\theta_3 + \ldots\ldots = \sum \theta_i \sim \dfrac{1}{2\pi}$, so we will define $\dfrac{1}{\sum\limits_{N} v_i}$ as

$$\frac{1}{\sum\limits_{N} v_i} \sim \frac{2\pi}{C} \tag{3}$$

v_i is the angular frequency, can be any real number not zero.

So we got a **Space-Time with energy** coordinate system as follow:

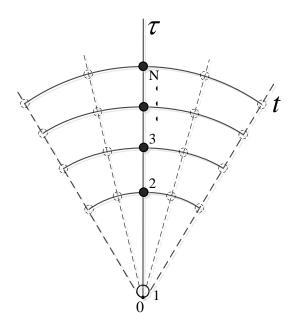$$\tau \sim \frac{1}{v_i} \sim t \quad with\ the\ Unit\ as \quad <h> \sim < \frac{2\pi}{C} > \sim < \frac{2C}{a_F} > .$$

2. The Geometry Structure of time-space

The photon explodes from a tiny point **ZERO** into N-dimensional space. Space with energy defined as $E*S$, **w**here This process can be described as the follow equations:

$$S_E = \int \frac{E}{T} dT = E \cdot \ln T + S_{E_0} \tag{4}$$

$$S_{E_0} \sim \frac{hc}{2\pi} \tag{5}$$

Where E is the energy and when $E \ln t \to Nh$. Then we have:

$$T \to e = \lim_{N \to \infty} (1 + \frac{1}{N})^N \tag{6}$$

And $\ln T \in (-1, 1)$, then we obtain as:

$$T \to e = \lim_{\frac{1}{v_i} \to \infty} (1 \pm \frac{i}{2\pi \cdot \frac{1}{v_i}})^{2\pi \cdot \frac{1}{v_i}} \tag{7}$$

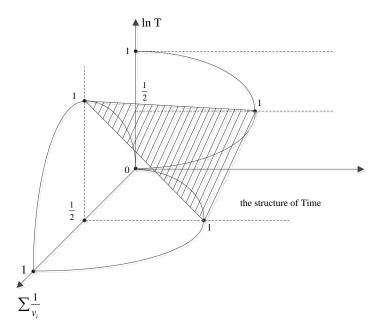$$T \to e = \lim_{n \to \infty} (1 \pm \frac{1}{n})^n$$

Figure.3. A Unit of space-time with energy

We can see in Fig.3, a unit $1/N - \dfrac{h}{2\pi} - C/a_F$ with a 1/2 Symmetry connects the Space and Energy together.
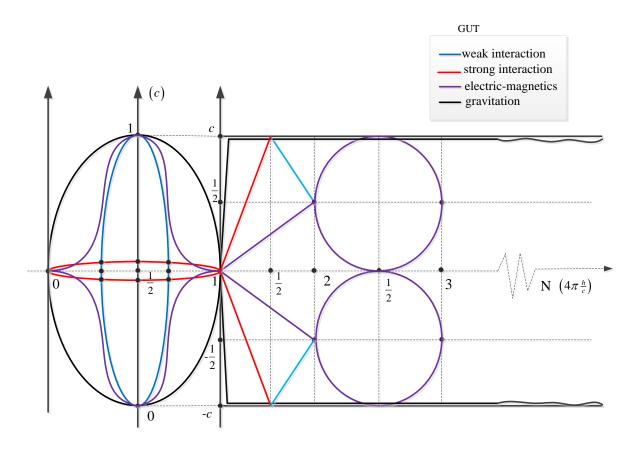

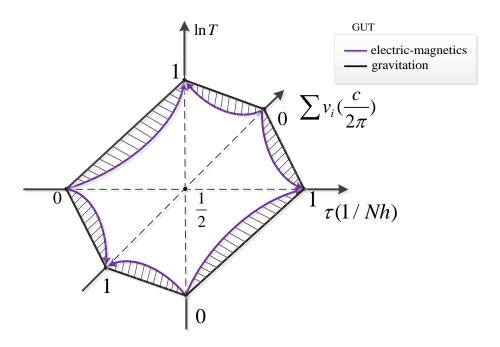**Figure.4. Uniting the gravitation and Electric-Magnetics field**

Figure.5. Uniting the gravitation and Electric-Magnetics field in a L$_{1/2}$ space

Fig. 4 and Fig.5 shows the picture uniting the gravitation and Electric-Magnetics field in the space with energy in 2D space and a L$_{1/2}$ space.

$$\ln T = \frac{Nh}{E} + \frac{C}{2\pi a_F} \tag{8}$$

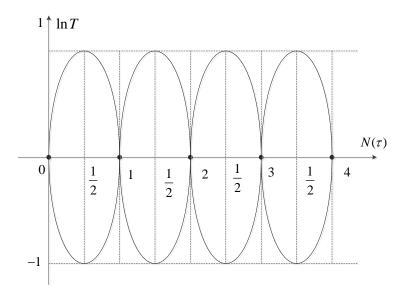## 3. The Age of the Universe: a case to test the model of time-space with energy

Figure.6. the unit of gravitation and Electric-Magnetics field

$$\begin{cases} e^{i2\pi} = 1 \\ e^{i\pi} + 1 = 0 \end{cases} \tag{9}$$

$$\frac{1}{e} \sim e^{\frac{1}{N}(1-i\cdot 2\pi)} \tag{10}$$

In Plane $\tau - \Sigma \dfrac{1}{v_i}$, we get:

$$\tau = e^{i\frac{hC}{\sum \frac{1}{v_i}\cdot a_F}} = 1 \tag{11}$$

$$\frac{hC}{\sum \dfrac{1}{v_i}\cdot a_F} = 2\pi \tag{12}$$

In Plane $\tau - \ln T$, we get:

$$\tau = N\cdot e^{i\frac{C}{\ln t\cdot a_F}} = N \tag{13}$$

$$\frac{C}{\ln T \cdot a_F} = 2\pi \tag{14}$$

So we can get:

$$a_g \cdot \tau_{aou} = a_{em}\cdot 2\pi\tau_{em} \tag{15}$$

Where a_g is the strength of gravitation, a_{em} is the field strength of the Electromagnetic.

So the age of Universal τ_{aou} is:

$$\tau_{aou} = a_{em}/a_g \cdot 2\pi\tau_{em} \tag{16}$$

The strength of the gravitation is about $10^{-40,}$ and the strength of the Electric-Magnetics field is 1/137. And $\tau_{em} = 10^{-21} s$, so $\tau_{aou} \approx 140\times 10^8$ years.

The age of the universal is about 13.7 billion years calculated by Hubble constant, and our calculation result using the above Time-Space model is the same!
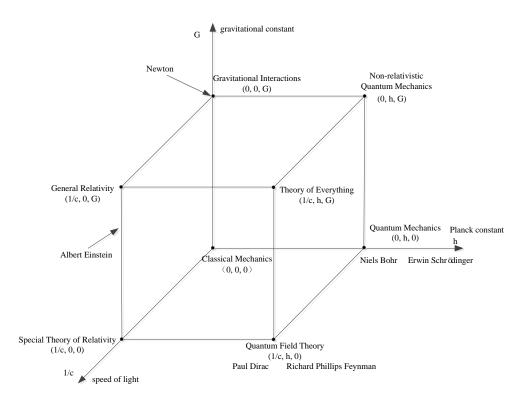
4. Summary

Figure.7. Three-dimensional interpretation of time-space. [1]

The paper [1] discusses the related structure of space-time, and our model and derivation are further studies on it. The basic unit of the Space-Time with Energy is $S_{E_0} \sim \dfrac{hc}{2\pi}$ and we get the following:

$$1/a_F \sim 4\pi N \frac{h}{c} \tag{17}$$

we can consider the $1/a_F$ as the curvature of the Space-Time with Energy !

$$E \ln T - Nh = \frac{C}{2\pi} \cdot 1/a_F \tag{18}$$

We just define the time (t), Space Time (τ) to con-structure a Time-Space with energy. It is interesting in this system, gravitation and electromagnetic force can be combined together only considering the velocity of the light is a constant C and the rotating time with light $\dfrac{1}{\sum\limits_{N} v_i} \sim \dfrac{2\pi}{C}$ just provide a probability to start the combination the basic structure Time-Space with energy to the whole Universal we can observe!!!

REFERENCE

[1] GAMOV D, IVANENKO L, LANDAU D, Physics of Atomic Nuclei, **65** (2002) 1403-1405.

5.   Competing Interests statement

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: