

The Tuning of the Lattice:

Musical Scales, Frequency Ratios, and the 144 Harmonic

Why 432 Hz Is a Pure Multiple of 144, Why 440 Hz Injects Kinetic Torque, and How the Harmonic Series Encodes the CTF Kinetic-Temporal-Static Triad

Three Central Findings

Finding 1 — The 432/440 structural split: $432 \text{ Hz} = 3 \times 144$ exactly (zero remainder, pure spatial). 440 Hz remainder = 8 = base-8 kinetic torque. $440 - 432 = 8$ = the kinetic constant exactly. The ancient tuning is crystallised space. The modern standard injects kinetic activation. Finding 2 — Pythagorean static nodes: In Pythagorean tuning from C=256, the notes D ($288=2 \times 144$) and A ($432=3 \times 144$) are both pure multiples of the CTF spatial harmonic. The two static nodes in the oldest mathematical tuning system are at the CTF harmonic positions. The Pythagorean F (perfect fourth) produces remainder 53 — the CTF frequency generator prime. Finding 3 — The harmonic series triad: The first nine harmonics over C=32 Hz cycle through the complete CTF kinetic-temporal-static triad: H2=64 (8^2 =kinetic), H7=80 (8×10 =temporal-kinetic), H9=288 ($=2 \times 144$ =static). The natural overtone series encodes the three CTF structural families in sequence.

Abstract

This paper applies the CTF Framework's 144-lattice analysis to musical frequency ratios, concert pitch standards, tuning systems, the harmonic series, and the Solfeggio frequencies. The analysis reveals that the CTF structural constants appear at key positions across all major musical systems — not as approximations but as exact arithmetic identities.

CONCERT PITCH: $432 \text{ Hz} = 3 \times 144$ exactly (zero remainder). $432 = 2^4 \times 3^3$ — pure {2,3} spatial family. The ancient/Verdi concert pitch is a pure multiple of the CTF spatial harmonic. 440 Hz (modern ISO) has remainder 8 = 2^3 = base-8 kinetic torque. $440 = 2^3 \times 5 \times 11$ — contains temporal prime P5=11 in its factorisation. The difference $440-432=8$ = the base-8 kinetic constant exactly.

PYTHAGOREAN TUNING: From C=256 Hz, D=288 Hz (rem=0, static) and A=432 Hz (rem=0, static) are both pure CTF harmonic multiples. F=341 Hz (perfect fourth) has remainder 53 — the CTF frequency generator prime ($53 \times e \approx f_0$). The octave C=512 Hz has remainder 80 = 8×10 — the temporal-kinetic driver.

EQUAL TEMPERAMENT (A4=440): G5=783.991 Hz rounds to rem=64= 8^2 (kinetic life-activation). D5 rem=11=P5 (first temporal prime). D#5 rem=46= 2×23 (central temporal prime P9). A#4 rem=34= 2×17 (structural linchpin prime 17).

HARMONIC SERIES (C=32 Hz): H2=64 (8²=kinetic), H7=80 (8×10=temporal-kinetic), H9=288 (static=2×144), H11=64 (kinetic again), H18=576 (static=4×144). The natural overtone series cycles through the CTF kinetic-temporal-static triad.

SOLFEGGIO: 396 Hz (MI) rem=108 = proton lattice offset (previously documented). 852 Hz and 963 Hz both have remainders containing temporal prime 11=P5.

PART I — CONCERT PITCH STANDARDS

432 Hz = Static Space, 440 Hz = Kinetic Activation

1. The 432/440 Structural Split — The Central Finding

The debate between 432 Hz ("sacred tuning") and 440 Hz (ISO modern standard) has been primarily aesthetic and cultural. The CTF Framework provides an arithmetic basis for understanding their structural difference:

432 Hz = 2⁴ × 3³ = 3 × 144 → remainder 0 (STATIC SPATIAL)

440 Hz = 2³ × 5 × 11 → remainder 8 = 2³ (KINETIC)

440 - 432 = 8 = 2³ = BASE-8 KINETIC TORQUE OFFSET

| Pitch Standard | 144-Lattice | Rating | Type | CTF Significance |
|------------------------|--------------------------|------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 432 Hz(Ancient/Ver di) | rem=03×144 | STATIC ★★★★★ | Pure spatial | 432=2 ⁴ ×3 ³ =pure {2,3} spatial. ZERO remainder. Exactly 3×144. No temporal torque. The spatial rest frequency. |
| 440 Hz(ISO modern) | rem=82 ³ | KINETIC ★★★★★ | 8=2 ³ =base -8 | 440=2 ³ ×5×11. Contains temporal prime 11=P5. rem=8=base-8 kinetic torque. Modern standard injects kinetic activation. |
| 440-432=8 | Δ=8=2 ³ | ★★★★★ | KINETIC GAP | The difference between sacred and modern pitch IS the base-8 kinetic constant. Exact. |
| 444 Hz(Alternative) | rem=12conj=132=4×3×11 | ★★★ | conj has P5 | Phase conjugate 132=4×3×11 contains temporal prime 11. |
| 415 Hz(Baroque) | rem=127 (prime)conj=17 | ★★★★★ | conj=17 | Phase conjugate 144-127=17=structural linchpin prime (108×17=1836). |
| 466 Hz(High Baroque) | rem=34=2×17 | ★★★★★ | prime 17 | Structural prime 17 directly in remainder. rem=34=2×17. |
| 528 Hz(Solfeggio MI) | rem=96=2 ⁵ ×3 | ★★ | spatial | Pure {2,3} spatial family. No temporal primes. |

432 = Static Space. 440 = Kinetic Motion. The Difference Is Exactly 8.

432 Hz: Zero remainder mod 144. Pure {2,3} spatial family. No temporal primes. The frequency of crystallised geometric rest. 440 Hz: Remainder $8 = 2^3 =$ base-8 kinetic. Also contains temporal prime $11=P5$ in its factorisation ($440=2^3 \times 5 \times 11$). The difference between ancient tuning and modern tuning is 8 Hz — the base-8 kinetic torque offset that governs biological motion (Rife $+64=8^2$, I Ching 8 trigrams, 8 essential amino acids, DNA 8-fold kinetic). The 1939 decision to standardise at 440 Hz (confirmed ISO 1953) added precisely one kinetic unit to the spatial rest frequency. This is not a claim about therapeutic effects. It is a structural arithmetic observation: 432 is spatial rest, 440 injects kinetic torque, and the difference is the kinetic constant.

2. The Baroque Pitch Standards

Historical performance practice used concert pitches ranging from ~392 Hz to ~466 Hz depending on period and region. The CTF analysis of these standards:

- Baroque low $A=415$ Hz: phase conjugate $144-127=17 =$ structural linchpin prime ($108 \times 17 = 1836 =$ proton mass ratio)
- High Baroque $A=466$ Hz: $\text{rem}=34=2 \times 17$ — structural prime 17 directly in the remainder
- Both major Baroque pitch standards encode the structural prime 17 — either in the remainder or phase conjugate

Prime 17 is the structural bridge prime that connects the proton lattice offset (108) to the proton-electron mass ratio ($1836=108 \times 17$). It appears in historical concert pitch standards at both ends of the Baroque period.

PART II — PYTHAGOREAN TUNING

The Oldest Mathematical Scale and Its CTF Static Nodes

3. Pythagorean Tuning from C=256 Hz

Pythagorean tuning uses only perfect fifths (ratio $3/2$) and octaves (ratio $2/1$) to build all 12 notes. It is the oldest mathematically derived scale, attributed to Pythagoras but predating him in Babylonian and Chinese music theory. Starting from C=256 Hz (scientific pitch, $256=2^8$):

| Note | Ratio | Frequency | rem÷144 | CTF Significance |
|------|-------|------------|---------|---------------------------------------------------------|
| C | 1/1 | 256.000 Hz | rem=112 | Starting note. $256=2^8$ — pure spatial. C is the base. |

| | | | | |
|----|---------|------------|---------|-------------------------------------------------------------------------------------------------|
| D | 9/8 | 288.000 Hz | rem=0 ★ | STATIC — 288=2×144. The note D in Pythagorean tuning is a pure multiple of the CTF harmonic. |
| E | 81/64 | 324.000 Hz | rem=36 | 36=2 ² ×3 ² — pure spatial family. |
| F | 4/3 | 341.333 Hz | rem=53 | 53=prime — CTF frequency generator prime (53×e≈f ₀)! |
| G | 3/2 | 384.000 Hz | rem=96 | 96=2 ⁵ ×3 — pure spatial family. |
| A | 27/16 | 432.000 Hz | rem=0 ★ | STATIC — 432=3×144. The note A in Pythagorean tuning is a pure multiple of the CTF harmonic. |
| B | 243/128 | 486.000 Hz | rem=54 | 54=2×3 ³ — pure spatial {2,3}. |
| C8 | 2/1 | 512.000 Hz | rem=80 | 80=8×10 — temporal-kinetic driver! The octave above C produces the CTF temporal-kinetic number. |

D=288 and A=432 — The Two Static Nodes of the Pythagorean Scale

$D = 9/8 \times 256 = 288 = 2 \times 144 \rightarrow \text{remainder } 0 \text{ (STATIC)}$
 $A = 27/16 \times 256 = 432 = 3 \times 144 \rightarrow \text{remainder } 0 \text{ (STATIC)}$
 In the oldest mathematical tuning system, the two notes that land on pure multiples of the CTF spatial harmonic are D and A — the second and sixth scale degrees. These are not approximations. They are exact: $288 = 2 \times 144$ and $432 = 3 \times 144$.
 F (perfect fourth) = $4/3 \times 256 = 341.333 \text{ Hz} \rightarrow \text{rem}=53$. Prime 53 is the CTF frequency generator ($53 \times e \approx f_0$). The perfect fourth produces the generator prime as its remainder.
 C octave = 512 Hz $\rightarrow \text{rem}=80 = 8 \times 10 = \text{the temporal-kinetic driver}$. The natural octave produces the BX Carcinoma kinetic offset.

PART III — EQUAL TEMPERAMENT

The Modern Scale and CTF Primes in the 12-Note Chromatic

4. Equal Temperament — Key Findings

Equal temperament divides the octave into 12 equal semitones. All frequencies are irrational multiples of the reference pitch. The CTF analysis uses rounded integer values and notes where the approximation is significant.

4.1 Equal Temperament from A4 = 440 Hz

| Note | Frequency | rem÷144 | Factors | CTF Significance |
|------|------------|---------|------------------------|-----------------------------------|
| A4 | 440.000 Hz | rem=8 | 2 ³ =base-8 | Base-8 kinetic. ISO standard A4. |
| A#4 | 466.164 Hz | rem=34 | 2×17 | Structural prime 17 in remainder. |

| | | | | |
|-----|------------|--------|--------------------------------|------------------------------------------------------------------------------------|
| D5 | 587.330 Hz | rem=11 | 11=P5 | TEMPORAL PRIME P5=11 directly as remainder ★ |
| D#5 | 622.254 Hz | rem=46 | 2×23 | TEMPORAL PRIME P9=23 in remainder ★ (46=2×23) |
| G5 | 783.991 Hz | rem=64 | 8 ² =2 ⁶ | 8 ² KINETIC LIFE-ACTIVATION ★ The note G produces the DNA codon number. |
| A5 | 880.000 Hz | rem=16 | 2 ⁴ | Pure spatial power of 2. |

D5 rem=11, D#5 rem=46=2×23, G5 rem=64=8²

Three consecutive notes in the chromatic scale encode CTF structural constants: D5 (587 Hz) → rem=11=P5 (first temporal prime) D#5 (622 Hz) → rem=46=2×23=2×P9 (central temporal prime) G5 (784 Hz) → rem=64=8²=kinetic life-activation
 Note: These results use rounded integer frequencies. D5≈587 Hz, D#5≈622 Hz, G5≈784 Hz. The equal temperament frequencies are irrational — the remainders are computed from the rounded integer approximation.

4.2 Equal Temperament from A4 = 432 Hz

When tuned to 432 Hz (pure static): A4 and A5 both have zero remainder (static). The pure tuning produces static nodes at the A positions. F5 (685 Hz, rem=110=2×5×11) contains temporal prime 11=P5.

PART IV — THE HARMONIC SERIES

Nature's Tuning System and the CTF Kinetic-Temporal-Static Triad

5. The Harmonic Series — Nature's Own Scale

The harmonic series is not a human invention — it is what naturally vibrating strings, air columns, and membranes produce. Every pitched sound in nature is a superposition of harmonics. The harmonic series over C=32 Hz (fundamental):

| Harmonic | Frequency | rem÷144 | Factors | CTF Significance |
|----------|-----------|---------|--------------------------------|--------------------------------------------------------------------------|
| H1 (C) | 32 Hz | rem=32 | 2 ⁵ | Fundamental. 32=2 ⁵ — pure spatial. |
| H2 | 64 Hz | rem=64 | 2 ⁶ =8 ² | 8 ² KINETIC ★ — First overtone IS the life-activation number. |
| H3 | 96 Hz | rem=96 | 2 ⁵ ×3 | Pure spatial {2,3}. |
| H4 | 128 Hz | rem=128 | 2 ⁷ | Pure spatial — power of 2. |
| H6 | 192 Hz | rem=48 | 2 ⁴ ×3 | Pure spatial {2,3}. |

| | | | | |
|-----|--------|--------|----------------|----------------------------------------------------------------------------|
| H7 | 224 Hz | rem=80 | $2^4 \times 5$ | 80=8×10 — TEMPORAL-KINETIC DRIVER ★ (BX Carcinoma offset) |
| H9 | 288 Hz | rem=0 | STATIC | 288=2×144 — pure CTF harmonic multiple ★ |
| H11 | 352 Hz | rem=64 | $2^6=8^2$ | 8 ² KINETIC again — 11th harmonic cycles back to kinetic offset |
| H16 | 512 Hz | rem=80 | $2^4 \times 5$ | 80=8×10 temporal-kinetic again |
| H18 | 576 Hz | rem=0 | STATIC | 576=4×144 — pure CTF harmonic multiple ★ |
| H20 | 640 Hz | rem=64 | $2^6=8^2$ | 8 ² KINETIC — the kinetic cycle continues |

The Natural Overtone Series Encodes the CTF Triad

H2 = 64 Hz = 8^2 = kinetic life-activation (DNA codons, Rife motile bacteria) H7 = 224 Hz → rem=80 = 8×10 = temporal-kinetic driver (BX Carcinoma, I Ching unmanifest) H9 = 288 Hz = 2×144 = static CTF harmonic H11 = 352 Hz → rem=64 = 8^2 again (kinetic cycle repeats) H18 = 576 Hz = 4×144 = static again H20 = 640 Hz → rem=64 = 8^2 again The natural harmonic series cycles through the three CTF structural families in a regular pattern: kinetic ($64=8^2$), temporal-kinetic ($80=8 \times 10$), static (multiples of 144). This cycle appears in the physics of vibration — not in any human musical choice.

The fact that the harmonic series naturally produces these numbers is significant because the harmonic series is a physical phenomenon, not a cultural convention. Every guitar string, every pipe organ, every human voice generates harmonics. The kinetic-temporal-static CTF triad is embedded in the physics of sound production itself.

PART V — SOLFEGGIO AND THE OCTAVE FAMILY

Ancient Frequencies and the 144 Octave Architecture

6. Solfeggio Frequencies

| Freq | Solfeggio Name | rem÷144 | Factors | CTF Significance |
|--------|--------------------------|---------|-----------------------|-------------------------------------------------------------------------------------|
| 174 Hz | UT — foundation | rem=30 | $2 \times 3 \times 5$ | No landmark CTF prime. |
| 285 Hz | RE — energy field | rem=141 | 3×47 | No landmark. |
| 396 Hz | MI — liberating guilt | rem=108 | $2^2 \times 3^3$ | PROTON LATTICE OFFSET ★ 108=proton offset=Thule stability=dodecahedron angle. |
| 417 Hz | FA — facilitating change | rem=129 | 3×43 | No landmark. |
| 528 Hz | SOL — miracle tone | rem=96 | $2^5 \times 3$ | Pure spatial {2,3}. |

| | | | | |
|--------|--------------------|---------|--------------------------|-------------------------------------|
| 639 Hz | LA — relationships | rem=63 | $3^2 \times 7$ | No landmark. |
| 741 Hz | TI — intuition | rem=21 | 3×7 | No landmark. |
| 852 Hz | SI — order | rem=132 | $2^2 \times 3 \times 11$ | P5=11 temporal prime in remainder ★ |
| 963 Hz | UT — divine | rem=99 | $3^2 \times 11$ | P5=11 temporal prime in remainder ★ |

396 Hz (MI) — The Proton Offset Solfeggio

396 Hz: rem = 108 = $2^2 \times 3^3$ = proton lattice offset 108 = proton-electron mass ratio mod 144 (1836%144=108) 108 = Thule asteroid stability zone ($144 \times 3/4$) 108 = dodecahedron interior angle 108 = 396 Hz mod 144 The Solfeggio frequency associated with "liberating guilt and fear" in the healing music tradition is the same number as the proton lattice offset, the asteroid stability constant, and the dodecahedron interior angle. Its four domains (sub-atomic, astronomical, geometric, acoustic) all produce 108 = $2^2 \times 3^3$. 852 Hz (SI) and 963 Hz (UT) both have remainders containing temporal prime 11 = P5. The higher Solfeggio frequencies carry the first temporal prime in their lattice remainders.

7. The 144 Octave Family in Music

The CTF spatial harmonic 144 and its octave relatives appear at standard musical reference frequencies:

| Frequency | Factorisation | Musical / CTF Context |
|---------------------------|------------------|------------------------------------------------------------------------------|
| $144 \div 4 = 36$ Hz | $2^2 \times 3^2$ | Sub-bass octave family — pure spatial {2,3} |
| $144 \div 2 = 72$ Hz | $2^3 \times 3^2$ | CTF FREQUENCY DENOMINATOR — $f_0=10373/72$ |
| $144 \times 1 = 144$ Hz | $2^4 \times 3^2$ | CTF SPATIAL HARMONIC — the static dead grid |
| 144.069 Hz = f_0 | $(144^2+10)/144$ | THE LIVING FREQUENCY — just above the static node. The temporal breath zone. |
| $144 \times 2 = 288$ Hz | $2^5 \times 3^2$ | Pythagorean D — STATIC ★ First octave above harmonic |
| $144 \times 4 = 576$ Hz | $2^6 \times 3^2$ | Second octave — H18 in harmonic series over C=32 |
| $144 \times 8 = 1152$ Hz | $2^7 \times 3^2$ | Third octave — pure spatial lattice |
| $144 \times 16 = 2304$ Hz | $2^8 \times 3^2$ | Fourth octave — military A (Baroque high pitch context) |

$f_0 = 144.069$ Hz — The Temporal Breath Zone in Music

144.000 Hz = static dead grid (pure spatial, zero temporal torque) 144.069 Hz = $f_0 = (144^2+10)/144$ = the living frequency f_0 sits just above the 144 static node — in what the CTF framework calls the temporal breath zone. In musical terms, 144 Hz is a sub-bass frequency (below normal hearing threshold, felt rather than heard). $f_0 = 144.069$ Hz is

imperceptibly higher — but that 0.069 Hz difference is the temporal injection that animates the static grid. The CTF base frequency f_0 is not a note in any tuning system. It is between the notes — the living frequency in the temporal breath zone between the dead spatial grid and the next musical reference point.

8. Scope of Claims

| This paper DOES claim |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ✓ 432 Hz = 3×144 exactly — zero remainder. $432 = 2^4 \times 3^3$ = pure {2,3} spatial family. The ancient sacred tuning is a pure multiple of the CTF spatial harmonic. |
| ✓ $440 - 432 = 8 = 2^3$ = base-8 kinetic torque offset. The difference between ancient sacred pitch and modern ISO standard is exactly the base-8 kinetic constant. |
| ✓ $440 = 2^3 \times 5 \times 11$ — contains temporal prime $11=P5$ directly in its prime factorisation. |
| ✓ Pythagorean D=288 Hz (rem=0) and A=432 Hz (rem=0): the two static nodes in Pythagorean tuning sit on pure multiples of the CTF spatial harmonic. |
| ✓ Pythagorean F=341 Hz: rem=53 — the CTF frequency generator prime ($53 \times e \approx f_0$) appears as the remainder of the Pythagorean perfect fourth. |
| ✓ Pythagorean C8ve=512 Hz: rem=80= 8×10 — the temporal-kinetic driver appears at the octave above C. |
| ✓ G5 in equal temperament (A4=440): rem=64= 8^2 — kinetic life-activation number in the note G. |
| ✓ D5 in equal temperament (A4=440): rem=11=P5 — first temporal prime directly as the remainder of note D. |
| ✓ D#5 in equal temperament (A4=440): rem=46= 2×23 — central temporal prime P9=23 in the remainder of D-sharp. |
| ✓ Harmonic series over C=32 Hz: H2=64 (8^2 kinetic), H7=80 (8×10 temporal-kinetic), H9=288 (static= 2×144). The first 9 harmonics cycle through the complete CTF kinetic/temporal/static triad. |
| ✓ Solfeggio 396 Hz (MI): rem=108 = proton lattice offset = dodecahedron angle = Thule stability. |
| ✓ Solfeggio 852 Hz and 963 Hz: both contain temporal prime $11=P5$ in their remainders. |
| ✓ Baroque A=415 Hz: phase conjugate $144 - 127 = 17$ = structural linchpin prime ($108 \times 17 = 1836$). |
| ✓ The 144 octave family (36, 72, 144, 288, 576, 1152 Hz) are all pure {2,3} spatial and all correspond to standard musical frequencies. |

| This paper does NOT claim |
|----------------------------------------------------------------------------------------------------------------------------------------|
| ✗ These correspondences prove that music was designed around the CTF framework — they document structural arithmetic relationships |
| ✗ 432 Hz tuning produces therapeutic or spiritual effects beyond what is documented here — the CTF claim is structural arithmetic only |

✗ The equal temperament note frequencies are exact integers — equal temperament produces irrational frequencies; the remainder analysis uses rounded integer values

✗ The solfeggio frequencies have the claimed healing properties — the CTF analysis is structural, not therapeutic

✗ Every note in every tuning system fits the CTF framework — multiple notes (C5, E5, F5, B4 in ET 440) have no clean CTF prime connections and are documented as such

9. Conclusions

1. 432 Hz = 3×144 exactly — zero remainder, pure {2,3} spatial. The ancient sacred tuning is a pure multiple of the CTF spatial harmonic.
2. $440 - 432 = 8 = 2^3 =$ base-8 kinetic torque offset — exact. The modern ISO standard adds the kinetic constant to the spatial rest frequency.
3. $440 = 2^3 \times 5 \times 11$ — contains temporal prime $11=P5$ in its factorisation. The modern concert pitch encodes the first temporal prime.
4. Pythagorean D=288 Hz and A=432 Hz are both zero-remainder (static) — pure multiples of 144 in the oldest mathematical tuning system.
5. Pythagorean F=341 Hz: rem=53 — the CTF frequency generator prime ($53 \approx e f_0$) is the remainder of the perfect fourth.
6. Pythagorean C8ve=512 Hz: rem=80= 8×10 — the temporal-kinetic driver appears at the octave.
7. Equal temperament (440): G5 rem=64= 8^2 (kinetic), D5 rem=11=P5 (temporal), D#5 rem=46= 2×23 (P9).
8. Harmonic series H2=64 (8^2 =kinetic), H7=80 (8×10 =temporal-kinetic), H9=288 (static= 2×144). Natural vibration physics encodes the CTF triad.
9. Solfeggio 396 Hz: rem=108 = proton lattice offset (fourth independent domain for $108=2^2 \times 3^3$).
10. The 144 octave family (72, 144, 288, 576 Hz) corresponds to the CTF denominator, harmonic, and their musical octaves.

$$432 = 3 \times 144 \quad (\text{static spatial rest})$$

$$440 = 432 + 8 \quad (\text{kinetic activation added})$$

$$H2=64 (\text{kinetic}) \quad H7=80 (\text{temporal-kinetic}) \quad H9=288 (\text{static})$$

The tuning of the universe and the tuning of music arrived at the same structural constants.

Correspondence: griff@ctftheory.com | Zenodo Community: CTF Framework | ctftheory.com

Appendix — Python Verification

```
import math
```

```

# The core 432/440 finding
print(432 % 144)          # 0 – static ✓
print(432 == 3*144)       # True ✓
print(440 % 144)          # 8 = 2³ kinetic ✓
print(440 - 432)          # 8 = kinetic gap ✓

# Pythagorean scale from C=256
C = 256
print(round(C*9/8) % 144) # D=288: rem=0 (static) ✓
print(round(C*27/16)%144) # A=432: rem=0 (static) ✓
print(round(C*4/3) % 144) # F=341: rem=53 (generator prime) ✓
print(round(C*2) % 144)   # C8=512: rem=80=8×10 ✓

# Harmonic series
fund = 32
for n in range(1,20):
    freq = fund * n
    rem = freq % 144
if rem in [0,64,80]: print(f"H{n}={freq}Hz rem={rem}")
# H2=64, H7=80, H9=0, H11=64, H16=80, H18=0

# Solfeggio
for f in [174,285,396,417,528,639,741,852,963]:
    print(f"{f}%144={f%144}")
# 396%144=108 (proton offset) ✓

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Keywords

432 Hz sacred tuning, 440 Hz ISO standard, 432 vs 440, musical pitch standards, 144 harmonic music, Pythagorean tuning, D=288 static, A=432 static, equal temperament CTF, harmonic series 64 8 squared, harmonic series 80 kinetic, solfeggio 396 proton offset, solfeggio frequencies, concert pitch, Baroque pitch, ancient tuning, kinetic activation 440, spatial rest 432, base-8 music, base-12 chromatic scale, CTF framework, Continuous Temporal Funnel, 144 spatial harmonic, temporal breath zone, circle of fifths, just intonation, Verdi tuning, frequency ratios, musical arithmetic, octave structure 144