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Artificial Intelligence AI

Choice Mechanism

Hypothesis of a Mathematical Method that Describes Quantum Numbers, Quantum Entanglement And Expanding Universe or Universes Proving That Something can evolve from Nothing (.i.e. numbers evolving from non-existent illusion)

Martins Kolawole Alabi
E-mail: alabikmartins@gmail.com

Abstract

1. To device a mathematical method that can generate quantum numbers showing a complete model of a quantum system which includes a wavefunction, a quantum state which is a set of mathematical variables that fully describes a quantum system. For example, set of 4 numbers $\{n, l, m, s\}$ that defines the state of an electron.

2. To show quantum entanglement- the spin of an electron (plus and minus value) is opposite.

3. To show a shift of all quantum numbers with homogeneity having the same observational evidence available to observers at different locations that can be mapped with an expanding universe.

4. To test that the spin quantum number labeled as equal plus and minus values is powered by co-existence of triplet numbers 1, 2 and 3 which determine (wavefunction) the location of finding a particle in space. This can lead to a mechanism that would return the information down black holes .i.e. numbers evolving from a non-existent illusion.

Keywords: quantum numbers, quantum entanglement, wave function, expanding universe, shape of the universe

1. Introduction

Basic constituents of matter are quarks and leptons**.** Both of these subatomic particles are fermions and bosons. Fermions are defined by half-integer: They are elementary particles that have a particle spin equal to a half-integer value (-1/2, 1/2, 3/2. etc). They include (electrons, neutrinos, quarks, protons and neutrons, and helium-3 atoms). These particles made up of the matter that we observe in our universe. Bosons are defined by

integers: They are elementary particles that have a particle spin that is equal to an integer (1, 2, 3, etc). They include (photons, gluons, and helium-4). These particles are what mediate the fundamental forces of physics under the quantum field theories.

Premise 1: Let a quantum state, a set of mathematical variable {*n*, *l*, *m*, *s*} that describe a quantum system represents a universe.

The principal quantum number, *n*, or electron shell describes the energy of the electron and is always an integer. In fact, it can be any positive integer.

The angular or azimuthal quantum number, *l*, describes the orbital angular momentum of each electron and is always an integer. The set of orbitals associated with a particular value of *l* are collectively called a *subshell*.

The magnetic quantum number, *m*, describes the magnetic moment of an electron in an arbitrary direction, and is also always an integer.

The spin quantum number, *s*, describes the spin or direction (clockwise or counter-clockwise) in which an electron spins. If there are two electrons in any one orbital, they will have opposite spins.

2. The Algorithm for Wavefunction

(Format to generate quantum numbers)

Quantum wavefunction defines equation of motion in the universe expressing all motion in the form of a series of probability. They give the probability of finding a particle at each position.

Premise 2: Let the coexistent of triplet numbers 1, 2 and 3 represent a wave function.

Symbolic Representation

Given that in scale A and B;

Variables A and G:

A implies Arithmetic growth mechanism +A.

G implies Geometric growth mechanism ×G.

y implies Index number .i.e. a set of all numbers on the number line.

z implies pair of Spin.

To generate a spin (conjugate equal and opposite value):

Formula for the variables

$A = y - 1$

$G = A / 2 + 1$

Scale A

1 ×G minus 1 + A = +z ⟷ -z

2 ×G minus 2 + A = 0 ⟷ 0

3 ×G minus 3 + A = -z ⟷ +z

Conversely,

Scale B

1 + A minus 1 ×G = -z ⟷ +z

2 + A minus 2 ×G = 0 ⟷ 0

3 + A minus 3 ×G = +z ⟷ -z

3. Combinations of Quantum Numbers

Using the algorithm

Formula for the variables:

A = y – 1

G = A / 2 + 1

When y = -1 and n = 1

1 × 0 – 1 + (-2) ⟶ 0 – **(-1)** = +1

2 × 0 – 2 + (-2) ⟶ 0 – **0** = 0

3 × 0 – 3 + (-2) ⟶ 0 – **1** = -1

When y = 0 and n = 2

1 × 0.5 – 1 + (-1) ⟶ 0.5 – **0** = +0.5

2 × 0.5 – 2 + (-1) ⟶ 1 – **1** = 0

3 × 0.5 – 3 + (-1) ⟶ 1.5 – **2** = -0.5

When y = 1 and n = 3

1 × 1 – 1 + 0 ⟶ 1 – **1** = 0

2 × 1 – 2 + 0 ⟶ 2 – **2** = 0

3 × 1 – 3 + 0 ⟶ 3 – **3** = 0

When y = 2 and n = 4

1 × 1.5 – 1 + 1 ⟶ 1.5 – **2** = -0.5

2 × 1.5 – 2 + 1 ⟶ 3 – **3** = 0

3 × 1.5 – 3 + 1 ⟶ 4.5 – **4** = +0.5

When y = 3 and n = 5

1 × 2 – 1 + 2 ⟶ 2 – **3** = -1

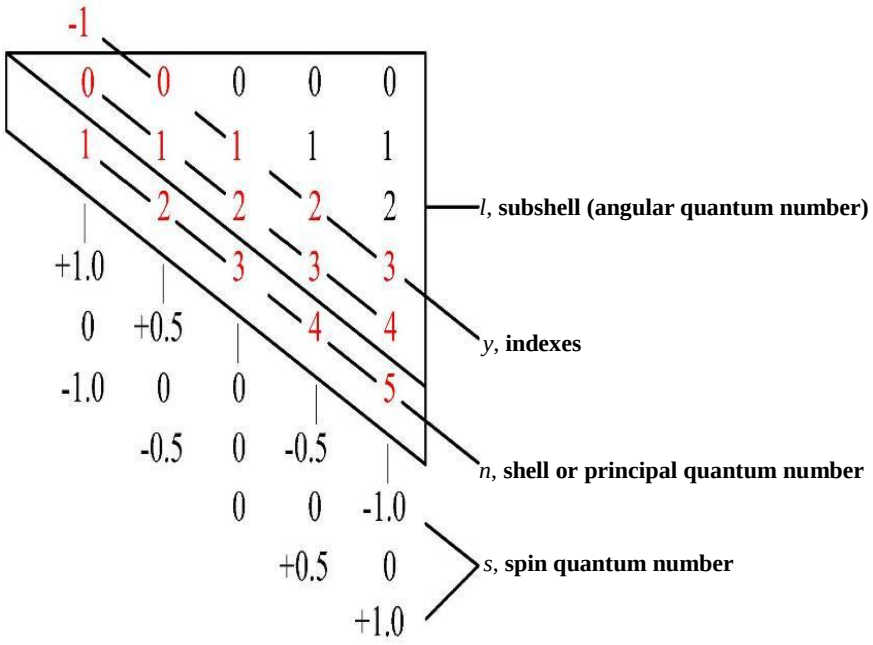
2 × 2 – 2 + 2 ⟶ 4 – **4** = 0

3 × 2 – 3 + 2 ⟶ 6 – **5** = +1

Note: The 3 consecutive coloured numbers in this text represents the last-two subshell for each shell and this applies to figures (1, 2, 3, 4, 5, 6 and 7).

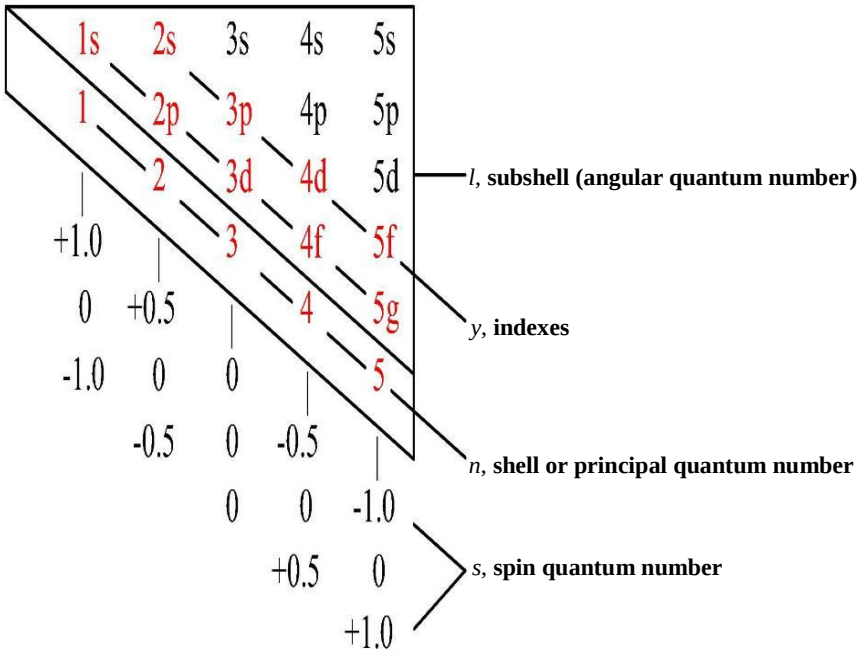
4. Quantum Numbers

The -1 as shown in (Fig.1**)** is based on the math that describes it though it does not necessarily need to be there.



(Fig.1) For (n - 1) .e.g. If n = 4, l can be 0, 1, 2, and 3 where n is some integer ranges across all integer values

5. Subshell Name



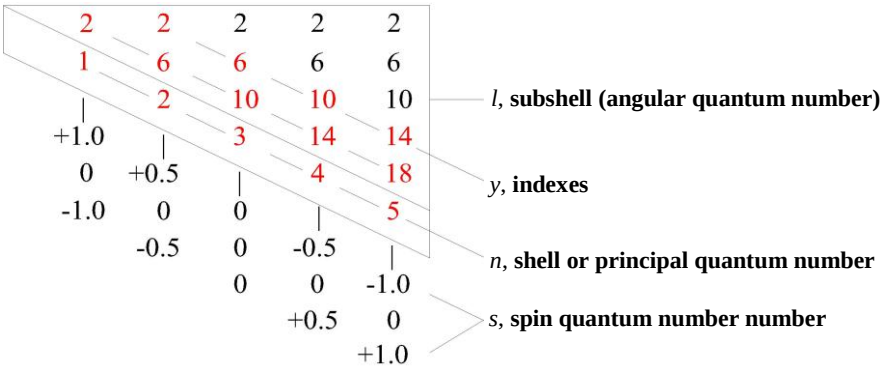
(Fig.2) The subshell name for example Phosphorus having the atomic number of 15 is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$

6. Magnetic Quantum Number m

"m" can be any integer between -l and +l.

For **1s**, m = 0. For **2s**, m = 0. For **2p**, m = -1, 0, 1. For **3s**, m = 0. For **3p**, m = -1, 0, 1. For **3d**, m = -2, -1, 0, 1, 2. For **4s,** m = 0. For **4p**, m = -1, 0, 1. For **4d**, m = -2, -1, 0, 1, 2. For **4f**, m = -3, -2, -1, 0, 1, 2, 3.etc

7. Number of Electrons



(Fig.3) An atom's nth electron shell can accommodate $2n^2$ electrons

8. Quantum Entanglement

Given that in scale A and B;

A implies Arithmetic growth mechanism +A.

G implies Geometric growth mechanism ×G.

y implies Index number .i.e. a set of all numbers on the number line.

A = y – 1 and G = A / 2 + 1

Scale A: (SPIN UP) about the x-axis;

When y = -1

(1 ×0) - (1 + (-2)) = +1
(2 ×0) - (2 + (-2)) = 0
(3 ×0) - (3 + (-2)) = -1

} LEFT SIDE

When y = 3

(1 ×2) - (1 + 2) = -1
(2 ×2) - (2 + 2) = 0
(3 ×2) - (3 + 2) = +1

} RIGHT SIDE

Negative infinity α ——————————————————— Positive infinity α

Conversely, thus the converse of scale A also exists as scale B and vise versa.

Scale B: (SPIN DOWN) about the y-axis;

When y = -1

(1 + (-2)) - (1 ×0) = -1
(2 + (-2)) - (2 ×0) = 0
(3 + (-2)) - (3 ×0) = +1

} LEFT SIDE

When y = 3

(1 + 2) - (1 ×2) = +1
(2 + 2) - (2 ×2) = 0
(3 + 2) - (3 ×2) = -1

} RIGHT SIDE

Negative infinity α ——————————————————— Positive infinity α

NOTE: Without turning scale A to scale B or vise versa each of the scale pretends to turn to the other.

Conclusion

Since both scales A and B has the same variable. Therefore any changes in one would instantaneously reflect in the other and the other would immediately fix its results to the opposite value. This abstractly describes quantum entanglement.

Choice mechanism

Since both scales are right, a computer can be used to choose between scale A and scale B. If it chooses one path even though is random that means it has a choice mechanism otherwise it wouldn't have chosen any one

either.

Superpositioning

There can be superposition of the two states (scale A and scale B) just like decayed –no decayed in radio active atoms. This kind of super correlation is entanglement.

9. Shifting of Quantum Numbers

(This can be mapped with expanding universe and universes)

Assertion

Our new hypothesis predicts that if the universe as cool enough it reaches a certain limit and there is another big bang for another big bang such that the universe expands forever and would not eventually become too cold to sustain life.

Let consider an input x where x implies a system to shift all quantum numbers or system which all the spin (+ and - values 'z') belongs.

What its postulates

It postulates that for every given input x, there exist a turning point at y = x i.e. the point at which a very significant change occurs; a decisive moment designated as {0, 0, 0} in figures (1, 2, 3, 4, 5, 6 and 7).

NOTE: the plus and minus value below represents the spin of identical particles e.g.

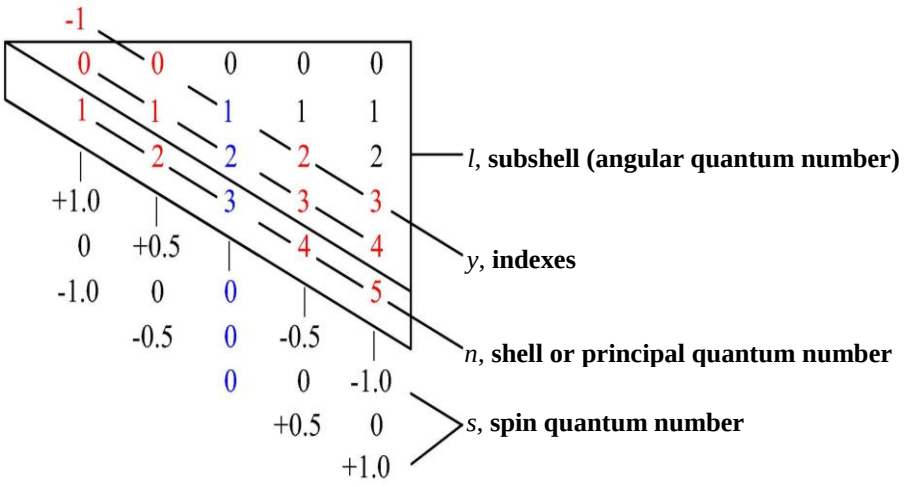
Fermions- elementary particles that have a particle spin equal to a half-integer value
(-1/2, 1/2, 3/2. etc) and it's the same with half integer value (-0.5, 0.5, 1.5, etc).

Bosons- elementary particles that have a particle spin that is equal to an integer value
(1, 2, 3. etc)

When input x = 1, output is:

(y): Spin (+/-value):
-1.....1.0, 0.0, -1.0
0.....0.5, 0.0, -0.5
1.....0.0, 0.0, 0.0
2.....-0.5, 0.0, 0.5
3.....-1.0, 0.0, 1.0

Thus when input x = 1 combination of quantum numbers are:



(Fig.4) Input x = 1 to give combination of quantum numbers

When input x = 2, output is:

(y): Spin (value):

-1.....1.5, 0.0, -1.5

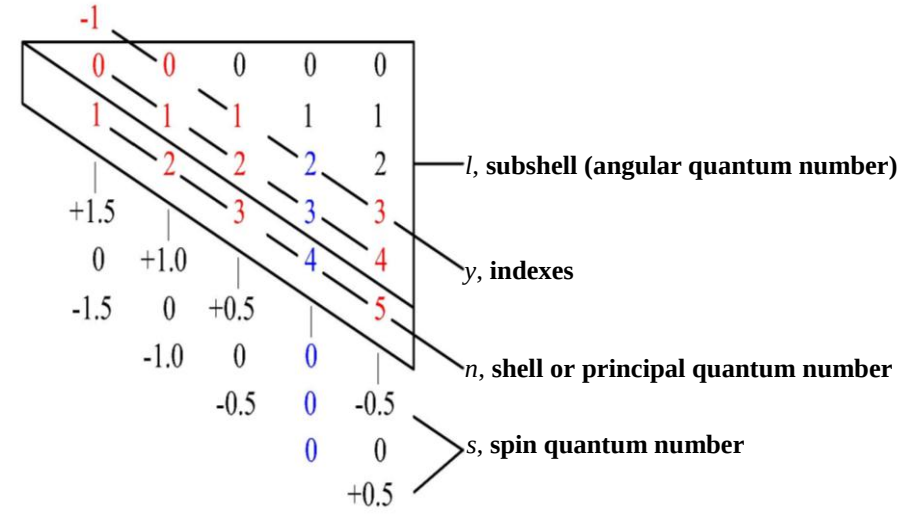
0.....1.0, 0.0, -1.0

1.....0.5, 0.0, -0.5

2.....0.0, 0.0, 0.0

3.....-0.5, 0.0, 0.5

Thus when input x = 2 combination of quantum numbers are:



(Fig.5) Input x = 2 to give combination of quantum numbers

When input x = 3, output is:

(y): Spin (value):

-1.....2.0, 0.0, -2.0

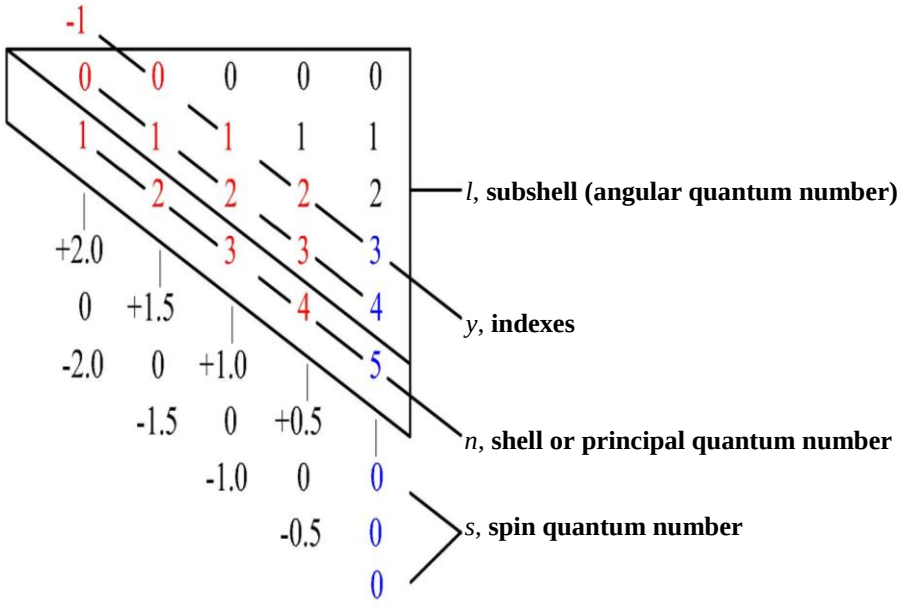
0.....1.5, 0.0, -1.5

1.....1.0, 0.0, -1.0

2.....0.5, 0.0, -0.5

3.....0.0, 0.0, 0.0

Thus when input x = 3 combination of quantum numbers are:



(Fig.6) Input x = 3 to give combination of quantum numbers

Observation

Quantum numbers shift via a continual increase in the number of discrete units that they contained as their spin continue to expand in figures (4, 5 and 6) towards a positive infinity.

Since the basic building blocks of the universe and all of the known matter in the universe is made up of fundamental particles having all quantum numbers. Therefore, let all quantum numbers represents an expanding universe.

Inference

There is Homogeneity In figures (4, 5 and 6), the same observational evidence is available to observers at different locations for every given input x having a uniform structure throughout and this can also be mapped with an expanding universe and universes.

Conclusion

This support the evidence that the universe is homogenous even as it expands. Therefore, the universe or universes expand(s) via a continual increase in the number of discrete units that it contained.

10. Test Validity

(To show that + and - value is referencing the coexistence of 1 and 3)

If a decimal number (excluding consecutive half of any integer) is input once and only once via floating point numbers the two opposite plus and minus values would be different but would not if an integer or consecutive half of an integer is input.

For example through a command prompt (where zero is a constant result for every input x):

If input = 2. Then at index number y = -13 (.i.e. a number on the number line)

The two opposite results would be: +7.5 and -7.5

If input = 3.5. Then at index number y = 8 (.i.e. a number on the number line)

The two opposite results would be: +2.25 and -2.25

If input = 0.1 Then at index number y = 1 (.i.e. a number on the number line)

The two opposite results would be: +0.4500000000000002 and -0.44999999999999996

Difference: 2.220446049250313E-16

If input = 4.7 Then at index number y = 13 (.i.e. a number on the number line)

The two opposite results would be: +4.149999999999999 and -4.15

Difference: -1.7763568394002505E-15

Observation

The plus and minus values does not come from the same entity because of their differences.

Inference

What is done to achieve one value is not the opposite of what is done to achieve the other value.

Conclusion

The difference in the plus and minus values is as a result of the difference in the coexistence of number 1 and 3 from the wavefunction (triplet numbers 1, 2 and 3). Thus, the test is valid otherwise the result would have been the same for every given input x.

11. Numbers Evolving from Non-Existent Illusion

(Condition that satisfy principal quantum number n)

Given that $n \geq 1$ exists or can be considered as a reality region.

Such that n = 1 at the ground state where y = -1 from the algorithm based on the math that describe it. Note: n and y are conjugate according to the algorithm e.g. If $n = 0$, l can be -2, and -1 where y is the same as the $l = -2$. For $n \neq 0$ according to quantum mechanics, n, describes the energy of the electron and is always a positive integer.

Therefore, $n \leq 0$ and $l \leq -1$ does not exist or can be considered as a non-existent illusion region. So that n = 0 where y = -2 is a hypothetical point in space, the point of the big bang. This can lead to a mechanism that would return the information down black holes .i.e. numbers evolving from a non-existent illusion.

When input x = -2, output is:

(y): Spin (+/-value):

-3…..-0.5, 0.0, 0.5 Non-existent illusion region **- α**

-2…...0.0, 0.0, 0.0 HERE IS THE TURNING POINT THE POINT OF THE BIG BANG.

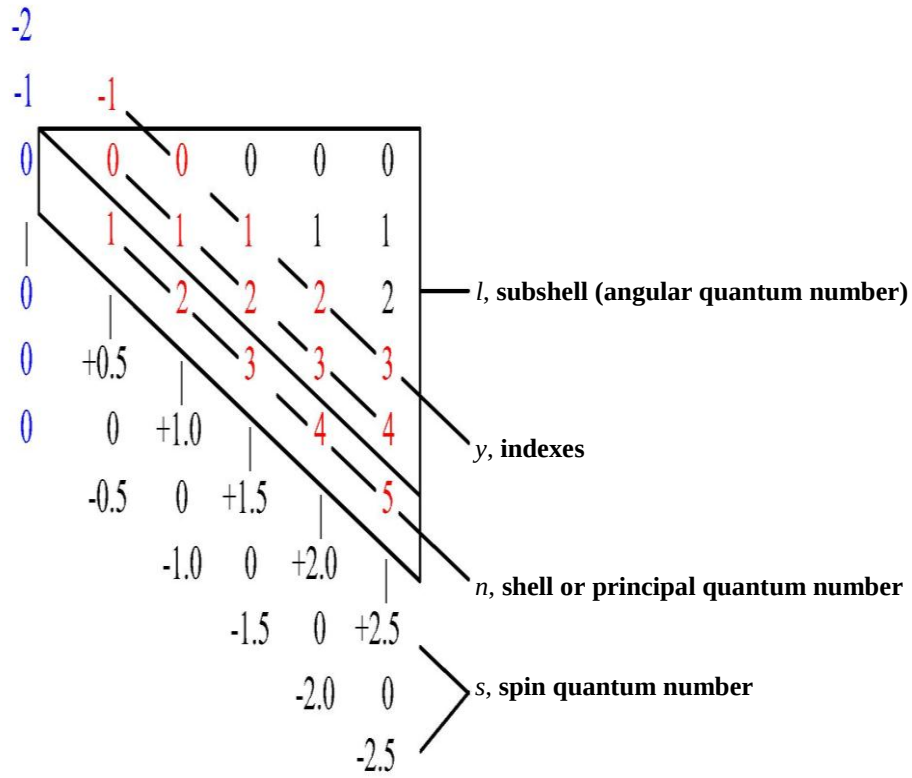
-1.....0.5, 0.0, -0.5

0.....1.0, 0.0, -1.0 Reality region +α

2.....1.5, 0.0, -1.5

3.....2.0, 0.0, -2.0

Thus, when input x = -2 combination of quantum numbers are:



(Fig.7) Input x = -2 to give combination

What logic demands

Logic demands that since numbers are usually run from a negative infinity to a positive infinity on the number line. Therefore, numbers can evolve from a non-existent illusion as shown in figures (4, 5, 6 and 7) and this can be mapped with the universe that evolves from nothing.

Conclusion

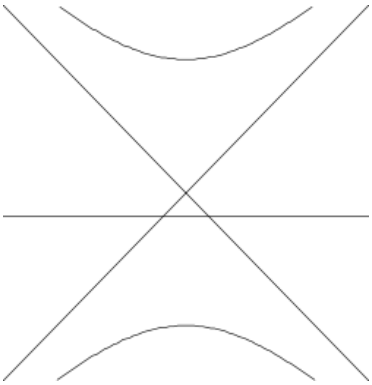
If assumed an arithmetic growth mechanism (+A) and a geometric growth mechanism (×G) numbers can evolve from nothing i.e. numbers evolving from a non-existent illusion.

PROPOSED MODEL FOR THE GLOBAL GEOMETRY OF THE UNIVERSE

12. Conic section analysis of the hyperbolic appearance of circles

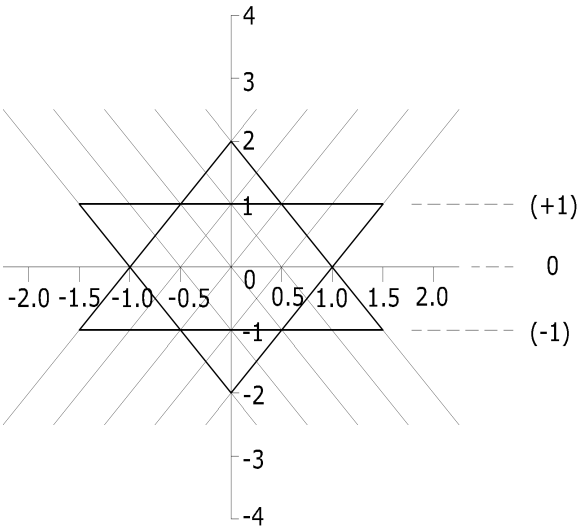
In general, this is a graph of when input x is a positive number after the turning point i.e. after the after the big bang.

When input x = 1.

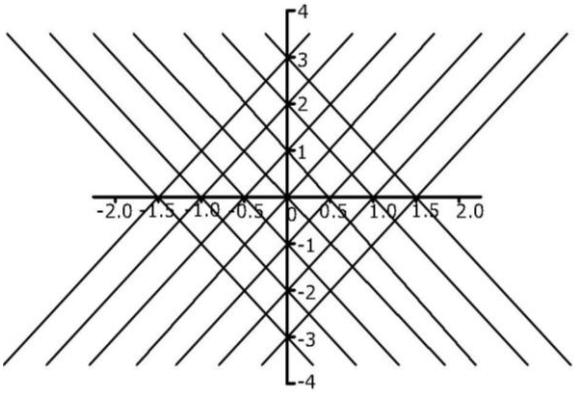


(Fig.8) The graph shows that shape of the universe is a cone

The graph of when input (x) = …-2, -1, 0, 1, 2… where {-1, 0, +1} are conjugate at the ground state according the math that describe it.



(Fig.9) The graph shows that the universe could be made up of hexagram
The graph of when input (x) = …-3,-2, -1, 0, 1, 2, -3…



(Fig.10) A continual increase as the graph moves up

13. Reference

Quantum number, Electron shell (subshell name), Electron configuration- Wikipedia.