Twist-Loop Aethereal Fractal Structures

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The Fine Structure Constant (α) and other unitless numbers can be structurally defined and mathematically calculated from various fractal platforms operating within the aetheral fractal plenum. This paper presents a structural model of circles imbedded within circles, forming an infinitely repetitive fractal pattern. It then integrates these discoveries with basic parameters defined by Sierpinksi's Triangle and Pascal's Fractal, from which electron and proton radius and mass ratios can be calculated.

1. Introduction

My fascination with unitless constants like the Fine Structure Constant (FSC), ratios of Planck's Length to the Compton or Bohr wavelengths or the Schwartzchild radius, and various mass ratios, has grown with time. [9-12] In my search for structural models to derive these constants, I stumbled across a very interesting fractal structure that may in the end result in a better understanding of these unitless constants. This paper will explore this new pattern, and some of its possible applications to the electron and proton radii and masses. Many times when I was attempting to find mathematical solutions for the Fine Structure Constant and various length ratios, I simultaneously developed models that mirrored and supported Don Bridell's theories as presented on his website and at various NPA Conferences. [13-15] Two such cases are the relationship between even and odd numbered loops and their relationship to energy and mass loops, and second that the structure of aether is a fractal. I give many thanks to Don for his contributions to this paper.

2. Odd-Numbered Aethereal Fractal Structures

As proposed in my paper [12], the Fine Structure Constant α can be calculated as follows:

$$\alpha = \left(\frac{\pi}{2} - x\right)^{11} \tag{1}$$

where "x" is proposed to be the diameter of a collapsed individual loop within eleven generations of interconnected loops. Although an explanation was given last year for $\pi/2$ as the increased length of a collapsed loop, no explanation was given for either "x" or why there would be "eleven" generations of loops other than to say, that is what works. Accordingly, it is proposed that the structures and tables on the following pages will help provide answers to those questions.

The proposed structure in Figure 1 represents a single loop of given internal and external diameter that can be replicated as a smaller scaled down version of eleven smaller identical loops located exactly within the single outer loop. A loop of energy is defined as any simple or complex structure of rotational energy created by the spiraling effects of individual or integrated eddy currents within the aether fractal plenum. The aether fractal plenum is defined as any finite portion of universal space (the plenum) that is occupied by a single universal substance (the aether), and which can be arranged and rearranged into various (fractal) patterns.

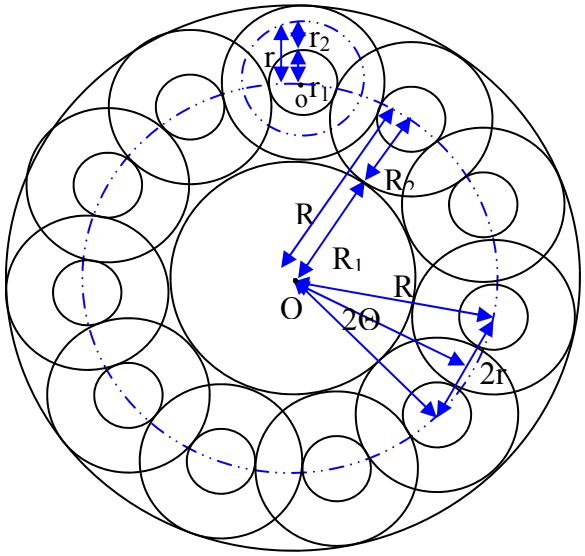

Fig. 1. Two Platform Levels of an Eleven Twist-Loop Fractal

The eleven twist-loop fractal pattern sequence in Figure 1 would then be replicated up to sixty-four times as will be shown later in this paper. The eleven smaller loops are interconnected by superimposing their outer loop radius on top of one another. The figure itself is proposed to be a two-dimensional image of a three-dimensional structure as will be further illustrated in other figures later on within this paper. This same approach was tried on other arrangements from six to sixteen numbers of twist-loops and only the odd numbered arrangements could be superimposed repetitively without contradiction. The structure itself fails at less than six twist-loops as the inner loop radius R_1, disappears and becomes negative, while at six twist-loops the inner loop radius R_1 equals zero. Also, in the seven, eight, and nine twist-loop configuration, R_1 is less than $2R_2$, therefore eliminating any possible interlinking of outer loops when in their neutral state. The eleven twist-loop image as shown below is a complex structural loop of energy in its neutral state, which then can also be both tensed or stretched and compressed, condensed or accumulated by the elasticity of the alpha factor. Also, the lines in the drawing are only representative of the overall structure of the next lower platform level of energy, and have no exact meaning until that structural platform is included in the drawing. Of particular interest, were the figures with seven and eleven twist-loops, and accordingly the eleven twist-loop arrangement will be

shown for illustration purposes as it is easier to visualize than the seven twist-loop arrangement, which will instead be illustrated later in the paper. Also, a 469 twist-loop arrangement will be discussed later in this same paper.

The following equations can then be written based upon the previous structure, where R_1 is the inner radius of the single large loop, and $R = R_1 + R_2$ is the centerline radius for the same large loop, and O is the center point for the same large loop. Accordingly, r_1 is the inner radius of each of the eleven smaller twist-loops, and $r = r_1 + r_2$ is the corresponding centerline radius for the same smaller twist-loops, and o is the center point for each of the same smaller twist-loops. S is then defined as the ratio or scalar factor of r to R, r_1 to R_1 and of r_2 to R_2. Also $C = 2\pi R$ is the circumference of the centerline or midline of the outer loop, 2θ is the angle between adjacent smaller twist-loops and N is the number of twist-loops within the fractal, which in this case is the number eleven. Therefore the eleven smaller twist-loops are proposed to be exact but smaller replicas of the larger loop that they are within.

$$r = r_1 + r_2 \qquad R = R_1 + R_2 \tag{2}$$

$$S \equiv \frac{r}{R} = \frac{r_1}{R_1} = \frac{r_2}{R_2} = \sin\theta \tag{3}$$

From Figure 1, N isosceles triangles oOo', with o and o' adjacent small circle centers, each containing angle 2θ, fill the entire circle around O with 2π radians. Thus each angle is:

$$2\theta = \frac{2\pi}{N} \qquad => \qquad S = \sin\frac{\pi}{N} \tag{4}$$

Also from Figure 1, we find that R_2 is the sum of r and r_2:

$$R_2 = \frac{r_2}{S} = r + r_2 \qquad => \qquad \frac{r}{r_2} = \frac{1}{S} - 1 = \frac{1-S}{S} \tag{5}$$

From this we also obtain relations between all the r's:

$$\frac{r_1}{r_2} = \frac{R_1}{R_2} = \frac{r}{r_2} - 1 = \frac{1}{S} - 2 = \frac{1-2S}{S} \tag{6}$$

$$\frac{r_2}{r} = \frac{R_2}{R} = \frac{S}{1-S} \tag{7}$$

$$\frac{r_1}{r} = \frac{R_1}{R} = 1 - \frac{r_2}{r} = \frac{1-2S}{1-S} \tag{8}$$

Since both r_1 and r_2 are positive, the ratio in Eq. (6) is also positive, and $S < 1/2$. By (3), this means $\theta < \pi/3$, and thence by (4) $N > 6$. That is, the pattern only works for N larger than 6.

N	$\theta = \pi/N$	$S = \sin\pi/N$	r_1/r_2	r_1/r	r_2/r
12	.26179939	.258819045	1.86370331	.349198186	.650801814
11	.28559933	.281732557	1.55946553	.392239074	.607760926
10	.31415927	.309016994	1.23606799	.447213595	.552786405
9	.34906585	.342020143	.923804400	.519803365	.480196635
8	.39269908	.382683432	.613125930	.619914404	.380085596
7	.44879895	.433883739	.304764871	.766421615	.233578385
6	.52359878	.500000000	0	1	0

Table 1. Values of θ, S and radii ratios for $6 \le N \le 13$

Figure 2 below is another image of the proposed eleven twist-loop fractal illustrating three platform levels of loops. The basic theory is that when the fractal is placed in tension, eleven layers of loops (only three layers are illustrated below) will collapse in a domino effect and will be stretched as a single elastic loop, thereby representing the elasticity of the aethereal fractal structure within the aether fractal plenum.

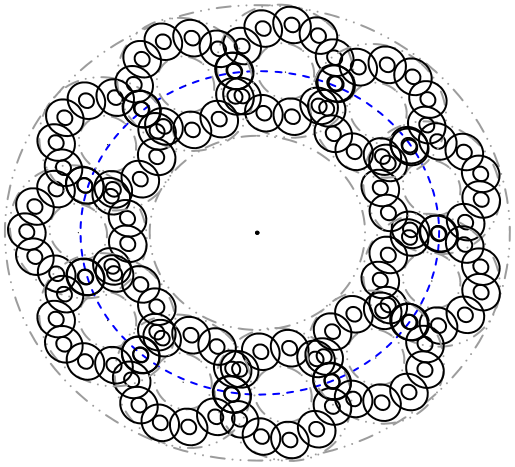

Fig. 2. Three Platform Levels of an Eleven Twist-Loop Fractal

3. Fractal Platform Structure

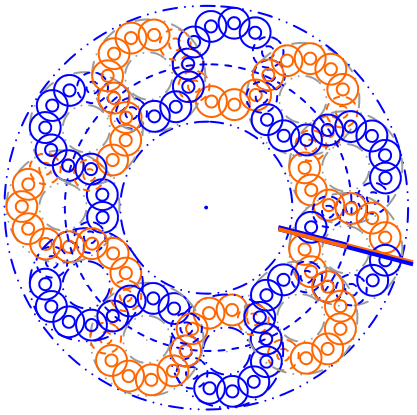

Fig. 3a. Two Platform Structure

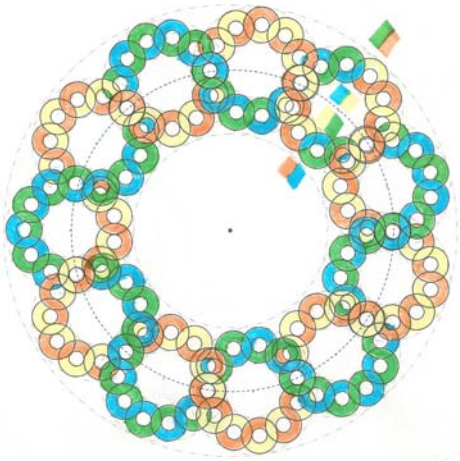

Fig. 3b. Three Platform Structure

The proposed fractal platform structure validates many of the tenants of Briddell's Field Structure Theory. Figure 3 illustrates the previous eleven twist-loop fractal from an entirely different point of view. Like the vase and the face, you can see either one depending upon how you look at it. Not only are there eleven twist-loops within a loop, but there are also two larger intertwined helical loops as shown in red and blue in Figure 3a. Please note the cross sectional line as shown in the drawing, is where the end of the string of red colored loops are connected to the beginning of the string blue colored loops, and also where the string of blue colored loops are then reconnected back to the string of red colored loops on its second journey around the outer loop. The only significance of the red and blue colors are to clearly illustrate that the two individual loops are made from a single string of energy, which are spiraling around each other on their journey around the outer loop. This process is then expanded to a third fractal level by coloring the 121 smaller twist-loops in Figure 3b, but this time with four colors, since there are now four trips around the outer loop, and again it is formed from one single string of energy, as proposed by Briddell.

Please note the cross sectional line now exhibits the respective order of transition of four different colors, which is green to orange, then orange to blue in the opposing loop, then blue to yellow back in the original loop, and finally yellow back to green in the opposing loop, thereby closing the entire single loop structure. This clearly shows that the proposed structure is made from a single loop of energy as proposed by Briddell. In the eleven twist-loop structure, this process would continue down 64 levels to Planck's Length. Accordingly, the loops from within the point of view of 2D structural form, become twists within 3D field structure theory. This process then clearly defines the method by which energy lines or strings are knotted together. One additional factor that makes the aether fractal plenum truly hyper-dynamic is that not only do the twist-loops stretch when they are in the tensed mode, but they also shrink in both length and diameter when they are in the compressed mode. This explains how a single string of energy can be knotted into the energy within a single electron.

It was a very fortunate accident that the first fractal drawn had eleven twist-loops, since it is fairly easy to see the spiraling workings of the inner loops; however, this is not the case with the seven twist-loop configuration as shown in Figures 4a thru 4d on the following page. Without knowing in advance that the trips around the outer loop were possible, it would have been entirely missed in the complexity of the seven twist-loop structure shown in Figure 4b. Figure 4c shows one single trip around the outer loop and Figure 4d shows all four trips (purple to orange, orange to green, green to yellow, and yellow back to purple) around the outer loop from a single string of energy.

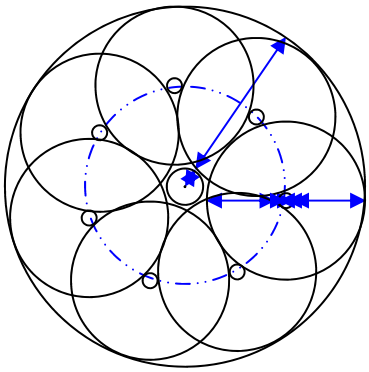

Fig. 4a. 2 Platform - 7 Loop Structure

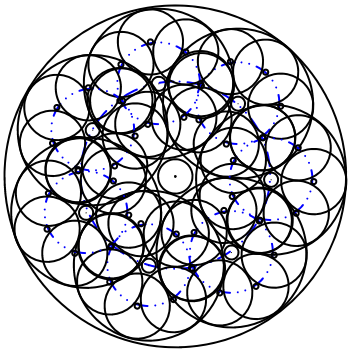

Fig. 4b. 3 Platform - 7 Loop Structure

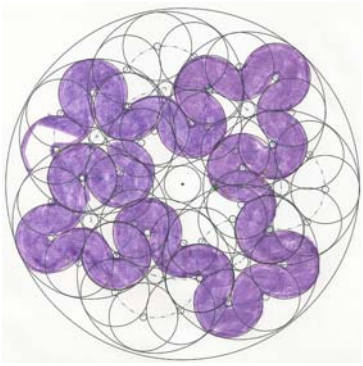

Fig. 4c. 3 Platform - 7 Loop Structure - 1 String - 1 Trip Around

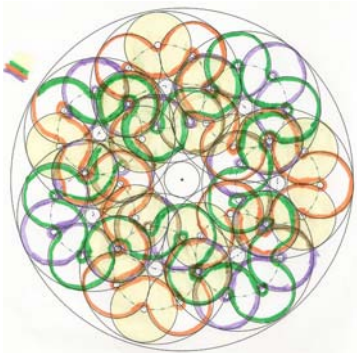

Fig. 4d. 3 Platform - 7 Loop Structure - 1 String - 4 Trips Around

This then brings up the possibility that the energy within the electron spirals from one to another numerical loop structure as the particle transits through differing energy levels. The same phenomena could also exist within the various frequencies within the electromagnetic wave spectrum, such that the energy within the wave oscillates from the seven twist-loop configuration when in accumulation or saturated compression, to a 469 twist-loop configuration when it is stretched and in saturated tension, with the exact numerical transitional sequence dependent upon the frequency. This could explain the internal wave structure and mechanism for the "massless" photon. The significance of 469 twist-loops is as shown in Table 2. This table shows the

number of fractal iterations that would be required for a twist-loop structure to arrive near Planck's Length. Only odd-numbered fractals are listed with greater emphasis given to prime numbers, since images of Pascal's Fractal simplify when using a prime number modulus as illustrated by the Pascal's Fractal Interface from the Center for Experimental & Constructive Mathematics, San Francisco University. Especially note that the structure with seven twist-loops is naturally closest to Planck's Length and that 469.5 is the number of loops that yields closest to sixteen platform levels as exhibited in the alpha platform shown in the previous tables. However, the only way that you could have 469.5 twist-loops is to interlink the loops twice around in a complex interactive link, which is very doubtful if it could even exist. Therefore, if the energy does morph from one structure to another, it is more likely that it ends in tension at 469 loops. Finally, $\pi/469$ yields an S-factor that is also very close to the proposed x-factor presented earlier.

Twist-Loops (N)	# of Fractal Levels	Calculation	Twist-Loops (N)	# of Fractal Levels	Calculation
470.000	16	1.58774404E-35	29	36	1.66140453E-35
469.477	16	1.61628139E-35	29	37	1.79629428E-36
469.474	16	1.61644665E-35	23	40	2.30584444E-35
469.000	16	1.64278419E-35	23	41	3.13979110E-36
59	27	4.02254275E-35	19	44	3.32877557E-35
59	28	2.14088474E-36	19	45	5.47898452E-36
53	28	4.29883012E-35	17	47	2.62199452E.35
53	29	2.54665396E-36	17	48	4.81790230E-36
47	29	8.26282384E-35	15	50	7.83331361E-35
47	30	5.51895767E-36	15	51	1.62863748E-35
43	30	7.92226838E-35	13	55	6.97287587E-35
43	31	5.78288473E-36	13	56	1.66871842E-36
41	31	2.52446666E-35	11	63	2.18641859E-35
41	32	1.93246036E-36	11	64	6.15985299E.36
37	32	5.12434273E-35	9	74	3.30997462E-35
37	33	4.34574623E-36	9	75	1.13207799E-35
33	34	1.78365526E-35	7	95	3.55198027E-35
33	35	1.69547211E-36	7	96	1.54114648E-35

Table 2. Number of Fractal Levels to Planck's Length for Various Loop Numbers

4. Sierpinski's Triangle and Pascal's Fractal

Integrating the proposed alpha structure into Sierpinski's Triangle and Pascal's Fractal is illustrated in Table 3. The numbers for Pascal's Fractal are listed for the first four platforms in the Sierpinski Triangle. Red zeros were added between the numbers and then all even numbers were also colored red, such that the only blue numbers left were the original odd numbers. The image of Sierpinski's Triangle can be clearly seen within Pascal's Fractal by observing the blue pattern of numbers within the fractal. The number of mass loops (ML) can be determined for each mass platform level (MP) by counting the number of blue numbers within that level and then adding that number to the total of mass loops (TML) of all previous levels. The total mass loops represent the number of odd numbered loops in the fractal, and is probably related to some interlacing effect between the helical loops. This number is then multiplied by three to determine the mass of any potential particle (X3) that forms from the fractal, since it requires three quarks (i.e. three tables representing three different fractals, which represent three different waves) to form any individual particle. Accordingly, the combined Sierpinski's Triangle - Pascal's Fractal then represents the energy level of one quark within a single electromagnetic wave and not the entire potential particle to be created, until all three individual quarks come together coincidentally on 3D polar axes from three separate electromagnetic waves to form that particle.

The total energy loops within any level (Total Level Loops) represents the number of trips around the outer loop in that level, and can be calculated by summing all integers in that row. Moreover, the total energy loops for any platform (Total Platform Loops) represents the total number of trips around the outer loop for all levels, and is the summation of all of the previous number of level loops in that platform. The number of twist-loops (# of Twist-Loops) in the right column is the number of twists within a single string of energy for each level, and can be determined by directly reading all non zero integers in any row. Finally, this analysis applies only to the eleven twist-loop structure with no attempt to construct similar arrangements for other odd numbered platforms.

Accordingly, this would define the particle mass platform as starting with the mass of the electron, which would then be defined as unit one in the fractal, and then building the fractal downward from that point to the alpha platform level 7. The result would be an analysis of particle masses and how particles are formed and how they decay. The basis for this analysis has already been completed quite elegantly within Briddell's Field Structure Theory. It will be interesting to see in the future how many various fractal strategies can be developed and the application of those concepts to theoretical physics.

Finally, the number of proposed twist-loops within the various fractal platforms is a very large number, with a value of 4.4579×10^{66} for 64 platform levels within the eleven twist-loop structure, or 3.2345×10^{84} for 100 platform levels within the seven twist-loop structure. However, this number is still reasonable when considering how many spheres at Planck's Length can be placed inside a one quarter meter sphere (1/4 wavelength of the frequency at the speed of light), which is $4\pi/3$ times the reciprocal of 64 divided by the cube of Planck's Length or approximately 4×10^{103}. Again, Briddell is correct in proposing that the twist-loops represent the energy within the structure. In my last paper, I had proposed that aether has two states, not linked or linked into charged strings. Each linked twist is therefore the same as one unlinked energy cell within the aether at Planck's Length, except the cells are now linked into twisted strings. The energy in the particle is therefore determined by the overall number of energy cells linked together within the space of the structure.

MP	ML	TML	X3	Combined Sierpinski Triangle & Pascal's Fractal	Total Level Loops	Total Platform Loops	# of Twist-Loops
1	1	1	3	1	1	1	1
2	2	3	9	1 0 1	2	3	11
	2			1 0 2 0 1	4		121
3	4	9	27	1 0 3 0 3 0 1	8	15	1,331
	2			1 0 4 0 6 0 4 0 1	16		14,641
	4			1 0 5 0 10 0 10 0 5 0 1	32		161,051
	4			1 0 6 0 15 0 20 0 15 0 6 0 1	64		1,771,561
4	8	27	81	1 0 7 0 21 0 35 0 35 0 21 0 7 0 1	128	255	19,487,171
	2			1 0 8 0 28 0 56 0 70 0 56 0 28 0 8 0 1			214,358,881
	4			1 0 9 0 36 0 84 0 126 0 126 0 84 0 36 0 9 0 1			2,357,947,691
	4			1 0 10 0 45 0 120 0 210 0 252 0 210 0 120 0 45 0 10 0 1			25,937,424,601
	8			1 11 55 165 330 462 462 330 165 55 11 1			285,311,670,611
	4			1 12 66 220 495 792 924 792 495 220 66 12 1			3,138,428,376,721
	8			1 13 78 286 715 1287 1716 1716 1287 715 286 78 13 1			34,522,712,143,931
	8			1 14 91 364 1001 2002 3003 3432 3003 2002 1001 364 91 14 1			379,749,833,583,241
5	16		1	15 105 455 1365 3003 5005 6435 6435 5005 3003 1365 455 105 15 1			4,177,248,169,415,651

Table 3. Mass Platform Analysis of Energy Loop Structures

Level	Total Twist-Loops	Level Loops	Total Loops	Various Platform Fractal Levels														
0	1	1	1	1										1				
1	11	2	3	2	1										1			
2	121	4	7	3	2	1								2		1		
3	1,331	8	15	4	3	2	1								2		1	
4	14,641	16	31	5	4	3	2	1						3		2		1
5	161,051	32	63	6	5	4	3	2	1						3		2	
6	1,771,561	64	127	7	6	5	4	3	2	1				4		3		2
7	19,487,171	128	255		7	6	5	4	3	2	1				4		3	
8	214,358,881	256	511			7	6	5	4	3	2	1		5		4		3
9	2,357,947,691	512	1,023				7	6	5	4	3	2	1		5		4	
10	25,937,424,601	1,024	2,047					7	6	5	4	3	2	1	6		5		4
11	285,311,670,611	2,048	4,095						7	6	5	4	3	2		6		5	
12	3,138,428,376,721	4,096	8,191							7	6	5	4	3	7		6		5
13	34,522,712,143,931	8,192	16,383								7	6	5	4		7		6	
14	379,749,833,583,241	16,384	32,767									7	6	5			7		6
15	4,177,248,169,415,650	32,768	65,535										7	6				7	
16	45,949,729,863,572,200	65,536	131,071											7					7

Table 4. Application of Fractal Levels to Various Fractal Platforms

I have long thought that $E = mc^2$ is much the same as saying $E = c^3$ where mass is replaced by the total quantity of energy cells within the mass structure, and which is then related back to the original number of unlinked energy cells within the original frequency of the speed of light structure at 1/4 meter wavelength. The result is a correlation of the equation $E = mc^2$ to the equation $E = c^3$, which can then both be equated to the volume of the original 1/4 meter radius sphere with the equation $V = 4/3 \cdot \pi r^3$, where r is the radius of the 1/4 wavelength structure in Planck's Length terms. This volume to energy relationship would then be the ratio of the actual number of loop twists in the structure to the maximum available number of energy cell loops available in the neutrally charged aether. Effectively, the energy of an electromagnetic wave increases as the number of energy cell loops are accumulated into smaller and smaller volumes in both the tensed and compressed conditions of waves as the waves increase in frequency. Finally, it is realized that the number "eleven" in the alpha equations is the number of alpha platforms between the electron platform (level 5) and the Planck's Length platform (level 16), which is the same as Briddell's field orders, and not the number of twist- loops within any layer of the fractal as originally thought.

5. Conclusion

It has been a long struggle for humankind to learn the secrets of the universe, and that struggle is not over. In the '*I Ching*', the hexagram for "After Completion" comes immediately prior to the hexagram for "Before Completion". That is because the end of one step or challenge in life merely represents the beginning of a new step, a new challenge and a new direction; and accordingly, this theory is presented in that spirit. It is imperative that before

anyone can truly understand the mechanics of the Universe, one must first understand the structure from which those mechanics arise. It is incomprehensible and beyond belief to think that something can come from nothing or that the vast spaces of the Universe are empty. It is not empty, it is instead filled with the aether in a vast, and yet finite, aethereal-filled, fractal-filled plenum. The fractal loop structure presented within this paper is not the structure of aether itself, but instead the dynamic distribution of energy within the aethereal plenum, thereby defining the aethereal fractal plenum. Furthermore, it is misleading to acknowledge that energy exists within the plenum, but then only to describe it as empty space or dark matter as though it does not really exist. Instead, it does exist, and it is better described as quantum foam, aether, the stellar air, stellar mist, or stellar light, and when the aether condenses into matter in its fixed energy form, it is better described as structures of energy or liquid light; and all must obey the laws of physics operating within the aethereal fractal plenum.

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