$L^{1/2}{}_{(0\ 1/2\ 1)}$ Entropy Space、Time-Space with Energy and Unified Field Theory

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Abstract

In this paper, we get a Space characteristic equation with a 1/2 fixed point and an entropy form.Base on this Space, We setup a model to describe a photon with the velocity of light **C** pushed by one unit energy **h**. and we find that it is interesting when considering the intensity of field1/$\mathbf{a}_F$ as the curvature of the **Quantum Time-Space with energy,** then we get a **Unified Field Equation**.We hope to throw a little bit light on the big picture of uniting the quantum mechanics and General relative theory.

Keywords

$L^{1/2}{}_{(0\ 1/2\ 1)}$ Space Quantum Time-Space Unified Field Equation

Time is a basic concept in physics. But till now, we have no idea to use mathematical model to describe the structure of **" Time"** till now. In Newton's system, Time is an independent existence with space. 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 then the "**Time contentiousness"** disappeared in this system. But It is 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.** And if we can quantized this Time-Space with energy system, Maybe we can get a mathematical model to describe more physics details of the basic structure of Time-space with energy and get a **Unified Field Theory.**

1. $L^{1/2}$(0 1/2 1) Entropy Space

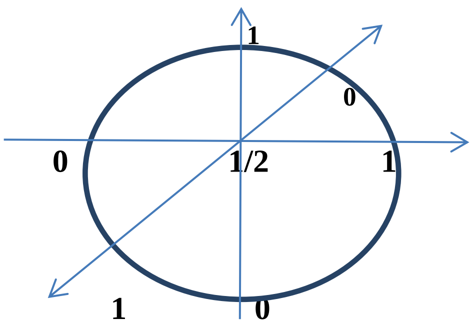

Figure.1. $L^{1/2}_{(0\ 1/2\ 1)}$ Uniting space

1.1/2 Fixed Point

$1/2=1/2 \quad 0=1/2-1/2 \quad 1=1/2+1/2$

$$1/2=(1/2+1/2\bullet i)(1/2-1/2\bullet i)$$

$$1/2=\frac{1}{2^2}+\frac{1}{2^3}+\cdots\cdots\frac{1}{2^N}=\sum_{N=2}^{\infty}\frac{1}{2^N}$$

$$1/2=\lim_{N\to\infty}\sum_{i=1}^{N}Ln(1+\frac{i}{N^2})$$

The basic space of this system is :

$$\begin{pmatrix} 0 & 1 & 0 \\ 0 & 1/2 & 1 \\ 1 & 0 & 0 \end{pmatrix}$$

This is an space with a 1/ 2 fixed point.

And we have :

$$\tau \in N\begin{bmatrix} 0 & ½ & 1 \end{bmatrix} N \bmod(2N)$$

$$T\in[e^{2\pi Ni}=1, e=\lim_{n\to\infty}(1+\frac{1}{N})^N]$$

$$t \in \left[\frac{e^{i2\pi} + e^{i\pi}}{2} = 0, \frac{e^{i2\pi} - e^{i\pi}}{2} = 1 \right]$$

$$< T >_{[0,1)} = < \tau >_{[0,1/2,1]} + < t >_{[0,1]}$$

$$LnT = N + \frac{1}{2\pi Ni}$$

So we have a space:

$$[\ln T][\ln T]^{-1} + \begin{bmatrix} 0 & 1 & 0 \\ 0 & \frac{1}{2} & 1 \\ 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} 1/2 & 1/2 - \frac{1}{4\pi i} & \cdots\cdots 1/2\,N - \frac{1}{4\pi Ni} \\ 1/2 + \frac{1}{4\pi i} & 1/2 & \cdots\cdots\cdots\cdots \\ \cdots\cdots\cdots\cdots & 1/2 & \cdots\cdots\cdots\cdots \\ 1/2\,N + \frac{1}{4\pi Ni} & \cdots\cdots\cdots\cdots & 1/2 \end{bmatrix} = 0$$

$$[\ln T][\ln T]^{-1} = 1$$

2. Time-Space with one unit of energy

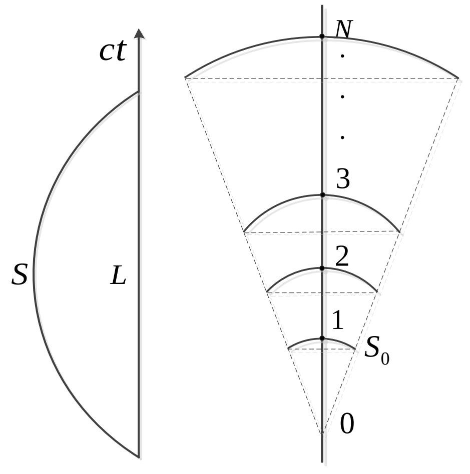

Fig. 2. Times definition in a space with energy

We will define a time space with energy as :

$$S \sim E \bullet L * t \quad \textbf{(J.m.s)}$$

We will define C as **the velocity of Light(m/s),** h is **Planck constant (J.s)**and a_F is **the strength of field (m/s^2).**

$$S_L \sim ct$$
$$S_L \sim \tfrac{1}{2} a_F t^2$$
$$\text{So } t \sim \frac{2c}{a_F}$$

and we define τ only at the points 1,2,3,..., have the value the Plank constant **h**.

$$\tau \sim \mathrm{Nh}(0,1,2,3,...)$$

So we got a time with energy coordinate system as follow:

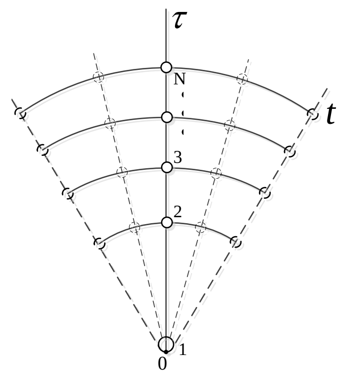

Fig. 3. A Time -Space with energy coordinate system

with the Unit as

$$<h>\sim<\frac{1}{C}>\sim<\frac{C}{a_F}>$$

We can see in Fig.3, a unit $\ln T - 1/N < h > -2\pi N < 1/C >$ with a 1/2 Symmetry connects the Time-Space and Energy together. C as the velocity of Light, h is Planck constant and a_F is Acceleration or the Intensity of field (m/s^2).

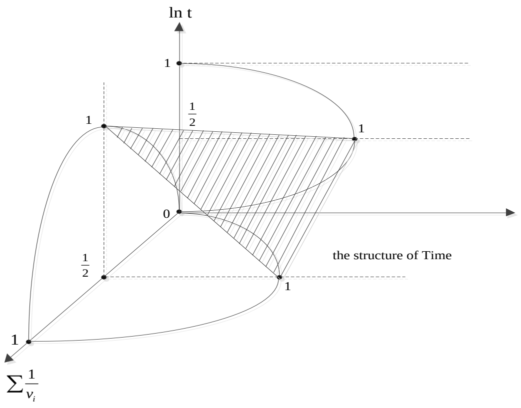

Figure.4. A Unit of space-time with energy

We can see in Fig.4, a unit with a 1/2 Symmetry connects the Space and Energy together.And then we obtain as:

$$1+\begin{bmatrix} 0 & 1 & 0 \\ 0 & \frac{1}{2} & 1 \\ 1 & 0 & 0 \end{bmatrix}\begin{bmatrix} ½ & ½-\frac{1}{4\pi i} & \cdots\cdots ½N-\frac{1}{4\pi Ni} \\ ½+\frac{1}{4\pi i} & ½ & \cdots\cdots\cdots \\ \cdots\cdots\cdots & ½ & \cdots\cdots\cdots \\ ½N+\frac{1}{4\pi Ni} & \cdots\cdots\cdots & ½ \end{bmatrix}=0 \quad \textbf{And} \quad <h>\sim<\frac{1}{C}>\sim<\frac{C}{2a_F}>\to 1$$

so

$$1+\begin{bmatrix} 1/C \\ h \\ C/a_F \end{bmatrix}\begin{bmatrix} 0 & 1 & 0 \\ 0 & 1/2 & 1 \\ 1 & 0 & 0 \end{bmatrix}\begin{bmatrix} ½ & ½-\frac{1}{4\pi i} & 1-\frac{1}{8\pi i} \\ ½+\frac{1}{4\pi i} & ½ & ½-\frac{1}{4\pi i} \\ 1+\frac{1}{8\pi i} & ½+\frac{1}{4\pi i} & ½ \end{bmatrix}=0$$

(One Quantum Space)

$$[LnT][LnT]^{-1}+\begin{bmatrix} 1/C \\ h \\ C/a_F \end{bmatrix}\begin{bmatrix} 0 & 1/C & 0 \\ 1/N & 1/2 & N \\ 1 & 0 & 0 \end{bmatrix}\begin{bmatrix} ½ & ½-\frac{1}{4\pi i} & 1-\frac{1}{8\pi i} \\ ½+\frac{1}{4\pi i} & ½ & ½-\frac{1}{4\pi i} \\ 1+\frac{1}{8\pi i} & ½+\frac{1}{4\pi i} & ½ \end{bmatrix}=0$$

(N- Quantum space)

And then

$$LnT = Nh + \frac{C}{4\pi N i a_F}$$

So We have the following equations as:

$$1 + B(S) = 0$$

$$LnT = Nh + \frac{C}{4\pi N i a_F}$$

$$SLnT = \frac{NhC}{2\pi a_F}$$

$$1/a_F = 4\pi N^2 \frac{h}{C}$$

The basic unit of the Space-Time with Energy in our model is:

$$S_{E0} \sim \frac{hc}{2\pi}$$

$$1/a_F \sim \frac{h}{C}$$

$1/a_F$ can be considered as the curvature of the Space-Time with Energy !

3.The Geometry Structure of Time-Space with energy

We can make 1/N=1 then we have a coupling number set:

$$[0\ 1/3\ 2/5\ 3/7]\ \frac{1}{2}\ [1\ 2\ 3\ 4]\ [4/7\ 3/5\ 2/3\ 1]\ \frac{1}{2}\ [7\ 5\ 3\ 2]$$

Fig.5 shows the structure of the time-space with energy.

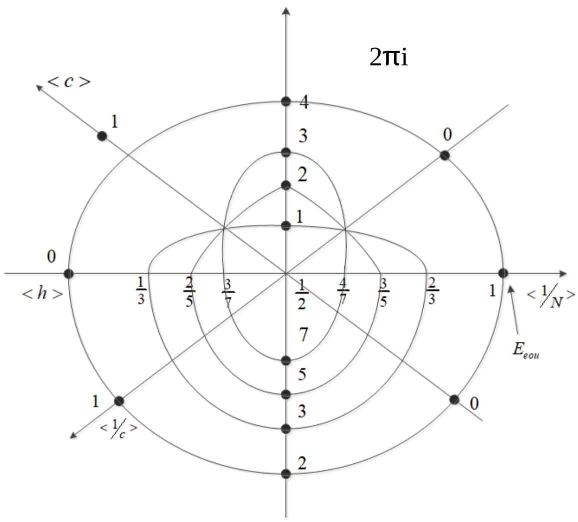

Fig.5 The Geometry Structure of time-space with energy in one Quantum Space

The strength of strong interaction a_s and the strength of electromagnetic field a_{em} and weak interaction a_w has a ratio :

$$a_{\mathrm{w}} : a_{em} : a_s = e^{3^2 : 5^2 : 7^2 :}$$

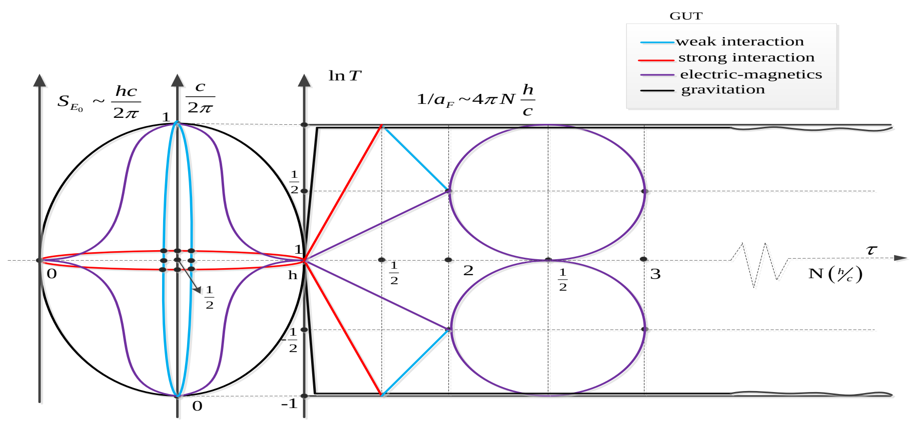

Figure.6 Uniting the gravitation and Electric-Magnetics field in a N Quantum Space

Fig. 6 shows the picture uniting the gravitation and Electric-Magnetics field in the Quantum Time space with energy .The strength of gravitation a_g and the strength of electromagnetic field a_{em} has a ratio:

$$a_g / a_{em} \sim e^{2^{2^2} : \frac{1}{2}\times\frac{1}{2}\times\frac{1}{2}} \sim e^{128}$$

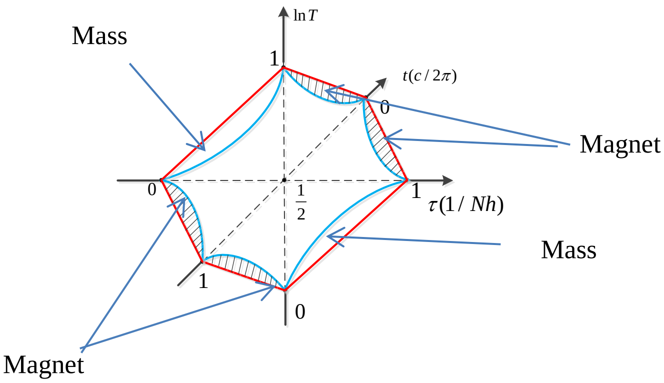

Figure.7. Mass and Magnet in the Uniting gravitation and Electric-Magnetics field

Figure 7 shows the meaning of mass and magnet in the $L^{1/2}_{[0\ 1/2\ 1]}$ Entropy space. Mass and Magnet can be considered as the fields between the gravitation and Electric-Magnetics field decided by the ratio of the a_{em} / a_g . So in this model, there is no **mass gap** and the magnetic poles should be pairing and **no monopole** !

Discussion

Galilei said that he can creative the Universal only using **Space**, **Time** and **Logarithm**. Einstein thanked that a Unified Field Theory should be a geometrization one. And Roger Penrose pointed out that if we want to get the uniting of the Mass and Time-Space , we need the help of Complex Number[1].The paper [2] discusses that a Unified field theory should be a model with Plank constant、gravitation and the velocity of Light.

In Our model

$$SLnT = \frac{NhC}{2\pi a_F}$$

$$LnT = Nh + \frac{C}{4\pi Nia_F}$$

This model has an **geometry space (complex)** with **entropy form (logarithm)** and just provide a probability to combine the **Gravitation** and **Electric-Magnetics field** under a basic structure of quantum Time-Space with energy.

Wilczek [3] want to use a concept called **Quantum Time Crystals** to **define the Time space with energy.** Our Model actually **give a definition of Quantum Time Space as**

$$S_{E0} \sim \frac{hc}{2\pi} \sim 10^{-26}$$

$$1/a_F \sim \frac{h}{C} \sim 10^{-42}$$

Summary

In this paper, We constructed a Time-Space with energy model just considering the velocity of the light C and the Plank constant h . It is interesting in this system, Gravition and electromagnetic force can be combined together only if we consider that the **The** $1/a_F$ **considered as the curvature of the Space-Time with Energy !**

References

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[2] Gamov D, Ivanenko L, Landau D Physics of Atomic Nuclei 2002. **65** 1403-1405.
[3] Frank Wilczek Physics Review Letters 109, 160401 (2012).