

The Assembly

Artist's Proof 48

Cosmology

The sky's history from the crack to the beat – the storm, the lock, the balance, the two counts, one rate

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Artist's Note

This is Artist's Proof 48 of The 420 Code. It belongs to Notebook VI – Cosmology, beside AP42, The Clock, and AP46, The Stretch.

This Artist's Proof is me thinking about the start of the universe.

I start by thinking of a horse running into an arena as it is being assembled. That is how I see the big bang. A silent pop, the smallest break there can be, and then the horse is off – flat out, nothing holding it, because there is nothing yet to hold it with. The silent pop is the horse becoming aware it can run; the big bang is the horse setting off.

The ropes are there from the first record, but they are slack. The handler is the arena itself, and the arena is being built out of the same records the horse writes as it runs.

When the building is up and the ropes go taut, the horse walks. Eighteen ropes hold it. Three guide the walk.

This is what I see when I close my eyes.

The paper takes a side on the expansion rate. It could be wrong. If it is, it dies on the switch that says so, and I would rather that than a straddle.

Artist's Proof 48 is the fifth paper I have written since my initial neutron prediction died on the 2nd of August 2026. That rattled me – a lot. Why? Because I had absolute confidence in the structure of reality I am describing, and despite this, I was simply wrong. That was a hard pill to swallow – if I am honest, it kind of fucked me up. The universe reminded me again – as it has done many times in my life – that the moment I (my ego) begin to think I am anything but a normal grain of sand, the universe simply slaps the shit out of me and reminds me to stay in my lane. What is my lane? To shut up, close my eyes, and look deeper. The structure of reality is not wrong. I am.

This realisation forced me back to the drawing board – in my case the mirrors and windows of my house – and I had to rederive everything from scratch and look for my mistake, because I am the one who made it. This is where brutal intellectual honesty comes in handy: it simply ignores the ego and only responds to the truth.

Today I know exactly what I left out – structurally – and I made the corrections. I say corrections deliberately, because in this system a mistake anywhere has consequences almost everywhere, and if one prediction was wrong, more will be wrong as well. Others were. I was forced to fix not only the neutron but also the gravity and MOND derivations and predictions. In fact, 60% of the predictions in my flagship book, Ø Predictions, turned out to be wrong.

I like physics – actually, no – I love physics. And I realise today that I will probably never be finished. This is the one puzzle I will never be able to finish, and that is good, but I will die

trying, because it is fun for me. All I care about is The 420 Code. That is my life. Until then, I will simply carry on writing and wait for nature's verdict.

At the end, all that is important is whether nature agrees.

the420code.org

Copyleft 2026. Don't be a cunt. Be kind.

Orientation

Where this paper fits in the body of work

The 420 Code is organised across eight bound notebooks. This paper belongs to Notebook VI – Cosmology – beside AP42, The Clock, and AP46, The Stretch, whose settling law it is.

Four papers made one family – AP44, The Snap; AP45, The Blink; AP46, The Stretch; AP47, The Flip – one axiom and one mechanism at four sites. AP46 priced persistence and landed on the age of everything, and it deferred the one thing its cycle could not do alone: say how the sky got from the crack to the beat. That deferral was booked as D-STRETCH.1, with a kill surface registered on this paper's behalf, KS-STRETCH.4. This paper pays the debt and meets the surface.

The universe was assembled, not decreed. The break wrote records; records wrote records; the arena is the census of what was written. Its constants engaged when their own structure completed. What followed is the room's growth answering the hold, and the two shapes the sky remembers are two counts.

The dynamical law this paper arrives at is not new. It is the Friedmann equation – the homogeneous case of the field equations AP08 already derives – with the leak in the seat AP08 admits for the cosmological constant. What is the work's here is narrower and is said at every step: the storm and its order, the lock, the forcing of the equation's form from the stated balance and G's dimensions, its flatness from the exactness of that balance, the leak's placement, the two thinning counts, and the closure of the work's own partition and age on one rate, which takes a side.

How to read this paper

A reader without physics should start at §8, where the rate is told in plain words, then read §3 and §4, where the horse and the handler are, then §5, where the balance is.

The reading order for everyone else is front to back. Section 0 names the dependencies and the scope. Sections 3 and 4 describe and rule; sections 5 through 8 derive; section 9 checks; section 10 closes the seam. Section 12 is the falsification register. Section 13 is the synthesis.

Everything derives from the axiom outward: 1:1 + 1×ε @ AS [+1/137 | –1/137]. The work's own inputs are AP42's partition and AP46's cycle. Two measured quantities enter, each named where it enters: the sky's light census, for the epoch of one handover; and the sky's curvature share, as the check on a ruling. One stance is inherited from AP46 as a rider: the leak's own rate is constant in the settled limit.

0 – Dependency and Scope

0.1 – What this paper does

AP48 derives the form of the sky's history from the crack to the beat, in the work's images and at their hedges, and grades every step by whether the words forced it. Five things.

First, the storm. Records write records, locally and in parallel, and persist; each record writes at the bare rate, one per site per tick, so the census grows exponentially from the first record, and the arena is the census. The ropes are the eighteen doors going up; they tighten together on one clock, the electron's, and unevenly by a lean that mass and gravity make; the readings settle as constants in a logical order that ends with gravity and c. The storm's length is a count of knots nobody has.

Second, the lock. The ropes are the constraint, and taut is c engaged; taut at a reach and a count; the three tugging ropes engaged from the first click, stability what completion adds; the roof the finite reach c/H the work already carried.

Third, the balance. The room's stretch and the census's hold are one operation read from two directions, 1:1 at every instant, the cost always paid. The hold can offer only one rate from G and a density, so the stretch enters squared; the 1:1 excludes a curvature term; the axiom's shape puts the ε in the balance. The result is the Friedmann equation, and its count is AP08's.

Fourth, the two thinnings. Light pays the room and its own line, four; a held record pays the room, three; the equation's solutions are then $t^{1/2}$ and $t^{2/3}$.

Fifth, the rate. The equation with the work's partition gives a pure number, 0.954; the cycle is 13.830 billion years; the rate is 67.45 km s^{-1} Mpc^{-1}, window 64.4 to 70.8, and the settled rate behind it is 0.792 of the cycle's inverse, 56.0. The seam AP46 opened closes by adjudication: the age survives, the work's previous rate does not, and KS-45.1 fires as AP46 pre-registered. The settled rate written into AP08's Λ is the same closure in other units, not a second result. The paper takes the standard model's side of the Hubble tension and says what that is worth.

Four things are said first. The equation is Friedmann's, AP08's homogeneous case, and the paper says so where a physicist looks. One step was found in the wrong order – the drafting knew the sky's two shapes needed the square before finding that G's dimensions force it – and §5 says so where the square appears. The rate is a closure of two earlier landings, not a fresh prediction, and could have failed in one way, which §7 shows. Two pre-registered expectations were missed, and §8 shows the misses in the words used for the landings.

0.2 – Dependencies

Ø Dissolutions (the Axiom chapter). The complete axiom; the pairs balancing at every AS instant; the cost always paid. Load-bearing for §§3, 5.

AP06, AP12, AP46 §5. The grain is the electron; one record is one $\hbar$; the tick is the electron's own time. The work's one clock. Load-bearing for §3.

AP08 (The Identity). The Poisson equation from the axioms (§4, KS-I.1); the tensor form via Lovelock (§8), $G_{\mu\nu} + \Lambda g_{\mu\nu} = (8\pi G/c^4)T_{\mu\nu}$, the coefficient identified through the Newtonian limit (KS-I.3), Λ admitted by Lovelock – "predicted to exist," in AP08's words – and its value undetermined (KS-I.7), the bridge from Axiom R to conservation (KS-I.8). Load-bearing for §5: the balance is AP08's tensor form in the homogeneous case, displayed there.

AP24 and AP28. The six faces; the twenty-one channels; G as α^{21} through all of them. AP44 §9, the realised G. AP30, mass as resistance, the knot image. Load-bearing for §§2–5.

AP45 (The Blink). The three lines of the ledger, of which the SHED line integrates. Load-bearing for §6.

AP46 (The Stretch). The cycle, $(21/18)\cdot\alpha^{-18}\cdot\tau_C = 13.830$ Gyr, one lane wide (KS-STRETCH.3); the settled leak's constant rate (KS-STRETCH.2), inherited here as a rider; the describings of AP46 §10; D-STRETCH.1 and KS-STRETCH.4; the H_0 seam of AP46 §9. Load-bearing for §§7–10.

AP42 (The Clock). The partition – dark energy 68.85%, dark matter 26.39%, visible 4.76% (§3.4) – as a count, unchanged under either reading of t_H (§5); the sourced reservoir (KS-42.4); the feeding history, D48. Load-bearing for §8.

AP21 and AP18. Axiom R's finite extent c/H; the floor $a_0 = 1.0445\cdot cH_0/(2\pi)$ and its switches KS-45 and KS-45.1 (AP18 §§4–8). AP04 and AP41, the work's cyclic hypothesis and fusion as the ongoing break, for §§0.7–0.8. AP15 and AP18 §2, bounded propagation at c as what Axiom C produces.

WP-ASM.1, the primer of record, which also carries the clock spread of §8 from the conversations before it; the continuation README of 3 September 2026 with its pre-registered items; the answers of 3 September 2026. All three hashed beside this proof.

0.3 – Axiom mapping

Axiom B is principal. The silent pop, $+1\times\varepsilon$, is the first record; the conditions fall out at that record and wait for nothing.

Axiom R is load-bearing for §3. Records persist and accumulate; the written landscape is the base the next records are written from; each record writes at the bare rate.

Axiom C is load-bearing for §§3–4. It is Constraint – locality: a record is somewhere, not everywhere – and bounded propagation at c is what it produces (AP15; AP18 §2). Writing is local but parallel. Slack rope, unconstrained propagation; taut rope, c engaged.

Axiom S is load-bearing for §5. The stretch and the hold are one operation read from two directions, in 1:1 balance at every instant, the cost always paid – and exactly that, which is why the balance carries no curvature term.

0.4 – Epistemic status per section

Section 1 (Definitions). DEFINITIONAL.

Section 2 (The Name). RULED; the twenty-one-click identity caged.

Section 3 (The Storm). DERIVED – the exponential on the stated linearity; the ropes as the doors RULED; the lean RULED as describing, its spectrum not claimed; the order of settling RULED, logical; the storm's clock RULED by canon; the serial timetable SHOWN DEAD; the length OPEN.

Section 4 (The Lock). RULED; the roof CANON; the count OPEN; the date BOUNDED.

Section 5 (The Balance). RULED (the balance, its exactness, flatness on two rulings) and DERIVED (the square from G's dimensions); the equation IDENTIFIED as Friedmann's, AP08's homogeneous case; the count AP08's, at AP08's grade; the work's picture CONSISTENT, recorded.

Section 6 (The Two Thinnings). DERIVED as counts; the shapes the equation's solutions; the alternative eliminated by the glow.

Section 7 (The ε's Entry). RULED by the axiom's form; the corpse of the other SHOWN.

Section 8 (The Rate). DERIVED from the work's three, a closure; the settled rate COUNTED; the misses SHOWN; the tail and D48 sensitivities DECLARED.

Section 9 (The Era Table). PASS/FAIL, the standard equation's passes with inputs and riders named.

Section 10 (The Seam). RULED – one rate; the floor RE-READ with the file open; KS-45.1 FIRED.

Section 11. REFUSALS. Section 12. FALSIFICATION REGISTER. Section 13. SYNTHESIS.

0.5 – Kill switch summary

Three switches arm at this lock; one registered switch is met; one switch of the work fires. The register is §12.

KS-ASM.1 — the rate. LIVE — EMPIRICAL: the expansion rate lands inside 64.4 to 70.8, or the family's pre-registered edge fires on the age.

KS-ASM.2 — the balance. LIVE — STRUCTURAL and EMPIRICAL: the square, flatness, the two counts, the ε in the balance, the D48 sensitivity.

KS-ASM.3 — the roof before the nuclei. LIVE — EMPIRICAL: the constants steady from before the first second; its comparative limb carried, not counted.

KS-STRETCH.4 — the era surface. MET at this lock; CLOSED, with its dependency carried by KS-ASM.2.

KS-45.1 — the work's $H_0 = 74.3 \pm 1.2$. FIRED, 3 September 2026, as AP46 pre-registered, on the work's own derived rate; shown; the erratum on its width beside it.

0.6 – Structural debts owed

D-ASM.1. The storm's length – the count of knots to the taut point, and the completing count, the same debt's two faces. Its shape is given in §3: a threshold of the record history's size per reading, in the stated order. OPEN; not load-bearing, because the roof's date is bounded by nature on both sides.

D-STRETCH.1. PAID on the settling law and the seam. The tail's shape of the observed equation of state remains AP42's D48.

Inherited. D-CCC.1 and D-BLINK.1 (the record algebra); D48 (AP42's feeding history), with its sensitivity on the rate declared in §8; AP08's KS-I.3 and KS-I.8, the count's exposures.

No other debt is booked. The count in front of G is AP08's, and the settled rate is made of the closure and the partition; §5 and §8 say so.

0.7 – Items held open without claiming debt status

The awareness window, inherited from AP46 §0.9, not reached here and not a claim; the lane is a twenty-first of the cycle and the visible a twenty-first of the census – the same integer, two unrelated objects, and no window is to be built on the link.

The wobble's spectrum. The describing gives concentrations of mass and light born in the storm from the ropes tightening unevenly; the sky measures the spectrum of such concentrations to better than a per cent; the work has no line for it and claims none.

The eye loop – twenty-one lanes to open, the work's "twenty-one clicks," the tipping point, the closing; two cycles, 27.66 billion years; the thinned horse pulled down; the black hole as the reservoir read to its end. The work's narrative, beside AP04's cyclic hypothesis and AP41 §6's seven stages – break to door to break, the door conjectural and carrying AP04's switch – and not a claim added to either; by its own fence not testable for some twenty-three lanes.

The eighteen doors closing around a record as the strong force – recorded, and fenced: α^{18} is gravitationally small, not the strong coupling; the strong coupling grows with separation, opposite to α at every door; its own counts are three and eight.

The electron as one knot on the rope and the proton as 1836 – AP30's image, the mass site's, not this paper's.

The arena's coin, from AP46 §0.9.

0.8 – Structural relationships

AP46: the paper whose settling law this is. Its cycle enters §8; its mechanism and its age stand; four of its sentences move on adoption (§13).

AP08: the field equations whose homogeneous case §5's balance is; the leak fills the seat AP08 admits for Λ, and AP42 with AP46 gives that seat a value – the closure of §8 in other units; AP08's re-read at the wave decides what that does to KS-I.7.

AP42: its partition enters §8 as the work's own count; its feeding history is a declared sensitivity; its §4.2 crossover figures are re-read at the work's partition.

AP44 and AP45: G's dimensions; the SHED line's integral, which is why light pays a whole dimension and not an ε.

AP21 and AP18: the finite reach c/H; the floor, re-read at this paper's rate with its systematic restored, and its switch KS-45.1 fired.

AP28: G as a function of α – a completion identity, true from the lock, §3.

AP41: fusion as the ongoing break, KS-41.7 – "the Big Bang was the first break; fusion is the ongoing break; one ignited the arena, the other sustains it." This paper's storm is the ignition and its tail is where fusion begins; AP41's identification stands untouched, and a passing thought that fusion might drive the storm was checked and withdrawn on AP41's own sentence and on KS-ASM.3.

1 – Definitions

The storm. From the first record to the lock: the census grows exponentially and propagation is unconstrained.

The lock. The completion of the assembly: all twenty-one ropes taut, c engaged, the constants steady thereafter.

The tail. The room's growth after the lock, answering the hold as the census thins – the two known eras.

The beat, two ways. $H_{\varepsilon,\infty}$, the leak's own constant fractional rate in the settled limit, AP46's stance; $H_\varepsilon(t_0)$, the leak's effective rate today under the balance. In the settled limit they coincide at 0.792 of the cycle's inverse; while the hold still settles today's value may sit above the settled one by the tail, D48's.

The census. Everything written and persisting. A held record – a three-dimensional coupling with mass, the rock. A running reading – the line, light.

The balance. The 1:1 between the room's stretch and the census's hold at every instant, the cost always paid: $\text{stretch}^2 = k \cdot G \cdot \rho + H_\varepsilon^2$. The Friedmann equation, §5.

A thinning count. How many dimensions of the room's growth a kind of census pays as the room grows: three for a held record, four for a running reading.

The window. One lane-time either side of the cycle, AP46's width, carried into the rate.

Symbols. ε the break, the grain. α the fine-structure constant, ≈ 1/137.036. τ_C the tick, $\hbar/(m_e c^2) \approx 1.29 \times 10^{-21}$ s; a click, the work's word for it – and, in the image of the eye, for a lane; the two senses are marked where they occur. The cycle, $(21/18) \cdot \alpha^{-18} \cdot \tau_C = 13.830$ Gyr; the lane, one twenty-first of it, 0.659 Gyr. N the census; ρ its density; a the room's size; H its fractional growth rate, the stretch; k the count in front of G, $8\pi/3$. $H_0 t_0$ the pure number the equation gives for rate times age at a given partition. The eighteen and the three, AP28's face-projections and gates. The horse, propagation; the handler, the arena; the ropes, the constraint; taut, c engaged; a knot, one tick of resistance on the rope. AP18's correction factor $2 \ln(\sec ½ + \tan ½) \approx 1.0445$, written α in AP18 and not the fine-structure constant.

2 – The Name, and the Assembled State

The Assembly: the six readings of the break assembling in three dimensions as a record – the eighteen channels – and the now. The work's initials read a second way: the AS is the Assembled State, the now as the completed assembly from which things happen. Actualization State and Assembled State are one object with two names, the one-axis pattern the family keeps finding.

The programme's job, set in the primer and done here: derive how the assembly proceeded and show that its stages reproduce the recorded history of the sky.

One identity, caged. The describing gives a full opening of the eye as twenty-one clicks, once over each channel – a click here being a lane, not a tick. Twenty-one lanes is AP46's cycle by construction; the image is the family's and carries no information beyond the definition.

3 – The Storm: Records Write Records

The first record. Ø, then the silent pop – the smallest possible break, +1×ε – and at that record the conditions fall out. Nothing waits for a second record. The ropes are attached from the first record, and slack.

Why the growth is exponential. Records write records, and written records create the landscape of records available to write from now; the record history creates the landscape against which records can be written and what records cannot be written. Writing is local – one record now, somewhere, never everywhere – but parallel: more than one at once. Records stay written. And the rate is consistent: writing cannot speed up; it can only write more records at once. That last sentence is the forcing. If each record writes at the bare rate, one per site per tick, the rate of writing is proportional to what is written, and the census grows from the first record as an exponential. DERIVED on that linearity, which is a stated rule. The arena is the census: expansion is accumulation.

Why the constants took time. The same landscape is why the lock was not instant. The constants needed a record history to stand relative against; the assembly had to catch up with itself. The conditions were set at the first record; the structure had to be populated before it could hold.

The rope order, as described. The primer's first session step was his eyes on the handler. First: "the ropes are the eighteen doors going up." AP46 ruled that α sits at every door and each site sets how many doors assemble; that the doors are the ropes was a transfer of that law in the first draft and is his sentence now. RULED. Second, how they go up: "the ropes all tighten together – I don't see them specifically having a different speed, not at the absolute beginning – what does happen is that the consequences of the ropes getting taut is that there are wobbles as certain ropes get taut differently to others, and that creates a lean that makes the ropes snap into tautness because of the lean, which created direction – but also concentrations, of mass, of light, which in turn become the record history from which the now writes – the lean, or instability, stabilises once gravity populates everywhere." And: "the accumulation of mass causes a lean that is caused by, and strengthened by, and strengthens gravity itself." So the storm has no stages. The doors go up together, in parallel, on one clock; the unevenness is a lean, not a sequence; the lean is where the concentrations come from, and gravity makes it, feeds on it, and ends it by populating everywhere. The beat's α^{18} is the count of doors the completed assembly carries, not the order they went up in.

The order of settling, logical. In his words: the break; "the record of the break, which means information starts to travel – the bit of light that carries the record of the first break event – the click after the first click, as a first click can only be registered as a click from the second click – and there light goes, constrained to only itself and moving"; "phase coupling is needed and exists with every click – it can only couple and click now relative to what it can actually couple to, or grab – so mass accumulation takes a lot longer than light propagation – the record history has to grow and get bigger, because the bigger, the more it can hold together, the more mass can accumulate, the more resistance and stiffness have a relative to

make sense, the more time accumulates and the more gravity comes into play, until gravity has its hands on all twenty-one channels – and then tug, and the light bends, and we have stability." His summary: "G and c settle last – as constants – because c needs G in order to be constant." Read as an order of dependence with no clock on it: propagation runs from the first click, constrained only to itself; phase coupling is there from the first click too – it is the tug of §4 – and what grows is what it can grab; direction registers with the second click, because a record must be read as a record; then, in proportion to the record history's size, mass, because it needs something to hold together; stiffness and resistance, because they need a relative; time accumulating; gravity coming into play; gravity settling last, over all twenty-one; and c a constant only then, because its constancy is relative to the whole, and the whole is held only when gravity holds it – which is the reach c/H of §4 existing at all. RULED. What the order gives the storm's length is its shape and not its number: each reading's rope goes taut when the record history is big enough to give that reading a relative, in that order, and the completing count is the size at which gravity has a relative everywhere. The digits are not in the words; D-ASM.1.

What the order is exposed to. In the work G is a function of α: AP28's $G = \alpha^{21}(1 + 1/\pi)\cdot\hbar c/m_e^2$, realised in AP44. Phase coupling from the first click and gravity settling last is coherent with that only if AP28's identity is a completion identity – true from the lock, when all twenty-one channels hold, and not before – and the paper says so. From the lock the identity gives AP28 a consequence it had not named, and the exposure is AP28's to carry: $\Delta G/G = 21\cdot\Delta\alpha/\alpha$ to first order at fixed electron mass – the full first order is $21\cdot\Delta\alpha/\alpha - 2\cdot\Delta m_e/m_e$, and the proton-to-electron ratio is held in quasar absorbers to a few parts in a million at redshift two and a part in ten million near redshift one – so the quasars' bound on α, about a part in a million, bounds G's constancy since redshift two at a few parts in a hundred thousand, tighter than any direct measurement of G. The constants that settle last are gravity's coupling and, with it, c; on the stated order, any residual settling nature ever shows at early times is in G, not in α, and a variation of α found at the epochs of the nuclei or the glow while G is steady would kill the order. That limb is on KS-ASM.3, carried and not counted: G's early bounds are loose where α's are tight, so the order is safe by the looseness of the test. Only dimensionless couplings are measurable; "c settles last" is tested through G.

The timetable the doors do not carry, and the clock. The doors going up together carry no timetable, and the one reading that would give them one is dead. Read serially on the electron tick – each stage one factor of α slower than the last, one record per stage – the eighteen stages take $\Sigma\ \alpha^{-n}$ (n = 0 … 17) ticks, the geometric sum $\alpha^{-17}/(1 - \alpha)$ to a part in 10^{38}: 2.13×10^{36} ticks, times 1.288×10^{-21} s, is 2.75×10^{15} s, 87 million years, the last stage alone 99.3% of it. The roof would go on after the relic glow, fifteen orders of magnitude past KS-ASM.3. No count of records per door rescues it; a count only lengthens it. The doors are what the completed assembly produces – the settled escape count, exactly as AP46's chain uses $\alpha^{-18}\cdot\tau_C$ – and not the storm's schedule. The clock itself is not an assumption: the work has one tick, the grain's, and the grain is the electron – AP06's Lock, AP12's one record one $\hbar$, AP46 §5's tick as the electron's own time – and the answer to the primer's input E says the same in its image, "one knot in the rope, one tick of resistance." RULED by canon. On that

clock the ropes tighten in parallel, his “more records at once,” and the storm’s length is the count of knots to the taut point.

Input B, disposed. The primer asked whether the rope-gathering order might be the era stages. It is not: the eras are the tail after the lock, §6, and the rope order is the storm’s internal structure before it – a lean and a logical order of settling, not a timetable.

What the words do not give. The storm’s length. A door needs records to install on, so the assembly cannot be instantaneous; the count of records a door needs is not in the words. The storm here is a law of shape, not a derivation of inflation: it gives the exponential and not its length, its e-folds, or its spectrum. The standard account has never derived when its early run ends either; this paper has a reason it ends and no count for when.

4 – The Lock: Taut at Reach and Count

Taut. The ropes go taut once the horse has run far enough and the assembly completes; until then there is slack. The ropes are connected to the building being assembled – the handler is not standing on something; the handler is the arena itself. Handling can only happen on a taut rope. All twenty-one taut is the assembly complete, and that is stability.

What the ropes are. The ropes are the constraint, Axiom C – locality – and bounded propagation at c is what the constraint produces (AP15; AP18 §2): slack rope, unconstrained propagation; taut rope, c engaged. The speed of light was unconstrained for a while because the roof of the building was not assembled yet; the moment the structure assembled, the universe stabilised. The constants are not imposed. They are assembled. The constraint engages when its own structure completes. The lock is a completion, not a decree.

The roof, twice. Once the roof is on, light cannot escape the building – and, "conceptually far more importantly," the roof constrains the light to how far it can go within the arena itself. The work already carried that: AP21's Axiom R has the manifold expanding at H with finite extent c/H, and AP18 §2 names that extent the recession-speed boundary beyond which coherence cannot close. The roof is that reach.

The head start. The break runs in the visible as a line – the runner on the surface of the ocean. Gravity is the ocean: three-dimensional, growing around the line, the thing that defines the possibility of running at all. The 0 catches the 1 because a volume outgrows a line, not because it runs faster. The head start is dimensional, not a channel count; the visible's one twenty-first is a census share and does no work here.

The tug, from the first click; stability, at completion. The three tugging ropes are engaged from the first click – "the now stays the now, that is the point from where anything can happen, so the tug ropes are fully engaged from the start – as long as the now is, the 1 runs – it is just now in relation to, and constrained by, the structure itself." The tug is phase coupling from the now, the +1/137 outward through the three gates – the forward pull, the walk – and it never waited for the lock; §3's order says the same from the other side. What the lock adds is the eighteen holding ropes: the record faces held, the walk now in relation to the whole. "Stability starts at completion – that gives handling more control." Each step is a collapse that prunes the alternatives not taken, AP45's toll, walking; the road the horse walks is the hold. One process, two readings – the axiom's one operation read from two directions. And c is a constant only from completion: it needs G to be constant, because its constancy is set relative to the whole, and the whole is held only once gravity holds it.

What the words do not give. The count that completes the assembly. OPEN. The roof's date is therefore bounded, not derived: on before the first nuclei, because the expansion rate in the first minutes is fixed by the light-element yields to a few per cent and a storm still ringing then would have shifted them; before the quasars, because α is steady in their light to about a part in a million. This paper says bounded and does not say derived.

5 – The Balance, and Where the Square Comes From

The balance, as described. The assembled state is a perpetual tension – pulling and holding in place. The balance is the 1:1 in everything; the break persists; the cost is always paid, +1×ε. If a flip happens the cost is still paid, as –1×ε; that flip belongs to the loop of §0.7 and is not claimed.

What is balanced. The room's stretch and the census's hold are the one operation read from two directions: the outward, the room getting bigger; the return, the hold accumulating with what is written. Gravity holds over all twenty-one channels – it populates the whole arena, not the visible alone – and its grip grows with the census. Tension sheds: the denser the hold, the faster the stretch.

Direction, first. The hold does not slow the horse. The horse's pace is c, and c is locked. The heavier hold pulls the horse in a direction – along the ceiling toward the wall, where the ceiling's resistance and the wall's add and turn it – and cancels where the horse is equally far from every wall. That is the hold as geometry: gravity bends light and never brakes it. So the stretch is not the horse. The stretch is the room, and the tail is the room's growth answering the hold.

Where the square comes from. The hold is G times the census in the room – G times a density. Out of G, whose dimensions are length cubed over mass over time squared, and a density, exactly one rate can be made: the square root of G times the density. The hold can offer no other rate from those two. The stretch is a rate. A rate in 1:1 balance with a rate is a square in balance with G·ρ:

$$\text{stretch}^2 = k \cdot G \cdot \rho,$$

with k a pure count. The square is forced by the dimensions of a constant this body of work derived itself – AP28's count, AP44's realised value – and not by anything the sky remembers. DERIVED, and the grade attaches to the square and to nothing wider.

The equation, named. With the ε placed as §7 rules, the balance reads

$$\text{stretch}^2 = k \cdot G \cdot \rho + H_\varepsilon^2.$$

That is the Friedmann equation for a spatially flat universe with a cosmological constant, and it is the homogeneous case of the tensor form AP08 §8 derives via Lovelock, $G_\mu\nu + \Lambda g_\mu\nu = (8\pi G/c^4)T_\mu\nu$, the coefficient identified through the Newtonian limit and Λ admitted with its value undetermined. The reduction, displayed: put the homogeneous, isotropic metric – $ds^2 = -c^2dt^2 + a(t)^2[dr^2/(1 - Kr^2) + r^2d\Omega^2]$ – and a perfect fluid of density ρ into AP08's equation; the time–time component gives

$$H^2 = (8\pi G/3)\cdot\rho - Kc^2/a^2 + \Lambda c^2/3,$$

with $H = \dot{a}/a$ and K the curvature index. With K = 0 by the rulings below, and $\Lambda c^2/3$ written as H_ε^2, that is the balance above, letter for letter. AP08's §4 weak-field family – $a\cdot\nabla^2\Phi + b\cdot\Phi =$

A·ρ, of which Poisson is the small-Λ member – is not the route used here; the tensor form is. This paper does not derive the Friedmann equation from nothing. It claims three things about it: that the stated balance, read with G's dimensions, forces its form; that the 1:1's exactness rules its flatness; and that the axiom's shape puts the ε where Λ sits. Everything the equation then does – the two shapes, the closed-form age, the nuclei, the glow, the onset – it does as the standard equation, and §§6–9 say so at each line. What the work adds is the claim that the equation is the axiom's, and that the seat AP08 admits for Λ is occupied.

Why flat – two rulings, said as two. There is a second quantity with the dimensions of a rate squared that the room could carry: c^2 over the room's size squared, the curvature term the standard equation writes as $-Kc^2/a^2$. The dimensional argument alone does not exclude it, and the shell picture below says what it is: what an inexact balance leaves over. Two rulings exclude it. First, the 1:1 is exact – "the balance is the 1:1 in everything, but the break persists: the cost is always paid" – so nothing is left over. Second, §7's: the axiom's one departure from exact balance is the ε, and it is the constant term, not a term going as one over the room's size squared. The census picture says the same in its own words: the arena is the census, and a census has no curvature to carry. RULED on those two, with the reading of the stated sentences named as a reading; the sky's check is that its curvature share is consistent with zero at its current bound, and the edge is on KS-ASM.2 as a detection significance.

The count in front of G. k is not an unknown of the arena's geometry. Its value is tied to what G means: G is the inverse-square coupling with the 4π of the field equation left unrationalised – write $G' = 4\pi G$ and the same balance reads $(2/3)\cdot G'\cdot\rho$ – and the work's G is that coupling, since AP28's and AP44's formulas land on the tabulated value. Given that, the count is AP08's: the field equations with the coefficient AP08 identifies reduce, in the homogeneous flat case, to the Friedmann equation with 8π/3. The same count comes from the shell argument of the standard account (McCrea and Milne, 1934) on three premises that are AP08's own – the inverse-square hold of the census inside a room of size a with the outside cancelling (AP08's Poisson equation), the census inside as ρ times the room's volume $(4\pi/3)\cdot a^3$ (the room's three), and the push accumulated over the run against that hold, exact, $\tfrac{1}{2}\dot{a}^2 = G\cdot M/a$ (energy conservation, AP08's KS-I.8 and the ruling of 11 August that records are never destroyed and the holder of the standing record is energy, Axiom R read as conservation). Then $\dot{a}^2/a^2 = 2 \times (4\pi/3) \times G\cdot\rho = (8\pi/3)\cdot G\cdot\rho$. The count rides on the tensor form; the shell argument corroborates it. Its exposures are AP08's and no new one: KS-I.3 on the coefficient and KS-I.8 on the conservation bridge, with KS-I.1 on the Poisson chain upstream of KS-I.3 through the Newtonian limit. Nothing in the shapes of §6 depends on k; the absolute rates of §9 do. One warning the work owes itself: the two in the count is the escape-speed factor – a flat room grows at exactly the escape speed of its own census – and the word "escape" there has nothing to do with AP46's escape count.

The work's picture, recorded. The route was known to the drafting before any question was put. Asked, blind to the number, what the horse's push against the taut rope is, he answered in his images: "the horse stands at the edge of the rope – in the now the balance is 1:1 – the balance breaks now – the pull is from behind and the front – it breaks backwards, the now moves forward, the record history accumulates – the horse is held in place by eighteen ropes,

and the eighteen ropes are also the configurations of the record history – think of it walking into space at and as the edge of a ball – the hold holds you – beyond the edge is potential, and potential pushes back as a relative quality of the record history itself – the edge and the walker and the ball are all the same thing." What those words carry: the ball, with the hold inside it and nothing written beyond its edge, which is the shell picture's geometry; and a balance two-sided at every now, exact, breaking forward, which is its E = 0. What they do not carry is the volume of a ball or the half in the square; those are AP08's, and no reading of his word "potential" is made to stand for the kinetic side. The picture is recorded as consistent with the route – the hold not placed beyond the edge, the balance not left inexact, the edge going out and not round – and it carries no weight in the count.

The order on record. The two shapes of §6 were known to the drafting to require the square before the forcing from G's dimensions was found. The forcing does not depend on them; it depends on G's dimensions and the stated balance, and it would hold if no era had ever been measured. The describing came first, the sky's requirement second, the reason third.

What the no-energy line is worth. The work books no energy for the leak: it enters the balance as its own rate squared, in the seat where the standard equation writes an energy density, and no density is written there because the leak is a fractional rate of the room, not a content of it – AP45's dimension rulings govern. That refusal is bookkeeping and is said to be: at the level of the balance a constant rate squared and a constant density are the same term, and no observation there tells them apart. It has consequences only where the work prices energy – AP44, AP45, AP47 – and none here.

6 – The Two Thinnings, and the Shapes

Two kinds in the census. A held record – a rock – is a three-dimensional coupling that has mass; its information propagates under constraint while gravity holds it in place against the stiffness of the substrate, and the record persists. A running reading – light – is the line.

Light pays the stretch. As the room grows, a held record pays the room: its share of the census thins with the volume, three dimensions. A running reading pays the room and its own line: the line is itself pulled long as the room grows, so light thins by four. The extra dimension is not a slight tip. The ε is the per-tick shed; the extra dimension is its integral over the room's whole growth – AP45's SHED line, the line that integrates.

The shapes. Under the equation of §5 a census thinning by a count n grows the room as t to the power 2/n while it dominates. While light outweighs the records, $t^{2/4} = t^{½}$. Once the records outweigh light, $t^{2/3}$. These are the standard equation's radiation-era and matter-era solutions; what is the work's in them is the counts – the room's three, the line's one, the balance's two – and the sky's two shapes are the counts read back.

The alternative, shown dead. The four was stated first; the question was then asked whether the line's extra dimension might instead be the same $+1\times\varepsilon$, the slightest tip of the scale, rather than a whole dimension. Run side by side: with light thinning by three plus ε the first era's shape is indistinguishable from the second's, and the relic glow could not be what it is. The glow is 3000 K stretched to 2.725 K, a factor of eleven hundred – the line paying the whole stretch. Four stands on its derivation; three plus ε is eliminated by the glow, which is data doing what KS-CCC.1 lets data do – eliminate, not generate.

7 – The ε's Entry, and the Corpse of the Other

The recursion. The volume covered in one beat is not the volume covered in the next: $B_2 = B_1 + L(B_1)$, $B_3 = B_2 + L(B_2)$. The same time processes more volume. That, as described, "is why the universe expands and why it accelerates"; in the equation it is why the expansion accelerates – the eras' expansion is the hold's. The leak is a structural rate – a fixed fractional rate of the room – and the recursion is geometric at that rate: AP46 §8's compounding as a recursion, scale-free, the same law per tick or per age. In the equation a constant H_ε is exactly that: a term that does not thin as the room grows, so that once the hold has thinned below it the room's growth compounds. The size of the universe is the assembly and the leakage that has happened to date.

Where the ε enters. The axiom writes the cost onto the balance itself: 1:1 + 1×ε. The leak enters the balance as its own rate squared, $\text{stretch}^2 = k \cdot G \cdot \rho + H_\varepsilon^2$, and not as a rate added to the stretch. A ruling by the axiom's form, and tested.

The corpse of the other. Both entries were run. With the ε added as a rate to the stretch, and the hold rate today taken from the work's own partition – $\sqrt{0.3115} \times 67.45 = 37.6$ km s^{-1} Mpc^{-1} – the age comes out 12.1 billion years at a rate of 74.3 and 12.7 at 67.45: below the floor of AP46's window, 13.17, for any measured rate. To reach the cycle the additive entry needs a rate near 58, which nothing measures. Read the other way – the work's partition as a share of the rate rather than of the census – it gives 14.9 at 74.3 and 16.4 at 67.45, above the window's ceiling. Dead in both readings, in opposite directions.

The stance, carried. In the balance the leak's settled rate, $H_{\varepsilon,\infty}$, is a constant of structure – AP46's intrinsic $w = -1$ – and what the surveys measure is AP42's sourced reservoir and the hold's unfinished settling. In the settled limit today's value and the settled constant coincide, and what falls toward it as the hold thins is the total stretch H, not the leak. While the hold still settles today's value may sit above the settled one; that displacement is AP46's $w > -1$ late, its shape is D48's, and its effect on §8's number is sized there. This paper adds nothing to the stance and takes nothing from it.

8 – The Rate

The three numbers the work already holds. AP42's partition: 31.15 per cent of the census held, 68.85 per cent the reservoir the leak returns to – one hold read three ways, AP46 §10. AP46's cycle: 13.830 billion years, one lane wide. This paper's balance, the Friedmann equation.

The pure number. At a given partition the equation fixes rate times age as a pure number – the standard closed form, $H_0 t_0 = (2/(3\sqrt{\Omega_\Lambda}))\cdot\operatorname{arcsinh}\sqrt{(\Omega_\Lambda/\Omega_m)}$. At 31.15 per cent held it is 0.954; with the sky's light census included 0.9536; at the sky's own partition, 31.5 per cent, 0.951. The differences are below the window.

The rate, and its window. Rate times age is 0.954; the age is the cycle; so

$H_0 = 0.954 \times 70.70 = 67.45$ km s^{-1} Mpc^{-1}.

The window is the cycle's own lane, 0.659 billion years either side: an age of 13.17 gives 70.8, an age of 14.49 gives 64.4 – symmetric in age, 3.4 above and 3.1 below in rate. The partition's contribution to the pure number, 0.954 against 0.951 across the work's and the sky's shares, is a fifteenth of the lane. Nothing was fitted; the three ingredients were fixed by AP42, AP46, and §§5–7 in that order.

In plain words. Take the age the work already derived – one cycle, 13.83 billion years. Take the share of the sky that is still held – the work's own 31 per cent. Ask how fast a room whose hold is that share and whose age is that long must be growing today, under the balance of §5. The answer is a pure number over the age: 0.954 over 13.83 billion years – in the astronomers' units, 67 and a half kilometres per second for every megaparsec. The relic glow's own value is 67.4 ± 0.5.

What this is, and is not. A closure, not a fresh prediction. AP42's partition landed on the glow's partition; AP46's cycle landed on the glow's age; given the equation's form, a partition and an age, the rate is arithmetic. That makes AP42's provenance the one structural thing between this paper and its headline, and it is stated with its locus. AP42 §3.4 and §5 give the partition as a count: the dark sector as twenty twenty-firsts and the visible as one, and inside the dark sector the split by a constant-feeding kernel whose timescale is six twenty-firsts of the age – so the kernel is evaluated at $t/\tau = 21/6$ whatever the age is, and no age enters the partition, as AP42 §5 says. No parameter is fitted, and the comparison to the glow came after. AP42 compares to the glow's TT,TE,EE+lowE+lensing+BAO column (Planck 2018 results VI, Table 2), net of radiation as its §3.4 states: the visible's 4.76 against 4.86, two per cent low; the dark matter's 26.39 against 26.07, one per cent high; the dark energy's 68.85 against 68.89. Against the same table's lensing column, which §10 quotes for the rate, the visible is 4.93 and the miss is three and a half per cent, the dark matter 26.45 and the dark energy 68.47, half a per cent off. A partition matched to the sky would not miss the visible by two or three per cent; a partition counted from twenty-one channels does. The closure is exactly as strong as that provenance. What is new is that the work's cosmology closes on all three of the

sky's numbers at once, and the closure could have failed in exactly one way: the structure forcing a different placement of the ε. §7 shows the corpse that would have left. A pass is not a fit.

What was pre-registered, and what happened. The README of 3 September pre-registered, before any arithmetic, that AP46's chain read as a rate gives 70.7, that today's rate was expected above that settled beat with the tail still adding, and that the derivation's late limit must land on it. Today's rate is 67.45 and the late limit is at or below 56; both are below 70.7, and the direction was the other way. The rate-reading of the chain is eliminated by the sky, as KS-CCC.1 permits data to do; the time-reading – the chain as the cycle – stands, and it is the one AP46 §9 froze. The rule that decides what a miss does, stated so it is not written after the fact: a pre-registered item fires a switch if a switch was armed on it – KS-STRETCH.3 on the age, KS-STRETCH.4 on the eras, KS-45.1 on the rate – and an expectation without a switch, like the direction and the magnitude the README left to this paper to derive, is shown as a miss and fires nothing. The direction was the second kind; AP46 §9, which carried it, moves by dated note in §13.

The clock spread. The primer assigned this paper the adjudication of the residual-factor clock spread, 0.90 / 0.86 / 0.75, three factors of the bare thread against three clocks. The comparison target is adjudicated by the same rule: the chain is a time, so its target is the age, and the factor against the age – 0.86, the raw thread's 11.85 against 13.79, which the duty cycle 21/18 closes to +0.31% as AP46 §9 records – is the one that stands; any factor against a Hubble time at some H_0 is a rate-reading and is eliminated with it. The spread's source is the primer itself, which carries it from the conversations before the primer was written; no other file holds it, and the adjudication is by the rule stated here.

The tail, sized. The pure number is the w = –1 limit, the constant-ε reading inherited from AP46's frozen stance. With the tail as a constant departure, w = –0.95 gives 66.9, –0.9 gives 66.4, –0.8 gives 65.2 – all inside the window. The tail is a rider on the number, not a defect in it, provided today's departure is no larger than about 0.2, which is the order the surveys currently prefer.

AP42's feeding history, declared. The pure number is integrated under this paper's own dilution counts – held records thinning as the room's three, H_ε constant. AP42's history has the held census converting into the reservoir on its 3.9-billion-year timescale, a different history of the rate and hence a different pure number. This paper takes AP42's present shares as an input and not its dynamics; the direction of the difference cannot be fixed without the feeding history, and the sensitivity is unbounded until D48 is paid. It is carried on KS-ASM.2.

What 70.7 is, and the settled rate counted. The cycle's inverse, 70.70, is not a rate; AP46 §9 refused it as one and this paper says why. Under the balance the leak's rate today is $H_0 \times \sqrt{0.6885} = 56.0$ km s^{-1} Mpc^{-1}, and under AP46's frozen stance that is the settled rate itself: $0.954 \times \sqrt{0.6885} = 0.792$ of the cycle's inverse. Every ingredient is the work's – the cycle, the partition, the balance – so the settled rate is counted, and it is not the cycle's inverse. AP46 set that pure number to one in two places: its §5, read literally, put the settled rate at the

thread’s inverse, 82.5; its §9, read as a rate, at the cycle’s inverse, 70.7. The balance sets it to 0.792, and both readings are eliminated. The α^{18} chain prices the cycle – an escape count read as an interval – and the settled rate is that interval’s inverse scaled by the balance at the partition. And the seat AP08 admits for Λ is occupied by that same number in other units – $\Lambda = 3H_{\varepsilon,\infty}^2/c^2$, with $H_{\varepsilon,\infty} = 0.792$ of the cycle’s inverse, $1.10 \times 10^{-52}\ \mathrm{m}^{-2}$ – which is the closure of this section restated, not a second result: if the closure holds, Λ follows, and if the closure falls, so does it.

9 – The Era Table

Pass or fail, one line each, against the targets pre-registered in AP46 §12 and the primer §3. Every pass is the standard equation's pass; what the work adds to each line is stated, and inputs and riders are named where they enter.

The first era, $a \propto t^{1/2}$. PASS – the equation's radiation-era solution, the thinning count four from §6.

The second era, $a \propto t^{2/3}$. PASS – the equation's matter-era solution, the thinning count three from §6.

The handover between them at the recorded epoch. PASS – with one input named. The handover falls where the running census and the held census weigh the same. The held census is the work's own, 31.15 per cent at 67.45, $\Omega_m h^2 = 0.1417$; the running census is the sky's – photons and the relativistic neutrinos, $\Omega_r h^2 = 4.15 \times 10^{-5}$ – and the handover is at $1 + z = 3.4 \times 10^3$, the recorded epoch (Planck 2018, $z_{eq} \approx 3400$). The epoch is a ratio, not a count; the work has no line for the light census and takes it from the sky as AP46 takes α and m_e from the table.

The first minutes' nuclei. PASS – on the standard count, AP08's. The rate at the temperatures of the first minutes is the equation's with light dominant; the helium and deuterium yields fix that rate to a few per cent, the bound quoted as the number of light relativistic species.

The relic glow. PASS – on the same count; and the glow is §6's first thinning seen directly, 3000 K at last scattering, 2.725 K now.

The late inheritance at the recorded onset. PASS – at the work's own partition, in the constant-ε reading, with D48 as its rider. The leak's term and the hold's deceleration cancel at $z = 0.64$, where the room's growth stops slowing and starts compounding; the leak and the hold weigh the same at $z = 0.30$; the supernova record places the onset of acceleration near $z \approx 0.6$–0.7. AP42 §4.2 quotes the standard crossover as $z \approx 0.38$, the same quantity at an older partition, and places its own sourced crossover near 0.9 – AP42's D48, without which this line's pass is not to be quoted.

The roof before the nuclei. BOUNDED – not derived. The assembly completes, and the ringing is quiet, before the first second: a storm still ringing at the temperatures of the nuclei would have shifted the yields the fourth line passes on; α is steady at the glow to a few parts in a thousand and in the quasars' light to about a part in a million. The storm's length is D-ASM.1.

No target fails. Two lines pass on the thinning counts, one with an input, two on AP08's count, one with a rider, one is bounded, and every line says which.

10 – The Seam, Closed

What AP46 opened. Under the standard equation at the work's partition an age of 13.83 needs a rate of 67.45, and a rate of 74.3 gives an age of 12.55 – two lanes below the cycle. (AP46 §9 quotes 12.52 at the sky's partition; same relation, one share apart.) The work held both a one-cycle age and a rate of 74.3, and AP46 pre-registered that AP48 would derive a non-standard relation reconciling them or one edge of the family would fire: KS-45.1 or KS-STRETCH.3.

How it closed. By adjudication, not reconciliation. The derivation is the standard relation; the age survives; the work's previous rate does not. This paper does not save both of AP46's numbers.

One rate. The rulings close the one door a second rate could have come through: records get written at a consistent rate; it cannot speed up; it can write more records at once, which might look like speed and is not; the now's tug does not pull – it is just now. RULED, and narrowly: there is no structural mechanism in the work for a rate read from here and now to sit above the rate written in the record. The uniqueness of the rate itself is the equation's – one integral, one number – and the describing is not pressed into proving anything about the Cepheids.

The side the structure is on, with its source lines. The relic glow: 67.4 ± 0.5 (Planck 2018 results VI, Table 2, TT,TE,EE+lowE+lensing; with BAO, 67.66 ± 0.42). The Cepheid ladder remeasured with JWST: 73.49 ± 0.93 (Riess et al. 2025, ApJL 992, L34, doi 10.3847/2041-8213/ae0ad6; the 2026 decade review, Cai and Wang, RAA, doi 10.1088/1674-4527/ae842f, beside it). The red-giant ladders in the Chicago–Carnegie programme's hands (Freedman et al. 2025, ApJ, doi 10.3847/1538-4357/adce78): the programme's best TRGB-alone value 70.39 ± 1.22 (stat) ± 1.33 (sys) ± 0.70 (σ_SN); from JWST data only, 68.81 ± 1.79 ± 1.32 for the tip of the red giant branch and 67.80 ± 2.17 ± 1.64 for the JAGB method. The same methods in the SH0ES team's hands do not sit lower – their complete HST and JWST red-giant calibration sample (Li et al. 2026, ApJ 997, 115, doi 10.3847/1538-4357/ae1f17) returns 72.1 to 73.3 ± 1.8, near its Cepheids, as the decade review reports it – so the lower values are one programme's position, not the method's. The work's window, 64.4 to 70.8, contains the glow and the central values of the Chicago–Carnegie red-giant ladders and excludes the Cepheid ladder and the SH0ES red-giant values; the TRGB-alone value sits at the window's upper edge, inside on its central value and straddling it on its total error. So this paper says: the Cepheid ladder's 73 is not the expansion rate. Either that ladder's systematics are found, or this paper dies on KS-ASM.1 – and it can die within a few years of JWST samples.

What the side is worth. The side this paper takes is the standard model's. If the Cepheid ladder is confirmed as the expansion rate, KS-ASM.1 fires and flat ΛCDM at the sky's partition fails with it; on that edge the work gains nothing over the standard model and claims nothing. What is the work's here is not the number but the closure – an age and a partition derived by counting that, under the standard equation, sit on the glow's side and not the ladder's. The distinctive prediction the work used to carry on H_0, a value above both camps, is gone.

The floor, re-read, with the file open. The work's 74.3 came through AP18. Its §4 derives $a_0 = 1.0445 \times cH_0/(2\pi)$. Its §5 tests it against an empirical acceleration scale of $1.20 \pm 0.02 \times 10^{-10}$ m s^{-2}, citing McGaugh et al. 2016 and Lelli et al. 2017, lands 0.4% low at $H_0 = 74$, and calls the match sub-percent; its §8 arms KS-45.1 as $H_0 = 74.3 \pm 1.2$. The ±0.02 is the random error alone. The sources AP18 cites give the scale as 1.20 ± 0.02 (random) $\pm$ 0.24 (systematic) $\times 10^{-10}$ m s^{-2}, the systematic from the stellar mass-to-light ratios and the distances. Inverted, 0.24/1.20 is twenty per cent, so the floor's rate was 74.3 ± 14.9; it cannot tell 67 from 74. At this paper's 67.45 the floor gives 1.089×10^{-10}, 9.2% below the scale and 0.46σ on the honest error; across the window it stays between 0.24σ and 0.67σ. The coefficient KS-45 tests, 0.1662, stands against the sky's 0.183 ± 0.037 at this rate, 0.46σ, live. The floor's relation survives; its registered width did not.

KS-45.1 fires. On the width it registered, KS-45.1's claim sits 5.7σ from the work's own derived rate, (74.3 – 67.45)/1.2; folding in the work's window, ±3.2, the separation is about two sigma, and the switch fires on its own terms, which are its registered width. AP46 pre-registered that if AP48 derived the standard relation this switch or KS-STRETCH.3 would fire; the age stands; this is the edge. Two dispositions were open. FIRED with erratum: the switch fires as registered, the corpse is shown, and the erratum records that its width omitted the systematic, so that the floor's relation survives and KS-45's coefficient test stands live. SUPERSEDED by erratum: a mis-registered width never tested anything and a dated erratum retires it unfired. The first was ruled for one reason — the house's law is that nothing fired is repaired, and re-sizing the width of a live switch after the work's own derivation has contradicted it, then not counting the switch as fired, is a repair — and on 3 September it was confirmed in one word: fired. The width correction is right and stands beside the corpse, not instead of it. KS-ASM.1 freezes beside the corpse as the work's H_0 entry.

The edge that fires if this paper is wrong. If the Cepheid ladder is confirmed as the expansion rate, the balance stands and the age at 73 and the work's partition is 12.78 billion years – outside AP46's window. KS-STRETCH.3 fires, as AP46 pre-registered, and AP46's chain reverts to a candidate. This paper's form, counts, and corpse stand either way.

11 – What This Paper Does Not Claim

It does not claim the Friedmann equation as its own. It names it as AP08's homogeneous case, says what of it the work forces – the form, the flatness, the placement of the ε – and grades the rest as the standard equation's.

It does not claim the count in front of G as its own; the count is AP08's, with AP08's switches. It does not claim the storm's length, nor the count that completes the assembly; both are open, and the roof's date is bounded by nature, not derived. It does not claim the settled rate as a new number; under the balance and AP46's stance it is 0.792 of the cycle's inverse, made of what the work already held, and it claims no displacement of today's value from it, which is the tail and D48's.

It does not claim the rate to better than its window. It does not claim the awareness window, the wobble's spectrum, or the eye loop. It does not claim the shape of the observed equation of state, which is AP42's D48 and AP46's stance, both untouched, and it does not bound the feeding history's effect on the rate.

It adds no energy-budget term of any size. It does not touch α's value. It does not repair or reweigh anything fired, and it does not repair KS-45.1.

12 – Kill Switches

Three switches are armed at this lock; one registered switch is met; one switch of the work fires and is shown. Each has a claim, a test, a status, and a specified recovery position. Identifiers are pending Master Kill Switch Registry registration at the wave.

KS-ASM.1 — The rate

Claim. The expansion rate is 0.954 times the cycle's inverse: 67.45 km s^{-1} Mpc^{-1}, window 64.4 to 70.8, one lane-time either side of the cycle. There is one expansion rate, and the Cepheid ladder's 73 is not it.

Test. The resolution of the Hubble tension: larger JWST samples on every ladder, the red-giant and JAGB ladders, gravitational-wave sirens, time-delay lenses. Fires if the expansion rate, as the data settle it, lands outside the window in either direction, including if the Cepheid ladder is confirmed as the expansion rate.

Status. LIVE — EMPIRICAL. On its upper edge this switch and flat ΛCDM at the sky's partition die together; the work claims no advantage over the standard model there.

Recovery. The form, the counts, and the corpse of §7 stand. If the rate lands above the window, the age at the work's partition falls outside AP46's window and KS-STRETCH.3 fires as pre-registered; AP46's chain reverts to a candidate and AP42's partition is re-examined. If below, the same, the other way.

KS-ASM.2 — The balance

Claim. The room's stretch enters the balance squared; the balance is flat; the ε enters as its own rate squared; light thins by four and a held record by three.

Test. Structural: fires if any recorded era requires the additive entry of the ε or a thinning count other than four and three; fires if AP42's feeding history, once written (D48), moves the pure number of §8 by more than the window can carry. Empirical: the light-element yields and the relic glow's rate at their current bounds; the growth shapes at high redshift; the sky's curvature share, which fires the flatness ruling if found non-zero at detection significance, five sigma, beyond the balance's carrying – the current bound is consistent with zero at two parts in a thousand.

Status. LIVE — STRUCTURAL and EMPIRICAL.

Recovery. §§3–4 stand as describings; the era claim retires; KS-STRETCH.4 re-opens and fires; the rate of §8 falls with the balance.

KS-ASM.3 — The roof before the nuclei

Claim. The assembly completes, and the storm's ringing is quiet, before the first second: the constants are steady from before the nuclei form.

Test. Fires if α or G is found to vary at the epochs of the nuclei or the glow beyond the bounds those records set, or if the light-element yields require an expansion rate in the first minutes that the balance with AP08's count cannot give. Comparative limb, from the stated settling order, carried and not counted as a reachable edge: fires if the electromagnetic coupling is found to vary at early times while gravity's coupling is steady. Its weakness is on the page: α is pinned to a part in a million where G is bounded at the tens of per cent, so the limb is safe by the looseness of G's bounds.

Status. LIVE — EMPIRICAL.

Recovery. On the first two limbs the storm's length becomes load-bearing and D-ASM.1 must be paid, or the paper dies. On the comparative limb the settling order of §3 retires to STATED and the storm's description stands without it.

KS-STRETCH.4 — The era surface (registered by AP46 for this paper)

Claim. The storm's tail reproduces the two known era-forms, their transition, the nuclei, and the relic glow.

Test. §9.

Status. MET at this lock: the shapes on the work's counts; the epoch with its input named; the rates on AP08's count. CLOSED, with the dependency carried forward by KS-ASM.2.

Recovery. If KS-ASM.2 fires, this switch re-opens and fires with it; AP46's standing returns to the dock.

KS-45.1 — The work's H_0 (AP18; fired here, shown)

Claim, as registered. $H_0 = 2\pi a_0/(\alpha c) = 74.3 \pm 1.2$ km s^{-1} Mpc^{-1}, the floor inverted.

What fired it. The work's own derived rate, 67.45, at 5.7σ on the registered width – about two sigma on the work's window – under the pre-registration of AP46 §9 that the standard relation fires this edge.

Status. FIRED, 3 September 2026. Shown; never repaired; never deleted. Beside it, the erratum: the registered width omitted the ±0.24 systematic; on the honest width, 74.3 ± 14.9, the floor's relation survives at 0.46σ and KS-45 stands live. KS-ASM.1 is the work's H_0 entry from this lock.

Recovery. None claimed for the switch. The floor stands as a relation; AP18's erratum is booked in §13.

Why these three and not more

A switch on the storm's length would have no edge to fire on: the date is bounded by nature on both sides and no count is claimed. A switch on the settled rate would duplicate KS-ASM.1 and AP42's partition switches, since the number is made of nothing else. A switch on the count in front of G would duplicate AP08's. The awareness window and the loop are not claims. Three switches with a reachable edge, one of them also carrying a weak limb it does not count; one met; one fired.

13 – What This Establishes and What Remains Open

What this paper closes

The storm's law: exponential growth from records writing records at the bare rate; the ropes as the doors, tightening together on the work's one clock; the lean as the origin of the concentrations; the readings' logical order of settling, ending with gravity and c. The lock as tension at completion, the tug engaged from the first click, with the roof as the finite reach the work already carried. The balance as the Friedmann equation, AP08's homogeneous case, with the square from G's dimensions, flatness on two rulings, the ε in Λ's seat, and the order on the page. The two thinning counts and, as the equation's solutions, the two shapes. The ε's entry in the balance, with the other entry's corpse shown. The rate, 67.45, window 64.4 to 70.8, as a closure of the work's own three numbers; the settled rate, 0.792 of the cycle's inverse, counted from the same three, and written into AP08's Λ as the same closure in other units. One expansion rate and the side the structure is on, with what that side is worth. The seam, by adjudication. KS-45.1, fired and shown. D-STRETCH.1 on the settling law and the seam. KS-STRETCH.4, met.

What this paper does not close

The storm's length and the completing count (D-ASM.1). The observed equation of state's shape, the tail's displacement of today's leak rate, and the feeding history's effect on the rate (D48). AP08's own exposures on the count (KS-I.1, KS-I.3, KS-I.8) and on Λ (KS-I.7), which this paper inherits and does not close. The awareness window. The loop.

Provenance and lineage

The four sentences of AP46 that move on adoption, by dated note, the landing untouched, no digit changed. §5: "$H \cdot \tau = \ell$ – the growth per tick equals the leak per tick," read as the settled rate; re-read as the cycle. §8, first paragraph: "every held grain sheds α^{18} of itself per tick," read as the stretch's magnitude; re-read as the escape count pricing the cycle. §9, last paragraph: "the work's stance is that both are right and the relation between them is not the standard one," with the expected direction; superseded – the relation is the standard one, the rate was not right, and the direction was the other way. §10: "the integral is the expansion," read as the α^{18} shed integrated; re-read as the stretch's constant part, 0.792 of the cycle's inverse by the balance at the partition. AP46's mechanism and its age claim stand; its settled rate stays counted, with the pure number in front of the cycle's inverse corrected from one to 0.792.

What moves on adoption

At the wave, every locus that carries the work's previous rate or its posture:

Locus	What it carries	Action
Master Kill Switch Registry	KS-45.1 LIVE (H_0 = 74.3 ± 1.2)	FIRED, 3 Sep 2026; erratum line on the width; KS-ASM.1–.3 entered; KS-STRETCH.4 REGISTERED → CLOSED (met)
AP18 §§5, 7, 8; Notebook VI bound copy	the sub-percent match at 74; the Hubble prediction; KS-45.1's width; the correction factor written α	erratum: systematic restored, match restated as a half-sigma consistency at the work's rate, factor renamed as the site already renames it; KS-45.1 shown fired
AP21 §0.9 / §2 echoes	"≈0.4% at 74; exact at 74.3"	dated note pointing to AP18's erratum
AP17 and KS-39	the first-order floor at $H_0 \approx 71$; residual "<1% at 74"	dated note: 9.2% at 67.45, within the scale's systematic
AP46 §5, §8 ¶1, §9 last ¶, §10	the four sentences above	dated supersession note; D-STRETCH.1 PAID (two limbs)
AP42 §4.2; §5	ΛCDM crossover z ≈ 0.38; "t_H ≈ 1/H_0 at $H_0 \approx 71$"	dated note: 0.30 at the work's partition; t_H is the age, 0.954/H_0 at 67.45, and the partition is unchanged as §5 says
AP08 KS-I.7; §4	Λ's value undetermined; the weak-field family $a\cdot\nabla^2\Phi + b\cdot\Phi = A\cdot\rho$	re-read at the wave: Λ's seat carries §8's closure in other units, 1.10×10^{-52} m^{-2}, and AP08 decides its switch; one question carried to the re-read – the weak-field limit of §8's tensor form with Λ is Poisson with a constant source, $\nabla^2\Phi = 4\pi G\rho - \Lambda c^2$, and whether §4's Φ-proportional term is meant as that limit is AP08's to say
Master Root, the H_0 lines	"predicts H_0 = 74.3 ± 1.2 … the Hubble prediction's home is AP18"	superseded at the next Root revision
Ø Predictions; the scoreboard	the H_0 line as a landing at 0.55σ	line re-read: closure at 67.45, window 64.4–70.8, KS-ASM.1; the old line shown fired

Locus	What it carries	Action
the420code.org/proofs	KS-45, KS-45.1, KS-45.2 filed under AP13; AP18's summary	the switches moved to AP18's entry and KS-45.1 shown fired; the H_0 limb of the one wave
Rosin Ø Prose and Proofs, the print set of 13 July	"74.3 is above both camps"; the first-order floor	revised at the wave, with the rest of the work's H_0 posture, on a stated rule
WP-ASM.1 v1.0; WP-ROAD.1 v1.2	"late September" for late-August describings	dated errata beside each; the hashed files untouched

Nothing else numerical moves. This table is the wave's H_0 limb.

The closing

The universe was assembled. Records wrote records until the building stood; the ropes went taut and the constants engaged; after that the room grew as the hold allowed – the equation is Friedmann's, AP08's own, and the counts in it are the work's – and then the leak outgrew the hold and the compounding began. Three numbers the work already held close on one rate and on the settled rate behind it; the rate takes the standard model's side; and the work's old rate is shown dead on the page, in one word, beside the reason its error bar was wrong. Nature agrees, or nature doesn't. That is all that matters.

Claim Summary

Section 0. Contract with the reader: dependencies, axiom mapping, epistemic status, switches, debts, items held open, relationships, and the four things said first.

Section 1. DEFINITIONAL. The storm, the lock, the tail, the beat two ways, the census and its two kinds, the balance, a thinning count, the window, symbols.

Section 2. RULED. Six readings in three dimensions and the now; AS as Assembled State; the twenty-one clicks caged.

Section 3. DERIVED on the stated linearity; RULED; OPEN. Records write records from the first record; the landscape; the ropes as the doors; together, then a lean; the logical order of settling with AP28's identity as a completion identity and its weak edge; the serial timetable dead with its arithmetic; the clock canon's; the length open as a count of knots.

Section 4. RULED; CANON; BOUNDED. Taut at reach and count; the ropes as the constraint; the roof as c/H; the dimensional head start; the tug from the first click, stability at completion, c constant only with G; the date bounded.

Section 5. RULED; DERIVED; IDENTIFIED. The 1:1 with the cost paid; direction before pace; the square from G's dimensions; the equation as AP08's homogeneous case with the ε in Λ's seat; flatness on two rulings; the count AP08's; the work's picture recorded as consistent; the order on record; the no-energy line as bookkeeping.

Section 6. DERIVED. Four and three; the equation's $t^{1/2}$ and $t^{2/3}$; three-plus-ε eliminated by the glow.

Section 7. RULED. The recursion as the constant term; the leak in the balance; the additive corpse in both readings; the stance with its two quantities.

Section 8. DERIVED, a closure. The closed form; 0.954 × 70.70 = 67.45, window 64.4–70.8; plain words; what it is and is not, with AP42's locus; the misses shown and the rule stated; the clock spread by rule, the primer its source; the tail sized; D48 declared; the settled rate counted at 0.792 and written into AP08's Λ as the same closure.

Section 9. PASS/FAIL. Two shapes on counts; the handover with the light census named; the nuclei and the glow on AP08's count; the onset with D48's rider; the roof bounded.

Section 10. RULED. Adjudication, not reconciliation; one rate, scoped; the side with its source lines and its worth; the floor re-read with the file open; KS-45.1 fired, 3 September 2026; the edge that fires if wrong.

Section 11. REFUSALS. Section 12. FALSIFICATION REGISTER. Section 13. SYNTHESIS.

Conditionality Footer

Everything above is conditional on the axiom and its locked developments, and is exactly as strong as they are. If AP42's partition or AP46's cycle falls, the rate of §8 falls with it. If AP08's field equations fall on their own switches, the balance falls with them. If any recorded era requires the ε added to the stretch, or the sky's curvature is found non-zero at detection significance beyond the balance's carrying, or the feeding history moves the pure number outside the window, the balance retires and KS-STRETCH.4 re-opens. If the expansion rate settles outside 64.4 to 70.8, KS-ASM.1 fires and the family's pre-registered edge fires with it – and on the upper edge the standard model at the sky's partition fails alongside. If the constants are found to vary before the nuclei, the storm's length becomes load-bearing.

The proof names the equation it arrives at and whose it is, names its inputs and its rider where they enter, shows the corpse of the entry it refused and the corpse of the timetable it withdrew, states the one step it found in the wrong order, shows the two pre-registered items it missed, fires a switch of its own body of work on the page, and takes a side it can lose.

Dependencies. Ø Dissolutions. AP06, AP12, AP46 §5 (the tick). AP08 (the field equations; KS-I.1, I.3, I.7, I.8). AP24, AP28, AP44 §9, AP30. AP45 §9. AP46 (the cycle; KS-STRETCH.2–.4; D-STRETCH.1; the seam). AP42 (the partition; KS-42.4; D48). AP21, AP18, AP15. AP04, AP41. WP-ASM.1, the README of 3 September 2026, the answers of that date, WP-BUMP.2 §1.

Dependents. AP46 (its settling law; its four sentences). AP18 (its erratum; its fired switch). AP08 (Λ's seat; KS-I.7's re-read). AP17, AP21, AP42 (dated notes). The Master Kill Switch Registry build after this paper. The Master Root. Ø Predictions and the scoreboard. The website. The Rosin Ø print set.

Kill switches closed by this paper. KS-STRETCH.4 (met).

Kill switches fired by this paper. KS-45.1, on the work's own derived rate, as AP46 pre-registered; shown; the erratum on its width beside it.

Kill switches that remain live in this paper. KS-ASM.1 through KS-ASM.3, armed. KS-STRETCH.2, KS-STRETCH.3, KS-42.4, KS-45, and AP08's KS-I.1, I.3, I.7, I.8 stand in their own papers, untouched.

Structural debts owed. D-ASM.1. Inherited: D-CCC.1 and D-BLINK.1; D48.

Items held open without claiming debt status. The awareness window. The wobble's spectrum. The eye loop, beside AP04. The eighteen doors as the strong force. The knot image, AP30's. The arena's coin.

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