

# Quantum time-space with energy

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Yajun L. Quantum time-space with energy. J Mod Appl Phys 2023;6(4):1-2.

**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  $1/a_g$  ( $a_g$  is the strength of gravitation ( $m/s^2$ )). 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; Energy unified field theory; Electric-magnetics field; Gravitation; Time quantization

**INTRODUCTION**

**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 quantize 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 (Figure 1).

$$nh=nc/a_g$$

$$1/a_g=h/c$$

$$T \sim \langle h \rangle + \langle c/a_g \rangle$$

**Quantum time space with energy**

We will define a time space with energy as:

$$S_0 \sim 1/4 \times h \quad a_g/c \sim 1$$

$$S_1 \sim h \times a_g/c \sim 1$$

$$m_0 \sim h/C^2 \quad 1/a_g \sim h/c$$

$$m_0 a_g \sim 1/l$$

$$S_{2n}/S_0 = 16n^2$$

$$mT = 16n^2 h/c^2$$

**DESCRIPTION**

Galilei said that he can create 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 discusses that a unified field theory should be a model with Plank constant gravitation and the velocity of Light. Wilczek want to use a concept called quantum time crystals to define the time space with energy [2,3].

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

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

In Einstein's system, time and space are bonded together just considering the velocity of light is a constant  $C$  ( $m/s$ ).

$$S \sim E \times (C/a_g) \text{ and } E=mc^2$$

$a_g$  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 [4-6].

$$S \sim E \times t = nh \text{ and } E=hv$$

$h$  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

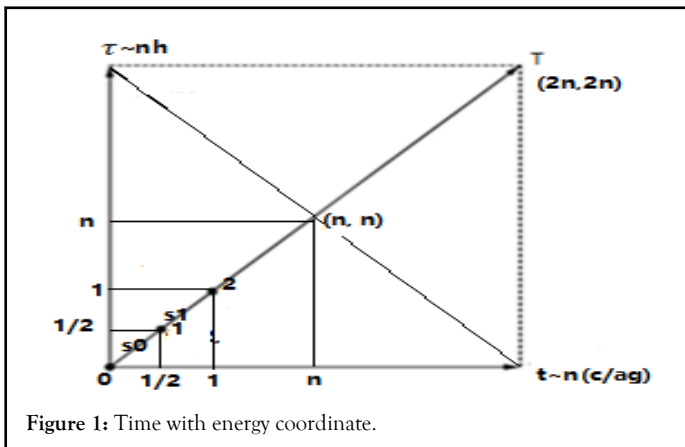


Figure 1: Time with energy coordinate.

$\tau$  can be defined as  $\tau \sim nh \quad n \sim (1,2,3,...)$   $h$  is Plank constant

$t$  can be defined as  $t \sim n(c/a_g) \quad n \sim (1,2,3,...)$

$C$  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 Figure 1.

For a physic system, at every moment:

$$\tau=t$$

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**Received:** 04Jun-2023, Manuscript No. PULJMAP-23-6505; **Editor assigned:** 07Jun-2023, PreQC No. PULJMAP-23-6505 (PQ); **Reviewed:** 22Jun-2023, QC No. PULJMAP-23-6505; **Revised:** 04Aug-2023, Manuscript No. PULJMAP-23-6505 (R); **Published:** 14Aug-2023, DOI: 10.37532.2023.6(4).1-2.



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$S \sim E$

$$S_{2n} \sim 16n^2 h \times a/c(a_g) \text{ and } m_0 a_g \sim 1/c$$

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 gives a definition of quantum time space as

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

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

$$S_0 \sim 1/4 \times h \times (c/a_g) \sim 1$$

$$S_1 \sim h \times (c/a_g) \sim 1$$

$$S_{2n}/S_0 \sim 16n^2$$

$$mT = 16n^2 h/C^2$$

### CONCLUSION

This model has a geometry space (complex) with entropy form (logarithm), which just provides 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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