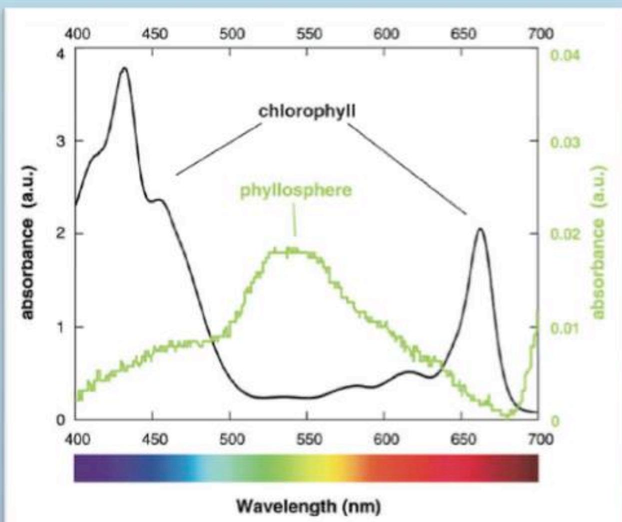
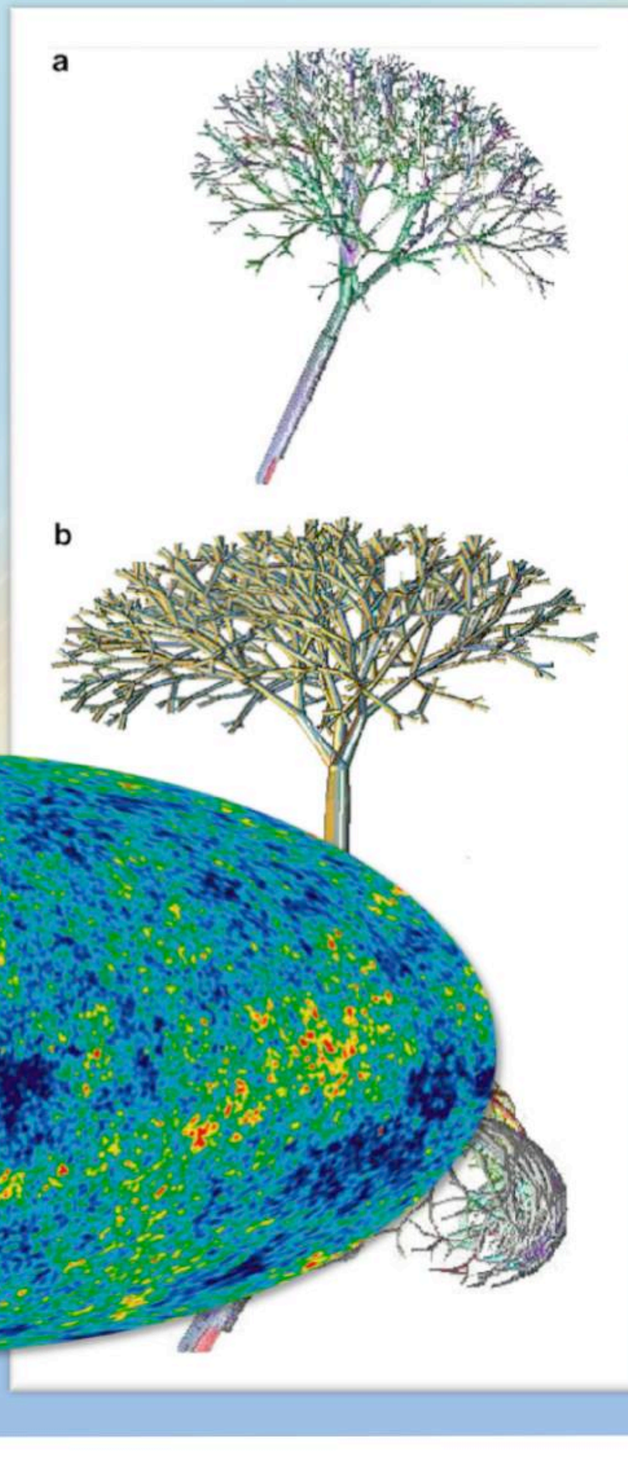
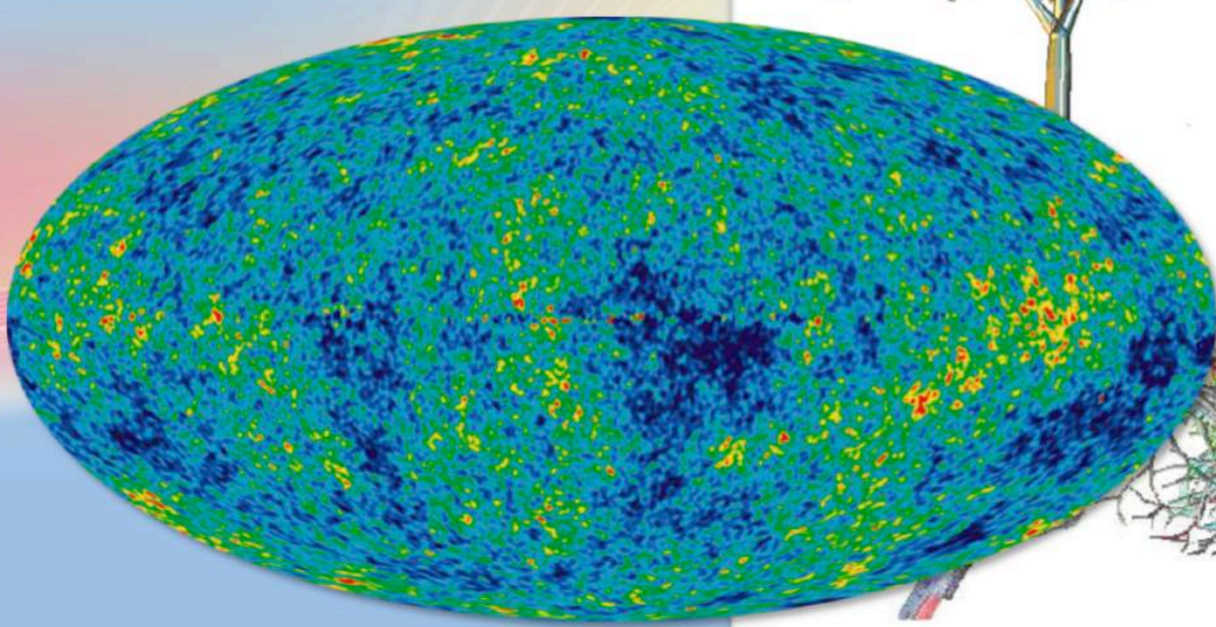
The charge field explains fractals

and symbiotic relationships with plants and photosynthetic bacteria

by Michael Howell







I will begin this paper by showing that the "cosmic background radiation" is simply the ambient charge field Miles Mathis proposes. It is mediated by actual photons and not "virtual particles." The numbers point to the sort of interference pattern to be expected out of real photons

Wikipedia gives two values for cosmic background radiation, depending on how you calculate wavelength from temperature: 0.0019 m (Planck) or 0.00106 m (Wien).

The CMBR has a thermal black body spectrum at a temperature of 2.725 K, thus the spectrum peaks in the microwave range frequency of 160.2 GHz, corresponding to a 1.9 mm wavelength. This holds if measured per unit frequency, as in Planck's law. If measured instead per unit wavelength, using Wien's law, the peak will be at 1.06 mm corresponding to a frequency of 283 GHz.

This is the third paper I have written on photons. My first two papers that Mathis has already posted sum up and consolidate his research on the subject, in addition to providing my own insights and corroborating evidence. Nothing has done so much to convince me of Mathis' theory of photons as being able to apply his work for my own discoveries.

For your reference, my first two papers are listed below. You can find these titles under the "updates" section of Mathis' website (http://milesmathis.com/updates.html).

1. **The Michel-Levy chart proves that light has four primary colors**
2. **Photons, stacked spins and the silver mean family**

From both these papers, I remind readers that initially emitted photons have wavelengths that are multiples of 2^x. One of those photons is approximately 360 nm, or 0.00000036 m. The proton is about 16385 times as massive as the non-spinning electron. The mass/energy of the non-spinning electron marks the upper limit that this relation applies: **mass** = ***h*/cλ**, where *h* is Planck's constant. Past this point, adding a spin continues to halve the wavelength—but the mass now rises, on average, by a factor of $e^{1+\sqrt{2}}$. This distinguishes "massive" particles from plain photons.

The upper limit for plain photons proves to be about 16385 times the energy of one of the primary colors of visible light (to appreciate this number, see "Photons, stacked spins…" and milesmathis.com/elecpro.html). Although 360 nm is just off the visible spectrum, this near-UV photon and the red photon (720 nm) experience Doppler-like shifts to explain the colors cyan and yellow. Together, these four colors make the proper end-members of the visible spectrum.

The minimum wavelength a photon can have before it becomes "massive" is…

$$\frac{360\ \text{nm}}{16385} \approx \mathbf{0.02197\ nm\ \ (2.197\times10^{-11} m)}$$

I have already connected the frequency of this photon to the golden ratio (see my second paper). I can connect this wavelength to the silver ratio.

$$\mathbf{2.197^2 = 4.826809}$$

That is the almost exactly area of the unit octagon, given by this formula (when $a = 1$):

$$A = 2a^2 \cot \tfrac{\pi}{8} = 2(1+\sqrt{2})a^2 \simeq 4.828427a^2.$$

Again, no numerology is going on here. When editing this paper, Mathis explained to me the source of this octagon:

There are four stacked spins, each spin the double of the one inside. So the z spin is 8 times the radial spin. In other words, the moving particle with all its waves is eight times bigger than the still particle. **The wave or spin equation creates an octagon in the math.** Or, **the z-spin, which is what we measure, is octagonized by the inner spins**. It contains their variations along with its own, so it has the shape of an octagon in the math.

The electron without its axial spin is 16385 times less massive than the proton. This is my proposed upper limit for plain photons. When the electron at rest has its usual spin, it is about 1821 times less massive than the proton (again, see milesmathis.com/elecpro.html). The proton is three spins removed from the electron at rest. In my paper "**Photons, stacked spins and the silver mean family**," I propose that plain photons double in energy with each stacked spin—but that "massive" particles such as protons and electrons follows a much steeper exponential curve.

So I really believe that the electron without it's *a*-spin is **14** stacked spins removed from the 360-nm photon ($\log_2(16385) \approx 14.000088052$). Still, the properties of the unit octagon would apply to the stacked spins of the proton—which must be the source of the number 4.828.

The distinction between gamma rays and X-rays is not so clear cut as it is for other members of the electromagnetic spectrum. Wikipedia explains (http://en.wikipedia.org/wiki/Gamma_rays):

Older literature distinguished between X- and gamma radiation on the basis of wavelength, with radiation shorter than some arbitrary wavelength, such as 10^{-11} m, defined as gamma rays.[6] However, with artificial sources now able to duplicate any electromagnetic radiation that originates in the nucleus, as well as far higher energies, the wavelengths characteristic of radioactive gamma ray sources vs. other types, now completely overlaps. Thus, gamma rays are now usually distinguished by their origin: X-rays are emitted by definition by electrons outside the nucleus, while gamma rays are emitted by the nucleus.

Simply stripping an electron of outer spins (which likely happens in particle accelerators) will easily produce X-rays comparable to gamma rays. This is the mechanical reason for the overlap between X- and gamma rays.

Moving on, I attempt to connect our gamma-ray wavelength with the Dalton and Newton's gravitational constant G (the two of which seem interconnected as well, as I also demonstrate in my second paper).

$$2.197131523 \times 10^{-11}\,\text{m} \times 1821^3 \approx 0.132674021\ \text{m}$$

$$2.197131523 \times 10^{-11}\,\text{m} \times 10^{11}/6.674 \approx 0.3292076\ \text{m}$$

We now divide by the Planck wavelength for the cosmic background radiation.

$$\frac{0.132674021}{0.0019} \approx 69.8284 \qquad \frac{0.3292076}{0.0019} \approx 173.267$$

$$\ln(69.8284) \approx \mathbf{4.24604} \qquad \ln(173.267) \approx \mathbf{5.15483}$$
$$\log_2(69.8284) \approx \mathbf{6.12574} \qquad \log_2(173.267) \approx 7.43685$$

Silver means	
0: ½ (0 + √4)	1
1: ½ (1 + √5)	1.618033989
2: ½ (2 + √8)	2.414213562
3: ½ (3 + √13)	3.302775638
4: ½ (4 + √20)	4.236067978
5: ½ (5 + √29)	5.192582404
6: ½ (6 + √40)	6.162277660
7: ½ (7 + √53)	7.140054945
8: ½ (8 + √68)	8.123105626
9: ½ (9 + √85)	9.109772229
...	
n: ½ {n + √(n^2 + 4)}	

For good measure, I find the logarithm for base $e^{1+\sqrt{2}}$.

$$\frac{\ln(69.8284)}{1+\sqrt{2}} \approx 1.75877 \qquad \frac{\ln(173.267)}{1+\sqrt{2}} \approx \mathbf{2.13520}$$

Already, we can notice three possible connections with the silver mean family. Especially promising is ln(69.8).

$$\sqrt[5]{7.43685} \approx \mathbf{1.49375} \approx \delta_S / \varphi \qquad \frac{7.43685}{1.75877} \approx \mathbf{4.22844}$$

$$\sqrt[5]{2.13520} \approx \mathbf{1.16383} \approx \delta_6 - 5$$

From Mathis' earlier work on the subject, we already know that the pervasiveness of the silver means is a clear sign of a naturally optimized system—in harmony with the feedback loops.

We will now do math with the Wien wavelength for the cosmic background radiation.

$$\frac{0.132674}{0.00106} \approx \mathbf{125.164} \qquad \sqrt{\mathbf{125.164}} \approx \mathbf{11.1877} \qquad \mathbf{5\sqrt{5}} \approx \mathbf{11.180}$$

It just so happens that $e^{1+\sqrt{2}} \approx 11.181$—an almost exact match with both our fraction and the square root of 125.

Going back to the Planck wavelength, we will divide by our near-ultraviolet photon.

$$\frac{0.0019}{0.00000036} = 5277.\overline{7} \qquad 5277.\overline{7} \times 9 = 47500 \qquad \frac{47500}{4} = \mathbf{11875}$$

$$\sqrt{\mathbf{125.164}} - 10 \approx \mathbf{1.1877} \qquad \tfrac{9}{4}\left(\frac{\mathbf{0.0019}}{\mathbf{0.00000036}}\right) \approx \left(\sqrt{\mathbf{125.164}} - 10\right) \times 10^4 \approx \mathbf{11877}$$

Already, we have an apparent connection among the Planck and Wien wavelengths for the CBR plus one of our primary colors for visible light.

$$\ln(47500) \approx 10.768485 \qquad \log_{16385}(47500) \approx \mathbf{1.10968} \approx \delta_9 - 8$$

$$\frac{\ln(47500)}{1+\sqrt{2}} \approx 4.46045 \qquad \tfrac{1}{2}\left(\frac{\ln(47500)}{2\left(1+\sqrt{2}\right)}+1\right) \approx \mathbf{1.61511} \approx \varphi$$

That is a feedback loop if I have ever heard of one. But we're not done yet—we still have to divide the Wien wavelength by the near-UV photon.

$$\frac{0.00106}{0.00000036} = 2944.\overline{4} \qquad \mathbf{\ln(2944.\overline{4}) \approx 7.987675 \approx 8} \qquad \frac{\mathbf{\ln(2944.\overline{4})}}{1+\sqrt{2}} \approx \mathbf{3.30860} \approx \delta_3$$

Going back to our fraction with the Planck wavelength, we find this logarithmic relation:

$$\ln\mathbf{(5277.\overline{7})} \approx 8.57126 \qquad \frac{\ln\mathbf{(5277.\overline{7})}}{1+\sqrt{2}} \approx 3.550332$$

Now we find the logarithmic difference (base $e^{1+\sqrt{2}}$) between the fractions we got with the Planck and Wien wavelengths.

$$\frac{\ln\mathbf{(5277.\overline{7}) - \ln(2944.\overline{4})}}{1+\sqrt{2}} \approx \mathbf{0.241728813} \qquad \mathbf{\exp(0.241728813)} \approx \mathbf{1.2734488}$$

$$\exp\left[\frac{\ln\mathbf{(5277.\overline{7}) - \ln(2944.\overline{4})}}{1+\sqrt{2}}\right] \approx \sqrt{\varphi} \qquad \sqrt{\varphi} \approx \mathbf{1.2720196}$$

Recall this quote from Wikipedia, at the beginning of this paper:

…1.9 mm wavelength…holds if measured per unit frequency, as in Planck's law. If measured instead per unit wavelength, using Wien's law, the peak will be at 1.06 mm…

We now have this transform between the two measurement schemes:

$$\exp\left[\frac{\ln(\lambda_P) - \ln(\lambda_W)}{1+\sqrt{2}}\right] = \sqrt{\varphi}$$

The subtraction process for logarithms cancels out the 360 nm for the near-UV photon.

The Planck wavelength of the cosmic background radiation relates to the golden ratio in yet another astounding way:

$$\frac{\ln\left(\frac{0.0019}{0.00000036}\right)}{1+\sqrt{2}} \approx 3.550332 \qquad \sqrt[4]{3.550332} \approx \mathbf{1.37267} \qquad \varphi^{2/3} \approx \mathbf{1.37824}$$

$$\therefore \quad \frac{\ln\left(\frac{0.0019}{0.00000036}\right)}{1+\sqrt{2}} \approx \varphi^{8/3}$$

Where do all these silver ratios come from—so many relations in the same general area? Well, the ambient charge field is the epitome of equilibrium and feedback loops. If we are going to find balances stacked on balances, it's going to be here. The equilibria on which the silver means are based form the mechanical basis for "chaos theory." It should not be a surprise, either, that the power of 10 can largely be ignored in seeking silver-mean relationships—10 is simply 2×5, and both 2 and 5 are central to silver-mean relationships.

As you can see, the numbers basically prove that the cosmic background radiation comes out of Mathis' charge photons. This means the CBR is not a residue of the Big Bang—or, at least, not *simply* a Big-Bang residue. It is the cosmic charge field, averaged over cosmic distances. And it is not some nebulous energy—it is photons. It is charge. And it must enter systems from the cosmic scale all the way down to the subatomic scale. As Mathis shows in "An analysis of dark matter" (http://milesmathis.com/dark2.pdf), the ambient charge field is the "dark matter" and "energy" that physicists are missing in all their equations.

As we can also tell, the way the photon field interferes with itself will produce first-order effects, second-order, third-order, and so forth. All these *n*th-order effects form a fractal.

Building fractals upon the silver-mean family is not without precedent—including in quantum mechanics. *Chaos, Solitons and Fractals* is one place to go for all the cutting-edge models involving just this sort of pattern we have encountered. One article[1] by Chandra and Rani (2009) provides these key quotes:

Fractals in nature are always a result of some growth process. The language of fractals which has been created specifically for the description of natural growth process is called L-systems [14, p. 330]. L-system constructs the fractal structure with an initial state and applying rewriting rules sequentially and accurately captures the prominent features of trees and plants [5]. (1442)

The family of Metallic Mean has the Golden Mean, the **Silver Mean**, the **Bronze Mean**, the **Copper Mean**, the **Nickel Mean**, etc. These Metallic Means share important mathematical properties that transpose them into a basic key and constitute a bridge between mathematics and design, e.g., **Silver Mean has been used in describing fractal geometry**. The most well-known member in MMF (Metal Mean Family) is golden mean. Theoretical studies show that the plants are self similar if their structure are in the set of Noble numbers, that are the function of golden mean [6,21]. El Naschie has worked and given important results on golden mean and silver mean in fractals. For details, refer to [11–13] and several references thereof. (1442–3)

The "References" section contains these key titles (highlighted):

[1] Aono Masaki, Kunii Tosiyasu L. Botanical tree image generation. IEEE Comput Graph Appl 1984;4(5):10–34.
[2] Caraglio Y, Heuret P, Lebarbier E, Meredieu C. Analyzing growth components in trees. J Theor Biol 2007.
[3] Boudon F, Godin C, Pradal C, Puech O, Sinoquet H. Estimating the fractal dimension of plants using the two-surface method: an analysis based on 3D-digitized tree foliage. Fractals 2006;14:149–63.
[4] Boudon F, Prusinkiewicz P, Federal P, Godin C, Karwowski R. Interactive design of bonsai tree models. Comput Graph Forum – Proc Eurograph 2003;22(3):591–9.
[5] Ijiri Takashi, Owada Shigeru, Igarashi Takeo. The sketch L-system: global control of tree modeling using free-form strokes. Smart Graph 2006.
[6] Jean RV. Phyllotaxis: a systemic study in plant morphogenesis. NY, USA: Cambridge University Press; 1994.
[7] Lindenmayer Aristid. Mathematical models for cellular interactions in developments: I&II. J Theor Biol 1968:280–315.
[8] Lindenmayer Aristid, Przemyslaw P, Prusinkiewicz P. The algorithmic beauty of plants. New York: Springer-Verlag; 1990.

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[1] M. Chandra & M. Rani. Categorization of fractal plants. Chaos, Solitons and Fractals **41** (2009), 1442–1447.

[9] Mann WR. Mean value methods in iteration. Proc Am Math Soc 1953;4:506–10 [MR0054846 (14,988f)].
[10] Mech R, Prusinkiewicz P. Visual models of plants interacting with their environments. In: Proceedings of ACM SIGGRAPH; 1996. p. 397–410.
[11] El Naschie MS. Is quantum space a random cantor set with a golden mean dimension at the core? Chaos, Solitons & Fractals 1994;4(2):177–9.
[12] El Naschie MS. Silver mean Hausdorff dimension and cantor sets. Chaos, Solitons & Fractals 1994;4(10):1861–9.
[13] El Naschie MS. The golden mean in quantum geometry, knot theory and related topics. Chaos, Solitons & Fractals 1999;10(8):1303–7.
[14] Peitgen HO, Jürgen H, Saupe D. Chaos and fractals. New York: Springer-Verlag; 2004.
[15] Prusinkiewicz P, Hammel M, Hanan J, Mech R. L-system: from the theory to visual models of plants. In: Proceedings of the second CSIRO symposium on computational challenges in life sciences; 1996.
[16] Prusinkiewicz P, Hanan J, Mech R. Synthetic topiary. In: Proceedings of the ACM SIGGRAPH 1994; 2004. p. 351–8.
[17] Przemyslaw P, Prusinkiewicz P, Lindenmayer Aristid, Hanan J. Developmental models of herbaceous plants for computer imagery purposes. Comput Graph 1988;22(4).
[18] Rani M, Iterative procedures in fractal and chaos. Ph.D. Thesis, Department of Computer Science, Gurukula Kangri Vishwavidyalaya, Hardwar; 2002.
[19] Samal Ashok, Peterson Brian, Hozziday David J. Recognizing plants using stochastic L-systems. IEEE Computer Society; 1994.
[20] Smith AR. Plants, fractals and formal languages. Proc ACM SIGGRAPH 1984;18(3):1–10.
[21] Stewart I. Daisy, Daisy, give your answer do. Sci Am 1995;272:76–9.

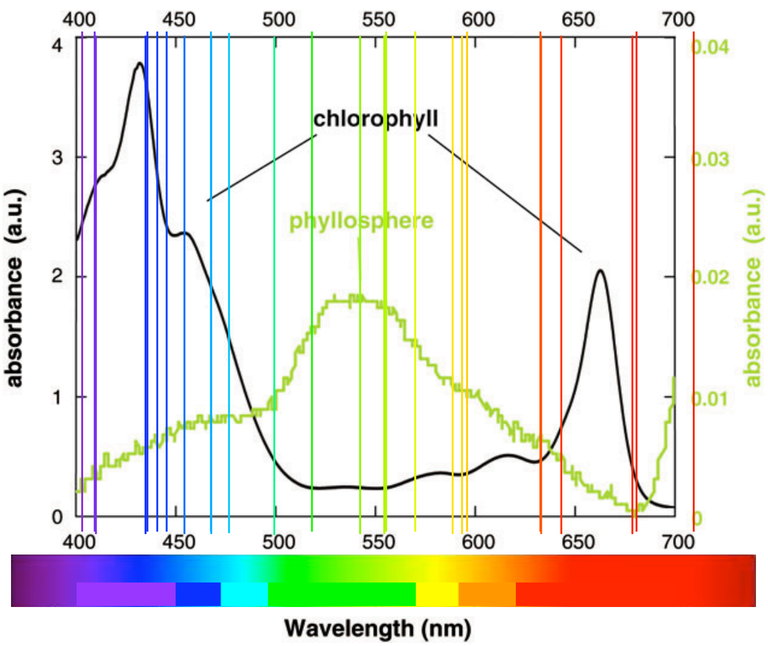
In 1994, El Naschie asked, “Is quantum space a random cantor set with a golden mean dimension at the core?” Close—but it should not be space that gets quantized. Quantization should always go to real matter and energy, as Mathis always reminds us. Assigning properties to the vacuum is nothing short of making stuff out of nothing.

Even among mass and energy, it is not an absolute rule that these packages must occur in discrete units. Mathis explains again (http://milesmathis.com/planck.html):

A particle or system can have any possible energy value, over a continuum. But given a specific interaction, like an emission or absorption or an orbit, a particle or system must change in a quantized way. This is due to the stacked spins…[E]ach spin is an integer value of the radius of the particle itself [a power of 2].

Once a photon has been emitted, the ambient charge field can theoretically shift it to any energy level within the continuum. In practice, interference patterns favor a limited set of bandwidths. Among natural materials, photosynthetic organisms surely rank among the most selectively sensitive to wavelengths of light. To figure out just how the charge field tends to shift freshly emitted photons, I analyze the absorption charts of a photosynthetic bacterium and its plant host.

multiples of the silver-mean family



This absorption chart[2] comes out of a breakthrough paper in *Environmental Microbiology* (2011). Those rainbow-colored lines are my annotation, in addition to a more accurate color-to-wavelength spectrum. Each of these colored lines stands for 360×2^x multiplied by a member of the silver mean family (all the way to δ_{15}).

Notice the points where the two curves intersect. My fractal brackets these points very well—almost dead center. Look at the major vertices of each curve. My fractal marks or brackets them almost to a T.
My fractal also marks almost the exact bandwidth of cyan and yellow.

If green is not a primary color, why does the absorption of the phyllosphere peak at green? Remember that green is supposed to be a combination of cyan and yellow, according to Mathis' theory of light (milesmathis.com/rain2.html). Therefore, sensors for detecting green will pick up a double signal. This theorem seems corroborated by the absorption chart above.

Mathis explains why green photons should be disallowed (rain2.html):

I have shown that charge photons have…an average energy about 1,000 times less than our visible light photons. **Because charge field photons have a definite energy relative to red photons or violet photons, they will move those photons a certain amount, but no more *[as per the photoelectric effect]*.**

…The red photons may stay pretty red, if they are more toward the center of the gap. But the photons near the material will feel the denser field, and will be taken all the way to the maximum.

…Since the hole in the wall creates this maximum effect, we may establish that the maximum is easily reached, and, in almost all cases, will be reached *[explaining why orange, too, is generally disallowed]*.

Color	Wavelength
violet	380–450 nm
blue	450–475 nm
cyan	476–495 nm
green	495–570 nm
yellow	570–590 nm
orange	590–620 nm
red	620–750 nm

The fractional part of each silver mean is the reciprocal.

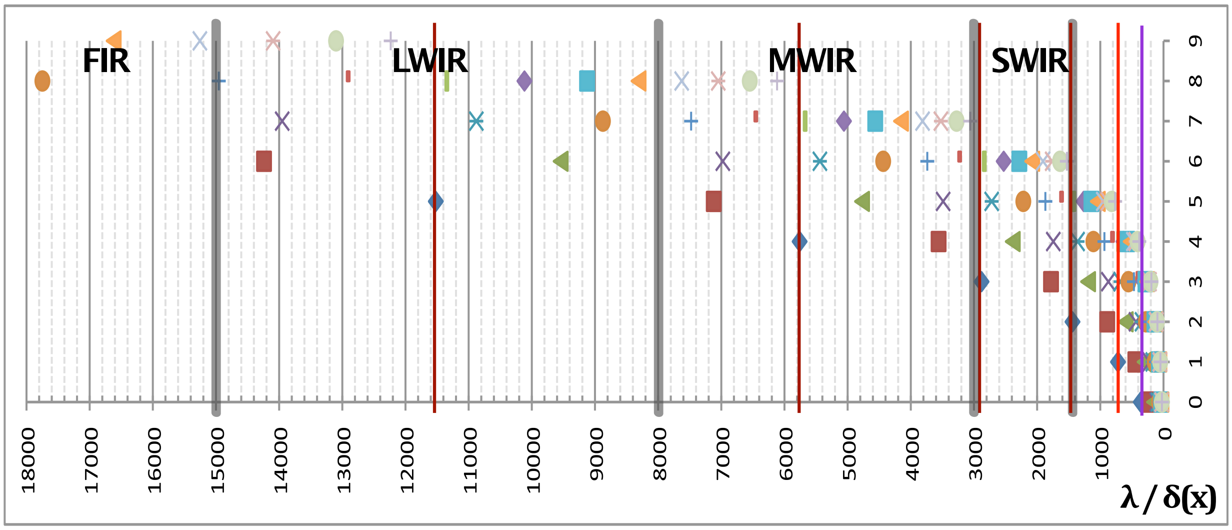
$$\tfrac{1}{2}\left(n+\sqrt{n^2+4}\right)$$

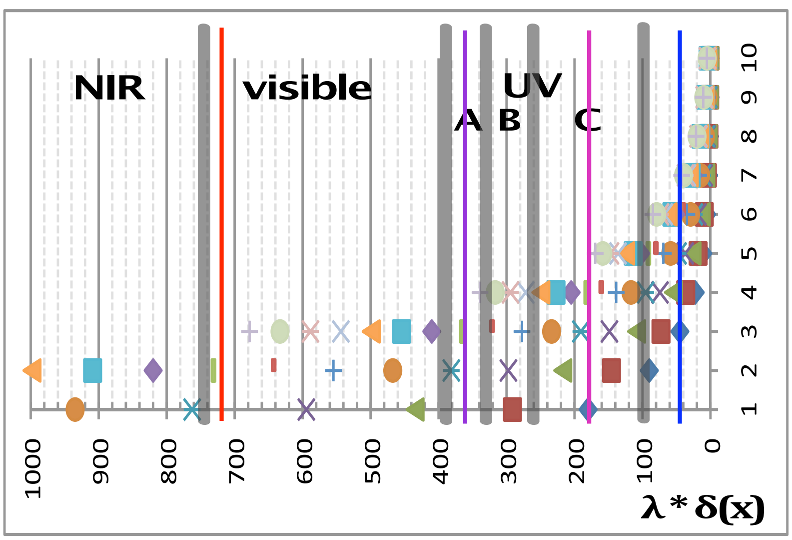
Atomic structures perform a nano-scale version of edge diffraction. Or—you might say edge-diffraction experiments are a macro-size version of crystallographic interactions. The Michel-Levy chart is the epitome of all forms of edge diffraction. It is the logical baseline for understanding light.

2 N. Atamna-Ismaeel et al. Microbial rhodopsins on leaf surfaces of terrestrial plants. Environmental Microbiology (2011).

Here is my silver-mean (metallic mean) fractal extended beyond the visible spectrum. Grey lines mark boundaries between the types of light (visible, near-infrared, etc.). Colored lines mark photons of primary emission (multiples of 360×2^n). The dots of various shapes mark multiples of 360×2^n by the silver/metallic ratios, $\delta(x)$.

Horizontal axis stands for wavelength (nm); vertical axis stands for xth-order silver mean.





Silver Means		Value	
	0	1	
golden ratio	1	1.61803399	φ
silver ratio	2	2.41421356	δ_s
	3	3.30277564	
	4	4.23606798	
	5	5.1925824	
	6	6.16227766	
	7	7.14005494	
	8	8.12310563	
	9	9.10977223	
	10	10.0990195	
	11	11.0901699	
	12	12.0827625	
	13	13.0764732	
	14	14.0710678	
	15	15.066373	

The divisions within the spectrum of light, as it turns out, are generally logical and not arbitrary. Sometimes a photon of primary emission comes close to the division between one light type and another. Other times, the primary wavelength nearly bisects the bandwidth.

Mathis' *B*-photons (about 2 or 8 μm) seem as well accounted for as yellow and cyan.

These spreadsheets constitute the numerical data employed for the charge-field fractals.

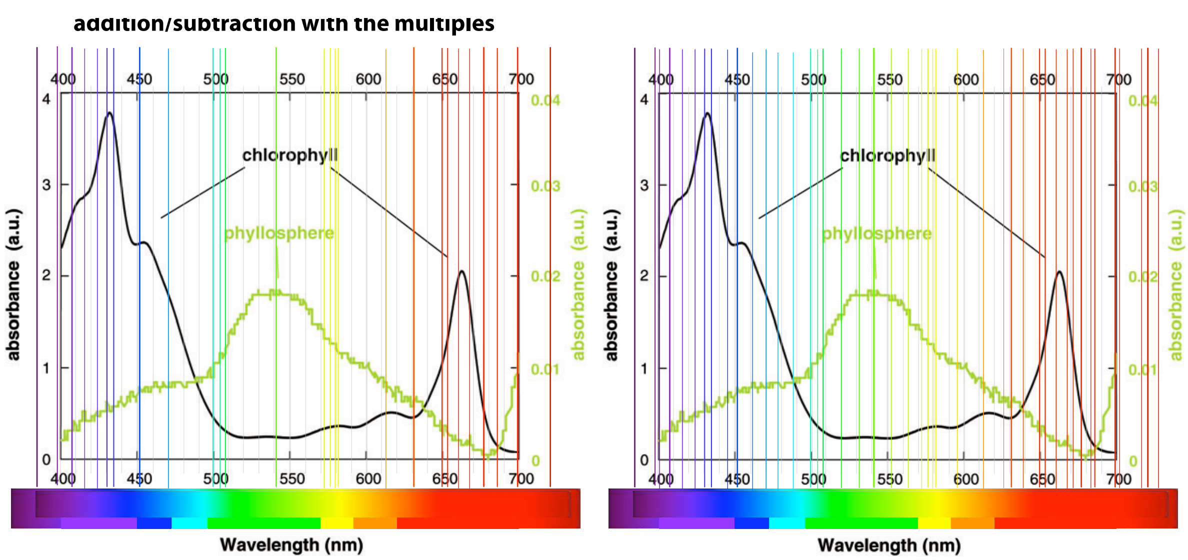
Wavelengths	360*2^x	λ/δ(1)	λ/δ(2)	λ/δ(3)	λ/δ(4)	λ/δ(5)	λ/δ(6)	λ/δ(7)
0	360	222.492236	149.116882	108.99923	84.9844719	69.3296653	58.4199577	50.4197801
1	720	444.984472	298.233765	217.998459	169.968944	138.659331	116.839915	100.83956
2	1440	889.968944	596.46753	435.996918	339.937888	277.318661	233.679831	201.67912
3	2880	1779.93789	1192.93506	871.993837	679.875775	554.637322	467.359661	403.358241
4	5760	3559.87578	2385.87012	1743.98767	1359.75155	1109.27464	934.719323	806.716481
5	11520	7119.75155	4771.74024	3487.97535	2719.5031	2218.54929	1869.43865	1613.43296

λ/δ(8)	λ/δ(9)	λ/δ(10)	λ/δ(11)	λ/δ(12)	λ/δ(13)	λ/δ(14)	λ/δ(15)
44.3180252	39.5180023	35.6470249	32.4611797	29.7945109	27.5303588	25.5844123	23.8942711
88.6360504	79.0360046	71.2940498	64.9223595	59.5890218	55.0607177	51.1688245	47.7885422
177.272101	158.072009	142.5881	129.844719	119.178044	110.121435	102.337649	95.5770843
354.544202	316.144019	285.176199	259.689438	238.356087	220.242871	204.675298	191.154169
709.088404	632.288037	570.352398	519.378876	476.712175	440.485741	409.350596	382.308337
1418.17681	1264.57607	1140.7048	1038.75775	953.424349	880.971483	818.701193	764.616674

Wavelengths	360/2^x	λ*δ(1)	λ*δ(2)	λ*δ(3)	λ*δ(4)	λ*δ(5)	λ*δ(6)	λ*δ(7)
1	180	291.246118	434.558441	594.499615	762.492236	934.664833	1109.20998	1285.20989
2	90	145.623059	217.279221	297.249807	381.246118	467.332416	554.604989	642.604945
3	45	72.8115295	108.63961	148.624904	190.623059	233.666208	277.302495	321.302473
4	22.5	36.4057647	54.3198052	74.3124518	95.3115295	116.833104	138.651247	160.651236

λ*δ(8)	λ*δ(9)	λ*δ(10)	λ*δ(11)	λ*δ(12)	λ*δ(13)	λ*δ(14)	λ*δ(15)
1462.15901	1639.759	1817.82351	1996.23059	2174.89726	2353.76518	2532.79221	2711.94714
731.079506	819.879501	908.911756	998.115295	1087.44863	1176.88259	1266.3961	1355.97357
365.539753	409.93975	454.455878	499.057647	543.724314	588.441295	633.198052	677.986784
182.769877	204.969875	227.227939	249.528824	271.862157	294.220647	316.599026	338.993392

I got another fractal by adding and subtracting the above results (adding to / subtracting from 360 and 720 nm). (The second chart contains more iterations than the first.)



The lines cluster, rather preferentially around the edges of the green bandwidth, but the bias toward green seems compensated by results in the orange and cyan-blue sections. It's perhaps understandable how green could be confused for a primary color of light: Red, blue, and green are rather prominent in the fractals I have made.

The aforementioned paper on plants and their complementary bacterial hosts[2] summarizes its key points very nicely:

The above-ground surfaces of terrestrial plants, the phyllosphere, comprise the main interface between the terrestrial biosphere and solar radiation.... [W]e report on the existence of diverse microbial rhodopsins in five distinct phyllospheres...Our findings, for the first time describing microbial rhodopsins from non-aquatic habitats, point towards the **potential coexistence of microbial rhodopsin-based phototrophy and plant chlorophyll-based photosynthesis**...the **different pigments absorbing non-overlapping fractions of the light spectrum**

I was originally alerted to this discovery by an "alternative-science" website. The article[3] that tipped me off provides a great summary for the layman:

Plant leaves...specifically [absorb] the blue and red areas of the visible light spectrum. Now researchers have discovered that light-harvesting bacteria living on the surfaces of leaves gather energy from the green part of the spectrum...The researchers found that the **bacteria absorb the most light at exactly the same point where plants absorb no light**...The researchers found that the bacteria use some of their rhodopsins as light sensors so they can most effectively use the energy available to them.

So much emotional investment has been put into the Big Bang theory that it has no room for a new paradigm for physics. The Big Bang cannot incorporate Mathis' charge field, for the desire to divine where the universe came from has led physicists to carve in stone their incomplete human understanding—as if it were divine revelation.

The same crisis plagues biology. The greatest debacle has to be the dogma of "junk DNA." *Scientific American*[4] sums it up:

In higher organisms (such as humans), genes "are fragmented into chunks of protein-coding sequences separated by often extensive tracts of nonprotein-coding sequences," Mattick explains. In fact, **protein-coding chunks account for less than 2 percent of the DNA in human chromosomes**. Three billion or so pairs of bases that we all carry in nearly every cell are there for some other reason. **Yet the introns within genes and the long stretches of intergenic DNA between genes**, Mattick says, **"were immediately assumed to be evolutionary junk."**

"I think this will come to be a **classic story of orthodoxy derailing objective analysis of the facts**, in this case for a quarter of a century," Mattick says. **"The failure to recognize the full implications of this—particularly the possibility that the intervening noncoding sequences may be transmitting parallel information in the form of RNA molecules—may well go down as one of the biggest mistakes in the history of molecular biology."**

For decades, pseudogenes have been written off as molecular fossils, **the remains of genes that were broken by mutation and abandoned by evolution**. But this past May a group of Japanese geneticists led by Shinji Hirotsune of the Saitama Medical School reported their **discovery of the first functional pseudogene**.

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[3] http://www.icr.org/article/bacteria-share-light-spectrum-with/

[4] W.W. Gibbs (2003). Unseen Genome: Gems among the Junk. Scientific American **289**(5), 46-53.

…[S]ome inherited diseases have stumped researchers because, in their diligent search for a mutant protein, the investigators ignored the active RNA right under their noses.

No one knows yet just what the big picture of genetics will look like once this hidden layer of information is made visible. “Indeed, **what was damned as junk because it was not understood** may, in fact, turn out to be the very basis of human complexity,” Mattick suggests.

The exploration of that epigenetic layer is answering old conundrums: **How do human beings survive with a genome <u>horribly cluttered</u> by <u>seemingly useless, parasitic</u> bits of DNA?** ***[Here we go again.]***

What is thought to be a relic of the Big Bang is actually a central element to the fabric of the universe. What was once thought to be a relic of biological evolution turns out to be central to the working of the body. Chaos theory as popularly understood smells a lot more of pagan mythology and sorcery than rational thought.

The same *SciAm* article begins with a reference to the so-called discovery of “dark matter.”

About 20 years ago astronomers became convinced that distant galaxies were moving in ways that made no sense…Gradually they were forced to conclude that the universe is not as empty as it appears, that in fact it must be dominated by some dark kind of matter. Although no one knew what the stuff is made of or how it works, scientists could see from its effects that it is out there. The quest to understand dark matter (and more recently, dark energy) meant revising or replacing theories, but it reenergized astrophysics and cosmology.

Sadly, it does not seem that mainstream science is learning its lessons.