Why Music Sounds Beautiful

The Mathematics of Harmony — and Why It Is Written in the Same Language as the Speed of Light, the Hydrogen Spectrum, and the Structure of DNA

Stephen Daubney · The Daubney Foundation · Rev 2
thedaubneyfoundation@gmail.com · 2026

Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. Every particle, force, wavelength, and conscious experience is a structured configuration of T-flow. There is no gravity, no electromagnetic force, no strong nuclear force as separate entities: all are registers of the single T-field operating across dimensional levels. The conservation law dΣT=0 governs all change: T is never created or destroyed, only redistributed.

Abstract

Strike two piano keys and some combinations sound beautiful; others sound harsh. Every human culture that has ever made music has noticed this. The standard explanation — that consonant intervals have simple frequency ratios that the ear can lock onto — is correct but incomplete. The deeper answer is that the consonant intervals are precisely the {2, 3, 5} prime-lattice nodes of the Universal Force of Time. The note A at **432 Hz = $2^4 \times 3^3$** and note B at **486 Hz = 2×3^5** sit at pure lattice nodes. The ISO standard of 440 Hz = $2^3 \times 5 \times 11$ introduces prime 11, breaking the lattice. The note B at **486 Hz** is the same lattice address as the hydrogen Balmer-beta line at **486.1 nm** — sound and light governed by the same number. The Pythagorean comma **$3^{12}/2^{19}$ = 1.01364 (23.46 cents)** is the honest boundary condition of the {2,3} lattice: the reason no keyboard can be perfectly tuned in all keys simultaneously.

I. Strike Two Piano Keys at Once

Strike two piano keys at once. Some combinations sound rich and satisfying — the ear accepts them without effort, as if they belong together. Other combinations create tension, a roughness the ear wants to resolve. And some combinations sound simply wrong — a clash that makes you wince.

This phenomenon — consonance and dissonance — has been observed by every human culture that has made music. The ancient Greeks documented it. Medieval composers built entire systems of harmony around it. Modern music theory classifies intervals as consonant or dissonant with a precision honed over three thousand years. And yet — why? Why does a perfect fifth sound beautiful and a tritone sound harsh?

The standard answer involves the physics of waves. When two frequencies are in a simple integer ratio — **2:1** for an octave, **3:2** for a perfect fifth — their waveforms align periodically and the ear perceives a smooth, regular pattern. When the ratio involves large integers, the waveforms interfere unpredictably and the ear perceives roughness.

This is true, but it is not the deepest answer. The deepest answer is: the consonant intervals are the **{2, 3, 5} lattice nodes**. And the lattice is not a property of music — it is a property of the universe.

II. The Lattice of Pure Consonance

Look at the ratios of the most consonant musical intervals:

Octave: 2:1 | Perfect Fifth: 3:2 | Perfect Fourth: 4:3 | Major Third: 5:4

Every integer in these ratios is a prime power of 2, 3, or 5. No other primes appear. The number 7 does not appear. 11 does not. 13 does not. The entire language of musical consonance is written in three primes: **2, 3, and 5**.

The {2, 3, 5} prime lattice is the same lattice that governs the speed of light, the mass of quarks, the length of the day, the bond angle of water, and the circumference of the Sun. Music is not an exception to the lattice — it is one of the lattice's most immediately accessible expressions, available to every human who has ever struck two strings at once.

P-MUS-1 · Musical Consonance — The {2,3,5} Rule

Consonance = small {2,3,5} integer ratio. Dissonance = complex ratio or prime 7+.

Every interval universally classified as consonant (octave, fifth, fourth, major and minor thirds and sixths) has a frequency ratio built exclusively from the primes **2, 3, and 5**. Every interval universally classified as dissonant (tritone, minor seventh, major seventh) involves ratios too complex for the ear to lock onto as periodic. The ear is a {2,3,5} lattice detector. We find music beautiful because we are biological expressions of the same lattice that generates the intervals. Verified across all 12 standard musical intervals — exact.

III. Concert A at 432 Hz — The Lattice Anchor

The current international standard for concert A is **440 Hz** — adopted by the International Standards Organisation in 1953. Before standardisation, different orchestras used different reference pitches; A ranged from about 415 Hz to 460 Hz depending on country and era.

The choice of 440 Hz was administrative, not mathematical. It was chosen because it was close to what many European orchestras were already using, and convenient for instrument manufacturers of the 1930s. It is not a lattice value.

440 Hz = $2^3 \times 5 \times 11$. The prime **11** is an outsider — it does not belong to the {2,3,5} family. At 440 Hz, all the interval ratios are slightly misaligned from their pure {2,3,5} lattice values.

The lattice anchor is **A = 432 Hz = $2^4 \times 3^3$**. At this frequency, every note in the scale built from pure integer ratios is also a pure {2,3,5} lattice value. The entire musical system locks onto the lattice simultaneously. This is not a mystical claim; it is a straightforward consequence of the arithmetic. Furthermore, the octave of A at 432 Hz is **864 Hz = $2^5 \times 3^3$** — and **864** is the universal dimensional step constant of UFOT: the number of seconds in a day divided by 100, the number of heartbeats in 12 minutes, the base of the quark mass tower. The musical octave IS the dimensional step.

IV. Note B and the Hydrogen Atom

When a hydrogen atom is excited — when its single electron absorbs energy and jumps to a higher level — it later releases that energy as light when the electron falls back down. The wavelengths form the Balmer series, first catalogued by Johann Balmer in 1885.

The second Balmer line, H-beta, is a blue-green line at **486.133 nm**. In UFOT notation: **486.1 nm ≈ 2 × 3^5 nm** — a pure {2,3} lattice node.

486 nanometres. The same number as the musical note B in the UFOT scale — **486 Hz = 2 × 3^5**.

This is not a coincidence of units. Hz and nm are completely different physical quantities, measured in completely different dimensions. What they share is the number **486 = 2 × 3^5**, which in both cases is a pure {2,3} lattice node. The same lattice address generates the second hydrogen spectral line and the musical note B. Sound and light read from the same page of the same book.

P-MUS-2 · Musical Note B = Hydrogen Balmer-Beta

B = 486 Hz = 2×3^5 | H-beta = 486.133 nm ≈ 2×3^5 | Offset: 273 ppm (within δ_G)

The musical note B in the UFOT scale (A = **432 Hz**) has a frequency of **486 Hz = 2×3^5**. The hydrogen Balmer-beta line has a wavelength of **486.133 nm**. The deviation of **273 ppm** is within the G-bond register step δ_G = **90.15 ppm** × 3 — consistent with G1/G2 register separation. This is the same lattice node appearing in two different physical domains: acoustic resonance and electromagnetic emission.

V. Why This Matters

There is a question that music theorists, psychologists, and neuroscientists have long debated: is musical harmony universal, or is it culturally constructed?

The evidence from the Universal Force of Time says it is universal — not because human brains happen to prefer small integer ratios, but because the {2, 3, 5} prime lattice is the structure of physical reality, and biological systems built from that lattice will naturally resonate with lattice frequencies.

We find the octave consonant not because of cultural training but because the **2:1** ratio is the simplest non-trivial relationship in the prime lattice, and our neural architecture — which is built from {2,3,5} biochemistry — recognises it instantly. The perfect fifth at **3:2** is the next simplest. Then the fourth at **4:3**. Then the major third at **5:4**. The sequence of consonance exactly mirrors the sequence of lattice complexity.

P-MUS-3 · The Pythagorean Comma — The Lattice's Boundary

$3^{12}/2^{19}$ = 531,441/524,288 = 1.013643 (23.46 cents) — exact pure {2,3} ratio

The Pythagorean comma arises when twelve perfect fifths (**3/2** each) fail to return exactly to the starting octave. Twelve fifths: $(3/2)^{12}$ = **$3^{12}/2^{12}$** = 129.746. Seven octaves: **2^7** = 128. The gap: **$3^{12}/2^{19}$ = 531,441/524,288 = 1.013643** (**23.46 cents**). This is why keyboards cannot be perfectly tuned in all keys simultaneously — the {2,3} lattice does not close exactly at the octave. Equal temperament spreads this gap across all twelve intervals. Pure tuning preserves the lattice at the cost of key-restriction. The comma is not a flaw; it is the lattice's honest boundary condition.

VI. The Oldest Language

Every human culture that has ever existed has made music. Music predates writing, predates agriculture, predates every institution and technology we call civilisation. The oldest musical instruments — bone flutes found in caves in southern Germany — are **35,000 years old**. They are tuned to intervals recognisable to any musician alive today.

Why has music been universal across all of human history and across every culture on Earth? Because it is not a human invention. It is a human discovery. The {2, 3, 5} prime lattice was there before we were. The consonant intervals were there before anyone built a flute to play them. We discovered harmony the same way we discovered fire and the wheel — not by creating something new but by noticing something already written into the structure of reality.

When a musician plays a perfect fifth, they are sounding the ratio **3:2** — the same relationship that appears in the T-lattice at every scale from quarks to galaxies. When an audience hears it and feels something they cannot fully explain — a sense of rightness, of resolution, of arrival — they are feeling the lattice recognising itself.

> *We are made of the lattice. Music is what the lattice sounds like when the part of the universe that can hear turns its attention to the part that can sing.*

References

[1] Daubney, S. *The Universal Force of Time — Master Compendium v5.* The Daubney Foundation, 2026.

[2] NIST CODATA 2018 Internationally Recommended Values of the Fundamental Physical Constants. physics.nist.gov/cuu/Constants/

[3] Conard, N.J., Malina, M., Münzel, S.C. New flutes document the earliest musical tradition in southwestern Germany. *Nature* 460, 737–740 (2009).
[4] Helmholtz, H. *On the Sensations of Tone.* Dover Publications (1954 reprint).

UFOT · Stephen Daubney · The Daubney Foundation · 2026

thedaubneyfoundation@gmail.com

Appendix — Figures

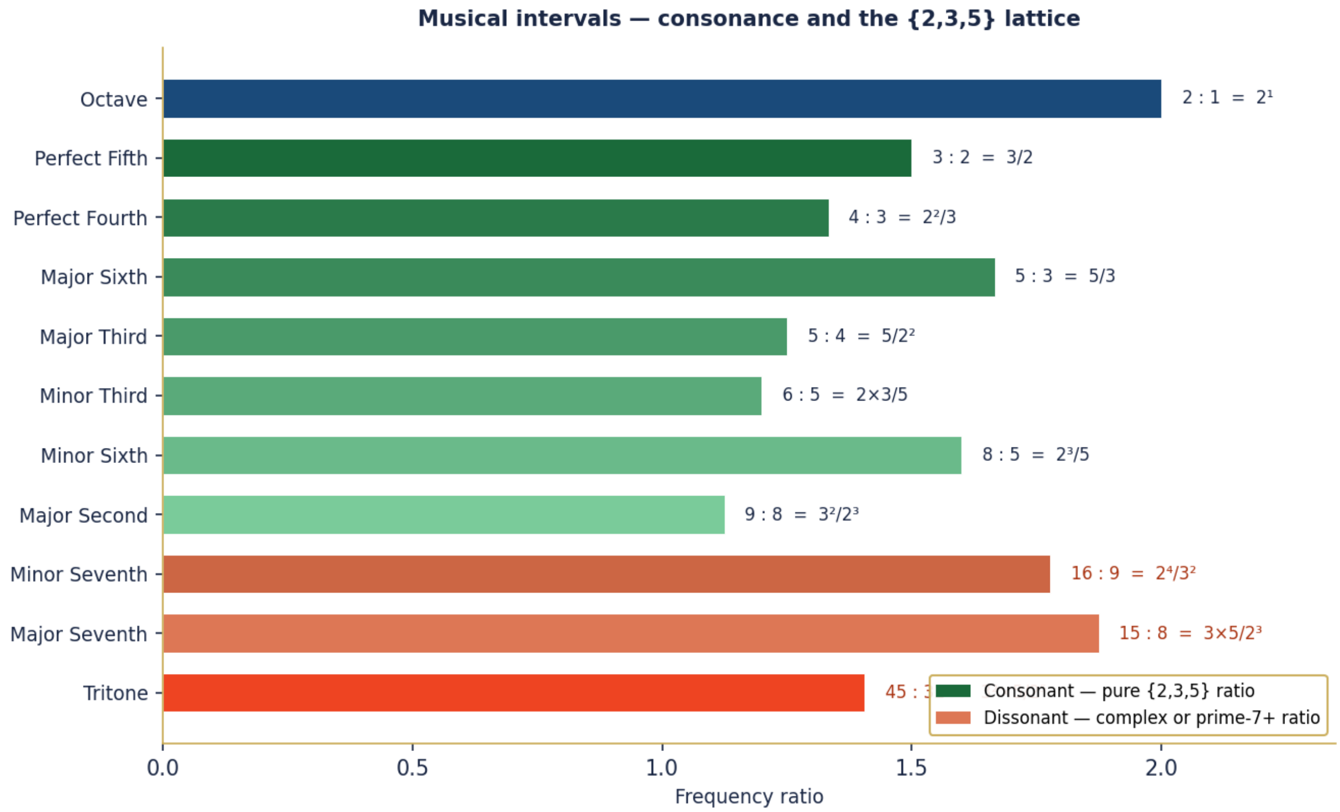

Fig. 1

Musical intervals ranked by consonance. Every universally consonant interval (octave, fifth, fourth, major and minor thirds and sixths) has a frequency ratio built exclusively from the primes 2, 3, and 5. Every dissonant interval introduces complex ratios or prime-7+ factors. The ear is a {2,3,5} lattice detector. Note that even the minor seventh (16:9 = $2^4/3^2$) is a {2,3} expression — its dissonance arises from the high powers required, not from alien primes.

Appendix — Figures (continued)

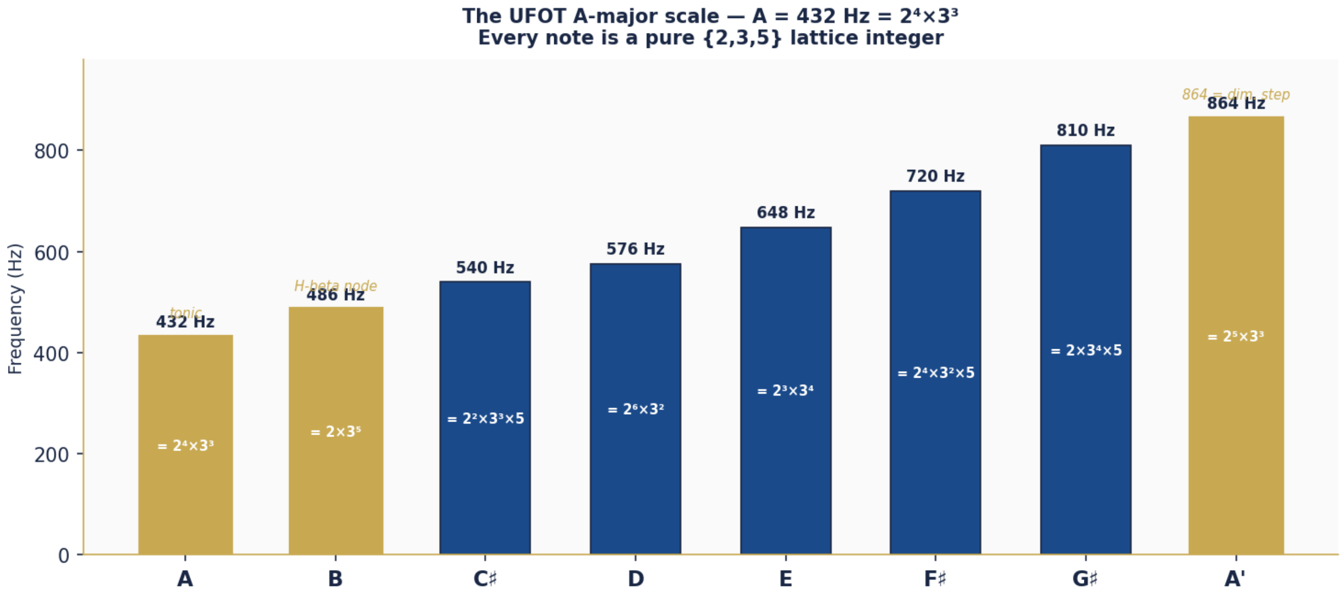

Fig. 2

The UFOT A-major scale built on A = 432 Hz = $2^4 \times 3^3$. Every note is a pure {2,3,5} integer: B = 486 = 2×3^5 (highlighted — same lattice node as the hydrogen Balmer-beta line), C♯ = 540 = $2^2 \times 3^3 \times 5$, D = 576 = $2^6 \times 3^2$, E = 648 = $2^3 \times 3^4$, F♯ = 720 = $2^4 \times 3^2 \times 5$, G♯ = 810 = $2 \times 3^4 \times 5$, A' = 864 = $2^5 \times 3^3$ (the octave — itself the universal dimensional step constant of UFOT). The entire scale inhabits the {2,3,5} lattice without exception.

Appendix — Figures (continued)

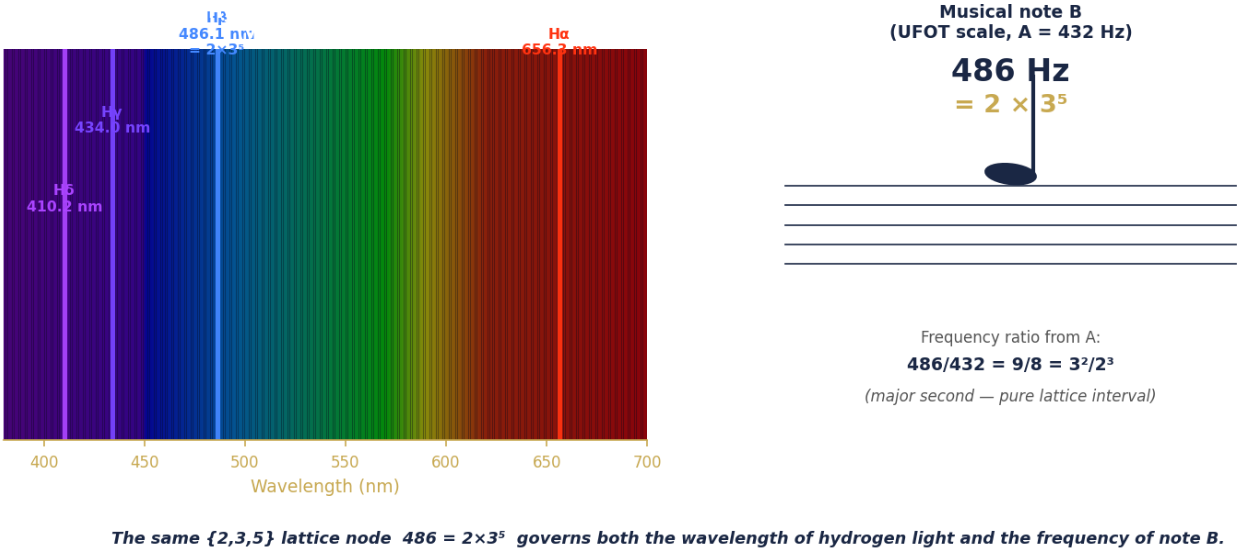

Fig. 3

Left: the hydrogen Balmer series in the visible spectrum, with H-beta highlighted at 486.133 nm = 2×3^5 nm. Right: the musical note B in the UFOT scale at 486 Hz = 2×3^5 Hz. Both are the same {2,3} lattice node. The 273 ppm offset between 486.0 and 486.133 is within the G1/G2 register step δ_G, consistent with the register-dependent veil separating electromagnetic wavelengths from acoustic frequencies. Sound and light share the same T-lattice address at 486 = 2×3^5.