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Quantum Buzzle, Vacuum Dynamics and the Big Bang

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Abstract:-

➢ ***This Article Aims to Describe the Inherent Connection between Three Seemingly Unrelated Topics:***

The quantum buzz, vacuum dynamics and the Big Bang.

First, we introduce what are called quantum buzzles.

Next, we explain what is called vacuum dynamics, which refers to the space where the quantum particle lives and functions in unexpected ways.

Finally, we use matrix mechanics to show how to combine the first and second parts to arrive at an explanation of the formation and explosion of the Big Bang.

➢ ***The Striking Result is that:***

The formation and explosion of the Big Bang is indispensable, but it takes millions or even billions of years and is an inevitable ultimate formation and explosion of infinite free space.

I. INTRODUCTION

We believe that the universe began with all of its energy trapped in a very small point.

This extremely dense dot exploded with unimaginable force, creating matter and pushing it outward to form the billions of galaxies in our vast universe.

Astrophysicists called this titanic explosion the Big Bang.

This is the subject of this article which is systematically divided into three main blocks:

In part A, we present what are called quantum buzzles.

Quantum buzzles are actually quantum rules that apply to the energy density distribution of quantum matter in a vacuum ($\psi^2(x,y,z,t)$ and not $\psi(x,y,z,t)$ itself).

➢ *We call them Quantum Buzzles for Two Basic Reasons:*

- These are not the same rules as the rules applied to material environments in classical physics and in some cases they are opposite.
- Quantum rules/buzzles do not have a rigorous mathematical proof.

Fortunately, quantum rules/buzzles are subject to Q matrix chains and can be predicted.

Q matrix chains are the same as B matrix chains but with a slight rewording.

The two chains B and Q are products of the numerical statistical method called Cairo techniques [1,2,3,4,5,6].

In Part B, we explain what is called vacuum dynamics, which refers to the space where quantum matter lives and functions.

Vacuum dynamics is a set of rules that apply to infinite free space.

Finally, in Part C, we show how to combine Parts A and B to arrive at an explanation of the formation and explosion of the Big Bang.

This shows that the formation and explosion of the Big Bang takes millions or even billions of years and is an inevitable ultimate formation and explosion of infinite free space.

Let us recall again that quantum hums and vacuum dynamics are in fact quantum rules which apply to the energy density distribution of quantum particles ($\psi^2(x,y,z,t)$ and not $\psi(x,y,z,t)$ itself).

II. THEORY

The combination of quantum rules, vacuum dynamics and the formation of the big bang is a subtle affair.

Here many mathematicians and physicists mix real science with fake science and fiction stories.

The old iron guards of the Schrödinger equation continue to deny the facts and dispel their flawed understanding of mathematics and physics.

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The question arises: are Newton's laws of motion and the law of gravitation, as well as the numerical statistical theory of Cairo techniques, all valid in a vacuum?

➢ *The short Answer is a Big yes.*

- *Newton's law of gravity*

F=G*m1 m2/r^2

Is valid in vacuum on the macroscopic scale as well as on the microscopic scale.

- *Newton's Second Law of Motion in its General Form,*

F=d/dt (mv)

Is valid in a vacuum.

Moreover, it is the only way to prove mass-energy equivalence [7],

E=mc^2

- *The Numerical Statistical Theory of Cairo Techniques is valid in a Vacuum.*

Furthermore, the statistical theory of Cairo techniques is a unified energy density field theory [7].

Despite the denials of Schrödinger's iron guards.

III. QUANTUM BUZZLES

Remember again that Quantum Buzzles are actually quantum rules that apply to the energy density of quantum matter waves U(x,y,z,t) in an infinite vacuum.

Note also that the wave-matter quantum energy density distribution U(x,y,z,t) is equal to ψ^2(x,y,z,t) rather than the wave function ψ(x,y,z, t) itself in the x-t unit infinite free space.

*The first and most important rule/buzz applied to infinite free space is:

S(x,y,z,t)=Constant * V(x,y,z,t) . . . . ……Rule 1

Where S is the source/sink energy density term and V is the potential energy at the same node in 4D unit space (x, y, z, t).

Rule 1 applies exclusively to infinite free space.

➢ *In Infinite Free Space, Potential Energy V can be Transformed into Quantum Particles and Vice Versa.*

Equation 1 is a clever breakthrough that leads to the numerical statistical equivalence of the Schrödinger equation.

In other words, equation 1 leads to the replacement of Schrödinger's partial differential equation by its equivalence to Cairo matrix mechanics.

** The second rule/buzz applied to infinite free space is:

V(x,y,z)at [∞] is equal to V(x,y,z) at [-∞] =0 for all t. .Rule 2

Equation 2 is a clever breakthrough that expresses the fact that the quantum mechanical situation describes an isolated quantum system in infinite free space.

***The third rule/buzz applied to infinite free space is that full symmetry around midpoint M in 4D unit space is valid and expressed in the quantum transition matrix Q as,

Q(M+x,t)=Q(M-x,t), for all x,t... . . . . ……..Rule 3

Where Q is the quantum transition matrix of the quantum system.

****The forth rule/buzzle is how to implement Rule 1 in the classical physics B-matrix chains to arrive at the quantum mechanics Q-matrix chains.

The B matrix chains of classical physics are well defined [1,2,3,4,5] and the quantum transition matrix Q is also well defined via the B matrix as follows,

[Q]=[I-B]+C[I]. . . . …….. Rule 4

Where the constant C is a function of the size and structure of the Q matrix and can be found by trial and error.

That implies that :

- *A Classic Numerical Statistical Matrix B is Generated and Defined by,*

U(x,y,z,t+dt)=B*U(x,y,z,t) . . . . ……...Rule 5

- *A Quantum Numerical Statistical Matrix Q Appears and Expressed by,*

U(x,y,z,t+dt)= Q*U(x,y,z,t) . . . …….....…Rule 6

Note again that in equation 5, U(x,y,z,t) represents Ψ^2 rather than Ψ itself.

I is the unitary matrix.

Rule 4 or equation 4 allows us to formulate the transition matrix Q in a simple way and predict its properties.

The Q matrix is a multi-rule/multiple buzzle in itself.

Note that Norm [Q^N] = Norm [Q]

Also note that the Q matrix is a proper matrix.

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IV. VACUUM MECHANICS

By Vacuum Mechanics, we mean the mechanical laws and formulas proposed to solve quantum mechanics problems via statistical techniques of matrix chains (Cairo techniques).

In this section, we use rules 1-6 of matrix mechanics to explain the essential properties of vacuum dynamics and how U(x,y,z,t) evolves in space and time.

Figures 1, 2, 3 clearly show the numerical results for the 1D infinite potential well, the 2D infinite potential well and the 3D quantum dot respectively.

In other words, the statistics of Cairo techniques can prove in a simple way [8] that infinite vacuum alone and spontaneously can provide peak shape in 1D, 2D, 3D geometry (triangular shape) of energy density.

This is the so-called Cairo techniques approach.

All figures have a prominent crest at the center of their mass.

The numerical solution is given by references 1-6 and it is therefore unnecessary to repeat it.

The above numerical results are shown in Figures 1,2 below.

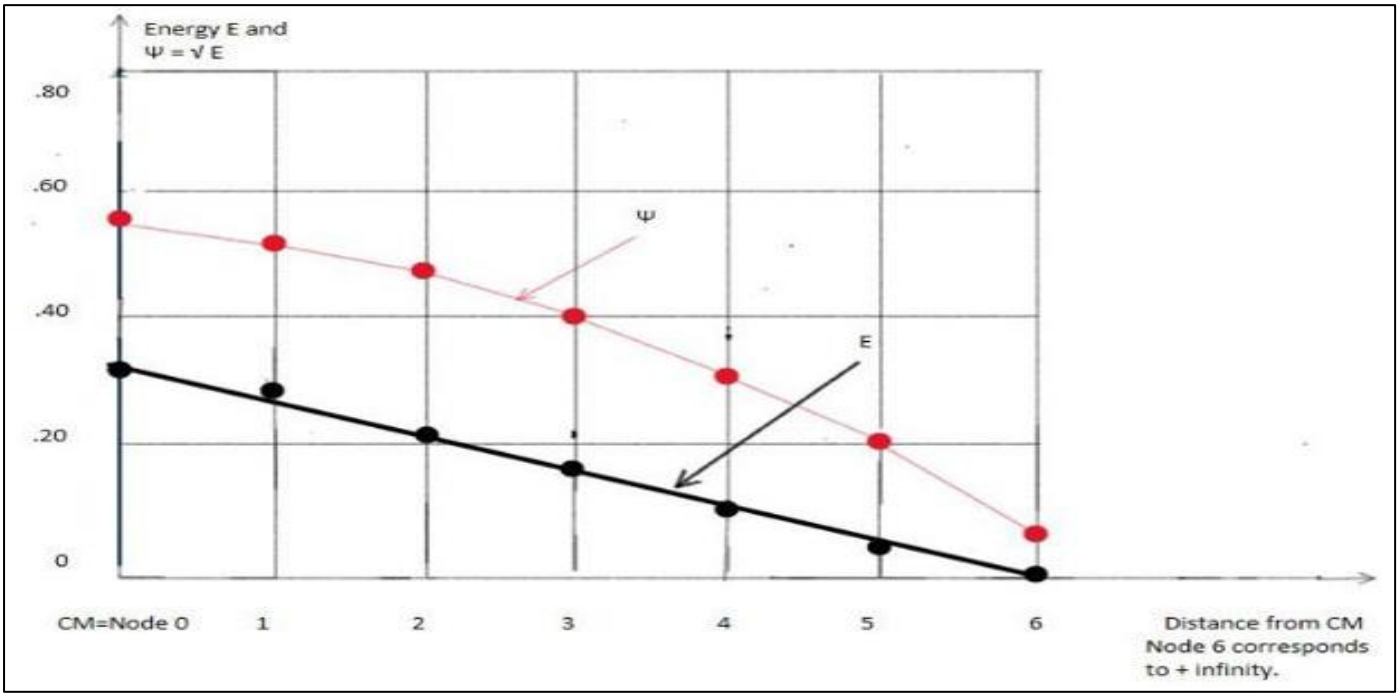

Fig 1 Vacuum Mechanics in a 1D Infinite Potential well.

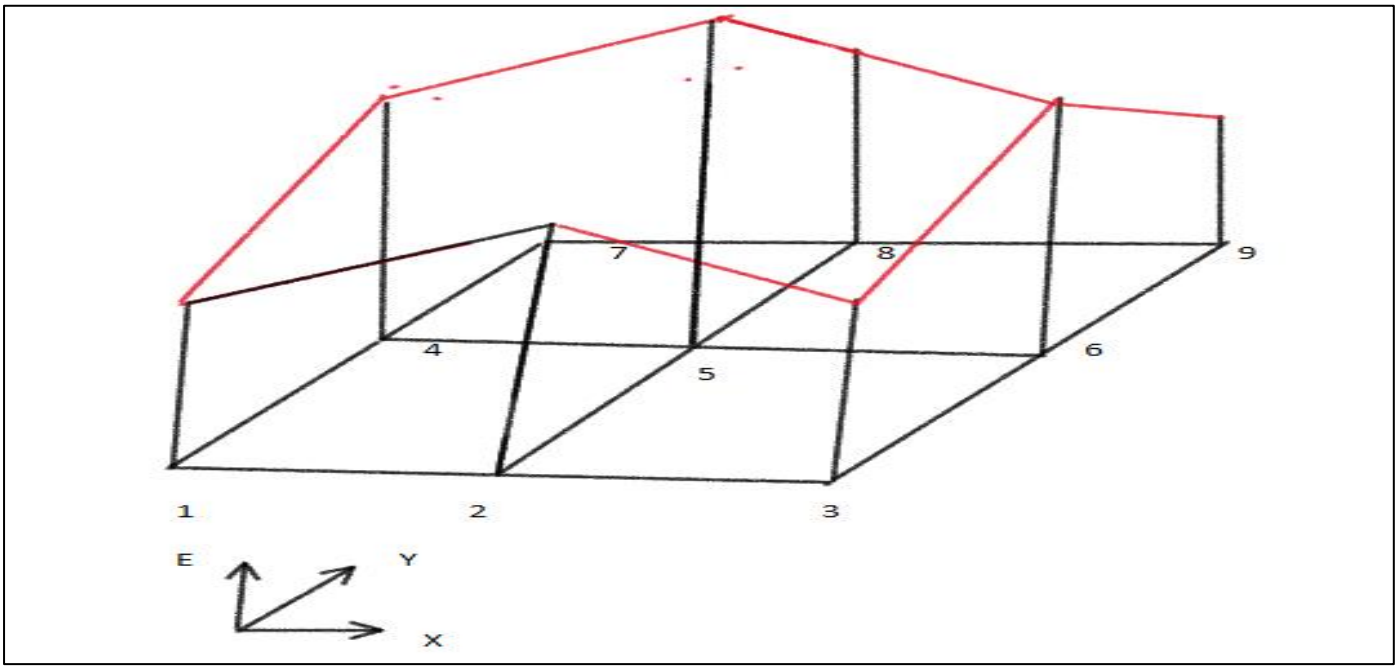

Fig 2 Vacuum Mechanics in a 2D Infinite Potential well.

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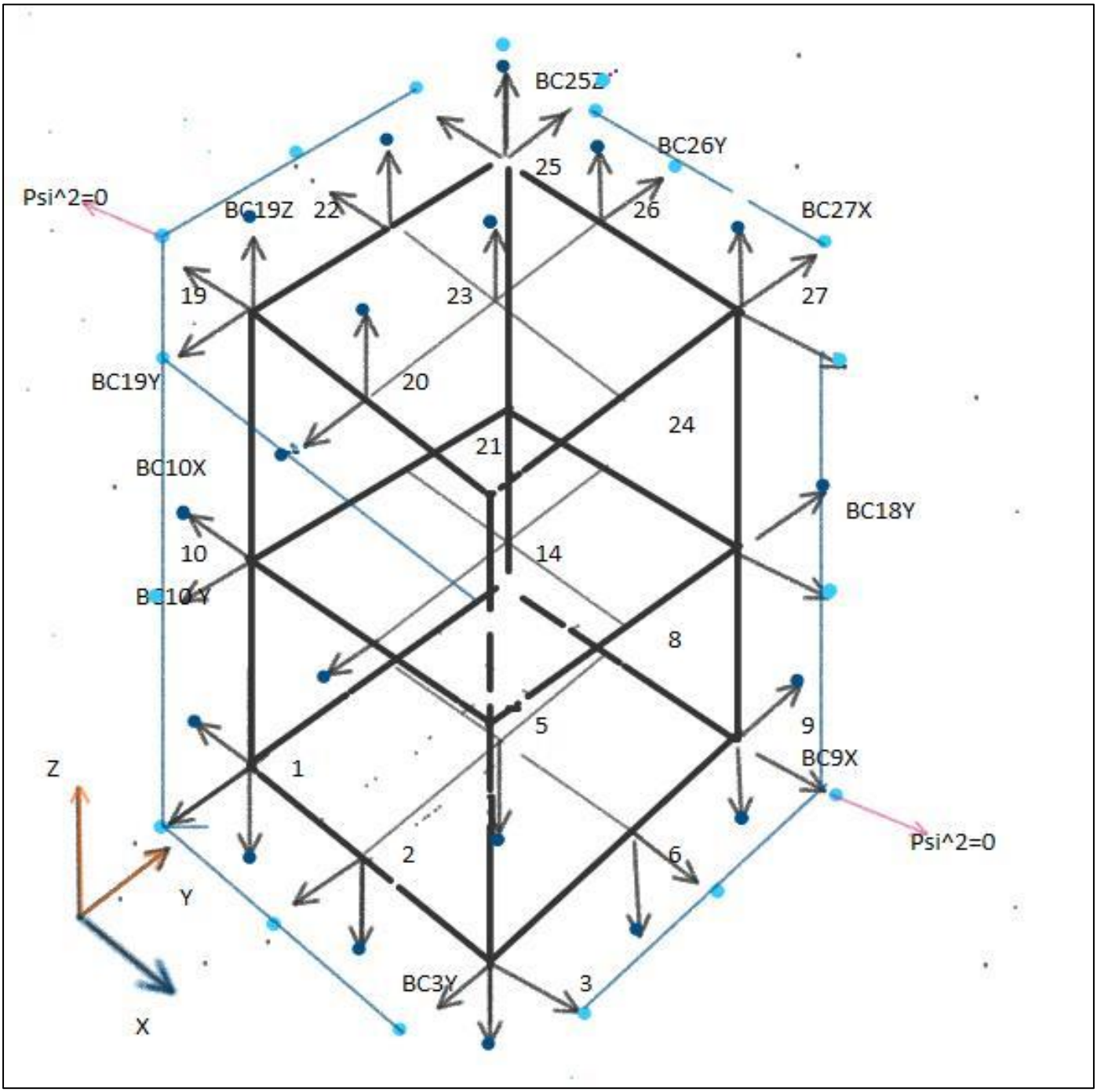

Fig 3 Vacuum Mechanics in a 3D Closed Box.

V. FORMATION AND EXPLOSION OF THE BIG BANG

Before the Big Bang, there existed infinite free space and time that constituted a unitary, four-dimensional void. This problem belongs to the Q matrix of quantum mechanics [9].

Here too, many mathematicians and physicists mix real science with false science and fiction stories.

The old iron guards of the Schrödinger equation claim that the Schrödinger equation and its derivatives should be combined with the theory of general relativity (theory of gravity) to obtain a comprehensible picture of the Big Bang, which does not is not true.

They are driven by the old iron guards of the Schrödinger equation.

The truth is that combining quantum mechanics and vacuum dynamics with the concept of strong and weak forces leads to the best explanation of the Big Bang.

The fact that the formation and explosion of the Bang can be explained via the theory of Cairo techniques combined with short-range weak and strong forces is explained in Fig.4 [9].

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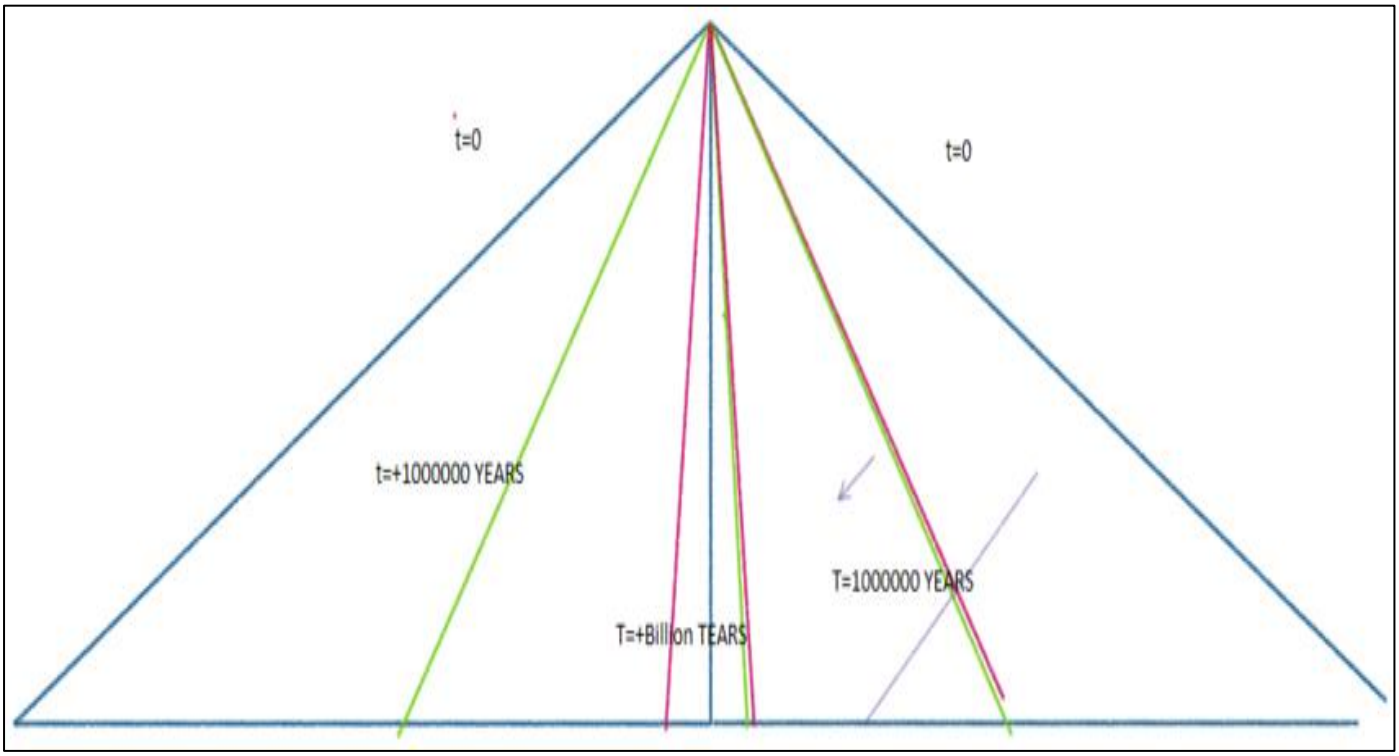

Fig 4 Occurrence and Duration of the Big Bang over Millions or Billions of years.

Just like the weak force, the strong force only acts when subatomic particles or energy density are extremely close to each other. They must be somewhere

Generally, the ratio of strong force to weak force under normal circumstances is 1:1 × 10 − 6. In other words, normally the strong force is one million times stronger than the weak force.

The probability of both forces appearing or lasting should also be 1/1 million.

Accordingly, Figure 4 explains the occurrence and duration of the Big Bang over millions or billions of years.

We emphasize once again that the Cairo technical approach does not require iteration of the out-of-the-box MATLAB or PYTHON algorithm or any other conventional mathematical iteration method.

VI. CONCLUSION

In this article we present what are called quantum buzzles.

We also explain what is called vacuum dynamics, which refers to the space where the quantum particle lives and functions.

Finally, we use matrix mechanics to show how to combine parts A and B to arrive at an explanation of the formation and explosion of the Big Bang.

This combination shows that the formation and explosion of the Big Bang takes millions or even billions of years and is an inevitable ultimate formation and explosion of infinite free space.

We also expect that in the near future, research studies via the new statistical equivalence of the Schrödinger equation will expand enormously at the expense of minimizing the classical formula of the Schrödinger partial differential equation

NB: Throughout this work, the author used his own double precision algorithm [10,11].

Python or MATLAB library is not required.

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