VISUALIZING THE RIEMANN ZETA FUNCTION

ABSTRACT: THE RIEMANN **ZETA** FUNCTION IS SYNCHRONOUS (CONGRUENT) WITH ALL THE **PROPERTIES** OF **LIGHT** & **ELECTR**-**O**-**MAGNETIC PHENOMENA**. THE **2**-D EUCLIDIAN PLANE IS THE **GEOMETRIC** CANVAS TO PAINT THE SIGNATURE OF THE **PERFECT SINUSOIDAL WAVE** (**SINEWAVE**). **LIGHT** (THE **PERFECT SINEWAVE**) ENCODES THE RIEMANN **ZETA** FUNCTION, AS WELL AS **PERFECT HARMONY** (**FOUNDATIONAL** TO MUSIC THEORY). **2**-D EUCLIDIAN AFFINE SPACE ALLOWS **YOU** TO **GEOMETRICALLY** VISUALIZE THE MEASURE IN THE **SECOND** DIMENSION. **3**-D FANO AFFINE SPACE ALLOWS **GEOMETRIC** VISUALIZATION IN THE **THIRD** DIMENSION.

PROOF: THE RIEMANN **ZETA** FUNCTION CANNOT DEVIATE FROM THE **CRITICAL LINE** (½ **Re** PART) BECAUSE **PERFECT HARMONY** (NO DEVIATION) IS THE **SIGNATURE** OF THE **PERFECT SINUSOIDAL WAVE**. ANY DEVIATION FROM THE **CRITICAL LINE** WOULD CAUSE DISHARMONY, WHICH IS IMPOSSIBLE FOR A SNAPSHOT OF **LIGHT** (THE **PERFECT ELECTR**-**O**-**MAGNETIC WAVE**).

THE STEREOGRAPH: THE RIEMANN **ZETA** FUNCTION CAN BE VISUALIZED AS A STEROGRAPH OF A RIEMANN SPHERE ONTO **2**-DIMENSIONAL EUCLIDIAN SPACE WITH A FOCUS ORIGIN F = (**0**, **0**). THE FOCUS BY ITS VERY **NATURE** IS BOTH THE **PRIME ZETA** & THE **FIRST DOUBLE NAUGHT** [**00**]. THE **ZETA** FUNCTION IS **GEOMETRICALLY** EXPRESSED ON THE **2**-D AFFINE PLANE AS A **PARABOLA** OR ITS **MIRROR**-SYMMETRICAL (SCALING) **PARABOLIC** INVERSION – THE **ROSE** CARDIOID (**HEART**).

THE PARABOLA: THE **PARABOLA** OBEYS THE **PROPERTY** OF **GEOMETRIC** CONTINUITY (A **PARABOLA** TENDS TO A **CIRCLE** AS THE **ECCENTRICITY** (**ELECTRICITY**) APPROACHES **ONE** (**1**)). **GEOMETRIC** CONTINUITY **PROVES** THAT THE **5** CONIC SECTIONS (PLANE, CIRCLE, ELLIPSE, **PARABOLA**, HYPERBOLA) ARE **5** DIFFERENT VERSIONS OF THE SAME SHAPE (THE **CIRCLE**). THE CONCEPT OF CONTINUITY STATES THAT A **LINE** CAN BE THOUGHT OF AS A **CIRCLE** OF INFINITE **RADIUS** (HERE YOU FIND ∏ HIDDEN WITHIN THE **LINE**) (THE **CIRCLE** = A **LINE** = A PLANE = AN ELLIPSE = A **PARABOLA** = A HYPERBOLA = **YOU** ARE BOTH LOOKING & MATHEMATICALLY EXPRESSING THE SAME THING FROM VARYING POINTS OF VIEW (**PERSPECTIVES**).

CIRCLE INVERSIONS: THE **TWO** ENDS OF A **PARABOLA** MEET TO MAKE IT A CLOSED **CURVE** TANGENT TO THE **LINE** AT INFINITY ON THE EUCLIDIAN PLANE (**2**-D PROJECTIVE SPACE). THE **0** (**CIRCLE**) = **1** (**LINE**).

THE ROSE CARDIOID (**HEART**): EXPRESSED FROM THE POINT OF VIEW OF THE **ROSE** CARDIOID (AN INVERSE **PARABOLA**), THE RIEMANN **ZETA** FUNCTION **PROVES** TO BE SYNCHRONOUS WITH ALL OF THE **PROPERTIES** OF **LIGHT** (**TRI**-POLARIZED **ELECTR**-**O**-**MAGNETIC CIRCULATING CURRENT**) AS EXPRESSED ON THE **2**-D EUCLIDIAN PLANE. THE BOUNDS OF THE **ROSE** CARDIOID (A **2**-D POINT OF VIEW OF **TWO** (**REAL** = **Re**) (**IMAGE** = **i**) INTERSECTING EUCLIDIAN PLANES) IS A FUNCTION OF **ROOT 2** (**SQUARE ROOTS**), JUST AS AN INFINITY **CIRCLE** (AN INVERSE HYPERBOLA) IS A FUNCTION OF **ROOT 3** (**CUBE ROOTS**). THE ULTIMATE BOUND OF **ROOT 2** IS EXPRESSED BY FERMAT'S LAST THEOREM.
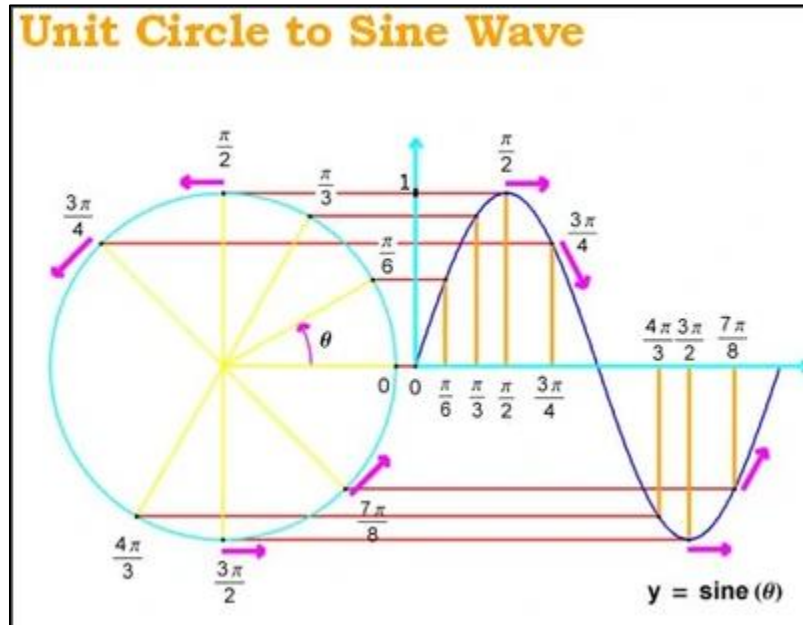
ROOT 1 (UNITY):

ROOT 1 ESTABLISHES THE **REAL** (**Re**) PLANE (THE **FIRST** PLANE).
ROOT 1 IS BOTH THE **FIRST** & **SECOND** FIBONACCI NUMBER (WHICH PRODUCES **Φ** (1.618033...).
ROOT 1 IS THE PRIMARY OPERATION OF **ADDITION** & THE IDENTITY FOR **MULTIPLICATION**.
ROOT 1 IS THE **ONLY** NATURAL NUMBER THAT IS NEITHER COMPOSITE NOR PRIME WITH RESPECT TO
DIVISION, BUT INSTEAD CONSIDERED A **UNIT** (MEANING OF RING THEORY).

UNIT CIRCLE MATHEMATICAL RELATION TO THE **ELECTR**-**O**-**MAGNETIC SINEWAVE**

ROOT 1 HAS A GENERATIVE FUNCTION (THE COEFFICIENTS OF A POWER SERIES THAT PRODUCE AN
INFINITE (BOTH CONVERGENT & DIVERGENT) SEQUENCE OF NUMBERS. THE **ROOT 1** GENERATIVE
FUNCTION IS THE CONJUNCTION OF **ADDITION** (THE PRIMARY OPERATION OF **ROOT 1**) & THE POWER
SERIES (**MULTIPLICATION** FUNCTION) OF **ADDITION** (TO THE POWER OF 1, 2, 3 ...). THE POWER SERIES
CONVERGES & HAS FINITE VALUE IF & ONLY IF, $|X| < 1$.

$$\frac{1}{1-x} = 1 + x + x^2 + x^3 + \dots$$

THE BASEL PROBLEM IS THE CONJUNCTION (BRIDGE) OF **ADDITION** (THE PRIMARY OPERATION OF **ROOT
1**) & **SQUARES** (THE POWER SERIES (**MULTIPLICATION** FUNCTION) OF **ROOT 2**). IT IS THE **SUM** OF THE
INFINITE SERIES OF RECIPROCALS OF **SQUARES**:

$$\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots$$

... (**ad** infinitum) = **Π²/6** (APPROXIMATELY EQUAL TO 1.644934...).

THE SOLUTION TO THE BASEL PROBLEM BROUGHT EULER INSTANT FAME. THE IDEA OF INFINITY WAS EXPANDED UPON BY BERNHARD RIEMANN IN HIS SEMINAL 1859 PAPER "ON THE NUMBER OF PRIMES LESS THAN A GIVEN MAGNITUDE", IN WHICH HE DEFINED HIS ZETA FUNCTION & PROVED ITS BASIC PROPERTIES.

|		
ZETA PLOT 2 = Π^2/6	MIRROR ZETA PLOT -2 = 0	Φ = 1 ± √5/2
ẕ(X): 1.644934… [= 1]	ẕ(X): 0	1 + √5/2 = 1.618033… [= 1]
ẕ(X) − 1: 0.644934…	ẕ(X) − 1: -1 [= -1]	1 - √5/2 = -0.618033…

THE LINEAR VIEW OF THE BASEL PROBLEM (& EULER SOLUTION) (& ZETA FUNCTION) IS ANALOGOUS TO RECIPROCATING ELECTR-O-MAGNETIC CURRENT CIRCULATING (BENDING) ALONG THE LINE. THE LINE = A CIRCLE ON ITS SIDE (GEOMETRIC CONCEPT OF CONTINUITY). THE ARC (BEND) FROM THE LINEAR (1) POINT OF VIEW IS:

Π^2/6 = 1.644934… (THE BASEL PROBLEM), OR, EVEN MORE EXACTING;
Π^2/6.0998 = 1.61802…, OR, TO BE ABSOLUTELY EXACT;
Φ (1.618033…), WHICH DEFINES THE AFFINE (PRIME) ARC BETWEEN 1 & 2. THUS, Φ (PHI) IS THE AFFINITY (+ ∞) EXPANSION (GROWING ARC) OF THE 1 (UNITY) AS EXPRESSED FROM THE LINEAR PERSPECTIVE (THE EVER-EXPANDING CIRCLE IN PROFILE VIEW). FROM THE PERSPECTIVE OF LIGHT [1], THE CIRCULATING RECIPROCATING (TOROIDAL) VORTEX OF ALL TRI-POLARIZED ELECTR-O-MAGNETIC ENERGY (MOST EASILY SEEN & STUDIED WITHIN PHYLLOTAXIS) OBEYS THE PROPERTY OF Φ (PHI): GROWTH (FROM THE 1-D LINEAR PERSPECTIVE) IN MEASURE OF THE GOLDEN RATIO & GROWTH (FROM THE 2-D SQUARE PERSPECTIVE) IN MEASURE OF THE GOLDEN SECTION.

IF A LINE = A CIRCLE, THEN ½ LINE = 180^0 CIRCLE = Π (PI). THIS MEANS THAT Φ (PHI) IS THE PRIME ARC OF THE CIRCLE & Π (PI) IS THE ½ PART (180^0) AROUND THE CIRCLE. FROM THE RIEMANN ZETA POV, ½ Re PART = Π (PI), & SO ALL NON-TRIVIAL ZEROES (CIRCLES OF INFINITY) SHALL PLOT ON ½ Re PART OF THE LINE (1). THE TRI-POLARIZED PERSPECTIVE IS TO THINK OF A LINE (1) & NOTICE THAT IT HAS TWO (2) POLES (0, 1). ½ (180^0) AROUND THE ZETA IS Π (PI), JUST AS ½ AROUND THE LINE IS Π (PI). THE THIRD POLE OF THE LINE LAY ON ½ Re PART OF THE LINE. THESE ARE THE FUNDAMENTAL ROOT 1 POINTS OF VIEW THAT PROVE THE CRITICAL LINE (CIRCLE & LINE):
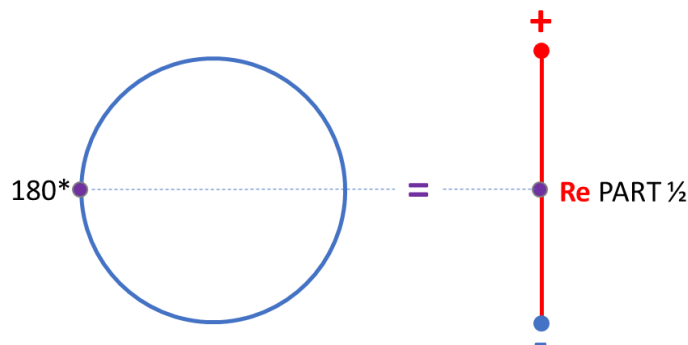
IF: A LINE IS A CIRCLE (GEOMETRIC CONCEPT OF CONTINUITY),
THEN: ½ (180^0) AROUND THE CIRCLE = ½ AROUND THE LINE

ROOT 2 (DUALITY) (TWINNING):

ROOT 2 ESTABLISHES THE IMAGINARY (i) PLANE (THE SECOND PLANE).
ROOT 2 IS THE SECOND FIBONACCI NUMBER (THIRD IN SEQUENCE).
ROOT 2 IS THE PRIMARY OPERATION OF SUBTRACTION [-] & THE IDENTITY (BASIS) FOR DIVISION.
ROOT 2 IS THE FIRST & ONLY EVEN PRIME NUMBER. ANY PRIME DOUBLED = AN EVEN NUMBER. 2 & 3 ARE THE ONLY CONSECUTIVE PRIME NUMBERS.
ROOT 2 MULTIPLIED (DECIMAL SYSTEM) SHALL END IN AN EVEN INTEGER (0, 2, 4, 6, or 8).
ROOT 2 HAS THE FOLLOWING UNIQUE SYMMETRY (FOR ANY NUMBER x):

$x + x = 2 \cdot x$ (ADDITION TO MULTIPLICATION)
$x \cdot x = x^2$ (MULTIPLICATION TO EXPONENTIATION)
$x^x = x \uparrow \uparrow 2$ (EXPONENTIATION TO TETRATION) (HYPER-OPERATION)

ROOT 2 HAS THE UNIQUE HYPER-OPERATIONAL PROPERTY: $2 + 2 = 2 \cdot 2 = 2^2 = 2\uparrow\uparrow2 = 2\uparrow\uparrow\uparrow2 = ...$
ROOT 2 IS THE ONLY NUMBER THAT THE SUM OF THE RECIPROCALS OF THE POWERS OF x EQUALS ITSELF:

$$\sum_{k=0}^{\infty} \frac{1}{2^k} = 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \cdots = 2.$$

ROOT 2 IS ANALAGOUS TO THE SQUARE ($2^2 = 4$) & SQUARE ROOTS. THE SMALLEST FIELD HAS 2 ELEMENTS. THE SQUARE ROOT OF 2 ($\sqrt{2}$) IS IRRATIONAL. $1^2 + 1^2 = \sqrt{2}$.
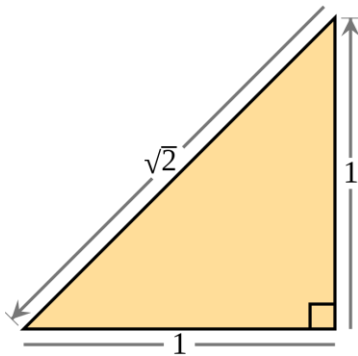
PYTHAGORIAN FORMULA: $1^2 + 1^2 = \sqrt{2}$ ALGEBRAIC FORM: $1 + \sqrt{2} = \delta_S$
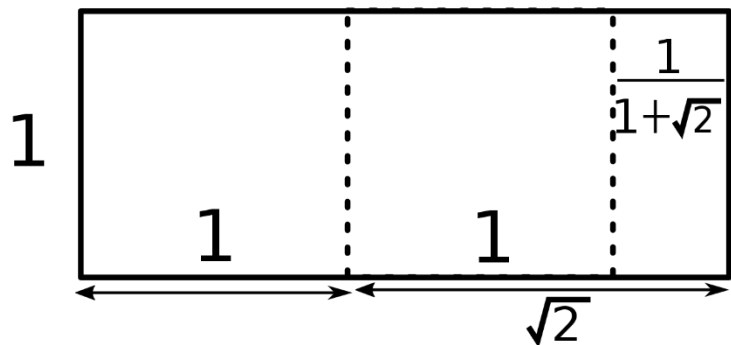
THE SILVER RATIO (δ_S) IS THE 12-FOLD 1-D LINEAR FUNCTION OF ROOT 2.
THE SILVER SECTION IS THE 12-FOLD 2-D GEOMETRIC FUNCTION OF ROOT 2.
THE 12-FOLD (ROOT 2) HARMONIC EXPRESSION OF δ_S IS EASILY SEEN WITHIN ITS INFINITE FRACTAL EXPRESSION OF THE CONTINUED FRACTION [2; 2, 2, 2, ...]:

$$\left(\frac{2}{1}, \frac{5}{2}, \frac{12}{5}, \frac{29}{12}, \frac{70}{29}, ...\right)$$

δ_S = RATIOS OF CONSECUTIVE PELL NUMBERS

ROOT 1/2 (½) (FRACTIONALITY) (PARTING):

ROOT ½ IS THE **FIRST NATURAL** FRACTION OF THE **1** (**LINE**). THE **LINE** IS THE **1 DIVIDED** BY THE **2** INTO (& IN **TWO**) **EQUAL** PARTS. THE **NATURAL** FRACTION POINT (**0**) OF THE **LINE** (**1**) IS THE **CENTER** (**Π**), THE **EQUATOR**, ½ **Re** PART, 90^0 ANGLES (MAX DIFFRACTION), & **√2** (THE EXACT SAME INFINITY FROM VARYING **PERSPECTIVE** & STARTING MEASUREMENT) ALL SUPERIMPOSE ON THE **CENTER** OF **ACTION**.

ROOT ½ IS FURTHER **NATURALLY** FRACTIONED (FRACTURED) (DIFFRACTED) INTO THE **5**TH & **7**TH PARTS [**5** + **7** = **12**, WHILE **5** – **7** = **-2**), JUST AS **ROOT 12** (**NATURAL HARMONY**) IS **NATURALLY** REFRACTED INTO **5 MINOR** & **7 MAJOR HARMONICS**. THE **5**TH & **7**TH PARTS CAN BE HYPER-FRACTIONED (OPPOSITE OF HYPER-EXPONENTIATION) INTO THE **5**TH OF **7** PARTS (MORE COMMONLY KNOWN AS **5**/**7**) & WHEN DECIMALIZED = **0**.714 285 714 285… (REPEATING INFINITE (IRRATIONAL) **HARMONIC 3**-DIGIT FREQUENCIES OF 714 & 285).

ROOT ½ (THE **CENTER**) REVEALS ITS **HIGHER** [**+**] **HARMONIC MAGNIFICATION 12** (TO BE FURTHER DISCUSSED) & ITS LOWER (SMALLER) **HARMONIC MAGNIFICATION** [**-**] **1**/**12**. **ROOT** ½ (**CENTERED**) REVEALS THE **FUNDAMENTAL** REASON WHY THE **ZETA** PLOT OF **-1** = (**-1**/**12**), & CONVERSELY HOW **1:12** (SCALED). CONVERT THE **DIVISION** (FRACTION) TABLE OF **12** INTO ITS **NATURAL TRIPLE HARMONICS** (**DECIMALIZED**) (**ONE ZEROED**):

147	258	369
1/12 = 0.08333…	2/12 = 0.1666…	3/12 = 0.25 (1/4)
4/12 = 0.333…	5/12 = 0.41666…	6/12 = 0.5 (2/4) (½ **Re** PART)
7/12 = 0.58333… (½ **Re** PART + **1**/**12**)	8/12 = 0.666…	9/12 = 0.75 (3/4)
10/12 = 0.8333…	11/12 = 0.91666…	12/12 = 1 (4/4)

CONVERT THE **DIVISION** (FRACTION) TABLE OF **5** (THE **MINOR HARMONICS** OF **12**) INTO ITS **NATURAL TRIPLE HARMONIC** COMPONENTS (**DECIMALIZED**) (**10**'D):

1/5 = 0.2	6/5 = 1.2	11/5 = 2.2
2/5 = 0.4	7/5 = 1.4	**12**/5 = 2.4
3/5 = 0.6	8/5 = 1.6	13/5 = 2.6
4/5 = 0.8	9/5 = 1.8	14/5 = 2.8
5/5 = **1**	10/5 = **2**	15/5 = **3**

CONVERT THE **DIVISION** (FRACTION) TABLE OF **7** (THE **MAJOR HARMONICS** OF **12**) INTO ITS **NATURAL TRIPLE HARMONIC** COMPONENTS (**DECIMALIZED**) (**10**'D):

1/7 = **0**.14285714285…	…	…
2/7 = **0**.28571428571…	…	…
3/7 = **0**.42857142857…	…	…
4/7 = **0**.57142857142…	…	…
5/7 = **0**.71428571428…	**12**/7 = 1.71428571429…	19/7 = 2.71428571429…
6/7 = **0**.85714285714…	…	…
7/7 = **1**	14/7 = **2**	**21**/7 = **3**

4	4	4	4	4	4	4	4	4
4	3	3	3	3	3	3	3	4
4	3	2	2	2	2	2	3	4
4	3	2	1	1	1	2	3	4
4	3	2	1	0	1	2	3	4
4	3	2	1	1	1	2	3	4
4	3	2	2	2	2	2	3	4
4	3	3	3	3	3	3	3	4
4	4	4	4	4	4	4	4	4
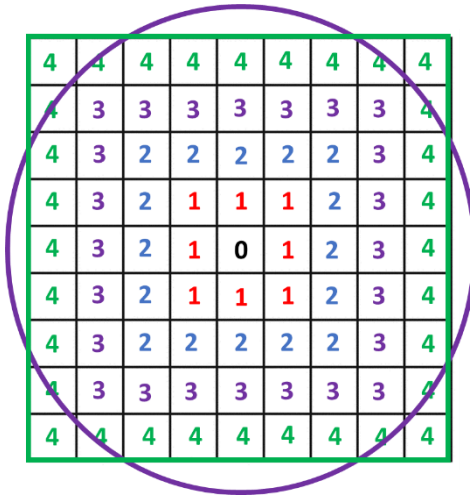
PI [π] & THE HARMONIC FREQUENCIES
KNOWING THE .14 OF 3.14 [π]
[3 = C]

THE FUNDAMENTAL .14 IS A FUNCTION OF BASE SEVEN (7):
1/7 = .1428571428... (714 285 DOUBLE HARMONIC INFINITE REPEAT)
2/7 = 0.2857142857... (714 285 DOUBLE HARMONIC INFINITE REPEAT)
3/7 = 0.428571428571... (714 285 DOUBLE HARMONIC INFINITE REPEAT)
3.14/7 = 0.4485714285... (714 285 DOUBLE HARMONIC INFINITE REPEAT) C [π] = A (444 Hz) (4 x 111)
4/7 = 0.5714285714... (714 285 DOUBLE HARMONIC INFINITE REPEAT)
5/7 = 0.714285714 28 (714 285 DOUBLE HARMONIC INFINITE REPEAT) (5/7 = MUSIC SCALE RATIO)
6/7 = 0.85714285714 (714 285 DOUBLE HARMONIC INFINITE REPEAT)
7/7 = 1 (LIGHT), EXPRESSED AS 3 [- = +], IN PERFECT HARMONY SLIGHTLY SHARP [#] [1/12]

3.14 [π] IS 3# TO MATH, JUST AS PERFECT PITCH IS C# (528 Hz) (LOVE) TO AUDIBLE SOUND (FREQUENCY).
C [π] = A (444 Hz) (111 x 4).
3 [π] + 7 [HEPTAHEDRON] = 10 (PERFECTION)
3.14 [π] + 7 = 7.14 (HARMONIC) + 3 [- = +]
3.14 [π] EQUALLY DEFINES BOTH THE CIRCLE [O] & THE ZERO [0]. THE PRIME ZERO [0] IS IN THE THIRD [MIDDLE] [3] [C], POSITION OF THE MIRROR (-1, 1) WITH FOCI (0, 0) = PRIME DOUBLE NAUGHT.
3.14 [π] PLOTTED ON THE AFFINE SPACE OVERLAYED WITH RIEMANN ZETA FUNCTION PLOTS REVEAL THAT LIGHT REFLECTS IN EXACT PROPORTIONALITY ON THE GRAPH (37.6991118431 = 12 x 2π/2). NOTICE THAT THE 6TH PLOTTED ZETA (Z6) (½ Re PART OF 12) = 37 (x 3 = 111) (111 x 4 = 444 Hz), & 3.14 [π] IS NESTED BETWEEN THE 3 & 4. NOTICE THAT Z6 IS ALSO NESTED INSIDE OF THE ARC OF 3.14 [π] (SCALE 1).

OBSERVE THAT -3.14 [π] (180⁰) (SCALE 1) & -3.14 [π] (270⁰) (SCALE 1) CONJOIN AT A PERFECT 90⁰ ANGLE ON Z1 (14) (SCALE 2). THESE ARE ALL MIRRORS OF EACH OTHER WITHIN VARYING SCALE (VECTORS). THIS CONFIRMS THAT Z1 (14.13...) (SCALE 2) IS MEROMORPHIC (THE MIRROR INVERSION) OF 3.14 [π] (SCALE 1). APPLY THE LAWS OF SCALING (MOVE THE DECIMAL) ON 3.141592 [π] (SCALE 1) & LAW OF MIRRORING ON 29514.13... (Z1) (SCALE 2). THE DECIMALS CANCEL LEAVING 29514 (THE SCALED & MIRRORED PLOT OF 3.141592 [π] (SCALE 1). THE TANGENT OF 29514 = -3.14 (PROOF ABSOLUTE). THIS CONFIRMS THAT Z1 (14.13...) (SCALE 2) IS THE MIRROR INVERSION OF 3.141... [π] (SCALE 1). WELCOME TO INFINITY'S END (0).

Figure 1 labels (partial):

½ = (40.918719012...)i
⅔ = (37.586178159...)i
½ = (34.9350615...)i
½ = (30...4248761...)i
¼ = (25.0108579...)
⅓ = (21.0220396...)i [21 = 7 x 3]
⅓ = (14.1347251...)i [14 = 7 x 2]

PRIME ZERO   NON-TRIVIAL ZEROES

-3.14   0   -1   **0**   1   2   3.14   4   5   6   7

√2

½ = (14.1347251...)i [14 = 7 x 2]

⅓ = (21.0220396...)i [21 = 7 x 3]
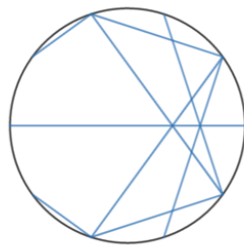¼ = (25.0108579...)i [25 = 5 x 5]
½ = (30.4248761...)i [30 = 3 x 10 & 5 x 6] [42 = 6 x 7]
½ = (32.9350615...)i [32 = 4 x 8] [93 = 3 x 31]
⅔ = (37.586178159...)i
½ = (40.918719012...)i [40 = 5 x 8]

∏ (3.141) MIRRORED = Z1 (14.13)
∏ (3.141592) MIRRORED & SCALED = 29514
TAN (29514) = -3.1454362852553

CONCLUSION: ∏ & Z1 ARE MIRROR IMAGES
(YOU ARE READING ∏ BACKWARDS)
...14.13 [-] (INFINITY'S END) [+] 3.141...

The Root of 29514 is 171.796391146 (REF: SIGNATURE OF e)

THE **RAINBOW** & **INFINITY**'S **ZETA** (**END**)
3.**14** [π] = **PERFECT** (**90⁰**) **LIGHT ReFLECTION** & **MEROMORPHIC** INVERSION = **Z1**

Figure 2 labels (partial):

7.83/.07 = **111**.85714285714...

2 & 5 ARE MIRRORS (INVERSIONS)
7.83 / 2 = 3.915   7.83 / 5 = 1.566
7.83 x 2 = 15.66   7.83 x 5 = 39.15

-7.83

5√2 = 7.07107 (REF: MAX AMPS)

-3.14
R = 0.4223
R = 0.41886
∏²/6.0998 = 1.61802098447
s = 2.61803   hₐ = 0.70711   R = 0.70711
√10   √S   √2
A = 1   A = ∏ / 3√3   mᵦ & c = √5/2

2   0
½ = (25.0108575...)i
¼ = (21.0220396...)i [21 = 7 x 3]

NON-TRIVIAL ZEROES
½ = (14.1347251...)i [14 = 7 x 2]

√5/2 = 111803
P = 2.61803
mᵦ = 0.70711

PRIME ZERO

0   -7   **0**   -5   **0**   -3   **0**   -1   0   1   2   3.14
mₐ = √5/2
mᵧ = √2

-0.83
�$\bar{z}$(X):   -0.115412047414146136535
$\bar{z}$(X) – 1: -1.115412047414146136535

2
$\bar{z}$(X):   1.6449340668482264
$\bar{z}$(X) – 1: 0.6449340668482264
∏²/6 = 1.64493406684...

s = 8.3618

-7
$\bar{z}$(X):   -0.0041666666666666666667 (19 SIXES)
$\bar{z}$(X) – 1: -0.995833333333333333333 (18 THREES)

5/12 = 0.41666...   (TAN)31 = 0.441666...
7/12 = 0.58333...   √34 = 5.8333...

∏ = 3 + (1.68/12)   Φ = 1.618033...

168 = DISTINCT PRIME #S IN ∏ (TO 1000TH DIGIT)
168 = PRODUCT OF 1ST TWO PERFECT #S
168 = MAX AUTOMORPHISMS OF GENUS 3 RIEMANN SURFACE

½ = (14.1347251...)i [14 = 7 x 2]

-83
$\bar{z}$(X):   7.079877440849458061745E+57
$\bar{z}$(X) – 1: 7.079877440849458061745E+57

14 = 168 / 12
.14 = 1.68 / 12
.14/168 = 0.08333...
1/12 = 0.08333...
10/12 = 0.8333...
11/12 = 0.91666...
.14/12 = 0.11666...
3.14/12 = 0.261666...

-3.14 = (CROSS SUM 21) (FIBONACCI #)
SIN(21) = 0.83665563853606
21 (BASE 4) = 111

-3
$\bar{z}$(X):   -0.008333333333333333333333 (21 THREES)
$\bar{z}$(X) – 1: -0.991666666666666666667 (18 SIXES)

-1
$\bar{z}$(X):   -0.083333333333333333333
$\bar{z}$(X) – 1: -1.083333333333333333333

½ = (21.0220396...)i [21 = 7 x 3]

∏, Φ, √, ẕ, & SCHUMANN RESONANCE TRIANGULATIONS:

7.83 Hz (THE SCHUMANN RESONANCE) = 7 + **10**/**12** (SCALE **1**) &/OR **7** (SCALE **1**) + **1**/**12** (SCALE **2**).
7 Hz IS THE **G** NOTE (**SEVENTH** MAJOR **HARMONIC** & ITS **NATURAL** SHARPNESS IS **1**/**12** (SCALED DOWN)
BEFORE REACHING **8** (THE OCTAVE) OF **A** (THE **12**TH NOTE) IN THE KEY OF **A** (THE **1**ST NOTE) = **444** Hz.
THUS, THE SCHUMANN RESONANCE (**7.83** Hz) IS **NATURAL G** JUST AS **3.14** [π] IS **NATURAL C** (**3** + **1.68**/**12**).
HARMONIC NOTE: (**3168** Hz = **528** Hz x **6** [½ **Re** PART OF **12**]), & (**528** Hz / **12** = **44** Hz).

7

<p style="text-align:center">**ROOT 12 (DUODECIMALITY):**</p>

ROOT 12 (DUODECIMAL) IS AN ORDER OF MAGNITUDE (MEASURED IN DECIMAL) ABOVE ROOT 2. THE FRACTIONAL FAMILY OF ROOT 2 INCLUDE ½, 1/12 (THE RESULT OF THE INFINITE SQUARE) & 1/120 (THE RESULT OF THE INFINITE CUBE). EXPRESSED FROM THE ELECTR-O-MAGNETIC POINT OF VIEW, 2, 12, & 120 IS THE MOST EFFICIENT PATH OF LIGHT (INVERSE: THE PRINCIPLE OF LEAST TIME) (FERMAT'S PRINCIPAL). NUMERICALLY, 2, 12, & 120 ARE THE FIRST, THIRD, & FIFTH (ODD …) SUPERIOR HIGHLY COMPOSITE NUMBERS (HAVING MORE DIVISORS (2, 3, 4, 6, …) THAN ANY OTHER NUMBER SCALED RELATIVE TO SOME POSITIVE POWER OF THE NUMBER ITSELF).

THE INVERSE MIRROR OF THE ROOT 2, 12, 120 … SERIES IS 6, 60, & 360 … (THE SECOND, FOURTH, & SIXTH (EVEN …) SUPERIOR HIGHLY COMPOSITE NUMBERS (THE ½ REFLECTION OF ROOT 2 IN THE 2 x CIRCULAR TIMES TABLE). THE RIEMANN ZETA FUNCTION OBEYS THE PROPERTIES OF TRI-POLARIZED ELECTR-O-MAGNETIC CIRCULATING CURRENT AS EXPRESSED THROUGH THE 2 x CIRCULAR TIMES TABLE (MOD 2 THRU INFINITY) – THE CIRCULATING MATHEMATICS THAT PRODUCE THE GEOMETRIC ROSE CARDIOID (THE INVERSE PARABOLA) (THE HEART). THE GEOMETRIC TOTALITY OF INFORMATION IS EXPRESSED IN THE DODECAHEDRON (12-SIDED 5-FACED 7-INTEGERED, ORTHOGONAL 10 PLATONIC SOLID).
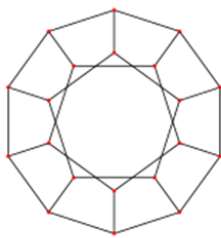
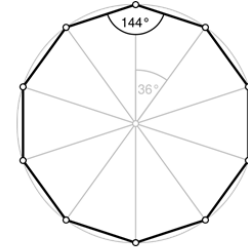| DODECAHEDRON 12-SIDES	2 x CIRCULAR TIMES TABLE: 2 MOD 10	DODECAPLEX 120-CELLS	DECAGON 144* = 12 x 12 36* = 6 x 6
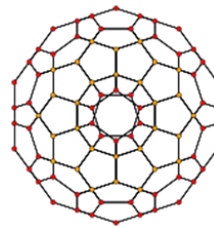
ROOT 12 (ROOT 1 (MAGNETIZED) + ROOT 2) IS THE FOUNDATION OF ADAM NUMBERS (MIRROR NUMBERS) = THE SQUARE OF A NUMBER (12^2 = 144) & THE SQUARE OF THE INVERSE NUMBER (21^2 = 441) = PALINDROMIC RELATIONSHIP. ALL ADAM NUMBERS (UP TO 1,000) ARE: 0, 1, 2, 3, 11, 12, 13, 21, 22, 31, 101, 102, 103, 111, 112, 113, 121 (11 x 11), 122, 201, 202, 211, 212, 221, 301, & 311.

ROOT 12 HAS A NATURAL FRACTAL RESONANCE OF SLIGHT SHARPNESS [1/12], WHICH IS A ReFLECTION OF THE TOTAL 12-TONE MUSIC SCALE. THIS 'TWELVENESS' IS EXHIBITED BECAUSE 12 IS MOST EFFICIENT PATH OF LIGHT TRAVEL (12 HAS MORE INTERGERS [6] (½ Re PART OF 12) THAN ANY NUMBER UP UNTO ITSELF (1, 2, 3, 4, 6, 12). HARMONIC FREQUENCIES ARE A TRIPLE-ReCIPROCAL FUNCTION OF 12 (THE 1ST & 12TH FRET = A), PROVED BY THE PATTERN CONTAINED WITHIN A SOLFEGGIO MAGIC SQUARE:

	VERSO			MIRROR		RECTO		
ADD	12	12	12	12	12	12	12	12
111	123	135	147	159	162	174	186	198
222	234	246	258	261	273	285	297	219
333	345	357	369	372	384	396	318	321
444	456	468	471	483	495	417	429	432
555	567	579	582	594	516	528	531	543
666	678	681	693	615	627	639	642	654
777	789	792	714	726	738	741	753	765
888	891	813	825	837	849	852	864	876
999	912	924	936	948	951	963	975	987

QUANTUM (Q) LIGHT: THE QUANTUM SIGNATURE OF **LIGHT** (**ELECTR**-**O**-**MAGNETIC ENERGY**) IS THE **SIGNATURE** OF THE **PERFECT SINUSOIDAL ELECTR**-**O**-**MAGNETIC WAVE**. **LIGHT** IN THE STATE OF A **PERFECT SINEWAVE** HAS NO FREQUENCY & THUS ACTS AS <u>ALL</u> FREQUENCY (THE QUANTUM FREQUENCY).

THE LAW OF ReFLECTION: **Re**LEASE Q (**LIGHT RAY**) TOWARD INFINITY [**-**]. THE LAW OF **ReFLECTION** STATES THAT **LIGHT** WILL DO THE FOLLOWING **THREE** THINGS:

Q = [**1**] **LIGHT RAY**: MAY BE REFLECTED (THE NON-TRIVIAL **ZEROES**). [**+**] **ReAL** (MAX = **90⁰** ANGLES)
O = [**0**] **TIME**: MAY BE ABSORBED BY THE MATERIAL (THE **ZERO** POINT) (**ZP**). [**=**] **MIRROR** (**MORPHIC FUNCTION**)
P = [**2**] **EVEN**: MAY BE TRANSMITTED THROUGH THE SURFACE (THE TRIVIAL **ZEROES**). [**-**] *i*MAGE

THE LAW OF **ReFLECTION** ESTABLISHES THE **CRITICAL LINE** AT ½ Re (DUE NORTH) & **MIRROR IMAGE** (DUE SOUTH). **LIGHT** (OBEYING THE LAW OF **ReFLECTION**) SHALL ALWAYS PLOT ON THE ½ (**CRITICAL LINE**).

QUANDRANT ReFLECTION (MAXIMUM **ReFLECTION**) = **90⁰** ANGLES (IN-PHASE). Q IS **ReFLECTED** ON **Re** PLANE AT **90⁰** (IN-PHASE) & SYMMETRICALLY THROUGH THE **MEROMORPHIC** FUNCTION. **LIGHT** (Q) (THE **PERFECT WAVE**) SHALL ARC AT **90⁰** ANGLES (IN-PHASE) ON PLOTTED **ZETA** FUNCTIONS [**0**]. **LIGHT** (Q) **PRODUCES** THE **ROSE** CARDIOD (LEMICON **TRI**SECTRIX = A HYPERBOLA WITH **ONE** FOCAL POINT). THE RIEMANN **ZETA** FUNCTION = THE VISUAL **GEOMETRIC PERFECT 90⁰** BENDING OF **LIGHT** UPON **2**-D EUCLIDIAN HYPERSPACE (AS ALL **ZETA** ANGLES = **90⁰**).

ReFRACTION: THE **ReFRACTIVE** INDEX OF A MATERIAL IS A DIMENSIONLESS NUMBER THAT DESCRIBES HOW FAST **LIGHT** TRAVELS THROUGH THE MATERIAL. IT IS DEFINED AS: $n = \frac{c}{v}$ WHERE C IS THE SPEED OF **LIGHT** IN A **VACUUM** & V IS THE PHASE VELOCITY OF **LIGHT** IN THE MEDIUM. THE LAW OF **ReFRACTION** (SNELL'S LAW) IS ALSO SATISFIED IN METAMATERIALS, WHICH ALLOW **LIGHT** TO BE BENT "BACKWARD" AT A **NEGATIVE** ANGLE OF **ReFRACTION** WITH A **NEGATIVE ReFRACTIVE** INDEX (**LIGHT INVERSION**).

DiFFRACTION: MAXIMUM **DiFFRACTION** = THE OPENING [**0**] IS SHORTER THAN THE WAVELENGTH [**1**].

TRI-POLARITY:

1D ELECTR-**O**-**MAGNETIC TRI**-**POLARIZATION [- = +]:**
[**+**] POSITIVE (**ELECTRICTY**)
[**=**] NEUTRAL (-**O**-)
[**-**] NEGATIVE (**MAGNETISM**)

2D GEOMETRIC (LINEAR) TRI-**POLARIZATION [- = +]:**
[**+**] 2D (EUCLIDIAN PLANE): **LINEAR** POLARIZATION = A VERTICAL **Di**POLE ANTENNA WILL CREATE A VERTICAL, **LINEARLY** POLARIZED **ELECTR**-**O**-**MAGNETIC WAVE**.
[**=**]: BOTH **0** (**ȥ**) (**UN**-POLARIZED) & ∏ (**OMNI**-POLARIZED) (**SUNLIGHT** IS A HOMOGENEOUS MIXTURE OF **ELECTR**-**O**-**MAGNETIC WAVES** WITH ALL ORIENTATIONS (**OMNI**DIRECTIONAL).
[**-**]: FARADAY EFFECT: **LINEAR** POLARIZED SIGNALS FROM SPACE ARE SUBJECT TO FARADAY ROTATION CAUSED BY THE **EARTH**'S **MAGNETIC** FIELD.

3D GEOMETRIC (CIRCULAR) TRI-**POLARIZATION [- = +]:**
[**+**]: **RIGHT**-HAND **CIRCULAR** POLARIZATION (**R**HCP) = CLOCKWISE ROTATION IN THE DIRECTION OF PROPAGATION.

[=]: **3**D (HYPERPLANE): **CIRCULAR** POLARIZATION (CORKSCREW) = THE <u>ELECTRIC FIELD ROTATES</u> AS IT TRAVELS ALONG. **CIRCULAR** POLARIZATION IS NOT AFFECTED BY FARADAY ROTATION.

[-]: **LEFT**-HAND **CIRCULAR** POLARIZATION (**L**HCP) = COUNTER-CLOCKWISE ROTATION IN THE DIRECTION OF PROPAGATION.

THE FARADAY EFFECT IS CAUSED BY THE PROPERTY OF **CIRCULAR BI**REFRINGENCE (**LEFT** & **RIGHT CIRCULARLY** POLARIZED **WAVES** PROPAGATING AT SLIGHTLY DIFFERENT SPEEDS). SINCE A **LINEAR** POLARIZATION CAN BE DECOMPOSED INTO THE SUPERPOSITION OF **TWO EQUAL**-AMPLITUDE **CIRCULARLY** POLARIZED COMPONENTS OF OPPOSITE HANDEDNESS (**R**HCP [**+**] & **L**HCP [**-**]) & DIFFERENT PHASE, THE EFFECT OF A RELATIVE PHASE SHIFT, INDUCED BY THE FARADAY EFFECT, IS TO ROTATE THE ORIENTATION OF A WAVE'S **LINEAR** POLARIZATION. THE FAMILIAR ROTATION OF THE AXIS OF **LINEAR** POLARIZATION RELIES ON THE UNDERSTANDING THAT A **LINEARLY** POLARIZED **WAVE** CAN AS WELL BE DESCRIBED AS THE SUPERPOSITION (**ADDITION**) OF A **LEFT** & **RIGHT CIRCULARLY** POLARIZED **WAVE** IN **EQUAL** PROPORTION. THE PHASE DIFFERENCE BETWEEN THESE **TWO** WAVES IS DEPENDENT ON THE ORIENTATION OF THE **LINEAR** POLARIZATION: θ_0 & THEIR **ELECTRIC FIELDS** HAVE A RELATIVE PHASE DIFFERENCE OF **2**θ_0 WHICH THEN **ADD** TO PRODUCE **LINEAR** POLARIZATION:

$$\mathbf{E}_{\theta_0} = \frac{\sqrt{2}}{2}(e^{-i\theta_0}\mathbf{E}_{RHC} + e^{i\theta_0}\mathbf{E}_{LHC})$$

POLARIZATION AS A FUNCTION OF **ROOT 2**.

<u>THE **THREE PERFECT WAVE**FORMS</u>

Pure sine wave =
1st harmonic only
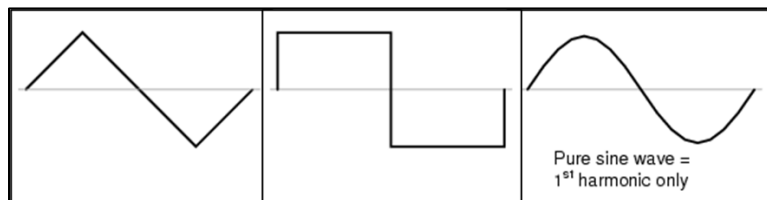
WAVEFORMS SYMMETRIC ABOUT THEIR X-AXIS CENTER LINE CONTAIN ONLY ODD HARMONICS.

THE DISTINCTION BETWEEN A **WAVEFORM** HAVING **EVEN HARMONICS** VERSUS **NO EVEN HARMONICS** RESIDES IN THE DIFFERENCE BETWEEN A **TRIANGLE WAVE**SHAPE & A SAWTOOTH **WAVE**SHAPE. THAT DIFFERENCE IS SYMMETRY ABOVE & BELOW THE HORIZONTAL **CENTERLINE** OF THE **WAVE**. A **WAVEFORM** THAT IS SYMMETRICAL ABOVE & BELOW ITS **CENTERLINE** (THE SHAPE ON BOTH SIDES **MIRROR** EACH OTHER PRECISELY) & CONTAIN **NO EVEN**-NUMBERED **HARMONICS**. **SQUARE WAVES**, **TRIANGLE WAVES**, & **PURE SINE WAVES** ALL EXHIBIT THIS SYMMETRY, & <u>**ALL ARE DEVOID OF** EVEN HARMONICS</u>.

HARMONICS
FORMULA (FUNDAMENTAL FREQUENCY): $E = V_{max}(2\pi ft)$
THE HARMONIC VALUES WILL BE GIVEN AS:

SECOND HARMONIC: $\quad E_2 = V_{2max}(2*2\pi ft) = V_{2max}(4\pi ft), = V_{2max}(2\pi t)$
THIRD HARMONIC: $\quad E_3 = V_{3max}(3*2\pi ft) = V_{3max}(6\pi ft), = V_{3max}(3\omega\pi t)$
FOURTH HARMONIC: $\quad E_4 = V_{4max}(4*2\pi ft) = V_{4max}(8\pi ft), = V_{4max}(4\pi t)$

THE **HARMONICS** OF MUSIC THEORY (THE SOUND OF THE **HARMONY** POINTS OF THE **PERFECT SINEWAVE**) ARE SYNCHRONOUS WITH THE **HARMONIC** SERIES EXIBITED BY THE RIEMANN **ZETA** FUNCTION. BOTH ARE SYNCHRONOUS WITH **LIGHT** (**ELECTR**-**O**-**MAGNETIC CURRENT**).

ZETA PLOTS (**Z**1 – **Z**34.1)	**HARMONICS** (12, 7, 5, …)	FREQUENCIES (**432** Hz = **A**$_4$)	(**44**0 Hz = **A**$_4$)	(**444** Hz = **A**$_4$) (37 x 12)
Z1: **14**.1347251**42**…	7 x 2			
Z2: 21.022039639…	7 x 3	21.43 = F_0	21.83 = F_0	
Z3: 25.010857580…	5 x 5	25.48 = $G\#_0$	25.96 = $G\#_0$	
Z4: 30.424876126…	5 x 6	30.31 = B_0	30.87 = B_0	
Z5: 32.935061588…	2 x 16	32.11 = C_1	32.70 = C_1	
Z6: 37.5**86**178159…	37 x 3 = **111**			
Z7: 40.918719012…	5 x 8	40.45 = E_1		
Z8: **43.32**7073281…	52 / 12 = **4.333**…			43.65 = F_1
Z9: 48.005150881…	12 x 4	48.11 = G_1		
Z10: 49.773832478…	7 x 7		49.00 = G_1	49.**44** = G_1
Z11: 52.97032**1**478…	4 x 13		52.39 = $G\#_1$	
Z12: 56.**44**6247697…	7 x 8			
Z13: 59.3470**44**003…	59 / 12 = 4.91666…			
Z14: 60.831778525…	12 x 5	60.61 = B_1		
Z15: 65.112**5 44**048…	5 x 13		65.41 = C_2	
Z16: 67.079810529…	67 / 12 = 5.58333…			
Z17: 69.546401711…	3 x 23		69.30 = $C\#_2$	69.93 = $C\#_2$
Z18: 72.067157674…	12 x 6	72.08 = D_2		
Z19: 75.704690699…	5 x 15			
Z20: 77.**1 44**840069…	7 x 11		77.78 = $D\#_2$	
Z21: 79.337375020…	79 / 12 = 6.58333…			
Z22: 82.910380854…	82 / 12 = 6.8333…			82.41 = E_2
Z23: 84.735492981…	12 x 7			
Z24: 87.425274613…	3 x 29		87.31 = F_2	
Z25: 88.809**111**208…	8 x 11			88.10 = F_2
Z26: 92.491899271…	4 x 23		92.50 = $F\#_2$	
Z27: 94.6513**44**04**1**…	94 / 12 = 7.8333… (SCHUMANN RESONANCE)			
Z28: 95.870634228…	5 x 19			
Z29: 98.831194218…	2 x 49 [7 x 7]		98.00 = G_2	98.89 = G_2
Z30: 101.317851006…	101 / 3 = 33.666…	101.94 = $G\#_2$		
Z31: 103.725538040…	103 / 3 = 34.333…		103.83 = $G\#_2$	
Z32: 105.**44**6623052…	5 x 21			
Z33: 107.**168611**184…	107 / 6 = 17.8333…			
Z34: **111**.029535543…	3 x 37			**111**.00 = A_2
Z34.1: **111**.874659177…	3 x 37			**111**.00 = A_2

111 = 37 x 03	**444** = 37 x 12	**777** = 37 x 21	**111**0 = 37 x 30
222 = 37 x 06	**555** = 37 x 15	**888** = 37 x 24	1221 = 37 x 33
333 = 37 x 09	**666** = 37 x 18	**999** = 37 x 27	1332 = 37 x 36 37 x 37 = 1369

<div align="center">

SQUARE WAVE SIGNALS:
A **SQUARE WAVE** = A **SINUSOIDAL** (**PERFECT CIRCLE**) **WAVE**.

</div>

SQUARE WAVE = A **CIRCULAR SINEWAVE** AT THE SAME (FUNDAMENTAL) FREQUENCY **ADDED** TO AN INFINITE SERIES OF **ODD**-MULTIPLE **SINEWAVE HARMONICS** AT DECREASING AMPLITUDES.

ANY REPEATING, NON-SINUSOIDAL **WAVEFORM** (NO MATTER HOW STRANGE OR CONVOLUTED THE **WAVEFORM** IN QUESTION MAY BE) CAN BE **EQUATED** TO A COMBINATION OF DC VOLTAGE, **SINEWAVES**, &/OR COSINE **WAVES** (**SINEWAVES** WITH A **90**-DEGREE PHASE SHIFT) AT VARIOUS AMPLITUDES & FREQUENCIES. ANY **WAVE** THAT REPEATS ITSELF REGULARLY OVER **TIME** IS REDUCIBLE TO THIS SERIES OF **SINUSOIDAL WAVES**. IN PARTICULAR, **SQUARE WAVES** ARE MATHEMATICALLY **EQUIVALENT** TO THE **SUM** OF A **SINEWAVE** AT THAT SAME FREQUENCY, **PLUS** AN INFINITE SERIES OF **ODD**-MULTIPLE FREQUENCY **SINEWAVES** AT DIMINISHING AMPLITUDE. THUS, A **SQUARE WAVE** IS AN INFINITE SERIES OF **ODD**-MULTIPLE FREQUENCY **SINE WAVE HARMONICS ADDED** TOGETHER (LAW OF **HARMONIC** PROGRESSION):

1V PEAK REPEATING **SQUARE WAVE** AT **44** HZ IS **EQUIVALENT** TO:

(**4**/π) (1V Peak Sinewave at **44** Hz)	**EVEN** DIFFERENCES:
+ (**4**/π) (1/3 V Peak Sinewave = **132** Hz)	**44** Hz x **2** = **88** Hz
+ (**4**/π) (1/5 V Peak Sinewave = **220** Hz)	**44** Hz x **4** = **176** Hz
+ (**4**/π) (1/7 V Peak Sinewave = **308** Hz)	**44** Hz x **6** = **264** Hz
+ (**4**/π) (1/9 V Peak Sinewave = **396** Hz)	**44** Hz x **8** = **352** Hz
+ (**4**/π) (**1**/**11** V Peak Sinewave = **484** Hz)	**44** Hz x **10** = **440** Hz
+ … (ad infinitum) …	**44** Hz x **12** = **528** Hz
	+ … (ad infinitum) …

MIRROR INVERSIONS OF THE LAW OF **HARMONIC** PROGRESSION:
Leibniz Formula: $\pi/4 = \arctan(1) = 1 - 1^3/3 + 1^5/5 - 1^7/7 + 1^9/9 - \ldots$ (ad infinitum) …
Gregory's Formula: $\pi/4 = 1 - 1/3 + 1/5 - 1/7 + 1/9 - \ldots$ (ad infinitum) …

<div align="center">

CIRCULAR WAVE SIGNALS:

A **CIRCULAR WAVE** = A **SINUSOIDAL** (**PERFECT CIRCLE**) **WAVE**.

</div>

A **WAVEFORM** OF INFINITE DURATION (INFINITE NUMBER OF **CYCLES**) CAN BE ANALYZED WITH ABSOLUTE PRECISION, BUT THE LESS **CYCLES** AVAILABLE FOR ANALYSIS, THE LESS PRECISE THE ANALYSIS. IT IS ONLY WHEN WE HAVE AN **EQUATION** DESCRIBING A **WAVEFORM** IN ITS ENTIRETY THAT **FOURIER** ANALYSIS CAN REDUCE IT TO A DEFINITE SERIES OF **SINUSOIDAL WAVEFORMS**. THE FEWER TIMES THAT A **WAVE CYCLES**, THE LESS CERTAIN ITS FREQUENCY. TAKING THIS CONCEPT TO ITS LOGICAL EXTREME, A SHORT PULSE (A WAVEFORM THAT DOESN'T EVEN COMPLETE A **CYCLE**) **ACTUALLY HAS NO FREQUENCY [0]**, **BUT RATHER ACTS AS AN INFINITE RANGE OF FREQUENCIES [∞]**. THIS PRINCIPLE APPLIES TO ALL **WAVE**-BASED PHENOMENA (NOT JUST AC VOLTAGES & CURRENTS). SINCE DC DOES NOT ALTERNATE ITS "FREQUENCY" IS SAID TO BE **ZERO** [**0**].

FREQUENCY IS DEFINED AS A NUMBER OF **CYCLES** PER **UNIT** **TIME** (**1** SECOND = **1** Hz). A FREQUENCY OF ½ **Re** PART IS PRODUCED (**CYCLED**) AT **2** SECONDS. INVERSELY PROPORTIONAL, A FREQUENCY OF **2** SHALL PRODUCE (**CYCLE**) A FREQUENCY OF ½ **Re** PART. **ZETA** PLOTS & **HARMONIC** FREQUENCY **SYNCHRONIZE**:

FREQUENCY	ZETA PLOTS
1 Hz = **1** s	**1** = ∞
-1 Hz = **-1** s	**-1** = **-1**/**12** (0.08333…) (OR, **-1** SCALED DOWN TO A **1:12** RATIO)
0 Hz = **0** s	**0** = PRIME **ZERO** (NO FREQUENCY = …) (MÖBIUS INVERSION)
Π Hz = **Π** s	**Π** = PRIME **ZERO** (… ALL FREQUENCY)
2 Hz = ½ s	**2** = $Π^2$/**6** (1.644934…) (THE BASEL PROBLEM)
½ Hz = **-2** s	½ **Re** PART = ALL NON-TRIVIAL **ZEROS**, &;
	-2 (& ALL **-EVEN** INTEGERS) = ALL TRIVIAL **ZEROS**.

RIEMANN SHOWED THAT THE FUNCTION DEFINED BY THE DIRICHLET SERIES ON THE ½-PLANE OF CONVERGENCE CAN BE CONTINUED ANALYTICALLY TO ALL COMPLEX VALUES S ≠ **1**. FOR S = **1** THE SERIES IS THE **HARMONIC** SERIES WHICH DIVERGES TO **+ ∞** (AFFINITY). THUS, THE RIEMANN **ZETA** FUNCTION IS A **MEROMORPHI**C FUNCTION ON THE WHOLE COMPLEX S-PLANE, WHICH IS HOLO**MORPHIC** EVERYWHERE EXCEPT FOR A SIMPLE POLE AT S = **1** (THE **FIRST** EMANATION OF Q (**LIGHT**)).

CONSTRUCTION OF THE **12**-FOLD **SINUSOIDAL WAVE**:

THE INSTANTANEOUS VALUES OF A **SINUSOIDAL WAVEFORM** ARE GIVEN AS:
"The Instantaneous Value = Maximum Value x Sin θ"
Formula: $V_i = V_{max}$ x Sin θ
V_{max} = the Maximum Voltage Induced in the Coil.
θ = ωt, = the **Ro**tational Angle of the Coil with **Re**spect to **Time**.

TO CONSTRUCT THE **SINUSOIDAL WAVEFORM**, CALCULATE THE INSTANTANEOUS VALUES AT VARIOUS POINTS ALONG THE **WAVEFORM** (USING THE MAXIMUM OR PEAK VALUE OF THE **WAVEFORM**). USE THE FORMULA ABOVE & PLOT THE INSTANTANEOUS VALUES EVERY 30^0 (**12** POINTS) ON THE **2**-D EUCLIDIAN PLANE (**SQUARE** GRAPH PAPER) OR **3**-D FANO PLANE (**TRIANGULAR** & **CUBIC** GRAPH PAPER).
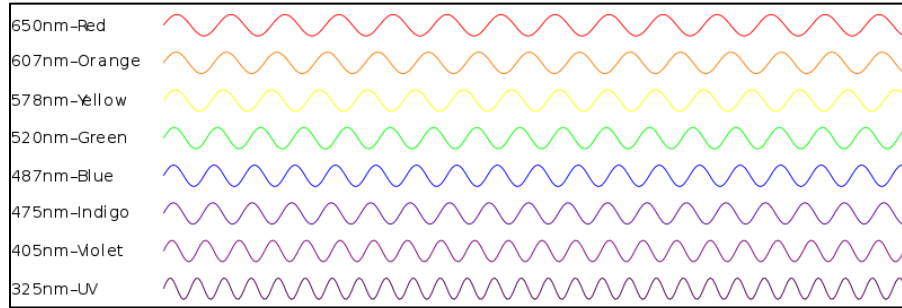

INTERFERENCE
Formula: $\Delta\phi = 2\pi\Delta x/\lambda$

ALL **ELECTR**-**O**-**MAGNETIC WAVES** CAN BE SUPERIMPOSED UPON EACH OTHER WITHOUT LIMIT. THE **ELECTRIC** [**+**] & **MAGNETIC** [**-**] **FIELDS** [**=**] SIMPLY **ADD** AT EACH POINT.

[**+**] 0^0 - 120^0 = CONSTRUCTIVE INTERFERENCE (**INCREASED** STRENGTH)
[**=**] 180^0 = TOTAL CONSTRUCTIVE INTERFERENCE (**NO** PHASE SHIFT = **NO** SIGNAL) = BOTH **0** (Ƶ) & ∏
[**-**] 120^0 - 240^0 = DESTRUCTIVE INTERFERENCE (**DECREASED** STRENGTH)

[½ Re PART & 1]: CHROMATICS (COLOR HARMONICS): THE HARMONIC-ANALYSIS CHART SHOWS HOW THE DIFFERENT WAVELENGTHS INTERACT WITH RED LIGHT. AT A DIFFERENCE OF $\lambda/2$ (½ Re PART WAVELENGTH), RED (POLE S 1) IS PERFECTLY IN SYNC WITH ITS SECOND HARMONIC IN THE ULTRAVIOLET (WHICH MEANS THE VISIBLE SPECTRUM (RAINBOW) IS CREATED BETWEEN ½ Re PART (THE CRITICAL LINE) TO POLE S 1).
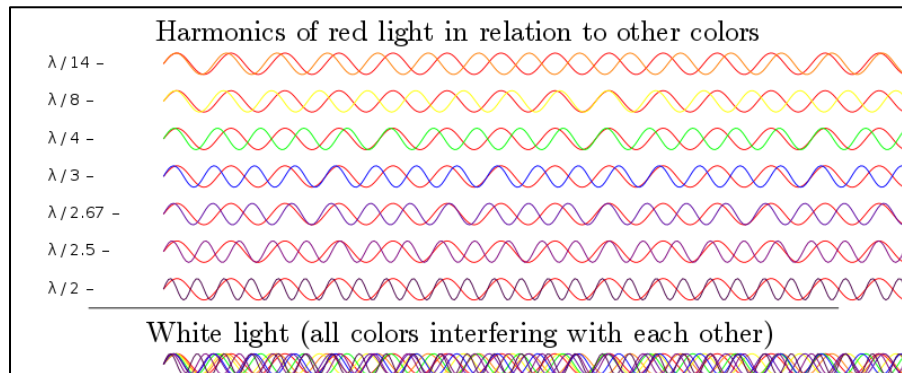
[0 & 2]: OSCILLATIONS: ALL OTHER WAVELENGTHS IN THE VISUAL SPECTRUM HAVE LESS THAN A $\lambda/2$ DIFFERENCE BETWEEN THEM, FORMING HARMONIC OSCILLATIONS IN THE COMBINED WAVES. THE PICTURE SHOWS HOW THE $\lambda/4$ HARMONIC INTERACTS IN VISIBLE LIGHT (GREEN & RED), AS PHOTOGRAPHED IN AN OPTICAL FLAT. THE OSCILLATIONS ARE MOST RAPID AT $\lambda/4$ ($\lambda/2^2$), CYCLING EVERY 4TH WAVE, WHILE AT $\lambda/8$ ($\lambda/2^3$) THEY CYCLE EVERY 8TH WAVE.

[∏]: AT $\lambda/3$ THEY CYCLE EVERY 7TH WAVE, & AT $\lambda/2.5$ (2 & 5 ARE MIRROR INVERSIONS. REF: SCHUMANN RESONANCE) THEY CYCLE EVERY 13TH. AT $\lambda/14$, THEY CYCLE EVERY 14TH WAVE (x 6 = 84) (x 12 = 168).

14
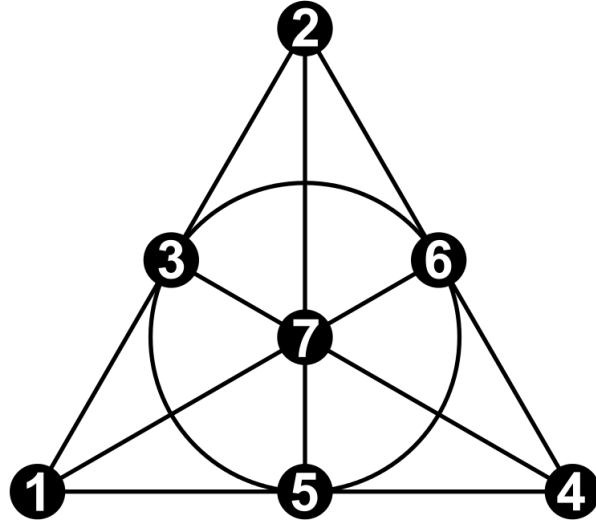
A NIMBER NUMBERING OF THE FANO PLANE

THE **3**D FANO PLANE CONFIGURATION IS SYNCHRONOUS WITH THE CHROMATIC OSCILLATION OF λ/**14** (**ORANGE**), WHICH **CYCLES** EVERY **14**TH **WAVE** (x **6** = **84**) (x **12** = **168**) WITH **7** = ½ **Re** PART.

CIRCULAR POLARIZED
λ/**14** (**14**TH WAVE) = **3** + **6** + **5** (**7** DAYS)

LINEAR TRI-POLARIZED
λ/**14** (**14**TH WAVE) = **1** + **7** + **6**
λ/**14** (**14**TH WAVE) = **2** + **7** + **5**
λ/**14** (**14**TH WAVE) = **3** + **7** + **4**

MIRRORS
λ/**3** (**7**TH WAVE) = **1** + **6** = **7**
λ/**3** (**7**TH WAVE) = **2** + **5** = **7**
λ/**3** (**7**TH WAVE) = **3** + **4** = **7**

SQUARE POLARIZED
λ/**14** (**14**TH WAVE) = **1** + **2** + **4** + **7**

A COLLINEATION, AUTOMORPHISM (SYMMETRY) OF THE FANO PLANE IS A PERMUTATION OF THE **7** POINTS THAT PRESERVES COL**LINEAR**ITY. THIS PROJECTIVE SPECIAL **LINEAR** GROUP PSL (**2**, **7**) HAS **168** ELEMENTS & IS THE **2**ND SMALLEST NON-ABELIAN GROUP. (**168** / **7** = **28**) & (**1** + **2** + **3** + **4** + **5** + **6** + **7** = **28**).