

Addendum 362: The α -Power Scale Ladder

The cosmological scale-bridge is $1/H_0 = (\pi/2) \alpha^{-3} \tau_1$, derived to a single 2π ; and the withdrawal of the 361 unifying-floor observation (Addendum to Paper 14; consolidates 358a/359a; corrects 361)

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Abstract

Addendum 361 conjectured — flagged as observation, not theorem — that the Goldbach-weight null and the Hubble- 2π floor are “the same gap,” the corpus lacking a bridge from its intrinsic clock (the breath) to external scales. Grounding that conjecture in the corpus’s actual scale machinery yields two findings. **Positive: the cosmological scale-bridge is an α -power ladder, derived down to a single 2π .** Paper 14’s geometric hierarchy already derives the inner step: multiplication by π lifts α^{-1} to the breath, $T_{\text{breath}} = \pi \alpha^{-1} \tau_1$ (the surviving $G_1 = 432/T_{\text{breath}} - 1$ identity). Addendum 358a gives the outer step via the de Sitter horizon $a_0 = cH_0/2\pi$: $1/H_0 = (\alpha^{-2}/2)T_{\text{breath}}$. Composing,

$$\frac{1}{H_0} = \left(\frac{\alpha^{-2}}{2}\right)(\pi \alpha^{-1}) \tau_1 = \frac{\pi}{2} \alpha^{-3} \tau_1,$$

so the Hubble time is $(\pi/2) \alpha^{-3}$ fundamental periods (numerically 4.04×10^6 against measured $4.2\text{--}4.6 \times 10^6$, the $\sim 10\%$ 2π slack). The bridge is thus *derived* except for the single de Sitter 2π — more derived than 357a’s “named floor, no candidate.” **Correction: the 361 unification is withdrawn.** The two steps of the ladder differ in kind: the inner (α^{-1} , fundamental $\rightarrow$ breath) is Paper 14, derived; the outer (α^{-2} , breath $\rightarrow$ Hubble) is the de Sitter horizon, floored at the 2π . And the Goldbach null is not a scale-bridge floor at all — it is geometry/arithmetic *orthogonality* (360/361: the singular series is arithmetic, no geometric signal at any level). The breath bridges to physical external scales (cosmology) through horizon physics; the integer line is not a scale it “fails” to reach. So the conjectured single floor dissolves into one real bridge (cosmological) plus one orthogonality (geometry vs arithmetic). All claims pinned by `verify_P362.py` (9/9).

1 The ladder

Proposition 1.1 (The inner step is Paper 14’s π -lift, derived). *Paper 14 §2 (“The Geometric Hierarchy of Scales”) derives the breath as the next level of a π -multiplication hierarchy above α^{-1} : $T_{\text{breath}} = \pi \alpha^{-1}$ in fundamental (τ_1) units, the surviving content being the exact identity $G_1 = 432/T_{\text{breath}} - 1$ with $T_{\text{breath}} = \pi \alpha^{-1}$ (Addendum 266; Paper 37). Numerically $T_{\text{breath}}/\tau_1 = 430.59 = \pi \alpha^{-1}$. The fundamental $\rightarrow$ breath step is therefore α^{-1} and corpus-derived.*

Theorem 1.2 (The α -power scale ladder). *Combining Proposition 1.1 with the de Sitter outer step of Addendum 358a ($1/H_0 = (\alpha^{-2}/2)T_{\text{breath}}$),*

$$\frac{1}{H_0} = \frac{\pi}{2} \alpha^{-3} \tau_1,$$

the Hubble time is $(\pi/2)\alpha^{-3}$ fundamental periods. This evaluates to $4.04 \times 10^6 \tau_1$ against the measured 4.20×10^6 (SH0ES) and 4.55×10^6 (Planck) — consistent within the $\sim 10\%$ slack that is the un-derived de Sitter 2π (Addendum 359a). The cosmological scale is thus pinned to the fundamental period by a single α^{-3} and an $O(1)$ coefficient $\pi/2$, derived except for that 2π .

2 The correction

Remark 2.1 (The ladder is not a single principle). The two steps differ in power *and* in status: the inner step is α^{-1} and derived (Paper 14); the outer step is α^{-2} and floored at the de Sitter 2π (358a/359a). The α^{-3} of Theorem 1.2 factors as $\alpha^{-1} \cdot \alpha^{-2}$, two distinct mechanisms, not one uniform lift. There is no single scale-bridge principle generating the whole ladder.

Remark 2.2 (Withdrawal of the 361 unifying-floor observation). Addendum 361 observed (explicitly as conjecture, not theorem) that the Goldbach-weight null and the Hubble- 2π floor are the same gap. Grounding withdraws this. The cosmological floor is the de Sitter 2π — a *physical* horizon factor, with the rest of the bridge derived (Paper 14 π -lift plus 358a). The Goldbach null (360/361) is geometry/arithmetic *orthogonality*: the representation counts are the arithmetic singular series, and no geometric signal appears at any level; the integer line is not a physical scale the breath bridges to at all. The two are different in kind. What 361 got right is narrow — both involve the breath and an external structure — but the cosmological case is a (mostly derived) physical bridge, while the prime case is an orthogonality, not a missing bridge. The unification was over-reach and is withdrawn here.

Status

Positive. The cosmological scale-bridge is the α -power ladder $1/H_0 = (\pi/2)\alpha^{-3}\tau_1$ (Theorem 1.2): the inner step ($\times\pi\alpha^{-1}$, fundamental $\rightarrow$ breath) is derived by Paper 14’s geometric hierarchy (Proposition 1.1), and the outer step ($\times\alpha^{-2}/2$, breath $\rightarrow$ Hubble) is the 358a de Sitter bridge, floored only at the single 2π (359a). The cosmological scale is therefore pinned to the corpus fundamental period *derived down to one horizon factor* — sharper than 357a’s original “named floor, no candidate.”

Correction. The ladder is not a single principle (Remark 2.1), and the 361 conjecture that the Goldbach null and the Hubble floor are one gap is withdrawn (Remark 2.2): the cosmological case is a mostly-derived physical bridge with a 2π residual, the prime case is geometry/arithmetic orthogonality. The honest picture is one real bridge plus one orthogonality, not a unification. No new objects beyond the de Sitter relation; no published number changes. Verifier: `verify_P362.py`, 9/9 pass.

What remains. The lone residual of the cosmological bridge is unchanged and now isolated: the de Sitter 2π (the horizon-thermodynamics program of 359a). Everything else in $1/H_0 = (\pi/2)\alpha^{-3}\tau_1$ is corpus-derived. Closing the 2π would make the Hubble time a clean α^{-3} prediction from the fundamental period.