

Addendum 388: Falsification Scorecard (2026)

The corpus's attractor numbers confronted with current data

(A dated living ledger, in the spirit of Paper 40 and the P39 falsifiers)

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Abstract

The corpus makes numerical predictions that real data can falsify (Paper 39's pre-committed SPARC falsifiers; Paper 40's refutation ledger). This addendum gathers the principal “attractor numbers” and confronts each with a current (2025–2026) measurement, with an honest verdict. The result is a genuine mix. The dark-energy *density* lands cleanly: $\Lambda_0 = 1 - \pi^2/32 = 0.6916$ matches the observed $\Omega_\Lambda \approx 0.689$ to sub-percent (the new Addendum 387 result). The SPARC acceleration scale holds: the corpus a_0 sits within the SPARC error bar (the BTFR confrontation of Paper 39, 175 galaxies). The fine-structure constant agrees to 0.43 ppb (2.8σ , owned). But $H_0 = 2\alpha^2/T_{\text{breath}} = 75.8$ km/s/Mpc is in tension with all current data — it sits $\sim 3\sigma$ *above* even SH0ES (73.17), the local/high camp, so the corpus over-predicts H_0 . And the dark-energy *evolution* conflicts both ways: DESI DR2 now prefers an evolving dark energy (2.8 – 4.2σ over Λ CDM), which challenges the corpus's constant Λ_0 , while the corpus's own evolving fold-to-redshift gives the wrong shape (w_a far too small). One standing refutation (δ_{CP}) and one open future test (m_{ν_3}) round out the ledger. Headline: the corpus's dark-energy density is its best current data hit; its H_0 and its DE-evolution are its worst. All verdicts pinned by `verify_P388.py` (10/10); this is a *dated* confrontation, shifting as the data shift.

1 The scorecard

Prediction	Corpus value	Current data	Verdict
Dark-energy density Ω_Λ	$\Lambda_0 = 1 - \pi^2/32 = 0.6916$ (387/P38)	≈ 0.689 (Λ CDM; Planck 0.6847 ± 0.0073)	PASS ($\sim 0.4\%$)
MOND scale a_0	$0.976 \times$ (369)	empirical $1.2 \pm 0.26 \times 10^{-10} \text{ m/s}^2$ (SPARC, 175 gal.)	PASS (within err.)
α^{-1}	137.035999236 (A288)	CODATA 137.035999177	near-pass, 2.8σ
H_0	$2\alpha^2/T_{\text{breath}} = 75.8$	SH0ES 73.17 ± 0.86 ; Planck 67.4; DESI 68.53	consistent [†] (0.3σ , A393)
DE evolution (w_0, w_a)	fold $(-0.82, -0.25)$ (349a)	$\approx$ DESI DR2 $(-0.752, -0.86)$, evolving DE 2.8–4.2 σ	TENSION (both ways)
δ_{CP}	$\approx 240^\circ$	$\approx 177^\circ$, CP-cons. within 1σ	REFUTED (A344)
m_{ν_3}	48.7 meV	not yet measured	OPEN (JUNO/HK)

[†] **Patched 2026-06-19 (A393).** The H_0 row originally read **TENSION** ($\sim 3\sigma$ high). Addendum 393 showed that reading used an inconsistent error budget: $H_0 \propto \sqrt{a_0}$ through the chart’s single dimensionful anchor, so the H_0 prediction inherits the anchor’s $\pm 22\%$ (75.8 ± 8.2); applying the same anchor error used to PASS a_0 gives 0.32σ vs SH0ES (0.88σ DESI, 1.02σ Planck). Consistent within the calibration uncertainty — though the central value still leans high (not a confirmation). The prose of Sec. 2 below is the dated original; the $\sim 3\sigma$ figure there is the data-only number A393 supersedes.

2 Reading the ledger

Remark 3 (Where it lands, where it does not). The honest summary has three registers. *The hits.* The dark-energy density is the strongest current confirmation, and it is new: Addendum 387 identified dark energy with the cokernel void $\Lambda_0 = 1 - \pi^2/32$, and 0.6916 matches the observed $\Omega_\Lambda \approx 0.689$ to sub-percent. The SPARC acceleration scale holds within its (large) error bar, and the fine-structure constant agrees to under half a part-per-billion. *The tensions.* $H_0 = 75.8$ is the clearest problem: it lies $\sim 3\sigma$ above even SH0ES, the highest measurement, so the corpus overpredicts H_0 relative to every current determination — it is most consistent with the local/high camp but still above it. And the dark-energy *evolution* cuts both ways: DESI DR2’s preference for evolving dark energy (2.8–4.2 σ over a cosmological constant) challenges the corpus’s constant Λ_0 even as it matches the density, while the corpus’s own evolving fold-to-redshift (Paper 32 / Addendum 349a) predicts an evolution with w_a far too small to match DESI. The corpus is, on present data, “right that dark energy may evolve, wrong about how” — and simultaneously “right

about the density, in a model the data are now questioning.” *The settled and the open.* $\delta_{CP} = 240^\circ$ is refuted and recorded (A344); $m_{\nu_3} = 48.7$ meV awaits JUNO and Hyper-Kamiokande.

Remark 4 (The honest status of the H_0 /DE tension). Two of the corpus’s worst results — H_0 and the DE-evolution shape — share a root: both descend from the cosmological bridge (Addenda 358a/362/369), which is conditional on the SPARC closure hypothesis and the de Sitter 2π , and which the corpus itself flags as resting on its single foundational posit (Addendum 370). The density Λ_0 , by contrast, is the cokernel residual (Paper 38), a more directly geometric quantity, and it is the one that lands. So the data are, suggestively, separating the corpus’s firmly-geometric predictions (the density, a_0 , α , the masses) from its bridge-conditional ones (H_0 , DE-evolution): the former pass, the latter strain. That is a useful signal, not a verdict — the H_0 tension is real and could equally indict the bridge, the closure hypothesis, or the 2π , none of which the data here resolve.

Status

This is a falsification scorecard, a dated living ledger in the spirit of Paper 40 and the Paper 39 pre-committed falsifiers. Confronted with 2025–2026 data: the dark-energy density $\Lambda_0 = 1 - \pi^2/32 = 0.6916$ matches $\Omega_\Lambda \approx 0.689$ (PASS, the new Addendum 387 result); the SPARC a_0 sits within its error bar (PASS, Paper 39); α^{-1} agrees to 0.43 ppb (2.8σ). But $H_0 = 75.8$ is $\sim 3\sigma$ above even SH0ES (TENSION — the corpus over-predicts), and the dark-energy evolution conflicts with DESI both ways (TENSION); $\delta_{CP} = 240^\circ$ is refuted (A344) and $m_{\nu_3} = 48.7$ meV is open. The geometric-density predictions pass; the bridge-conditional ones (H_0 , DE-evolution, all descending from the closure hypothesis of 369/370) strain (Remark 4). The corpus is efficiently falsifiable, and here it is being confirmed in places and falsified in others — which is the point. No published number changes; the new content is the dated confrontation. Verifier: `verify_P388.py`, 10/10 pass.

Sources. H_0 (SH0ES 73.17 ± 0.86 , Planck 67.4 ± 0.5 , DESI 68.53 ± 0.80): Hubble-tension status reports and DESI DR2 (2025). Dark energy: DESI DR2 evolving-DE preference ($w_0 = -0.752$, $w_a = -0.86$, $2.8\text{--}4.2\sigma$); $\Omega_\Lambda \approx 0.689$ (Λ CDM). SPARC $a_0 = 1.2 \pm 0.26 \times 10^{-10}$ m/s² (175 late-type galaxies). α^{-1} : CODATA. Retrieved 2026-06.