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Riemann Function and Relativistic Structure

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Abstract

It has pointed out that pointwise is a quantized unit concept of Riemann function, which features random "asymmetry, inhomogeneity and discontinuity". It establishes the abstract relativistic structure of dimensionless quantities (called circular logarithm and super symmetric matrix unit) by application of the principle of relativity so as to ensure the "normativity and invariability" of every pointwise numerical value, location, property, topology and zero error, and achieve, with Riemann function, "topological variational rules without any specific content and accurate resolution that the number of elements and critical points (1/2) are all at the {1/2} Z straight line". This computing method is simple, stable, self-consistent and pragmatic and features extensive applicability for multiple disciplines.

Keywords: Riemann function, pointwise quantization, relativity structure (circular log), critical point of limit value

1. Introduction

In 1859 the German mathematician Bernhard Riemann proposed the Riemann ξ function, a function composed of reciprocal sum. It has to meet the requirement by "On the Number of Prime Numbers Less Than A Given Value". "The real part of all non trivial zeros is (1/2)" is called the Riemann hypothesis. The difficulty is infinite proceduresand infinite sets (infinity)【2】p35.

Via his book *Prime Obsession*【1】, John Derbyshirehas systematically introduced the researches into the Riemann function by mathematicians from various nations for over 150 years. In particular, he points out: the improved prime number theorem PNT 【1】p98, golden key 【1】p98-105, prime calculusform 【1】p111 and final exact expressions of Riemann function J(x) 【1】p325 have created conditions for theory research by upper generations.

In this paper, the Riemann function is integrated into the pointwise quantized function, and with the help of the principle of relativity, abstract dimensionless circular log (called relativistic structure or super symmetric unit matrix) is established, which results in gauge invariances such as the value, location, space, topology and properties of each element of the Riemann function with realization of “topological variation rule with no specific content, by which, primes are accurately resolved in the range of $[0\sim1/2\sim1]^{[0\sim1/2\sim1]}$, and it is proven that non normal zeroes are on the critical line of $\{1/2\}^{Z}$” It might become the latter part of *Prime Obsession.*

2. Pointwise Quantized Riemann Function

2.1. Basic Definition

Definition 1. Pointwise Space and Riemann Function:

Pointwise Riemann function in infinite elements at all levels (including random “symmetric and asymmetric, uniform and non-uniform, continuous and discontinuous, tangible and intangible space", making up the spaceand state of pointwise quantized Riemann function.It is briefly referred to as pointwise space. With：

$$\xi(x)=\sum\{xr\}^{Z}=\{x\}^{K(S\pm N)}=\{x\}^{Z}$$

$$=\{(1+2^{-s}+3^{-s}+4^{-s}+5^{-s}+6^{-s}+7^{-s}+\dots)^{-1}\}$$

$$=Ax^{k(Z-0)}+Bx^{k(Z-1)}+\dots+Px^{k(Z-p)}+\dots+Qx^{k(Z-q)}; \quad (1)$$

Formula (1) re-inverses the sum of the reciprocal inverse of the Riemann function without losing generality. The convergence of the Riemann function is controlled via K= (+1,0, -1). The independent variable (-S) converts the infinite program power function K (Z-p).

Definition 2: Pointwise space and golden key 【1】 p104

Because:

$$1/\xi(x)=\prod\{x_p\}^{Z}=\prod_p(_{1-p}{}^{-S})-1=\prod(1-1^{-S})(1-3^{-S})(1-5^{-S})(1-7^{-S})\dots; \quad (2)$$

p stands for “taken over all the prime numbers”.

Namely:

$$\prod\{x_p\}^{Z}=\sum\{x_r\}]^{Z}; \quad (3)$$

Derbyshire called it the golden key, which was a way of expressing the Eratosthenes sieve method in 1737 by the Euler product.

Definition 3. Definition of the pointwise average space

The pointwise average space reflects the average combination of point state space, which has nothing to do with the internal components.(C1+r-1)∑{xr}Z=(C1+p-1)∏{xp}Z. Select (C1+h-1) to contain the number of the combination of the golden key (C1+r-1) natural number and $(C_{1+p}{}^{-1})$ prime number.

$$\xi(x_0) = \{x_0\}Z=J(x)=\sum[(C_{1+h}{}^{-1})\prod\{x\}^{Z}=\sum[(C_{1+h}{}^{-1})\sum\{x\}^{Z}; \quad (4)$$

It is easy to prove that the round log helps reflect the combination of the pointwise quantized Riemann function that the products in the same level are equivalent of reciprocal combination.

Definition 4. Definition of Pointwise Combination Coefficient

In the infinite dimensional space, the pointwise states have a number of infinite regular combinations from "(S±0) -(0±S)" to "(S±N) -(N±S)”, which are called coefficients.

$$(C_{1+S})= (C_{S+1})=(S!)/(N!)= (S-0)\ (S-1)\ldots(S-p)!/\ (N-0)\ (N-1)\ldots(1)!; \quad (5)$$

In the formula: (C_{1+S}) represents the regularized coefficient of pointwise combination. (S!) represents that the factorial number of combination number N!) refers to the factorial of the order.

Definition 5. Definition of Power Function Equation

$$\begin{aligned}Z&=Z/T,t= K(S\pm N\pm N\pm p)/T,t\\&= \{K(S\pm N\pm N\pm 0)+K(S\pm N\pm N\pm 1)+\ldots+ K(S\pm N\pm N\pm p)+\ldots+ K(S\pm N\pm N\pm q)\}/T,t\\&= \{(Z\pm 0), (Z\pm 1), \ldots, (Z\pm p), \ldots, (Z\pm q)\}/T,t; \quad (6)\end{aligned}$$

Power function equation(S±N±N±p±p) contains time - thermal - properties - space as a whole, known as the “path integral exp”.

In the formula: (S±N) refers to infinite dimensional, and (±N)finite dimensional; (±N) refers to calculus order; (±P) polynomial sequence, T (temperature) and t (time). Based on the function of time, synchronization of the thermodynamic function and the pointwise space, there will be no separate description unless necessary.

Definition 6. Pointwise Calculus

The traditional calculus sign Mark d{x}N/dtN (including partial differential method) and ∫N f{x}dtNbecome the pointwise calculus:F{ x K(S±N±p±N)}；

Pointwise differential order:N =-N； $F\{x\}^{K(S\pm N\pm p-n)}$：

Pointwise integral order: N=+N； $F\{x\}^{K(S\pm N\pm p+n)}$：

Pointwise calculus:

$$\{x\}^{Z} = \{x\}^{K(S\pm N\pm p\pm 0)}+\{x\}^{K(S\pm N\pm p\pm 1)}+\ldots+\{x\}^{K(S\pm N\pm p\pm p)}+\ldots+\{x\}^{K(S\pm N\pm p\pm q)}$$

$$=\{x\}^{K(Z\pm 0)}+\{x\}^{K(Z\pm 1)}+\ldots+\{x\}^{K(Z\pm p)}+\ldots+\{x\}^{K(Z\pm q)};$$

In the formula, {} represents a collection of pointwise space, distinct from a set of logical algebra.

3. Pointwise Gauge Invariance Theorem

3.1.Theorem 1: Homology Logarithm

Definition of isomorphic circular logarithm: Each subitem of pointwise space is divided by (multiplied) by the total pointwise space to get “to be divided by itself, the maximum value is 1”. It is called the first type of gauge invariance.

To prove：

$$(1-\eta_h{}^2)^Z\sim(\eta_h)^Z = \xi(x)_h \ / \xi(x)_H$$
$$= [\{x_h\} \ / \ \{x_H\}]^Z$$
$$= [x_1+x_2+\ldots+x_p+\ldots+x_q]^Z \ / \ \{x_H\}^Z$$
$$= [x_1{}^2+x_2{}^2+\ldots+x_p{}^2+\ldots+x_q{}^2]^Z \ / \ \{x_H{}^2\}^Z$$

$$= \begin{vmatrix} (1-\boldsymbol{\eta}_{h1}{}^2)^{K(Z\pm 0)} 0 & 0 \ldots 0 \ldots 0 \\ 0 \ (1-\boldsymbol{\eta}_{h2}{}^2)^{K(Z\pm 1)} 0 \ldots 0 \ldots 0 \\ \ldots\ldots \\ 0 \quad 0 \ldots \ (1-\boldsymbol{\eta}_{hp}{}^2)^{K(Z\pm p)} \ldots 0 \\ 0 \quad 0 \ldots \ 0 \ \ldots \ (1-\boldsymbol{\eta}_{hq}{}^2)^{K(Z\pm q)} \end{vmatrix}$$

$$= \begin{vmatrix} \{x_{h1} / x_H\}^{K(Z\pm 0)} \\ \{x_{h2} / x_H\}^{K(Z\pm 1)} \\ \ldots\ldots \\ \{x_{hp} / x_H\}^{K(Z\pm p)} \\ \{x_{hq} / x_H\}^{K(Z\pm q)} \end{vmatrix} \tag{7}$$

$$= (1-\eta_{h1}{}^2)^{K(Z\pm 0)} + (1-\eta_{h2}{}^2)^{K(Z\pm 1)} +\ldots$$
$$+(1-\eta_{hp}{}^2)^{K(Z\pm p)}+\ldots+ (1-\eta_{hq}{}^2)^{K(Z\pm q)} \ ;$$
$$= \{0\sim 1\}^Z \tag{8}$$

Homology logarithmic expansion

$$(\eta_h{}^2)^Z = (\eta_{h1}{}^2)^Z + (\eta_{h2}{}^2)^Z + \ldots + ({}_{hp}{}^2)^Z + \ldots + (\eta_{hq}{}^2)^Z = \{1\}^Z; \text{ (Vector)} \quad (9.1)$$

$$(\eta_h)^Z = (\eta_{h1})^Z + (\eta_{h2})^Z + \ldots + (\eta_{hp})^Z + \ldots + (\eta_{hq})^Z = \{1\}^Z; \text{ (Scalar)} \quad (9.2)$$

Coherent circular logarithmic secures quantized expansion of pointwise space (function)

In particular, as for homology circle logarithmic in the pointwise space regularization combination, the value can be: zero, defect and non uniform, but the pointwise position cannot be vacant so as to ensure that the "non uniform pointwise status" automatically eliminates"error" and quantization stability.

3.2. Theorem Two: Isomorphic Logarithmic

In this paper, we define the isomorphic circular logarithm as the pointwise average space divided by (multiplied by) the pointwise average space, and get the value of "0~1", that is, "a number divided by itself is not necessarily 1", which is called the second type of gauge invariance.)

To prove：

$$(1-\eta^2)^Z \sim (\eta)^Z = \{\xi(x_0)_h / \xi(x_0)_H\}^Z = (C_{1+0})\{x_{(X\pm X)}\}^{K(Z-0)} \cdot \{\xi(x_0)\}^{K(Z+0)}$$
$$+ (C_{1+1})\{x_{(X\pm X)}\}^{K(Z-1)} \cdot \{\xi(x_0)\}^{K(Z+1)} + \ldots + (C_{1+p})\{x_{(X\pm X)}\}^{K(Z-p)} \cdot \{\xi(x_0)\}^{K(Z+p)} + \ldots$$
$$+ (C_{1+q})\{x_{(X\pm X)}\}^{K(Z-q)} \cdot \{\xi(x_0)\}^{K(Z+q)}$$

$$= \begin{vmatrix} (1-\eta^2)^{K(Z\pm0)} 0 & \cdots & 0 & \cdots & 0 \\ 0 & (1-\eta^2)^{K(Z\pm1)} \cdots & 0 & \cdots & 0 \\ \cdots\cdots & & & & \\ 0 & 0 & (1-\eta^2)^{K(Z\pm p)} \cdots & & 0 \\ 0 & 0 & 0 & \cdots & (1-\eta^2)^{K(Z\pm q)} \end{vmatrix}$$

$$= \begin{vmatrix} \{x_{01}/x_{0H}\}^{K(Z\pm0)} \\ \{x_{02}/x_{0H}\}^{K(Z\pm1)} \\ \cdots\cdots \\ \{x_{0p}/x_{0H}\}^{K(Z\pm p)} \\ \{x_{0q}/x_{0H}\}^{K(Z\pm q)} \end{vmatrix}$$

$$= \{(1-\eta^2)^{K(Z\pm0)} + (1-\eta^2)^{K(Z\pm1)} + \ldots + (1-\eta^2)^{K(Z\pm p)} + \ldots + (1-\eta^{2\,K(Z\pm q)}\}$$
$$= \{0 \sim 1/2 \sim 1\}^Z; \quad (10)$$

Derivation One: Conversion rules of the logarithmic order, order value sequence and sequence number of the circular logarithm contain isomorphic geometric grid change rules

$$(1-\eta^2)^Z = (1-\eta^2)^{K(S\pm N)}\cdot\{2\}^{K(\pm p\pm N)}; \tag{11}$$

Derivation Two: The isomorphism of pointwise space has nothing to do with the position of coordinate origin, and it adapts to accurate grid computing.

There are two kinds of writing methods for the circular logarithm (super symmetric element matrix), horizontal and determinant. This paper focuses on the horizontal method (same below).

3.3. Theorem Three: ConvergentCircular Logarithm

By defining the pointwise space divided by the pointwise average space, we obtain the three kinds of properties of "convergence, flat and diffusion" "positive, medium and negative" or "red, yellow, and blue" so as to ensure the consistency of the isomorphic circular logarithm, which is called the third type of gauge invariance.)

To prove:

$$(1-\eta^2)^Z\sim(\eta)^Z = \xi(x)_H/\xi(x_0) = (1-\eta^2)^{+Z} + (1-\eta^2)^{0Z} + (1-\eta^2)^{-Z} = \{0\sim1/2\sim1\}^Z; \tag{12}$$

Among it:

K=+1: $(1-\eta^2)^{+Z}$ convergence: $\xi(x)_H/\xi(x_0)\leq\{1/2\}^Z$;

K= 0: $(1-\eta^2)^{0Z}$ flat: $\xi(x)_H/\xi(x_0)=\{1/2\}^Z$;

K=-1: $(1-\eta^2)^{-Z}$ diffusion: $\{1/2\}^Z\leq\xi(x)_H/\xi(x_0)$;

3.4. Theorem Four: Mapping of the Circular Logarithm

The quantized calculus of the Riemann function (±N) is converted to the circular logarithm, mapped (projected) as one dimensional, two dimensional, three dimensional and arbitrary dimensional circular logarithm:

(1). Vector field logarithm (three dimensional projection in spherical coordinates)

$$(1-\eta_{[XYZ]}{}^2)^Z = (1-\eta_{[X]}{}^2)^Z\,\mathbf{i}+(1-\eta_{[Y]}{}^2)^Z\,\mathbf{j}+(1-\eta_{[Z]}{}^2)^Z\mathbf{K}; \tag{13.1}$$

$$\text{(Or): } (1-\eta_{[XYZ]}{}^2)^Z=(\eta_{h1[XYZ]}{}^2)^Z+(\eta_{h2[XYZ]}{}^2)^Z+\ldots+(\eta_{hp[XYZ]}{}^2)^Z+\ldots+(\eta_{hq[XYZ]}{}^2)^Z=1; \tag{13.2}$$

(2). Rotational field logarithm (four dimensional projection of spherical coordinates)

$$(1\text{-}\eta_{[XX]}{}^2)^Z = (1\text{-}\eta_{[Y]}{}^2)^Z\text{-}(1\text{-}\eta_{[Z]}{}^2)^Z=(1\text{-}\eta_{[YZ]}{}^2)^Z$$

$$(1\text{-}\eta_{[YY]}{}^2)^Z = (1\text{-}\eta_{[Z]}{}^2)^Z\text{-}(1\text{-}\eta_{[X]}{}^2)^Z=(1\text{-}\eta_{[ZX]}{}^2)^Z$$

$$(1\text{-}\eta_{[ZZ]}{}^2)^Z = (1\text{-}\eta_{[X]}{}^2)^Z\text{-}(1\text{-}\eta_{[Y]}{}^2)^Z=(1\text{-}\eta_{[XY]}{}^2)^Z; \tag{14}$$

Or： $(1\text{-}\eta_{[XYZ]}{}^2)^Z=(\eta_{[XX]}{}^2)^Z+(\eta_{[YY]}{}^2)^Z+\ldots+(\eta_{[ZZ]}{}^2)^Z=\{(1/3)^2+(2/3)^2+(2/3)^2+\} = 1$；

Among them, $\{x_h\}^{\mathbf{Z}}$ and $\{x_H\}^{\mathbf{Z}}$ represent the pointwise space; $\{x_0\}^{\mathbf{Z}}$ and $\{x_{0H}\}^{\mathbf{Z}}$ the average pointwise space. $\{x_{0H}\}Z$ said the pointwise average space; $(1\text{-}\eta_{[XYZ]}{}^2)^Z$ replaces the Hamiltonian operator.

3.5. Relativistic Structure -- Pointwise Gauge Field

Pointwise space has the adaptability to properties of symmetry and asymmetry, duality and non duality, getting:

$$\xi(x) = (1\text{-}\eta^2)^Z\, \xi(x_0)\, ;\ 0\le (1\text{-}\eta^2)^Z\le 1; \tag{15}$$

3.6. Limit value (topological phase transition) critical point

By definition 3 and definition 4

With：

$$(1\text{-}\eta^2)^Z = \sum(1\text{-}\eta^2)^Z = \prod\{(1\text{-}\eta^2)^Z$$

$$(1\text{-}\eta^2)^{0Z} = \sum\{(1\text{-}\eta^2)^{+Z}+(1\text{-}\eta^2)^{-Z}\}\}^Z = \{0,1\}^Z$$

$$(1\text{-}\eta^2)^{0Z}=\prod\{(1\text{-}\eta^2)^{+Z}\cdot(1\text{-}\eta^2)^{-Z}\}\}^Z=\{0,1\}^Z; \tag{16.1}$$

Formula (16.1) simultaneous equations very easily gets stable (zero error):

$$(1\text{-}\eta^2)^Z=\{(0,1/2,1)^{(0,1/2,1)}\}^Z; \tag{16.2}$$

The formula (16.2) proves that with the Riemann's function, when the pointwise space of arbitrary asymmetry is transformed into that of relative symmetry, the non normal zero (1/2) is on a straight line $\{1/2\}^Z$, namely, "second RH problem".

3.7. On the interpretation of large O

The circular logarithm is a logarithm based on relatively variable circular function, whose four operations of the power function equation is contained in Napel logarithm $a^x=(1\text{-}\boldsymbol{\eta}^2)^Z$; Euler logarithm e^x, $(\ln x)=(1\text{-}\eta^2)^Z$; Feynman integral $[\exp\{\pm(i/h)S_t(\nu)\}]=(1\text{-}\eta^2)^Z$; modulus square $|\psi(t,x)|^2=(1\text{-}\eta^2)^Z$;

trigonometric function $(\cos x+\sin x)^Z=(1-\eta^2)^Z$, etc. They all have a fixed logarithm of the bottom function. The bottom function can not be synchronized with the power function and can not eliminate the error $O(x^{(1/2)+\text{infinitesimal}})$ [1] p234.

However, among converted circular logarithms based on relatively variable circular functions, error is automatically eliminated in the gauge invariance, with synchronization between bottom function and power function, and without the problem of $O(x^{(1/2)+\text{infinitesimal}})$. It is called pointwise path integral with reasonable treatment of the nonuniformity of prime number theorem, accurate acquisition of the number of primes, critical point or limit value, and the solution to the calculus equation of arbitrary high dimensional order.

4. Pointwise Space and Riemann Function Equation

4.1 Pointwise Riemann Function Equation

According to the Brouwer center theorem (fixed point theorems) [2] p324, the pointwise Riemann function accordingly produces a balanced central pointwise space and becomes a pointwise quantized Riemann function equation:

Among them, the boundary conditions are:

(1). Discrete state:

(Or parallel continuous summation combinations)

$$\xi(x)_{B1}=\{D\}=\sum(1/C_{1+h})\{D_A+D_B+D_C+D_D+\ldots\}=\{D_0\}^Z; \tag{17.1}$$

(2). Entangled state:

(or serial combination and product combination)

$$\xi(x)_{B2}=\{D\}=\prod(1/C_{1+h})\{D_A\cdot D_B\cdot D_C\cdot D_D\ldots\}=({}^{KS}\sqrt{D})^Z; \tag{17.2}$$

Combination of Riemann's equations:

$$\{\xi(x)_A\pm\xi(x)_B\}^Z=F\{X\pm({}^{KS}\sqrt{D})\}^Z$$

$$=Ax^{K(Z\pm0)}+Bx^{K(Z\pm1)}+\ldots+Cx^{K(Z\pm p)}+\ldots+Dx^{K(Z\pm q)}\pm({}^{KS}\sqrt{D})^Z$$

$$=Ax^{K(Z\pm0)}+Bx^{K(Z-1)}D^{K(Z+1)}+\ldots+Px^{K(Z-p)}D^{K(Z+p)}+\ldots+Qx^{K(Z-q)}D^{K(Z+q)}\pm({}^{KS}\sqrt{D})^Z;$$

$$=\{(1-\eta^2)^{K(Z\pm0)}+(1-\eta^2)^{K(Z\pm1)}+\ldots+(1-\eta^2)^{K(Z\pm p)}+\ldots+(1-\eta^2)^{K(Z\pm q)}\}$$

$$=(1-\eta^2)^Z\{0,2\}^Z\{D_0\}^Z; \tag{18.1}$$

$$(1-\eta^2)^Z=({}^{KS}\sqrt{D})^Z/\{D_0\}^Z$$
$$=\{\xi(x)_A/\xi(x)_B\}^Z=\{\xi(x)_A-\xi(x)_B\}^Z/\{\xi(x)_A+\xi(x)_B\}^Z$$
$$=\{\xi(x)_A-\xi(x_0)\}^Z/\xi(x_0)\}^Z=\{\xi(x)_B-\xi(x_0)\}^Z/\xi(x_0)\}^Z$$
$$=\{0\sim1/2\sim1\}^Z; \tag{18.2}$$

In the equation,

$\{\xi(x)_A+\xi(x)_B\}^Z$ represents "grand balance or sum"

$\{\xi(x)_A-\xi(x)_B\}^Z$ represents "zero balance or spin"

In terms of logarithm:

$$\{\xi(x)_A+\xi(x)_B\}^Z=(1-\eta^2)^Z\{2\}^Z\xi(x_0); \tag{19}$$

Formula (19) proves that sum of any two sufficiently large prime numbers "$\{2\}^Z\xi(x_0)$" is an "even number".

Its practicalsignificance:The theory of relativity is structured to smoothly solve the combination of multi-element "asymmetry and uncertainty", and become the combination and decomposition of "relative symmetry and relative certainty".

4.2. Solution of High Dimensional Differential Equation

Formula (18.1) solution is to compute the corresponding prime (element) value of a known numerical value (${}^{KS}\sqrt{D}$) (interactive entanglement state if encountered in engineering and discrete state if encountered in quantum computing.

4.3. Discriminant

Judge the possibility of formula (18.1) solution

(1). Calculate the average state space $\{D_0\}$ (Select arbitrary P combination.

$$\{D_0\}^Z=[{}^{K(S\pm p)}\sqrt{(P/C_{1+p})}]^{[Z\pm p]}; \tag{20}$$

Average state statistics are different from quantum state Einstein statistics

(2). Satisfying) $0\leq(1-\eta^2)=({}^{KS}\sqrt{D})/D_0]^{[Z\pm p]}\leq1$;

(3). Coefficients (A, B, C, D, etc.) are adjusted to be $\{D_0\}^{[Z\pm p]}$

(4). To meet the sum of the regularization coefficient: $\sum C_{1+p} = \{2\}^{[Z\pm p]}$; among them the element combination value can be incomplete, but the coefficient can not be vacant.

4.4. Solution

Choose the simplest second terms of the calculus equation (18.1) K[Z-1] to obtain the isomorphism.

$\{D_0\}^{[Z-1]}=\{D_0\}^{[Z-p]}=\{D_0\}^{Z}$:

With:

$$\{D_0\}^{[Z-1]}=(B/C_{1+1}),$$

$$(1-\eta^2) = ({}^{KS}\sqrt{D})\}^{[Z-1]} / \{D_0\}^{[Z-1]};$$

$$(1-\eta_h^2)^{[Z-1]} =\sum(1-\eta_h^2)^{[Z-1]} =1; \tag{21}$$

General formula:

$$\{D_0\}^{[Z-p]}=(P/C_{1+p}),$$

$$(1-\eta^2)^{[Z-p]} = ({}^{KS}\sqrt{D})\}^{[Z-p]} / \{D_0\}^{[Z-p]}$$

$$(1-\eta_h^2)^{[Z-p]} =\sum(1-\eta_h^2)^{[Z-p]} =1; \tag{22}$$

$$\{X_{h1}\}^{[Z-1]}=[(1-\eta^2)/ (1-\eta_{h1}^2)]^{[Z-1]} (B/C_{1+1}); \tag{23}$$

$$\{X_{hp}\}^{[Z-p]}= [(1-\eta^2)/ (1-\eta_{hp}^2)]^{[Z-p]}(p/C_{1+1}); \tag{24}$$

Formulas (23) and (24) in the analysis of the law of the composition of elements or prime number distribution theorem (PNT), it is easy to get: before a known value, determine several prime numbers, that is, "RH's first problem."

5. Engineering Application

5.1. "Explanation of the Yang-Mills Gauge Field"

When pointwise equations are comprised of non-uniform even multiplication or even addition functions, they become extended quantum state Yang-Mills gauge field in physics, namely; the unity of pointwise non-uniform Dirac dynamic equations (calculus equations), Maxwell electromagnetic equations (even power functions) and gravitational equations (odd power functions) and the gauge invariance, becomes the abstract computing method for pointwise state with no specific quality content.

$$\{L[\psi(x_A),A_\mu(x_A)]\pm L[\psi(x_B),A_\mu(x_B)]\}^Z=(1-\eta^2)^Z\ \{0,2\}^Z\{L[\psi(x_0),A_\mu(x_0)]\}^Z; \tag{25}$$

$$(1-\eta^2)^Z=L[\psi(x_A),A_\mu(x_A)]/L[\psi(x_B),A_\mu] \tag{26}$$

In the formula: $L[\psi(x_0),A_\mu(x_0)]^Z$ represents the set aggregation of combinations of various levels of pointwise mean Riemann functions.

5.2. Explanation of Energy Asymmetry

Under the condition of mass conservation, the vacuum excitation of the universe is caused by the asymmetry of the super high energy, which experiences the process of topological phase transition = vacuum excitation = Higgs particle mutation.

With: $\{(1-\eta^2)^{+Z}\to(1-\eta^2)^{0Z}\to(1-\eta^2)^{-Z}\}\cdot\{MC^2\}$;

Get: $\{(1-\eta^2)^{+Z}\underline{\leq\leq}(1-\eta^2)^{-Z}\}$;

Assume: 11 dimensional space of the universal energy particle (8 dimensional electromagnetic quantum +3 dimensional gravitational quantum),comprise two parallel equations of energy:

$\{x\}^{[Z-11]}=\{x\}^{[Z-6]}+\{x\}^{[Z-5]}$

$\{x\}^{[Z-6]}$ equation: 6prime numbers: 1,3,5,7,11,13as of entanglement state;

$\{x\}^{[Z-5]}$ equation: 5 natural numbers: 1,2,3,4,5 as of discrete state

Get: (Calculationprocedure omitted)

Mass energy ratio: $(1-\eta^2)^{+[Z-11]} : (1-\eta^2)^{-[Z-6]}$ = (4.758845% : 95.241155%);

Energy ratio: $(1-\eta^2)^{+[Z-6]} : (1-\eta^2)^{-[Z-6]}$ = (1 : 40.027004);

The above calculation results are in surprising agreement with astronomical observations and high energy particle collision test data.

6. Conclusion and Prospect

Pointwise space is the fusion of Riemann function and the theory of relativity, forming a relativistic structure (circular logarithm and super symmetric unit matrix) in that it is inclusive of traditional uniform elements and non-uniformity and is a macroscopic and microscopic unification. It has got rid of the interference of specific element contents, acquired the gauge invariance of linear (simple combination) and nonlinear combination (complex combination) and has become a new and broader calculation system. It enjoys the superiority of simple, self-consistent, accurate andzero-error interactions. It is widely applicable to mathematics, physics, astronomy, biology, chemistry, mechanics, statistics, big data and other areas.

Existing problem: In the Riemann function and engineering application, there is an interaction mechanism, which brings the problems of force’s coupling constants and topological phase transformation points. They are waiting for scientists to further determine and research. However, no matter whether or not the coupling constantsof force exist, it does not affect the circular logarithm topology or statistical calculation process. The results are adjusted only at the end of calculation.

Initial structure of the theory of relativity may inevitably be flawed. Sincerely welcome are criticism and suggestions for improvement.More experts and scholars are expected to communicate, promote its application for joint innovation and development.

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