

The Cosmic Breathing Cycle: $\pi \times \alpha^{-1}$ and the Geometric Origin of 432

Léon Fernando Vlegels
Independent Researcher

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Abstract

We demonstrate that the Hindu cosmological number 432, which appears throughout Vedic time cycles as the fundamental period of cosmic breathing, emerges naturally from the geometric framework of (B^4, S^3) topology as $\pi \times \alpha^{-1}$. Given the fine-structure identity $\alpha^{-1} = 4\pi^3 + \pi^2 + \pi \approx 137.036$, the next order in the geometric hierarchy is

$$\pi \times \alpha^{-1} = 4\pi^4 + \pi^3 + \pi^2 \approx 430.51,$$

which matches the traditional value 432 to within 0.35%. We show that this is not coincidental: the factorization $432 = 16 \times 27 = 2^4 \times 3^3$ encodes precisely the bulk coefficient (16) and the cube of the boundary coefficient (3) from the cubic density $\rho(x) = 16\pi^3 x^3 + 3\pi^2 x^2 + 2\pi x$. Furthermore, the ratio $432/\pi^3 \approx 13.93$ matches both the self-lensing energy $E_{\text{self}} \approx 13.18$ and the 14 manvantaras of Hindu cosmology. These correspondences suggest that ancient cosmological intuitions encoded geometric truths about the anti-collapse dynamics $C \circ P = I$ that govern universal breathing cycles.

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1 Introduction

The number 432 occupies a distinguished position in Hindu cosmology. A *kalpa*, defined as one day of Brahmā, lasts 4.32 billion years. A *mahā-yuga*, the cycle of four ages, spans 4.32 million years. The shortest age, *Kali Yuga*, comprises 432,000 years. These are not arbitrary choices but appear to encode a fundamental period of cosmic oscillation: what the Vedic texts poetically describe as the “breathing of Vishnu.”

In this paper, we demonstrate that 432 emerges naturally from the geometric framework developed in the preceding papers of this series. The connection is direct: given the fine-structure identity

$$\alpha^{-1} = 4\pi^3 + \pi^2 + \pi \approx 137.036, \quad (1)$$

the next order in the geometric hierarchy is simply

$$\pi \times \alpha^{-1} = 4\pi^4 + \pi^3 + \pi^2 \approx 430.51. \quad (2)$$

This differs from the traditional Hindu value of 432 by only 0.35%.

We argue that this correspondence is not numerological coincidence but reflects deep geometric structure. The anti-collapse interaction identity $C \circ P = I$ states that collapse toward the void, composed with projection away from it, yields the identity. This identity generates a breathing dynamic whose natural period is $\pi \times \alpha^{-1}$ fundamental oscillations. The Hindu sages, through millennia of contemplative observation, appear to have intuited this cosmic rhythm.

1.1 The Question, Posed Precisely

Two questions must be separated before anything can be demonstrated. The first is geometric and has a definite answer: does the (B^4, S^3) framework, as developed in the foundational papers of this series, contain a derived quantity whose value falls near 432? It does, and the derivation occupies Section 2. The quantity $\pi \times \alpha^{-1}$ is constructed from the same cubic density that yields the fine-structure constant, by the same integration, lifted one level; nothing in its construction refers to 432 or to any cultural tradition. The second question is interpretive and does not have a definite answer within this paper: does the proximity of that quantity to 432, together with the internal structure of the Hindu cycle system, indicate that the tradition preserved geometric knowledge? Sections 3 and 5 assemble the case as it stood when this paper was written: the factorization $432 = 16 \times 27$ matches the coefficients of the cubic density, and the ratio $432/\pi^3$ falls near both the self-lensing energy and the manvantara count.

The two questions have fared differently under later scrutiny, and the difference is the subject of Section 7. The geometric quantity survived: it is the breath period of the corpus, the single clock to which every subsequent construction synchronises. The interpretive correspondences were examined, found wanting in specific quantitative ways, and retired. This paper preserves both the original argument and, in place, the record of which parts of it held.

1.2 How to Read This Paper

The paper carries its own correction record. Two remarks in the body, labelled TBS, record quantitative defects found in the original argument: Remark 2.4 on the proposed reconciliation of 430.51 with 432, and Remark 5.2 on the identification of $432/\pi^3$ with the self-lensing energy. Each is followed by a Status paragraph recording the corpus’s ruling: both readings are retired (Paper 40), and the surviving statement is the exact identity $G_1 = 432/T_b - 1$ with $T_b = \pi \alpha^{-1}$ (Addendum 266; Paper 37). The body sections present the argument as originally constructed; the Status paragraphs are part of the paper, not commentary appended to it. A reader who wants only the surviving content may read Section 2 for the derivation of the period and Section 7 for what became of the rest.

1.3 Structure of the Paper

Section 2 establishes the geometric hierarchy of scales, showing how multiplication by π lifts from one cosmic level to the next. Section 3 analyzes the factorization $432 = 16 \times 27$ and its connection to the coefficients of the cubic density. Section 4 develops the physics of cosmic breathing as the manifestation of $C \circ P = I$ at cosmological scales. Section 5 explores the connection between $432/\pi^3 \approx 14$ and the 14 manvantaras. Section 6 discusses the implications for both physics and the history of cosmological thought. Section 7 records what survived later scrutiny and what was retired, and places the paper in the corpus.

2 The Geometric Hierarchy of Scales

2.1 The Fine-Structure Identity as Level Zero

The cubic phase density on the 4-ball B^4 is given by

$$\rho(x) = 16\pi^3 x^3 + 3\pi^2 x^2 + 2\pi x, \quad (3)$$

where $x \in [0, 1]$ is the normalized radial coordinate. Integration yields the fine-structure constant:

$$\mu_0 = \int_0^1 \rho(x) dx = 4\pi^3 + \pi^2 + \pi = \alpha^{-1}. \quad (4)$$

This is *Level 0* of the geometric hierarchy: the scale at which electromagnetic coupling is determined.

The three terms of the density correspond to the three layers of the monad architecture. The bulk term $16\pi^3 x^3$ carries the four-dimensional interior of B^4 ; the boundary term $3\pi^2 x^2$ carries the three-sphere S^3 on which the gauge structure lives; the fiber term $2\pi x$ carries the one-dimensional Hopf circle. Integration over the radial coordinate weights each layer accordingly: the bulk contributes $4\pi^3$, the boundary π^2 , the fiber π , and the sum is the fine-structure identity of equation (1). Nothing in the construction is adjusted to a target; the coefficients are fixed by the geometry, and the integral is what it is.

2.2 Level One: The Cosmic Breathing Scale

Multiplication by π generates the next level:

$$\text{Level 1: } \pi \times \alpha^{-1} = 4\pi^4 + \pi^3 + \pi^2 \approx 430.51. \quad (5)$$

This is the *cosmic breathing scale*: the natural period for the $C \circ P = I$ anti-collapse cycle when measured in units of the fundamental frequency $\omega_1 = \pi\sqrt{1-\kappa}$.

The operation can be iterated, and the iteration is the content of the following theorem: each level is the previous level multiplied by π , so the hierarchy is a geometric progression seeded at the fine-structure identity. The polynomial form makes the structure visible. At Level 0 the leading term is $4\pi^3$; at Level n every exponent has shifted up by n , so the same three-term shape recurs at every level with the coefficients 4, 1, 1 unchanged.

Theorem 2.1 (Hierarchy Levels). *The geometric hierarchy of scales follows*

$$\text{Level } n: \quad \pi^n \times \alpha^{-1} = 4\pi^{n+3} + \pi^{n+2} + \pi^{n+1}, \quad (6)$$

with explicit values:

$$\text{Level 0: } \alpha^{-1} \approx 137.04 \quad (7)$$

$$\text{Level 1: } \pi \cdot \alpha^{-1} \approx 430.51 \approx 432 \quad (8)$$

$$\text{Level 2: } \pi^2 \cdot \alpha^{-1} \approx 1352.5 \quad (9)$$

$$\text{Level 3: } \pi^3 \cdot \alpha^{-1} \approx 4249.0 \quad (10)$$

Proof. Direct multiplication of equation (1) by π^n . □

Remark 2.2. The Level 1 scale $\pi \times \alpha^{-1} \approx 430.51$ differs from the Hindu value 432 by a relative deviation of

$$\frac{432 - \pi \cdot \alpha^{-1}}{432} \approx 0.35\%. \quad (11)$$

This is well within the expected range for quantities transmitted through oral tradition over millennia.

Remark 2.3 (Independent Significance of 430.51). While 432 carries cultural significance, the geometric value $\pi \times \alpha^{-1} = 4\pi^4 + \pi^3 + \pi^2 \approx 430.51$ may have independent meaning. Note that:

- $430.51 = \pi \times (4\pi^3 + \pi^2 + \pi)$ is the unique value obtained by lifting the fine-structure identity by one dimension
- The ratio $432/430.51 = 1.00346 \approx 1 + \kappa^{0.6}$ where $\kappa = \alpha^{5/4}$ is the oscillation parameter
- In music theory, $A_4 = 430.54$ Hz was used as concert pitch in France until 1939 (“French pitch”), close to the geometric value

The question of whether ancient traditions approximated 430.51 as 432, or whether 432 has deeper significance requiring the $\pi/2$ bifurcation correction (Paper 15), remains open.

Remark 2.4 (TBS). Numerically, $432/430.51 \approx 1.00346$ while $1 + \kappa^{0.6} \approx 1 + \alpha^{3/4} \approx 1.00040$; the two sides differ by approximately a factor of 9. A corrected derivation reconciling these values is required.

Status. This reading is retired (Paper 40). The proposed reconciliation $432/430.51 \approx 1 + \kappa^{0.6}$ does not hold numerically and no corrected derivation was found. The current form keeps the geometric value: the breath period is $T_b = \pi \alpha^{-1} \approx 430.51$ system units, and 432 is related to it by the exact identity $G_1 = 432/T_b - 1$ (Addendum 266; Paper 37). The remark above stands as the record of the gap.

2.3 Interpretation: Multiplication by π as Dimensional Lifting

Each multiplication by π corresponds to a “dimensional lifting” operation. Just as the original density $\rho(x)$ encodes contributions from the 4D bulk (π^3), 3D boundary (π^2), and 1D fiber (π), the cosmic scale $\pi \times \alpha^{-1}$ encodes the integration of these contributions over one additional angular dimension.

Physically, this can be understood as follows: the fine-structure constant α^{-1} governs the strength of interactions at the *local* scale (particle physics). The cosmic breathing scale $\pi \times \alpha^{-1}$ governs the period of universal expansion and contraction, the global manifestation of the same geometric principle.

The lifting interpretation makes a definite commitment: it asserts that the relevant operation between adjacent levels is multiplication by π and nothing else. Within this paper the commitment is supported by consistency (the levels generated this way include the fine-structure scale at $n = 0$ and the breathing scale at $n = 1$) rather than by a uniqueness proof; no argument here excludes alternative hierarchy operations. The point matters for the standing of the 432 correspondence and is taken up in Section 7.

3 The Factorization $432 = 16 \times 27$

3.1 Prime Factorization

The number 432 admits the prime factorization

$$432 = 2^4 \times 3^3 = 16 \times 27. \quad (12)$$

The factors correspond to coefficients of the cubic density:

- **16** is the bulk coefficient in $\rho(x) = 16\pi^3 x^3 + \dots$
- **3** is the boundary coefficient in $\rho(x) = \dots + 3\pi^2 x^2 + \dots$
- **27** = 3^3 is the cube of the boundary coefficient

The observation that drives this section is arithmetical. The number 432 contains no prime factor other than 2 and 3, so its entire content is the exponent pair in $2^4 \times 3^3$. The same two numbers, 16 and 3, appear as the bulk and boundary coefficients of the cubic density. The factorization therefore reads as a compressed statement about the geometry: take the bulk coefficient once and the boundary coefficient three times. Whether the compression carries information or merely admits this description is the question the rest of the section addresses.

Theorem 3.1 (Coefficient Encoding). *The Hindu cosmic number 432 encodes the product of the bulk dimension and the cube of the boundary dimension:*

$$432 = (\text{bulk coefficient}) \times (\text{boundary coefficient})^3 = 16 \times 3^3. \quad (13)$$

3.2 Geometric Interpretation

The bulk coefficient 16 arises from octonionic geometry: $16 = 2 \times \dim(\mathbb{O})$, reflecting the doubling from left and right multiplication in the octonion algebra. The boundary coefficient 3 is the dimension of the adjoint representation of $SU(2)$, corresponding to the three generators of the gauge group on the boundary S^3 .

The appearance of $3^3 = 27$ suggests a *triple integration* over the boundary structure, consistent with the three-layer architecture of the monad (bulk, boundary, fiber) and the three fermion families arising from the $\mathbb{Z}_3$ structure of $L(3, 1) = S^3/\mathbb{Z}_3$.

Corollary 3.2. *The cosmic breathing number is the bulk contribution times the boundary contribution raised to its own dimension:*

$$432 = 16 \times 3^{\dim(\text{adjoint } SU(2))} = 16 \times 3^3. \quad (14)$$

3.3 Connection to Mahā-Kalpa

The *mahā-kalpa*, or complete life of Brahmā, is given as 311.04 trillion years in the Vedic texts. This admits the factorization:

$$311.04 \times 10^{12} = 432 \times 720 \times 10^9 = 432 \times 6! \times 10^9. \quad (15)$$

The appearance of $6! = 720$ suggests a combinatorial structure involving permutations of six objects, potentially related to the six compactified dimensions in certain approaches to dimensional reduction, or to the six vertices of an octahedron (the dual of the cube).

The combinatorial reading of $6!$ is offered as a direction, not a result. What the factorization establishes is narrower: the largest Vedic cycle is an integer multiple of 432, with the multiplier itself of recognisable combinatorial form. Whether the permutation structure has geometric content is left open here.

4 The Physics of Cosmic Breathing

4.1 The Anti-Collapse Identity

The fundamental interaction of the universe is given by the compositional identity

$$C \circ P = I, \quad (16)$$

where:

- C is the *collapse operator*, the formal generator of inward motion toward the void $\emptyset$
- P is the *projection operator*, generating outward expansion away from void into geometric structure
- I is the identity on physically admissible states

Reality continuously attempts to collapse into nonexistence via C , but this collapse cannot complete; the rebound via P generates outward projection. Existence is precisely the ongoing failure of collapse.

The identity is compositional, not dynamical: it constrains what the composition of the two operators must yield, without by itself fixing rates, amplitudes, or periods. To extract a period from it, additional structure must be supplied, and the structure available in this framework is the oscillation theory of the preceding papers: a fundamental frequency $\omega_1 = \pi\sqrt{1-\kappa}$ set by the oscillation parameter $\kappa = \alpha^{5/4}$, and the geometric hierarchy of Section 2 that fixes the admissible scale ratios.

4.2 Breathing Dynamics

The identity $C \circ P = I$ generates an oscillatory dynamic:

1. **Collapse phase:** The universe contracts toward the origin (void)
2. **Projection phase:** At maximal contraction, P activates and expansion begins
3. **Expansion phase:** The universe expands outward
4. **Return:** At maximal expansion, C dominates and contraction resumes

This is the “breathing of Vishnu” described in the Vedic texts: an endless cycle of in-breath (pralaya, dissolution) and out-breath (srishti, creation).

The four phases are not symmetric in mechanism. The collapse phase is driven: C is the generator of inward motion and acts continuously. The projection phase is a consequence of the identity: collapse toward the void cannot complete, because the composition must return the identity on admissible states, and the rebound through P is the form that failure takes. Expansion then proceeds until the same logic applies with the roles reversed. The cycle has no first moment and no last; it is the stationary behaviour of a system whose defining identity forbids both completed collapse and unbounded escape.

Theorem 4.1 (Breathing Period). *The natural period of cosmic breathing, measured in fundamental oscillation units, is*

$$T_{\text{breath}} = \pi \times \alpha^{-1} \approx 430.51 \approx 432. \quad (17)$$

Proof. The fundamental oscillation frequency is $\omega_1 = \pi\sqrt{1-\kappa}$, where $\kappa = \alpha^{5/4} \approx 0.00213$. The breathing frequency must be slower by a factor encoding the full geometric structure. The natural choice is

$$\omega_{\text{breath}} = \frac{\omega_1}{\pi \times \alpha^{-1}}, \quad (18)$$

giving a period of $\pi \times \alpha^{-1}$ fundamental cycles. This matches the Hindu value 432. $\square$

Status. The matched value 432 in this theorem is a historical reading. The current form states the period as $T_b = \pi \alpha^{-1} \approx 430.51$ system units with no rounding to 432; the integer 432 enters only through the exact detuning identity $G_1 = 432/T_b - 1$ (Addendum 266). Paper 37 carries the breath as a dynamical system in this form.

The proof deserves a candid characterisation. It is a selection argument: among the available combinations of the fundamental frequency and the hierarchy scales, it identifies $\omega_1/(\pi \times \alpha^{-1})$ as the natural breathing frequency, on the grounds that the divisor is the Level 1 scale and therefore encodes the full geometric structure. It does not integrate equations of motion for C and P and exhibit the period as their consequence. The distinction between a selected period and a derived one is recorded in this paper's verifier and is part of the retrospect of Section 7.

4.3 The Oscillation Arena

During each breath, the effective energy oscillates within the *oscillation arena*:

$$4\pi \leq E(t) \leq E_{\text{self}}, \quad (19)$$

where:

- **Floor:** $4\pi \approx 12.566$ (unobserved quantum substrate)
- **Ceiling:** $E_{\text{self}} \approx 13.177$ (fully observed classical state)

The gap $\Delta E = E_{\text{self}} - 4\pi \approx 0.611$ provides the amplitude for dimensional breathing, the oscillation between 4D quantum and 4D+ ϵ classical effective dimensions.

The arena bounds are inherited, not introduced. The floor 4π is the substrate value carried over from the foundational papers, and the ceiling E_{self} is the self-lensing energy $E[\rho]/\mu_0^2$ computed from the same cubic density that generates the hierarchy. The breathing dynamic of this section therefore runs inside an energy interval fixed elsewhere in the framework; what this paper adds is the period, not the bounds.

5 The 14 Manvantaras and E_{self}

5.1 The Ratio $432/\pi^3$

A numerical coincidence connects the cosmic number to the self-lensing energy:

$$\frac{432}{\pi^3} \approx 13.93. \quad (20)$$

This is close to two quantities:

1. The self-lensing energy $E_{\text{self}} = E[\rho]/\mu_0^2 \approx 13.177$
2. The number of *manvantaras* (epochs of Manu) in one kalpa: **14**

The two comparisons are not of equal strength, and the difference should be visible before the correspondence is stated as a theorem. The integer 14 sits within half a percent of $432/\pi^3$; the self-lensing energy sits several percent below it. The theorem as originally stated treats the chain as a single correspondence; the remark and Status paragraph that follow it record what became of that reading.

Theorem 5.1 (Manvantara-Energy Correspondence). *The number of manvantaras in one kalpa encodes the self-lensing energy:*

$$N_{\text{manvantara}} = 14 \approx \frac{432}{\pi^3} \approx E_{\text{self}}. \quad (21)$$

Remark 5.2 (TBS). The ratio $432/\pi^3 \approx 13.955$ differs from the canonical $E_{\text{self}} \approx 13.177$ by approximately 5.7%; the identification $432/\pi^3 = E_{\text{self}}$ is not proved and the discrepancy is not accounted for.

Status. This reading is retired (Paper 40). The identification $432/\pi^3 = E_{\text{self}}$ and the manvantara correspondence built on it are withdrawn; the 5.7% discrepancy recorded above was never accounted for. The breath period survives in its current form as $T_b = \pi \alpha^{-1}$ (Paper 37); the numerological reading does not. The theorem stands in the text as the record.

5.2 Interpretation

Each manvantara represents one complete sub-cycle within the kalpa, a period during which a Manu (progenitor of humanity) reigns and teaches the laws of existence. The correspondence

$$N_{\text{manvantara}} \approx E_{\text{self}} \quad (22)$$

suggests that each manvantara represents one unit of self-lensing energy, one “quantum” of the observational process by which reality maintains its coherence against collapse.

The number 13 is the nearest integer to the self-lensing energy ($E_{\text{self}} \approx 13.177$); 14 is the ceiling (smallest integer exceeding E_{self}), which matches the Hindu manvantara count. The structure of 14 manvantaras plus 15 sandhi (junction periods) yields the 1000 mahā-yugas of a kalpa through:

$$14 \times 71 + 15 \times 4 \times 0.4 = 994 + 24 = 1018. \quad (23)$$

(Corrected: $15 \times 4 \times 0.4 = 24$, not 6; total is 1018, not 1000.)

The arithmetic correction in the displayed equation is deliberate and is kept in place. The traditional accounting of fourteen manvantaras with their sandhi junctions does not reproduce the stated 1000 mahā-yugas under the factors used here, and the discrepancy is recorded rather than repaired. A correspondence argument is only as strong as its arithmetic, and this piece of the arithmetic does not close.

5.3 The Full Correspondence Table

Geometric Quantity	Value	Hindu Cosmology
$\alpha^{-1} = 4\pi^3 + \pi^2 + \pi$	137.036	–
$\pi \times \alpha^{-1}$	430.51	432 (cosmic cycle base)
$432/\pi^3$	13.93	14 (manvantaras)
E_{self}	13.177	–
$432 = 16 \times 27$	–	bulk $\times$ boundary ³

Table 1: Correspondence between geometric constants and Hindu cosmological numbers.

6 Implications

6.1 For Physics

The emergence of $\pi \times \alpha^{-1} \approx 432$ as the cosmic breathing period has several physical implications:

1. **Cosmological Oscillation:** If the universe undergoes genuine $C \circ P = I$ breathing dynamics, the period should be observable in some form, perhaps as a modulation in cosmic structure at scales corresponding to 432 fundamental units.
2. **Hierarchy Problem:** The geometric hierarchy (Level 0 at α^{-1} , Level 1 at $\pi\alpha^{-1}$, etc.) provides a natural explanation for the vast range of scales in physics without requiring fine-tuning.

3. **Dimensional Breathing:** The oscillation between 4π and E_{self} suggests that effective dimensionality is not fixed but breathes, a prediction that might be testable through precision measurements of coupling constants over cosmological time.

Of these, the first is the most exposed and the least developed: no observable channel is identified through which a modulation at the breathing period would register, and the conversion between system units and physical time is not fixed in this paper. The second and third are structural readings of the hierarchy rather than predictions in the strict sense.

6.2 For History of Science

The correspondence between $\pi \times \alpha^{-1}$ and the Hindu value 432 raises several questions:

1. **Ancient Knowledge:** Did the Vedic sages possess genuine insight into cosmic structure, or is this correspondence coincidental? The precision (0.35%) and the encoding of geometric coefficients (16×27) suggest more than mere chance.
2. **Contemplative Observation:** The Vedic tradition emphasizes direct observation through meditation and contemplation. If consciousness is indeed the “first-person experience of the anti-collapse loop” (as developed in earlier papers), then deep contemplative states might provide access to geometric truths normally hidden from ordinary perception.
3. **Transmission:** The preservation of 432 across millennia, through oral tradition and sacred texts, suggests that certain numbers were recognized as cosmologically significant and therefore worthy of precise preservation.

These questions are historical rather than physical, and this paper does not resolve them. What can be said within the framework is limited to the geometric side: the value $\pi \times \alpha^{-1}$ exists and is derived; the cultural value 432 exists and is documented; the gap between them is small. Everything beyond that, including any account of how a tradition might have arrived at the number, is interpretation. The retrospect in Section 7 records that the corpus ultimately kept the geometry and released the interpretation.

6.3 For the Ontological Identity

The cosmic breathing cycle completes the ontological identity

$$\emptyset \equiv 0 \equiv 1 \equiv \infty. \quad (24)$$

The breathing period $\pi \times \alpha^{-1}$ is the time for one complete traversal of this cycle:

$$\emptyset \xrightarrow{\text{creation}} 0 \xrightarrow{\text{excitation}} 1 \xrightarrow{\text{expansion}} \infty \xrightarrow{\text{collapse}} \Omega \xrightarrow{\text{dissolution}} \emptyset. \quad (25)$$

Each such cycle takes 432 fundamental oscillation periods: the breathing of Vishnu encoded in the geometry of (B^4, S^3) .

The cycle notation compresses the ontological sequence of the foundational papers: void giving rise to the zero state, excitation to unity, expansion toward the unbounded, and collapse back through the total state Ω to the void. The breathing period assigns this sequence a duration in fundamental oscillation units. The assignment inherits the standing of Theorem 4.1: the duration is the Level 1 scale by selection within the hierarchy, as discussed in Section 4.

7 What Survived and What Was Retired

This paper makes claims at three distinct levels, and later corpus work separated them. The record of that separation lives in this document, in the Status paragraphs of Sections 2, 4, and 5, and in the papers they cite. This section collects the record in one place without softening it.

7.1 What Survived

The geometric quantity survived in full. The breath period $T_b = \pi \alpha^{-1} \approx 430.51$ system units, constructed in Section 2 as the Level 1 lift of the fine-structure identity, is the corpus's clock. Paper 37 develops the breath as a dynamical system in exactly this form: the period is taken as fixed by this paper together with the corpus unit bridge, the fractional part of T_b becomes the rotation number of a rigid rotation on the Hopf fiber, and the dynamical consequences follow as theorems. Nothing in that development rounds the period to 432.

The 432 relation also survived, but in a sharpened form that reverses its polarity. Paper 37 derives that among integers whose only prime factors are 2 and 3, the nearest to T_b is exactly $432 = 2^4 \times 3^3$, and that the gap is the exact identity $G_1 = 432/T_b - 1$, a corpus constant (Addendum 266). Under this reading 432 is not the period and never was: it is the nearest such chord to the period, and the 0.35% deviation reported in Section 2 is not a transmission error to be explained away but the comma of that chord, exact and irreducible. The correspondence this paper proposed becomes a theorem, with the approximation sign replaced by an identity about a gap. The factorization analysis of Section 3 survives in the corresponding weaker reading: 16×27 names the coordinates of the nearest chord in the lattice of such integers, and the match with the density coefficients stands as an observation about those coordinates, not as a derived encoding.

7.2 What Was Retired

Three readings were retired, and Paper 40 carries the ledger.

First, the reconciliation factor. Section 2 proposed that the ratio $432/430.51 \approx 1.00346$ might equal $1 + \kappa^{0.6}$. Remark 2.4 records the numerical failure: the proposed factor misses by roughly a factor of nine, and no corrected derivation was found. The Status paragraph following the remark records the retirement and the surviving statement: the gap is G_1 , exactly, and requires no reconciliation because it is not an error.

Second, the manvantara identification. Section 5 proposed the chain $14 \approx 432/\pi^3 \approx E_{\text{self}}$. Remark 5.2 records the defect: the identification of $432/\pi^3$ with E_{self} was never proved and the discrepancy between them was never accounted for. The Status paragraph records the withdrawal of the identification and of the correspondence built on it. The original theorem stands in the text as the record of what was claimed.

Third, the interpretive frame. The reading of the correspondences as evidence that ancient contemplative traditions accessed geometric truth is retained as the historical motivation of this paper and as a question for the history of ideas; it is not maintained as a claim of physics. No mechanism of access or transmission is derived here, and none is asserted elsewhere in the corpus.

One derivation gap is recorded without retirement. Theorem 4.1 selects the breathing period rather than deriving it from the dynamics of $C \circ P = I$; Section 4 characterises the proof candidly. Paper 37 does not close this gap from below; it takes the period as given and builds the dynamical theory on top of it. The selection therefore remains the foundation of the period, and its standing is that of a quantity the corpus adopted rather than one derived from the anti-collapse dynamics.

7.3 Relation to the Corpus

Upstream, the paper depends on the (B^4, S^3) geometry and the cubic density developed in the foundational papers, and on the fine-structure identity $\alpha^{-1} = 4\pi^3 + \pi^2 + \pi$ established there. Everything in Section 2 is arithmetic on those inputs.

Downstream, three papers carry the material forward. Paper 15 examines the bifurcation structure and the 432 identity from the shadow-universe side, including the $\pi/2$ correction mentioned in Section 2. Paper 37 is the breath's dynamical theory: the rotation number, the

non-closure of breath orbits, the derivation of 432 as the nearest chord, and the exact identity G_1 ; it is the current form of everything in this paper that survived. Paper 40 is the repairs ledger; the registry items P014_1 and P014_2 are retired there, and their remarks live in this paper.

The period itself is the paper’s lasting contribution. Every periodic structure in the corpus synchronises to T_b ; no subsystem generates its own rhythm. That design principle traces to the quantity constructed here, whatever became of the readings that first surrounded it.

8 Conclusion

We have demonstrated that the Hindu cosmological number 432 emerges naturally from the geometric framework as $\pi \times \alpha^{-1}$, the next level in the hierarchy of scales built on the fine-structure identity $\alpha^{-1} = 4\pi^3 + \pi^2 + \pi$.

The key results are:

1. **Hierarchy:** Multiplication by π lifts from the fine-structure scale ($\alpha^{-1} \approx 137$) to the cosmic breathing scale ($\pi\alpha^{-1} \approx 432$).
2. **Factorization:** The encoding $432 = 16 \times 27 = 2^4 \times 3^3$ reflects the bulk coefficient (16) and the cube of the boundary coefficient (3) from the cubic density.
3. **Manvantaras:** The ratio $432/\pi^3 \approx 14$ matches both the self-lensing energy and the number of manvantaras per kalpa.
4. **Breathing:** The cosmic breathing period of $\pi \times \alpha^{-1}$ fundamental oscillations governs the $C \circ P = I$ anti-collapse dynamics at cosmological scales.

These correspondences suggest that the geometric framework developed in this series of papers captures not only the structure of fundamental physics but also the rhythms of cosmic evolution: rhythms that were intuited by ancient contemplatives and encoded in the number 432.

The identity

$$\pi \times \alpha^{-1} = 4\pi^4 + \pi^3 + \pi^2 \approx 432 \quad (26)$$

thus serves as a bridge between modern geometric physics and ancient cosmological wisdom, suggesting that the “breathing of the void” is not merely metaphor but mathematical truth.

That is the paper’s original closing statement, and it is kept as written. The corpus’s final form of the bridge is narrower and exact: the period is $T_b = \pi \alpha^{-1}$ with no rounding, the integer 432 is the nearest chord built on the primes 2 and 3, and the distance between them is the identity $G_1 = 432/T_b - 1$. Section 7 and the in-place Status paragraphs carry the details. What was approximation in this paper is, in the current form, a theorem about a gap.

References

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