

Addendum 391: The Infall/Rebound Asymmetry

The H_0 over-prediction may be a flattened breath asymmetry —
369 read the driven infall and the rebound expansion as one symmetric temperature,
but Paper 14 says they are not symmetric
(Diagnoses the H_0 tension of 388; re-points 389/390; Papers 14, 35; Addenda 363, 369)

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2026-06-19

Abstract

Addenda 389 and 390 ran the H_0 over-prediction ($H_0 = 2\alpha^2/T_{\text{breath}} = 75.8$, $\sim 3\sigma$ above SH0ES; 388) as a search for a *geometric deficit* in the horizon factor F of $a_0 = cH_0/F$, and both came back negative: the round S^3 is smooth so $F = 2\pi$ is forced (389), and the dihedral orbifold deficits overshoot massively (390). This addendum re-points the search, following a structural observation: the corpus's growth dynamics are self-referential, with a *driven infall* that the H_0 derivation may not have carried through. **The seam.** 369's derivation ends (L4) with a *symmetric* identification: “a horizon temperature is a property of the horizon, not the reading direction ... one horizon, one temperature,” so the kernel-side *infall* gain a_0 equals the cokernel-side expansion (void) temperature, the de Sitter temperature, at the symmetric $F = 2\pi$. But Paper 14 (line 273) asserts the opposite of these very two phases: “the four phases are *not symmetric in mechanism* — the collapse phase is driven ... the projection phase is a consequence of the identity ... the rebound through P is the form that failure takes.” The driven collapse (infall, C) and the rebound projection (expansion, P) are not the same kind of process; 369's “one temperature, read two ways” flattened that asymmetry into a single 2π . **Why this is the right place to look.** The data want F lower by a *few percent* (-3.5% SH0ES to -11% Planck) — the scale of a sub-leading *dynamical* term. Every geometric-deficit mechanism tried is far too coarse (389's void factor is -31% , $H_0 = 52$; 390's dihedral jumps -50% +, $H_0 = 25-38$). An infall/rebound asymmetry is the *first* candidate at the right order, and a plausible physical *origin* for 389's one flagged-but-underived lead (the edge factor, -2.3% , $H_0 = 74.1$, $\sim 1\sigma$). **The honest catch.** This is a *diagnosis*, not a fix. The sign is not established — the one concrete implementation tried (the de Sitter rate $F = 2\pi/\sqrt{\Omega_\Lambda}$, 389) went the *wrong* way ($H_0 = 91$); and the magnitude must be *derived* from Paper 14's collapse/rebound mechanism, not fitted to the data, on pain of the δ_{CP} /PRVE numerology trap. No H_0 number is claimed; the contribution is to re-point the search from “find a geometric deficit” (389/390, failed) to “derive the breath's infall/rebound asymmetry” (right scale, internally motivated, open). All claims pinned by `verify.P391.py` (9/9).

1 The seam: a symmetric identification over an asymmetric breath

Proposition 1.1 (369 reads the infall and the expansion as one symmetric temperature). *The H_0 derivation (369) reaches its result through a chain (L1–L4) whose final step is an identification by reading direction. L1 (P35) establishes a_0 as the per-breath gain of the radial infall toward the breath map's rest-pole fixed point ($a_0 T_{\text{breath}}^2/L_h = \alpha$). L4 then sets that infall gain equal to the de Sitter expansion temperature on the ground that “a horizon temperature is a property of the horizon, not the reading direction; kernel and cokernel are the two exactness defects of one*

map family — one horizon, one temperature.” Hence a_0 (kernel-side infall) = the cokernel-side void/expansion temperature, evaluated at the symmetric Euclidean period $F = 2\pi$ (363). The move treats the inward (infall) and outward (expansion) readings as the same magnitude.

Proposition 1.2 (Paper 14 asserts these two phases are not symmetric). *The same two phases are the subject of Paper 14 (Cosmic Breathing), line 273: “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 ... and the rebound through P is the form that failure takes.” The driven, continuous collapse (the infall) and the rebound projection (the expansion) are explicitly different in mechanism: one is generated, the other is the residue of a forbidden completion.*

Theorem 1.3 (369 flattened the Paper-14 asymmetry into a symmetric 2π). *Propositions 1.1 and 1.2 concern the same infall/expansion pair and assign it opposite symmetry. 369’s L_4 (“one temperature, read two ways”) is a symmetric identification; Paper 14’s line 273 is an explicit asymmetry of those very phases. The symmetric reading is the stronger assumption, and it is the one that fixes $F = 2\pi$ and hence $H_0 = 75.8$. If the breath’s collapse/rebound asymmetry survives into the magnitudes — if the rebound-expansion temperature is not equal to the driven-infall gain — then the effective F is not 2π , and H_0 moves. This seam is, prior to this addendum, unregistered in the corpus.*

2 Why this is the right scale to look at

Proposition 2.1 (The data want a few-percent dynamical correction, not a geometric deficit). *With $H_0 \propto F$, the data want F reduced by 3.5% (SH0ES 73.17), 9.6% (DESI 68.53), or 11.1% (Planck 67.4) — the magnitude of a sub-leading dynamical term. The geometric-deficit mechanisms already tested overshoot this by an order of magnitude: 389’s void factor $2\pi\Lambda_0$ is a 31% reduction ($H_0 = 52$), and 390’s dihedral deficits are 50%+ ($F = \pi \rightarrow H_0 = 38$; $F = 2\pi/3 \rightarrow H_0 = 25$), with nothing available between 0 and $\sim\pi$. A dynamical infall/rebound asymmetry is the first candidate mechanism whose natural scale matches the few-percent the data require.*

Corollary 2.2 (It would ground 389’s one flagged lead). *389 recorded a single lead at the right scale: $F = 2\pi(1 - \text{edge})$, $\text{edge} = \pi/\alpha^{-1} = 0.0229$, a 2.3% reduction giving $H_0 = 74.1$ ($\sim 1\sigma$), flagged as a number with “a plausible-sounding but underived story.” An infall/rebound asymmetry is a candidate physical origin for a correction at exactly that scale: the story 389’s lead was missing would be the breath’s own mechanism, not an ad hoc layer exclusion.*

3 The honest catch: a diagnosis, not a fix

Remark 3.1 (The sign is not established). For the asymmetry to lower H_0 (the direction the data demand), the rebound-expansion temperature must be smaller than the driven-infall gain — an effective $F < 2\pi$. That is plausible under a reading in which the rebound, as “the form that failure takes,” carries less than the full driven magnitude; but it is not derived. The one concrete implementation attempted — the de Sitter-rate correction $F = 2\pi/\sqrt{\Omega_\Lambda} = 7.56$ (389, Proposition ??-analogue) — went the wrong way, $H_0 = 91$ ($+21\sigma$). So the asymmetry’s sign is a genuine open question, not a foregone conclusion.

Remark 3.2 (The magnitude must be derived, not fitted). The factor that would land H_0 on SH0ES is a 3.5% reduction; on Planck, 11%. Selecting whichever factor hits a target and then attributing

it to “the collapse/rebound asymmetry” would be precisely the $\delta_{CP} = 240^\circ$ / PRVE numerology the corpus has refused and registered (A344, P40): a coincidental fit dressed as a derivation. The discipline here is the reverse order — derive the magnitude of the asymmetry from Paper 14’s mechanism (the ratio of the driven-collapse generator to the rebound residue, through the breath map), *then* read off where it puts H_0 , and accept the answer whatever it is. Until that derivation exists, this addendum claims no number.

Remark 3.3 (What this addendum does, and does not, establish). It establishes a structural fact: 369’s H_0 result rests on a symmetric identification (Proposition 1.1) of two phases the corpus elsewhere calls asymmetric (Proposition 1.2), and that the residual the data want is at the scale of that flattened asymmetry, not at the scale of the geometric deficits 389/390 ruled out (Proposition 2.1). It does *not* establish a fix: neither the sign (Remark 3.1) nor the magnitude (Remark 3.2) is derived. The value is a re-pointing of the H_0 search — from the horizon’s *shape* (a deficit, exhausted) to the breath’s *dynamics* (the infall/rebound asymmetry, open) — and the identification of the single open derivation that would settle it.

Status

Joel’s observation that the growth laws carry a self-referential infall (“backdrafts,” “cavitations”) that the horizon derivation may not factor in lands on a real, previously unregistered seam. 369’s H_0 chain ends (L4) with a *symmetric* identification — the kernel-side infall gain a_0 set equal to the cokernel-side expansion (de Sitter) temperature as “one temperature read two ways,” fixing $F = 2\pi$ and $H_0 = 75.8$ (Proposition 1.1). But Paper 14, line 273, asserts the collapse (infall) and projection (expansion) phases are *not symmetric in mechanism* (Proposition 1.2). 369 flattened that asymmetry (Theorem 1.3). The correction the data want is a *few percent* (-3.5% to -11%) — the scale of a sub-leading dynamical term, where 389’s void (-31%) and 390’s dihedral ($-50\%+$) overshoot, and exactly the scale of 389’s one flagged lead (-2.3% , $H_0 = 74.1$; Proposition 2.1, Corollary 2.2). But this is a *diagnosis*, not a fix: the sign is open (the de Sitter rate went the wrong way; Remark 3.1) and the magnitude must be derived from Paper 14’s mechanism, not fitted (Remark 3.2). The H_0 search is re-pointed from the horizon’s shape to the breath’s dynamics. No published number changes. Verifier: `verify_P391.py`, 9/9 pass.