$L^{1/2}$(0 1/2 1) Space and Quantum Time-Space with Energy

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Abstract

In this paper, We constructed a Time-Space with energy model just considering the velocity of the light C and the Plank constant *h* and $\mathbf{1/a_g}$ ($\boldsymbol{a_g}$ **is the strength of gravition (m/s^2))** This model has a **geometry space (complex)** and just provide a probability to combine the **Gravitation** and **Electric-Magnetics field** under a basic structure of quantum Time-Space with energy. We hope to throw a little bit light on the big picture of uniting the quantum mechanics and General relative theory.

Keywords

Quantum Time-Space with energy Unified Field Theory

1. Time quantization

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. 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.**

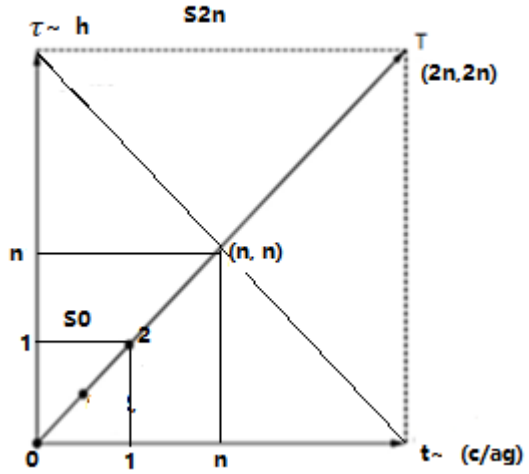

Fig. 1. Time with energy coordinate

τ can be defined as

$$\tau \sim nh \qquad n\sim(1,2,3,...)\ h \text{ is } \textbf{Planck constant}$$

$\boldsymbol{t}$ can be defined as

$$\boldsymbol{t}\sim\boldsymbol{n}\left(\frac{\boldsymbol{c}}{a_g}\right) \quad n\sim(1,2,3,...)$$

C as the velocity of Light, and a_g is the Intensity of field of gravitation (m/s^2). So we got a time with energy coordinate system as Fig.1

For a physic system, at every moment:

$$\boldsymbol{\tau} = \boldsymbol{t}$$

$$nh = nc/a_g$$

$$\frac{1}{a_g} = h/c$$

$$T\sim < h > + < \boldsymbol{c}/a_g >$$

2. Quantum Time Space with Energy

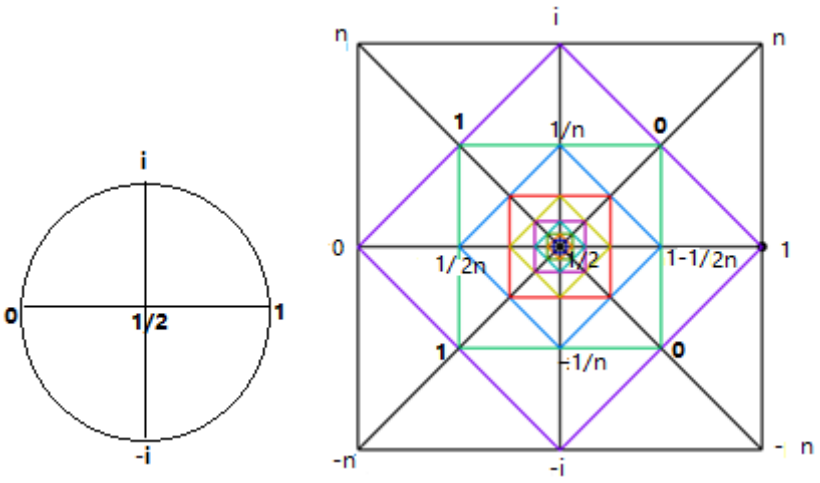

Fig.2. N-domain analytic continuation with $1/2n$ points in $L^{1/2}_{(0\ 1/2\ 1)}$ space

$$1/2 = 1/2 \quad 0 = 1/2\text{-}1/2 \quad 1 = 1/2 + 1/2 \quad i^2 = -1$$

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

$$i^0 = 1 \quad i^1 = i \quad i^2 = -1 \quad i^3 = -i \quad i^4 = 1$$

$$i^{2n} = \pm 1 \quad i^n = (i \ -1 \ -i \ 1)$$

we called it $L^{1/2}(0\ 1/2\ 1)$. **And**

$$\frac{1}{2n} \to 0 \quad n\sim(1,2,3,\ldots)$$

$$1 - \frac{1}{2n} \to 1$$

$$zp = \frac{1}{2} + \frac{1}{2n} i$$

$$-zp = \frac{1}{2} - \frac{1}{2n} i$$

$$i^{2n} = \pm 1 \quad i^n = (i \ -1 \ -i \ 1)$$

$$1 + \begin{bmatrix} 1 & i & 0 \\ 0 & 1/2 & 1 \\ 1 & -i & 0 \end{bmatrix} \begin{bmatrix} 1/2 & \ldots\ldots & \frac{1}{2^n}[1+\frac{1}{2n}i] \\ \ldots\ldots & 1/2 & \ldots\ldots\ldots \\ \frac{1}{2^n}[1-\frac{1}{2n}i] & \ldots\ldots & 1/2 \end{bmatrix} = 0$$

$[LnT][LnT]^{-1}=1$

The tr(A)=1/2*n

We will define a time space with energy as :

$$S_0 \sim h * \frac{a_g}{c} \sim 1$$

$$LnT = \frac{2h}{C^2}(1 + \frac{1}{2n} i)$$

$$m_0 \sim \frac{h}{C^2} \qquad 1/a_g \sim \frac{h}{C}$$

$$m_0 a_g \sim 1/c$$

$$\frac{\boldsymbol{S_{2n}}}{\boldsymbol{S_0}} \sim \boldsymbol{4n^2}$$

$$mLnT = \frac{\boldsymbol{8n^2 h}}{C^2}(\boldsymbol{1} + \frac{\boldsymbol{1}}{\boldsymbol{2n}} i)$$

3. 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. **Wilczek** [3] want to use a concept called **Quantum Time Crystals** to **define the Time space with energy.**

In Newton's system, Time is an independent existence with energy.

$$S \sim E * t \text{ and } F = ma$$

In Einstein's system, Time and Space are bonded together just considering the Velocity of Light is a constant **C(m/s).**

$$\boldsymbol{S \sim E} * (\frac{\boldsymbol{C}}{\boldsymbol{a_g}}) \text{ and } E = mC^2$$

a_g is the strength of gravitation (m/s^2)

And for a Quantum system, the energy is considered 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 .**

$$\boldsymbol{S \sim E * t = nh} \text{ and } E = h\nu$$

h is Plank constant, we can find that the **Dimension** of Plank's constant **h(J.s) is also including the unit of Time .**

In our system, we can get

$$\boldsymbol{S \sim E}$$

$$\boldsymbol{S_{2n} \sim 8n^2 h} * (\frac{\boldsymbol{ag}}{\boldsymbol{c}}) \textbf{ and } m_0 a_g \sim 1/c$$

4. 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. Our Model **give a definition of Quantum Time Space as**

$$m_0 \sim \frac{h}{C^2} \sim 10^{-50}(s^{-1})$$

$$1/a_g \sim \frac{h}{C} \sim 10^{-42}(s^2 * m^{-1})$$

$$S_0 \sim h * \left(\frac{ag}{c}\right) \sim 1$$

$$S_{2n}/S_0 \sim 8n^2$$

$$mLnT = \frac{\boldsymbol{8n^2h}}{C^2}\left(\mathbf{1} + \frac{\mathbf{1}}{\boldsymbol{2n}}i\right)$$

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

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.

Data Availability statement

No datasets were generated or analyzed during the current study.

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