



Is Relativity Theory Also Valid in Biogenetics and Mathematics?

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ABSTRACT

One of the modern and complexity theories is Chaos theory which is included of fractals and genetic algorithms... etc. The diversity of scientific disciplines has a number of interesting conceptual connections to many sciences from mathematics (π and the speed of light numbers) and biochemistry to genetics. Einstein's theory of relativity is energy (E) equals mass (m) times the square of the speed of light (c^2). Nuclear energy can also be separated into two separate forms: nuclear fission and nuclear fusion. The energy yield from nuclear fusion is much greater than nuclear fission. So, according to Einstein's theory of relativity, in order to reach the fastest velocity, this article is searching for the smallest mass of structures (Just like in atom mass in chemical structures, as nucleotide bases). If the square of light speed number in vacuum converts from decimal number system to **binary (2)** and **ternary (3)**, the outcome of numbers will be, interestingly very similar to nucleotide base codes: **(A, T, C, G, U)**. **(A)**Adenine, **(T)**Thymine, **(C)**Cytosine, **(G)**Guanine, **(U)**Uracil. In sum, this article tries to search for relationships of the square of the speed of light (c^2) numbers versus to genetic codes ascribed to different number base systems on the basis of the quantum perspective model. This conceptual connection owing to many sciences from physics and mathematics to biogenetics, additionally, the same results can be found by NCBI (The National Center for Biotechnology) databases related as many animals together with special abilities (darkness, cleverness, electricity, etc.). At last, the square of the speed of light (c^2) is appliance not only related to Fibonacci sequence and golden ratio in mathematics but also, **Zebrafish-Danio Rerio** in biogenetics.

Key Words: Velocity of Light Number, Zebrafish-Danio Rerio, Bats, Whales, Quantum Perspective Model.

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Introduction

It has been argued by many chaos theorists that serves as a general paradigm for complex systems. It is a collection of mathematical and geometric techniques that allow them to deal with complex systems (Çambel A, 1993).

Chaos theory is technically applied to a series of complex systems that are not suitable for the concept of narrow mathematical systems. It is called unequal equilibrium theory (Loye *et al.*, 2017). Chaos theorists have also developed a wide range of graphic

techniques, such as fractal and attraction portraits to characterize and explore such systems (Hilborn R, 1995). They work like a thermostat within the constantly accepted limits (Compton *et al.*, 1994). From the perspective of the quantum perspective model, the genetic codes from Pi numbers are modeled as fourteen groups [Uracil (U), Thymine (T) and Adenine (A)] forever (Koklu K, 2019). Also, a case of **reverse** direction to the thermodynamic arrow of time has been tested experimentally [12].

Fractals are another technique used to study chaotic processes of chaos theorists. Fractals are abstract visual representations of the same iterative mathematical calculations used to characterize

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chaotic processes (Çambel A, 1993). In addition, an interesting link between nucleotide frequencies in human single-stranded **DNA** and **Fibonacci numbers** has been explained in (Michel E *et al.*, 1993). Likewise, the expression of the square of speed of light (c^2) as genetic codes.

Micro foundational thinking is of crucial importance for the analysis of units through scientific methods (Devinney T, 2013), later this similarity can be shown by the quantum perspective model. From the perspective of the quantum perspective model just like as in the square of the speed of light (c^2) number versus to genetic codes. This varied thinking is also defined as a new model by Lissack. According to this model, the potential of chaos and after entering the energy into the open system, the largest regulatory principle is created called equilibrium. Apart from chaos, complexity is an activity of consistency and a way of thinking. In complexity, one of the elements of a system is committed to each other and is committed to the complexity of "all elements" (Lissack M. 1999). Similarly, the structural elements of nucleotide bases are also mapped in biochemistry, too. Especially, the atomic numbers of them: Carbon(**C**):6, Nitrogen (**N**):7, Oxygen (**O**):8, Hydrogen (**H**):1.

Can these atomic numbers be indicative of relations with mathematics? Or,

Is this relationship limited to Biochemistry and Mathematics or Physics?

Perhaps, you can find the answer of both of this question on next pages.

Nuclear Energy

Nuclear energy can also be divided into two forms: nuclear fission and nuclear fusion. Nuclear fission is the splitting of the large atomic nucleus into smaller elements that release energy, and nuclear fusion is the removal of energy from two small atomic nuclei to a larger element and during the process. The mass of a nucleus is always less than the sum of the individual masses of protons and neutrons that make up it. The difference is that nuclear binding energy holding the nucleus together is much larger than nuclear fission energy generated from nuclear fusion [1]. With respect to Albert Einstein's theory of relativity, Energy (E) and mass (M) are combined with an energy release to form larger nuclei [2].

The speed of light in a vacuum often called c , is a universal physical constant that is important in many areas of physics. Its precise valuation is

299,792,458 meters per second (approximately 300,000 km/s (186,000 m/s)). Square of light speed value is **8,9875,51787368176** meters per second [3].

In experiments in nature, December 22, 2005, researchers were carried out that matter and energy are generally, Energy (E) is equal to the mass (m) of the (c^2) frame of light considering Einstein's special theory [4].

Velocity Of Light Number' Square Calculation, (C^2) From Decimal (10) To Binary (2) Number System And Reverse

C^2 : SQUARE OF LIGHT SPEED: **8,987551787368176** (Decimal-10- base system); Writing in the form of BINARY (2) base system:

c^2 : 1110000010001011000 10
 1000101111011101111011110000; (c^2 ; When "8", is converted to binary "1000"; **The First digit of c^2 is disregarded**). So, the first digit of $c^2 = 1000$ [5].

c^2 : 1110 00001 000101

1000 10 1000 10 11110 1110

11111 0111 10000

c^2 : 14, 16 (REVERSE), 40 (REVERSE). SUM of this numbers: 14+16+40= 70: Adenine (**A**),

c^2 : 8, 2, 8, 2, 30, 14. SUM of this numbers: 8+2+8+2+30+14 =64: Cytosine (**C**)

c^2 : 31, 14 (REVERSE), 16. SUM of this numbers: 31+14+16=61: Uracil (**U**) (Extra three (3) hydrogen bonds) (See, Table 1).

Calculation of Velocity of Light Number Square (c^2) after the first digit (8), from binary (2) to decimal number system and convert to genetic codes

The Square of Light Speed Number can be written by binary number system (2) (As shown above). Let me try to convert these numbers as genetic codes (*Zeros (0)* are disregarded in selected five groups).

Total SUM of **FIRST** fifteen number after eight (8), also can be written, 14+16+40=70, ADENINE (**A**):70

Total SUM of **SECOND** twenty one number after eight (8), also can be written, 8+2+8+2+30+14=64, CYTOSINE (**C**):64

Table 1. Representation of decimal numbers in binary base.

DECIMAL NUMBERS	2	8	14	16	30	31	40
BINARY NUMBERS	10	1000	1110	10000	11110	11111	101000



Total SUM of **THIRD fourteen numbers** after eight (8), also can be written, $31+14+16=61$ URACIL (U):58

As a result; **if zero is admitted to fifty four digits**, this gene sequence in inclusion of 'square of light speed' can be written, just like as a **fifty five (55)** digits, as shown below:

This means, $c^2 = 8$, **ACU**; Respectively, (A) Adenine, (C) Cytosine and (U) Uracil. So "**ACU**" means to **THREONINE** amino acid, in terms of DNA CODON TABLE (Lodish *et al.*, 2018). Surprisingly, after searching, NCBI nucleotide blast, "**ACU**", outcome of this sequence for tenth times' triplet search (30 digit) is "**BONY FISHES, WHALES AND DOLPHINS**". (Remember, one of the smartest animals whales and dolphins). Besides them, even the another result of tenth times NCBI nucleotide blast "**UCA**'s, is **MUS MUSCULUS (mouse rodents) and BATS**. (Remember, hamsters and bats live in the **darkest** unlighted places concerning about the speed of light related to Albert Einstein's theory of relativity equation). Also, for human Genomic and transcript [6].

The chemical structures of bases are **A, T, C, G, and U**. The chemical structure of them:

(A)Adenine: C5H5N5:70;

(T)Thymine: C5H6N2O2:66,

(C)Cytosine: C4H5N3O1:64,

(G)Guanine: C5H5N5O1:78,

(U)Uracil: C4H4N2O2:58 (Lodish *et al.*, 2018).

The atomic numbers of them: Carbon(C):6, Nitrogen (N):7, Oxygen (O):8, Hydrogen (H):1 (Wieser *et al.*, 2013).

Calculation of velocity of light number square (c^2) from ternary (3) to other number systems- (ternary(3), quaternary(4), six(6), and seven(7))

Square of Light Speed **8987551787368176** (Decimal-10- base system); Writing in the form of ternary (3) base system: **112 112 2121 0 211 200 1000 1012 2001 1012 0** [5].

112 112 2121 0 (absent)

211 200 1000

1012 2001 1012 0 (absent) (See also Table 2).

Respectively, here are triplets (3), just like in amino acids, in terms of **DNA CODON TABLE** (Lodish *et al.*, 2018):

U (convert to 7 base) U, U (convert to 7 base) U, A (3 base) A (68: decimal base: nearly 3 base, lack of two hydrogen bonds): UUA: Amino acid, Leucine: '112 112 2121 0 (absent)'

(T)Thymine (REVERSE, 3 base) or (U) Uracil seven base, (A) Adenine: 72 six (6) bases plus two hydrogen bonds, (C) Cytosine four (4) base: **(T/U) AC: Amino acid, Tyrosine: '211 200'**

(C) Cytosine Three (3) Base, (T) Thymine four (4) base: (REVERSE), (C) Cytosine three Base (3) (REVERSE), **0(absent). CTC: Amino acid, Leucine: '1012 2001 1012 0 (absent)'**

METHODS AND DISCUSSION

The human brain is reminiscent of half of the walnut because of the double appearing and rounded brain structures. It is parted by an extensive fissure. Primarily, the nerve fibers called the corpus callosum are bound with a thick band. The right side of the body is directed by the left hemisphere of the brain (Edwards B, 2012). This "**reverse**" relationship can also be seen between the numbers called "palindrome numbers". Also, the sequence of nucleotides among DNA and RNA are not only reversed but also double-stranded with each other. From this "**Quantum Perspective Model**", the resemblance of nucleotide base codes and The Square of Light Speed Number outcomes are listed here (Koklu K, 2019). From this paradigm, the outcome of article evaluations is listed below.

The chemical structures of bases are **A, T, C, G, and U**. The chemical structure of them:

(A)Adenine: C5H5N5:70;

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(U)Uracil: C4H4N2O2:58 (Lodish *et al.*, 2018).

The atomic numbers of them: Carbon(C):6, Nitrogen (N):7, Oxygen (O):8, Hydrogen (H):1 (Wieser EM, *et al.*, 2013).

Table 2. Representation of DNA nucleotide bases (A, T, C, G, and U) in different (Binary to Decimal) number bases.

BASES/ NUMBER BASES	2	3	4	5	6	7	8	9	10
ADENINE :70	1000110	2121	1012	240	154	130	106	77	70
THYMINE :66	1000010	2110	1002	231	150	123	102	73	66
CYTOSINE :64	1000000	2101	1000	224	144	121	100	71	64
GUANINE :78	1001110	2220	1032	303	210	141	116	86	78
URACIL :58	111010	2011	322	213	134	112	72	64	58



One of the lightest element in the periodic table is Hydrogen (H: 1). Hydrogen bonds can easily be removed For example; DNA bases, Adenine (A) pairs with (T) Thymine by two hydrogen bonds. [8] Likewise two-based (binary) number systems.

As a result: Square of Light Speed can be written just like as, this gene sequence: Respectively: (U)Uracil, (U)Uracil, (A)Adenine, (T)Thymine or (U)Uracil, (A)Adenine, (C) Cytosine, (C) Cytosine, (T) Thymine, (C) Cytosine. So “UUATACCTC” or “UUAUACCTC”. Surprisingly, after searching three times this sequence (27), the output of this nucleotide blast is similar to Zebrafish-Danio Rerio. NCBI nucleotide blast, “UUATACCTC”, is similar to **DANIO RERIO (Zebra fish)**, etc. All these NCBI blast results including Zebra fish should be investigated by researchers. Because, the genetic codes of Zebra fish have proven to be very similar to human genetic codes (Koklu K. 2019).

The reason of Square of Light Speed Number's groups trivial calculation difference', can be likely to be derived from genetic nucleotides bonds (Ester bonds, Glycoside bonds, Point mutations, Nucleotide substitutions, Hydrogen bonds H: 1). Hydrogen bonds can easily be removed. Another reason is the changes in DNA (mutations, point mutations, nucleotide substitutions). The minor difference in Square of Light Speed Number's groups supposed to genetic bases (A, T, C, G, and U). As seen in Uracil (U):58 versus to 61, Extra three (3) hydrogen bonds) [9].

The reason of lack of hydrogen bonds": **Hydrogen bonding** is a very versatile attraction. Hydrogen bonds are relatively *weak and easily broken* by increasing hardness (Farrell R. 2010).

Hydrogen (H: 1) is a heavy hydrogen nucleus. It has an electromagnetic energy particle gamma ray with an energetic electromagnetic radiation pattern. So it is an ordinary particle of light; these entire particles are called as photons. A proton is a necessary component of reaction to conserve energy of Einstein's theory of relativity. Another conservation law is "charge conservation." In this formula, the deuteron nucleus takes approximately 8 MeV (million electron volts) as a suitable energy unit to release a single proton or neutron from nucleus (Boyd R. 2012). This value of energy, also seen in **the First digit of c^2** , too. (c^2 : Square of Light Speed: **8, 987551787368176**).

The variety of scientific disciplines in which complex system examples can be found means

that there are rich and varied frameworks, tools and modeling approaches. In addition to **genetic algorithms**, neural networks and **Computer Sciences**; theoretical chemistry to laminate math; and fitness landscape models based on combination optimization math from evolutionary biology (Magure *et al.*, 1999). With the emergence of the *triple code*, the evolution of proteins encoded in nucleotide sequences appeared (Trifanov E. 2000).

Binary encoding systems consist of binary information from all data in a computer system that includes only 2 possible values: 0 and 1. If current passes through the transistor (switch on), this represents 1. If current does not pass (switch off), this means 0 (**zero**) [10]. That's why; it can be the reason of **zero's** disregard '**Absent**'.

Why do you stop converting nucleotide bases (A, T, C, G, U), after binary and ternary number bases? This question may come to your mind? The answer can be stemmed from irrational numbers? For instance $\sqrt{2}$, π , golden ratio, and Euler number (e) etc. The digits of this irrational numbers also consist of zero, one, two and three. Also, the Universal Genetic Code Table is an indicator of codon triplet's .Because it is not only nucleotide bases chart but also it has a relationship with golden ratio regarding as 64 dispersion frequency of 64 triplets (Perez J, 2010), Even, Perez stated a base code system referring to three significant integer numbers [golden ratio, 1(one) and 2(two)] (Perez J, 2013).

Conclusion

Consequence of this work, if you take the smallest atom mass in chemical structures, just like as nucleotide bases (**A, T, C, G, U**), Can it be possible to reach velocity of light as an equation of Einstein's theory of relativity, by means of the chemical structure of bases? Because, the conservative sequence in genetics, called as (**TATAA box**), also generally *included* nucleotide bases (A, T, G). Let alone, previous explanations, regulation of transcription in biomolecules also, grouped as five (5) sections. Besides this, every amino acids in genetics also included three (3) nucleotide bases, as explained previously, $c^2 = 8$, **ACU** (A) Adenine, (C) Cytosine, (U) Uracil. In sum, The Square of Light Speed Number, either sequenced as *binary* (2) or *ternary* (3) number base system, both of them are meaningful in genetic codes either "**ACU**"s or **UUATACCTC / UUAUACCTC**. All of them may be valid in a relationship between the speed of light in a vacuum (decimal-10) and genetic



codes, ascribed to different number base systems especially ternary (3) and (binary -2). Even, square of light speed: **8987551787368176** (Decimal-10- base system), total **55 (fifty-five digit)** as seen except Zero (0) in the Fibonacci sequence is the **tenth number 55 (fifty-five)**. If you take **consider Zero (0) in the Fibonacci sequence** is also **the tenth number is 34 (thirty-four)**, as seen in square of light speed; Writing in the form of ternary (3) base system (112 112 2121 0 211 200 1000 1012 2001 1012 0) **34 (thirty four digits)**. So it (square of light speed); Writing in the form of *ternary (3)* and *binary (2)* based system, each is also similar to piece digits of almost nearly, the *tenth number of the Fibonacci sequence* (Remember, *the Fibonacci sequence: 0,1,1,2,3,5,8,13,21,34,55,... etc*). As explained in their reviews by Mäkelä and Annala The Fibonacci sequence is not a description of basic (complex) biological events, just as many other mathematical model functions lead to good agreements to obtain beneficial results (Mäkelä and Annala, 2010): "Universal models, such as power-law dependence, curve distributions, tree-like structures, networks, and spirals, are associated with energy distribution processes that use the principle of least action". The chemical composition of the genetic code and amino acids follows this principle and, just like as the same as a branched phylogenetic tree, The Helix Nautilus, and the number sequences. One of them is modeled by the Fibonacci sequence in this study (Negadi T, 2007). Also, is it similar to the **GOLDEN RATIO? (55/34)**. As seen in DNA double strands, too (Goncharenko V, 2011).

The human genome structure is a model of the universal genetic code table resulting from the Golden Ratio that defines the Universal Genetic Code Table. The universal genetic code table regulates both the micro and macro behavior of the genome. Chargaff's second rule consists of *codon triplet*, the codon frequencies in the human genome are related to 1.618 golden ratios [11]. This proportion is **unchanged fraction** as regards to numbers, as the same as the square of the speed of light (c^2) considering Einstein's theory of relativity's formula. In addition, as shown in the Pi number, as an acid-base ratio (Koklu K, 2019):

At last, either you can take twin sciences (Biochemistry and Mathematics) or triplet sciences (Biochemistry, Mathematics and Physics). If chaos theory is taken into account, is there a similarity between all of them according to quantum perspective model?

REVERSE: A short introduction to DNA transcription: During transcription, the genetic information stored in DNA is copied to the single-stranded RNA. RNA molecules can then be processed to form functional RNA molecules (e.g. tRNAs, rRNAs or non-coding RNAs) or in the case of a protein encoding sequence, mRNA can be converted into the corresponding *amino acid sequence*. Transcription is carried out by enzymes known as RNA polymerases (RNAP) that initiate transcription from specific DNA elements and promoters. These enzymes read template strands in **3 to 5 directions** and catalyze the structure of an RNA strand in **5 to 3 directions** simultaneously. That's why **REVERSE** term, may be reason of these calculations of number base systems (Especially decimal to Binary, Ternary and other base systems). Since RNA is made by nucleotides based on template matching with base, the resulting RNA will be the same as the non-template strand (also called encoder Strand) in its *nucleotide sequence* (Alberts *et al.*, 2008)

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