1.) Abstract

In Sphere Theory, the universe is a sphere made of spheres. In “Predicting the Gravitational Constant from the New Physics of a Rotating Universe”[7]. It was shown how to construct the first zero, one, two, and three-dimensional objects. These are, perhaps, regions of high stability in the construction of the universe. It is proposed that these structures will have fractals in different levels of dimensions. It was found that the zero-dimensional object was made of one sphere, the one-dimensional object was composed of two spheres, the two-dimensional object was composed of six spheres, and the three-dimensional object was composed of 42 particles.

For reference, it is shown in Appendix A, how these layers of dimensions, and the cuboctahedron structure can be correlated to the masses of particles over one GeV.

2.) Calculations

For correlating the masses of particles over one GeV it was shown in Mystery Particle Spotted at 28 Gev! Discovery Would Require Physics So Weird that Nobody Has Even Thought of It.

That each mass was correlated using the following equation.

Mass of Particle=(Number of particles)*Mass of Neutron/3. The mass is always different by a small fraction of close to .989 and .97. Another decimal or two decimals of accuracy of large mass particles would be helpful for better characterization of the large mass particles.

It is proposed that this calculation might be useful for calculating the masses of possible dark matter candidates. The simple calculations are shown below.

(42)*0.939565378 Gev/3 = 13.15 GeV

(6)*0.939565378 Gev/3 = 1.879 GeV

(2)*0.939565378 Gev/3 = .6264 GeV

3.) Discussion

The proposal of these masses is hypothetical, but perhaps based off of fractal regions of extreme stability. If one does add the masses of these particles and assuming they may be produced in equal amounts to the proton and electron and, the baryonic mass of the universe is 4.9 percent of the total mass of the universe, then these 3 particles

would add up to (.6264+1.879+13.15)/3*4.9=25.57 percent of the mass of the universe. The Dark Energy mass fraction of the universe was hypothesized to be 68.169 percent of the universe in “S p i n n i n g S p h e r e T h e o r y M a y D e s c r i b e D a r k E n e r g y”[8]

If one adds up the 4.9 percent baryonic matter 25.57 percent dark matter, and 68.169 percent dark energy, the sum is 98.64 percent. This hypothesis for fractal dark matter of extreme stability hypothesis will only be reasonable if one or more of these masses of dark matter candidates .6264,1.879, and 13.15 GeV is confirmed.

Appendix A

When using cuboctahedron packing of spheres, a pattern for the masses of the W, Z, and Higgs bosons and Bottom and Top quarks can be observed. This is a calculated value, which is shown below.

Note that cuboctahedron packing of spheres has a predictable sequence to the amount of spheres contained in each layer.(3)

$$Layer(N) = 10N^2 + 2$$

except layer 0 which is equal to 1

Layer 0 - 1 sphere

Layer 1 - 12 spheres

Layer 2 - 42 spheres

Layer 3 - 92 spheres

Layer 4 - 162 spheres

Layer 5 - 252 spheres

Layer 6 - 362 spheres

Mystery particle at 28 GeV

The mystery particle is a new unexpected particle found at Cern(5) in 2018. Apparently it would require physics so weird that no one has even thought about it. The calculation below shows that it conforms to the cuboctahedron layer structure for sphere theory of physics.

The accepted value for the Z boson mass is as follows.

Mystery particle mass 28 GeV/c2 (5)

If we take the 3rd layer of sphere packed cuboctahedron structure we have 92 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

(92)*0.939565378 Gev/3= 28.81 GeV

The value of 28 and 28.81 GeV are very close. Later on we find other particles that use the 3rd layer of the cuboctahedron. It would seem likely that this mystery particle would come from the decay of these particles. The particles that also use the 3rd layer are the W boson, the Top Quark, and the Higgs particle. The ratio of 28/28.81 is .972, which is very similar to what is obtained with the down quark of .974, which is shown below. Of courses the masses are not that well known, so the exact ratio is not known either.

W and Z Bosons

The W boson and Z boson mediate the weak force. From “Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres”(1) we found that the forces of charge and gravity could be calculated using 1/3 of the mass of the electron or neutron in the equations. We will also use 1/3 of the masses of the neutron for correlating the masses of the z boson and w boson.

The accepted value for the Z boson mass is as follows.

Z boson 91.1876±0.0021 GeV/c2 (2)

If we take the 2nd and 5th layer of sphere packed cuboctahedron structure we have 42 and 252 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

(42+252)*0.939565378 Gev/3= 92.077407044 GeV

When we take the ratio of the actual Z boson mass to this calculated value we obtain.

0.99033631

The accepted value for the W boson mass is as follows.

W boson 80.385±0.015 GeV/c2 (2)

If we take the 3rd and 4th layer of the sphere packed cuboctahedron structure we have 92 and 162 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

(92+162)*0.939565378 Gev/3= 79.5498686 GeV

When we take the ratio of the calculated value to the actual mass of the w boson we obtain 0.98961085

It is interesting that the Z boson and W boson would use different layers for calculating their masses. It is also interesting that the measured values are nearly symmetrical with the calculated values. That this is so is a freakish accident or z and w bosons are connected to a cuboctahedron structure.

Bottom Quark and Top Quark

If we take the 0th and 1st layer of the sphere packed cuboctahedron structure we have 1 and 12 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

Actual Bottom quark mass 4.18 GeV

Cuboctahedron Layer 0 + Layer 1 = (1+12)*0.939565 Gev/3= 4.07 Gev

When we take the ratio of the calculated mass to the actual measured value of the Bottom quark mass we obtain 4.07/4.18=0.974

Top quark mass 173.4 Gev

If we take the 2nd 3rd 4th, and 5th layer of the sphere packed cuboctahedron structure we have 42, 92, 162, and 252 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

(42+92+162+252)*.939565378 Gev/3= 171.627 Gev

When we take the ratio of the calculated value to the actual measured value of the Top quark mass we obtain 171.627/173.4=0.9898

It is interesting that the bottom quark and top quark would use different layers for calculating their masses. It is also interesting that the measured values are nearly

symmetrical with the calculated values. That this is so is a freakish accident or bottom quark and top quark are connected to a cuboctahedron structure. Note that the ratio of the bottom quark and top quark masses, to the calculated values are not as equal at the w and z boson.

Higgs Bosons

The mass of the Higgs is not well defined, but two values are being discussed. Which I have quoted from the following article(4)

Higgs upper mass boson 126.6±0.3±0.7 GeV/c^2(4)

Higgs lower mass boson 123.5±0.9+0.4-0.2 GeV/c^2(4)

If we take the 4th and 5th layer of sphere packed cuboctahedron structure we have 162 and 252 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

Cuboctahedron Layer 4 + Layer 5

(162+252)*0.939565378 Gev/3 = 129.66 Gev

When we take the ratio of the actual upper measured value of the Higgs mass to the calculated we obtain 126.6/129.66=0.9764

Or alternate version

If we take the 2nd and 6th layer of sphere packed cuboctahedron structure we have 42 and 252 spheres. Multiplying this by 1/3 of the neutron mass yields the following;

(42+362)*0.939565 Gev/3 = 126.53 GeV

When we take the ratio of the actual lower measured value of the Higgs mass to the calculated we obtain 123.5/126.53=0.9761

It is interesting that the upper and lower Higgs mass would use different layers for calculating their masses. It is also interesting that the measured values are nearly symmetrical with the calculated values. That this is so is a freakish accident or bottom quark and top quark are connected to a cuboctahedron structure. Note that the ratios are almost identical. The cuboctahedron layers can be combined in a number of ways that result in values that are close to the measured values of the mass of the Higgs.

References

1) M.J. Sarnowski http://www.vixra.org/abs/1403.0502

2) J. Beringer et al. (2012). "2012 Review of Particle Physics - Gauge and Higgs Bosons". Physical Review D 86: 1.

3) http://www.grunch.net/synergetics/sphpack.html

4) http://profmattstrassler.com/2012/12/17/two-higgs-bosons-no-evidence-for-that/

5) https://theconversation.com/mystery-particle-spotted-discovery-would-require-physics-so-weird-that-nobody-has-even-thought-of-it-106260

6) http://vixra.org/pdf/1903.0253v3.pdf

7) http://vixra.org/pdf/1903.0253v3.pdf

8) http://vixra.org/pdf/1904.0127v1.pdf