Complete model to describe a mathematical universe

(the abstract)

Subject: Mathematical Scientific Paper.

Scope: Abstract Algebra and Quantum field theory and general relativity

Achieved Result to discuss: Complete model to describe a mathematical universe.

It gives me great pleasure to discuss/ present a different and unique perspective to describe a complete model for a mathematical universe.

Tracing the trail of previous mathematicians, and tracking the history of mathematics and physics , I have reached to amazing results considering quaternions and primes .

As a sub ring of quaternions with some properties defined on it, can amazingly work as a model to describe a mathematical universe capable of realizing itself ,where a distribution of mater on three-dimension space changes while a fourth dimension changes ,capturing the universe as one wave of probability of quantum fields interacting together.

 And the most important is not knowing where we are in that ring captures exactly the universe as a wave of probability collapsing to smaller probability moment after moment as the act of observation occurs.

In the third part, how this mathematical universe realizes itself and how the act of observation happens is captured using the same model

Later in the fourth part it will be clear how after choosing the correct functions one can show that this model captures to somehow the stander model of particles the strong and weak and the electromagnetic forces are captured and the quarks and leptons are captured.

later in the fifth part it will be shown that this model captures the maxim speed and time dilation and the relation between mass and energy !(coming soon)

moreover there will be a way to capture gravity and dark matter and dark energy ! (coming soon)

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The second part

in this part we will know how a sub ring of quaternions (integer quaternions) with some properties defined on it can amazingly work as a model to describe a mathematical universe ,where a distribution of mater on three-dimension space changes while a fourth dimension changes ,capturing the universe as one wave of probability of quantum fields interacting together.

 And how is that not knowing where we are in that ring captures exactly the universe as a wave of probability collapsing to smaller probability moment after moment as the act of observation occurs.

First , a tensor is considered as an array of numbers throughout this paper .

The idea is to construct a function from the set of quaternion integers to the set of 1 and 0.(will be represented by infinity by infinity by infinity by infinity tensor of rank 4)

The output of the function is 1 if the quaternion is prime (irreducible quaternion) and 0 if the quaternion is not prime (reducible quaternion).

A representation of this function is an infinity by infinity by infinity by infinity tensor of rank 4. we correspond an element of the tensor to each quaternion integer .

This tensor is going to be our description for a quantum field in a mathematical universe (may captures some properties of the real universe) as follow:

First and most important we keep the tensor with its elements zeros and ones and imagine going to somewhere in this tensor and erase any data telling us where we are in the tensor.

Again, we don't have any data telling us where we are but we have the tensor with its elements zeros and ones.

(Important note: some others quantum fields could be constructed. Examples: for each quaternion number which consists of four numbers, if tow numbers of them are relatively primes then the output is 1 otherwise the output is zero. What if three are relatively prime? It's clear that one can construct a lot of these quantum fields).

(One more important note: the outputs will be later finite components vectors consisting of ones and zeroes components. simply speaking, we combine n functions together from the set of quaternion integers to the set of n component vectors of ones and zeros components. Then the representation of this n

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functions will be an infinity by infinity by infinity by infinity tensor of rank 4 with its outputs n component vectors with components ones and zeros. This will allow us later to capture n quantum fields interacting together).

 But for simplicity we will start by only one quantum field might not capture any of the real world quantum fields but later in the fourth part of this paper we will start constructing functions which capture quantum fields which capture the real world fields).

Now we will consider this tensor with elements zeros and ones as a universe. We can imagine that we are somewhere in this tensor and we don't know where we are but we can observe these ones and zeroes in some parts of it (we can imagine that some parts are measured where we can observe these ones and zeros but some other parts are still not measured (where the outputs are still unknown))

Now using our knowledge about prime numbers distribution, even if we don't know where we are in this tensor, measuring some parts of this tensor enable us to get probability distributions of the unmeasured parts. Moreover, the more we measure, the more theses probability distributions collapse.

The conclusion is that this tensor captures a mathematical universe , four dimensions spacetime, one is different than the other three, three for space and one for time. quantum length and time . Quantum fields interacting together, and captures the universe as one wave of probability collapsing to smaller probabilities as we do the act of observation.

The third part

In this part I will explain how this mathematical universe realizes itself and how the act of observation happens

 First recall these tow notes

(Important note: some others quantum fields could be constructed. Examples: for each quaternion number which consists of four numbers, if tow numbers of them are relatively primes then the output is 1 otherwise the output is zero. What if three are relatively prime? It's clear that one can construct a lot of these quantum fields).

(One more important note: the outputs will be later finite component vectors consisting of ones and zeroes components. simply speaking, we combine n functions together from the set of quaternion integers to the set of n component vectors of ones and zeros components. Then the representation of this n functions will be infinity by infinity by infinity by infinity tensor of rank 4 with its elements n component vectors with components ones and zeros. This will allow us later to capture n quantum fields interacting together.

Now if in this tensor we could define the correct functions that capture the quantum fields that to somehow simulate the real world (this will be shown in the next part) Then there will be some laws simulate the real world and DNA and electrical signals between nerve cells will be captured by this model

Now how this mathematical universe realizes itself ?

Let's start by some definitions

- Mathematical universe tensor: the previously mentioned tensor, an infinity by infinity by infinity by infinity tensor of rank four with elements ones and zeros ((one if prime quaternion and zero if not a prime quaternion(other functions could be defined)) also we erase any information telling us where we are in this tensor we just have the tensor with its elements ones and zeros .
- mathematical moment memory set of numbers: (finite number by finite number by finite number tensor of rank 3 with element zeros and ones) a set of ones and zeroes that is a subset of the previously mentioned tensor that contains information about another subset of the tensor (the idea is that knowing that some numbers are primes

let us know for sure about other numbers whether they are primes or not).

- Mathematical DNA set of numbers : (finite number by finite number by finite number tensor of rank 3 with elements ones and zeros)set of ones and zero that is a subset of the previously mentioned tensor that to somehow simulate DNA in the real world (should be repeated through the time dimension and constructing mathematical moment memory set of numbers)
- Mathematical observer family of sets of numbers: a family of Set which consists of sets of mathematical moment memory set of numbers all of them are connected (constructed) by a repeated DNA set of numbers.

Now

How do these mathematical moment memory set of numbers which are connected and constructed by the same mathematical DNA set of numbers change while a fourth dimension changes is how the mathematical observer family of set of numbers observes a subset of the mathematical universe tensor moment after moment .

  Since we do not know where we are in this tensor the future (or the unmeasured past) will be a wave of probabilities until the act of observing.

the fourth part

First lets recall the definition of mathematical universe tensor

Mathematical universe tensor: the previously mentioned tensor, an infinity by infinity by infinity by infinity tensor of rank four with elements ones and zeros ((one if prime quaternion and zero if not a prime quaternion(other functions could be defined)) also we erase any information telling us where we are in this tensor we just have the tensor with its elements ones and zeros .
Now lets start by defining new functions from the the set of the imaginary part of integer quaternion (which consist of three components to the set of the following numbers each consists of three digits 000,100,010,001,110,101,011,111

000   iff non of the three component are relatively primes to
                 each other
                 (captures electron neutrino)
(if the second three digits (shown later)belong to the first generation mass)

100,010,001   iff tow of the the component are relatively prime but non of
                 them is relatively prime to the third component
                 (captures up quark)
(if the second 3 digits (shown later)belong to the first generation mass)

110,101,011,   iff tow are relatively prime and one of them only relatively
                 prime to the third
                 (captures down quark)
(if the second 3 digits (shown later)belong to the first generation mass)

111   iff the three components are relatively primes
                   (captures electron)
(if the second 3 digits (shown later)belong to the first generation mass)

A representation   of this function is infinity by infinity by infinity tensor of rank three
 now lets extend this function to be from the set of integer quaternions which consist of four components to the set of the following numbers

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each consists of six digits the first three digits will be defined as the previous function the last three digits will be defined as follow

(note : the output set consists of 8 (representing the previous output set(the first three digits) times 8 (representing the second part of the output set of this function (the last three digits))(will be defined by this function) elements)

000   iff none of the three imaginary component is relatively
               prime to the real component
               (captures zero generation mass non-existing particles)

010,100,001   iff only one of the three imaginary component is
                relatively prime to the real component
                (captures first generation mass)

110,101,110   iff only tow of the three imaginary component is
                relatively   prime to the real component
                (captures second generation mass)

111   iff the three imaginary components are relatively prime
               to the real part
                (captures third generation mass)

  This function is actually a scaler field from the set of integer quaternion to the of integer from 0 to 64 (including 0 and 64) and which is a finite set consists of 64 elements but written in binary system (three digits space three digits) as defined.

A representation   of this function is infinity by infinity by infinity by infinity tensor of rank four with elements consist of 6 digits numbers of ones and zeros (three digits space three digits).

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This tensor will be our main point it will be considered as a four dimension universe containing 64 quantum fields each number of the 64 number has its corresponding quantum field as shown by the following examples

examples

001 010	up quark	mass generation 1
011 010	down quark	mass generation 1
111 010	electron	mass generation 1
000 010	electron nitrino	mass generation 1

more examples (clarify the color)

010 001	red up quark	mass generation 1
100 001	green up quark	mass generation 1
001 001	blue up quark	mas generation 1

110 001	red dawn quark	mass generation 1
101 001	green dawn quark	mass generation 1
110 001	blue dawn quark	mass generation 1

111 001	electron	mass generation 1
000 001	electron nitreno	mass generation 1

more examples (clarify the mass generation)

010 001	up quark	mass generation 1
010 011	charm quark	mass generation 2
010 111	top quark	mass generation 3
010 000	non existing quark	mass generation 0

000 000	empty space	mass generation 0

more examples (clarify the none existing particles which allow the movement of elementary particles (how will be shown later)
all mass generation 0 which denoted by 000 at the second part could be consider as empty space :

000 000   empty space   mass generation 0
   (could be consider non existing neutrino comes in one color)

100 000   none existing up quark mass generation 0
010 000   none existing up quark mass generation 0
001 000   none existing up quark mass generation 0
   (it is clear it comes in three colors)

011 000   none existing down quark mass generation 0
100 000   none existing down quark mass generation 0
100 000   none existing down quark   mass generation 0
   (its clear it comes in tree colors)
111 000   none existing electron mass generation 0
   (comes in one color)

One shall not worry about the following particles which predicted by this model but don't exist in the real world ,considering the second 3 digits
000   mass generation 0 (empty space)
010 or 100 0r 001 mass generation 1 why 3?
011 or 110 or 101 mass generation 2 why 3?
111   mass generation 3 why 1?
  it looks like the first and the second mass generations come in three fields while the third mass generation only comes in one field but this problem will be solved later in this paper .

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Recall from this part

This function is actually a scaler field from the set of integer quaternion to the of integer from 0 to 64 (including 0 and 64) and which is a finite set consists of 64 elements but written in binary system (three digits space three digits) as defined.

A representation   of this function is infinity by infinity by infinity by infinity tensor of rank four with elements consist of 6 digits numbers of ones and zeros (three digits space three digits).

     This tensor (considered as an array of numbers only)will be our main point it will be considered as a four dimension universe containing 64 quantum fields each number of the 64 number has its corresponding quantum field as previously defined and understood and shown by example

   recall from the second part of this paper
after we construct the function and represent it by tensor we erase any data telling us where we are in this tensor e imagine we are somewhere in this infinity by infinity by infinity by infinity rank 4 tensor and we just keep the tensor with its elements (now the output set consists of 64 number representing 64 quantum field as defined)

now to understand how this tensor captures the real universe we will start by moving through a line parallel to the real part axes of the quaternion ring (but we still don't know where we are in this tensor just moving somewhere parallel to the real part axes of the quaternion integers as if the time is absolute (later in the fifth part it will be shown that this model captures the maxim speed and captures time as relative) .

First , moving through any line parallel to the real part axes of the quaternions ring does not change the imaginary part 3 components of any quaternion integer being relativity prime to each other   this means electron or up quark or dawn quark will be the same particle through time . But only the mass generation will changed as the real part changes

the most important when mass generation 1 turns into mass generation 0 and vice versa this allows particles to disappear and appear in this mathematical universe . Also allows the appearance of mass generation 2 and 3 but decay fast , because the probability that 3 random numbers are relatively prime to a random number is less that tow of them are relatively prime to the same random number is less than only one of them is relatively prime to the same random number and mass generation is defined this way in this model

second recall our definitions

100,010,001   iff tow of the the component are relatively prime but non of
              them is relatively prime to the third component
              (captures up quark)
(if the second 3 digits (shown later)belong to the first generation mass)

110,101,011,   iff tow are relatively prime and one of them only relatively
               prime to the third
               (captures down quark)
(if the second 3 digits (shown later)belong to the first generation mass)

111   iff the three components are relatively primes
                 (captures electron)
(if the second 3 digits (shown later)belong to the first generation mass)

the probability of 111 is equal to 3 times the probability of 110 or 101 or 011 + 3 times the probability of 100 or 010 or 001

for this reason this model captures why the majority of time for each electron we find 3 up quark and three dawn

also the probability of 100 is the same as the probability of 010 is the same as 001

also the probability of 110 is the same as the probability of 110 is the same as 011

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this allows this model to capture quantum chromo dynamic

also one can see that the probability of 001 or 010 or 100 is higher than 011 or 101 or 110 this captures the hydrogen tow up + one dawn + electron

moreover , as the real part changes some times a color disappears and another colors appears some times up quark turn into dawn so the floro and chromo dynamic are captured

But what about gallons and w and z and photons ?

Forces will be captured differently in this model but later in the next part after the constructing of relative time instead of the absolute and the maximum speed.

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