The Gaps & Walls Register — Fable_Version rendered package. Rendered from `GAPS_AND_WALLS_REGISTER.md` ; frozen technical content unchanged by rendering.

The Gaps & Walls Register

A self-contained, plain-language map of what is established, what is open, and exactly which is which — across the four-paper Fable programme (GUT / Forces / Quantum / TOE).

Date: 2026-06-24 **Status of the programme:** serious candidate / partial unification — **NOT validated. Promotions this pass:** 0. No gap was closed, no number was newly derived, no wall was broken. **Frozen geometry:** the 13D active branch (content hash `dcc66f1b2685`, manifest hash `a5b1e6f9d951`) was treated as **READ-ONLY** throughout and was not modified.

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0. How to read this register (the honest preamble)

This document does one thing: for every hard problem the theory touches, it states **plainly what is settled, what is still open, and what single thing would close it.** Nothing here is dressed up. Where a famous problem is unsolved, it is marked unsolved.

A "gap" vs a "wall" — in plain terms

- A **gap** is a piece of work that *has a route*. The path to closing it is known; what is missing is a finished computation, a written-down certificate, or a measured input. Gaps are the ordinary debt of an unfinished theory.
- A **wall** is a piece of work where the *route itself is the problem*. Either no known method reaches it, or the only apparent escape secretly assumes the answer, or what is missing is a genuinely new idea. The famous open problems of physics (the Yang-Mills mass gap, the cosmological constant) are walls. A wall is not closed by relabelling it or by pointing a known theorem at it.

The cardinal discipline of this register: **no theorem breaks a wall.** Applying an in-category theorem (for example, the Atiyah-Singer index theorem, used inside its accepted framework) is legitimate; stretching it across a wall boundary to "close" the wall is not — that is assuming the answer.

The status vocabulary, defined inline

Every item below carries one of these labels. They are the only words used, and they mean exactly this:

Label	Plain meaning
DERIVED	Connected to a deeper *already-measured* fact, with no new assumption. The honest "floor" of assumptions does not grow. (This is rare here, and where it occurs it is a mechanical check, not a physics breakthrough.)
DERIVED-GIVEN-E	Rigid and correct **once the observed Standard-Model particle content "E" is supplied as input.** It is *not* a derivation of that content — it explains the structure given the spectrum, never produces the spectrum.
AXIOM-CLOSED	A hard problem reduced to **exactly one named, unproven, value-free assumption.** This is honest bookkeeping, not a proof. The assumption count does **not** drop; the gap stays open; the debt is now simply recorded in plain sight.
DISSOLVED	The problem only existed because of a false or unmeasured premise; dropping that premise makes the problem disappear. **Dissolved is not solved** — a smaller, real obligation usually remains and is still open.
SCHEME-ANCHORED	A specific number is reachable **only after one named, geometry-unfixed technical choice** (a regularization / normalization convention). Stronger than "no idea," strictly weaker than DERIVED: the cause of the gap is located precisely, but the number is not derived.
OPEN	The attack on the problem correctly failed, or the only available escape assumes the answer. Genuinely unsolved.
BLOCKED	A real route exists, but a required file, recipe, or input is missing or self-contradictory — and the honest move is to refuse to fabricate it.
RELABEL_FAIL	A proposed "closure" that merely renamed the unknown into an equal-strength assumption; it is killed and recorded, never counted as progress. (Final count here: 0.)
measured-but-irreducible	The value is known from experiment, but **no derivation of it exists** in this framework (or anywhere). It is recorded as a number that, for now, "just is."

The ceiling on every claim

Everywhere in this register the highest standing any item reaches is **"serious candidate / partial unification, NOT validated."** The geometry is frozen and reproducible; it is **not** proven unique. The closeable gates close **only given the observed particle content**; they do **not** derive that content. **PROMOTIONS: 0.**

Where these dispositions come from

Each disposition below was produced by an internal honesty methodology — **attack the problem to try to force a closure, then have an adversarial skeptic independently verify, then assign the most conservative defensible disposition.** When the attacker and the skeptic disagreed, the *weaker* verdict was recorded. Several attacker-claimed closures were demoted on verification; that is the method working as designed. The dispositions published here are the *results* of that process, and they are consistent with the live per-gate dossiers on this site (see Section 5).

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1. The GUT gates (SG-1 .. SG-10)

These ten gates are the spine of the geometry paper: from "here is the frozen shape" through gauge groups, three generations, hypercharge, electroweak breaking, moduli, thresholds, flavor, proton stability, and the honest claim boundary. The recurring theme: **the structural gates are rigid given the observed spectrum; the quantitative gates pass as consistency checks under declared assumptions, not as from-nothing predictions.**

SG-1 — Geometry specification (the frozen 13D shape)

- **Plain status:** The shape is fully written down, frozen, and reproducible — but it is *selected* as the simplest within a declared search family, **not proven to be the only possible shape.**
- **Badge:** DECLARED-FROZEN (reproducibility leg: DERIVED).
- **Established:** Every primitive and derived object is pinned by a content hash; an independent reproducer regenerates each hash blind. Within the declared grammar, the shape is the shortest-description winner over the named rivals.
- **Open:** Whether 13D is forced "from nothing" is unprovable in the absolute (it rests on an uncomputable shortest-description question); roughly 9-10 real-world quantities are injected beyond the 4 headline anchors; rival frameworks (string / M / F-theory / non-commutative geometry / lattice) tie on the gauge outcome, so the choice of search category is shared-open.
- **What would close it:** An architecture-neutral classification theorem showing this shape is minimal across *all* admissible categories — none exists.

SG-2 — Gauge group recovery (SU(3) x SU(2) x U(1) from the geometry's symmetries)

- **Plain status:** The exact Standard-Model gauge group falls out of the frozen shape's symmetries — given the spectrum.
- **Badge:** DERIVED-GIVEN-E.
- **Established:** The surviving symmetry algebra equals su(3) + su(2) + u(1) exactly (no extra, no missing factor); the color, weak, and hypercharge carriers are individually forced within the grammar; K6 = SU(3)/T² is the unique clean abelian SU(3) carrier (the built rival CP² over-produces gauge and dies downstream).
- **Open:** The gauge-group *outcome* is a filter every rival framework also passes — it does not single out this theory; the recovery is computed given the selected geometry, not proven unique across all geometries.
- **What would close it:** A from-scratch certificate that no extra summand can appear — the multiset check file is referenced but absent on disk (BLOCKED).

SG-3 — Three generations as a topological index (chi = -3)

- **Plain status:** Exactly three families, and their handedness, come out as a rigid whole number with no adjustable dial — given the spectrum.
- **Badge:** DERIVED-GIVEN-E.

- **Established:** The family count equals a topological index (magnitude 3 = generations, sign = chirality), rigid by the index theorem; consistent with the LEP/SLD measurement of 2.984 +/- 0.008 light neutrino species.
- **Open:** It certifies that *this* geometry + bundle yields three families, not that three is unique across all geometries; the from-scratch re-derivation of the index requires a Dirac-spectrum file that is absent (BLOCKED).
- **What would close it:** A bare-carrier proof that "3" is forced without supplying the observed content — none exists; the integer is a facet of the observed spectrum.

SG-4 — Hypercharge table and anomaly cancellation

- **Plain status:** The hypercharge assignments are listed and all anomalies cancel by hand — but anomaly cancellation is a *filter*, not the thing that picks the spectrum.
- **Badge:** PARTIAL -> OPEN (perturbative checks: DERIVED-GIVEN-E).
- **Established:** Full per-generation ledger; the six perturbative anomaly conditions vanish by hand.
- **Open:** Anomaly cancellation has infinitely many solutions, so it cannot *determine* the spectrum (the "anomaly selects the content" idea is a category error and is DISSOLVED); only about 10 of 16 quantum-consistency classes close; the non-perturbative descent construction has no known route.
- **What would close it:** A specialist construction of the non-perturbative coset-twist / BV-BRST descent anomaly — currently no known route (OPEN).

SG-5 — Electroweak embedding and symmetry breaking

- **Plain status:** A single Wilson-line Higgs breaks the electroweak symmetry correctly and lands near the measured v and Higgs mass — but the *lightness* of the weak scale and custodial symmetry are not delivered.
- **Badge:** PARTIAL -> OPEN.
- **Established:** Q = T3 + Y on every multiplet; near-hits v = 246.02 GeV, m_h = 123.82 GeV given the frozen anchors.
- **Open:** The gauge-hierarchy lightness of v and custodial rho = 1 are undelivered; the value carrying ~85% of the electroweak hierarchy is *read off* a one-loop minimum in SG-6 rather than independently derived.
- **What would close it:** An independent derivation of the small Hosotani phase that sets v (currently a read modulus).

SG-6 — Moduli stabilization (no tuned dials)

- **Plain status:** Every modulus the theory uses carries a structural witness (a rigid chamber, a fixed point, an integer winding) rather than a potential minimized at the answer — genuinely strong discipline, but local and given-spectrum, with global stabilization an explicit non-claim.
- **Badge:** PARTIAL -> OPEN.
- **Established:** A 12-row witness ledger, no tachyon, witness-coverage lint; the "a curve, not a placed number" argument made operational.

- **Open:** Global stabilization is explicitly *not* claimed; the moduli-mass positivity check is diagnostic-only; the acute soft spot is the tiny Hosotani phase read from a minimum; moduli stabilization is a shared-open hard problem on which rivals also struggle.
- **What would close it:** A global stabilization construction with a positive-definite moduli mass matrix derived, not diagnosed.

SG-7 — Threshold unification (the "not quite" gauge-coupling meeting) — now Diagnostic-only

- **Plain status:** This gate is the most important correction in this register. The three gauge couplings nearly meet when run up in energy, and the survivor's heavy spectrum was claimed to supply exactly the missing corrections. On verification, **the corpus threshold numbers are fitted-to-target, not formula-derived.** See Section 4 for the full finding. **Gate-7 is now Diagnostic-only** in the live manuscript.
- **Badge:** SCHEME-ANCHORED (was claimed-pass; downgraded, and live-corrected in GUT.md **and** in the per-gate SG-7 dossier, both updated 2026-06-24 — so this register and the dossiers agree). The SG-7 dossier's original binding label was PARTIAL; SCHEME-ANCHORED / Diagnostic-only is the post-2026-06-24 computation-debt downgrade of that same gate.
- **Established:** A blind run from the frozen geometry plus standard physics recovers the correct **sign structure** of the threshold corrections (hypercharge-matter driver positive, the non-abelian rows negative) — real, reproducible physics.
- **Open:** The corpus threshold vector (+4.8424, -3.1112, -1.7313) does **not** reproduce from the cited per-row formula — the unambiguous S^2 row comes out about 18x off, independently verified — so the rows are declared/fitted, not outputs of the stated formula. Under the physics-forced scale-invariant object the color row goes to zero, which *reopens* color unification rather than closing it. **Magnitudes are object-dependent; only the signs are geometric.**
- **What would close it:** An owner-countersigned, first-principles proof that fixes the one shared heat-kernel scheme object (see Section 4). Until then the magnitudes are not derived.

SG-8 — Flavor closure (Yukawa couplings)

- **Plain status:** The quark/lepton mass-and-mixing pattern is generated by diagonalization (not per-entry insertion) from two anchors — the program's hardest, most attackable gate. The honest economy is ~4x in, not the headline ~5.5x.
- **Badge:** PARTIAL -> OPEN.
- **Established:** Within-sector mass *ratios*, all CKM/PMNS magnitudes, the Jarlskog invariant, and CP phases are genuine frozen outputs given the selected chamber.
- **Open:** The per-sector mass scales are calibration inputs (fitted to observed masses, not derived); the absolute sector scales are consistency checks; the seesaw Majorana scale M_R is unknown/open (no value, formula, or hash); the up-quark mass sits at ~4.4 sigma.
- **What would close it:** A derivation of M_R and of the per-sector normalizations from the chamber, plus the comparison-table mount (AUDIT).

SG-9 — Proton safety (no GUT mediator)

- **Plain status:** The product (non-simple-group) structure has no heavy X/Y boson, so the classic fast proton decay never arises — a candidate-grade safety argument against a *declared* operator class, not an absolute lifetime bound.
- **Badge:** PARTIAL -> OPEN.
- **Established:** An exact off-block-killing projector identity (certificate plus the X-like FAIL confirmation), backed by a FCNC/mediator no-go theorem.
- **Open:** It is two-part by design — the dangerous operator class is *declared* before the identity acts, so the falsifier is whether the identity kills the *physically* relevant class or only the declared one; dim-6 proton decay is shared-open across all GUT-class geometries; the numerical lifetime is deliberately not forced (diagnostic only).
- **What would close it:** Promotion of the candidate selection rule to an absolute bound over the full physical operator class (and ultimately the Hyper-K observation, ~2035).

SG-10 — Claim boundary (the honest scope wall)

- **Plain status:** The outermost honesty layer: it names every sector the theory does *not* claim (quantum-gravity UV completion, full cosmology, dark matter, dark energy, baryogenesis, strong CP; Yang-Mills mass gap and Lambda left open) and enforces, by script, that no excluded sector is ever used to close a required gate.
- **Badge:** DISCLOSED -> AXIOM-CLOSED (one value-free disclosure posit; closes no physics).
- **Established:** A two-direction scope-consistency lint enforces the boundary mechanically.
- **Open:** The excluded sectors themselves remain entirely open — this gate closes no physics; it is pure disclosure discipline.
- **What would close it:** Nothing to close — it is a guardrail, not a physics claim.

GUT roll-up: 2 DERIVED-GIVEN-E (SG-2, SG-3); 6 PARTIAL -> conservatively OPEN (SG-4, SG-5, SG-6, SG-8, SG-9, and SG-7 now SCHEME-ANCHORED / Diagnostic-only); 1 DECLARED-FROZEN (SG-1, with a DERIVED reproducibility leg); 1 DISCLOSED/AXIOM-CLOSED (SG-10). The geometry is **frozen and reproducible, not proven unique.**

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2. The Quantum gates (the open UQF rows)

The quantum-force-completion paper carries an eight-row audit ledger of the conditions a full quantum theory must satisfy. All eight stay at **AUDIT** — the theory's overall headline is "Sigma = AUDIT." The honest posture is sharp: **the framework supplies UV (high-energy) data only, and structurally cannot supply the IR (low-energy spectrum) certificate.** Every claim about the observed particle spectrum is AUDIT, never proven.

Row	What it asks	Status	What is established	What is open / would close it
UQF-4 — anomaly closure	Does the BRST/BV structure stay consistent and do all anomalies cancel, including non-perturbatively?	**AUDIT (OPEN)**	The perturbative anomaly ledgers vanish (DERIVED-GIVEN-E).	The non-perturbative descent (4D anomaly lift) has **no known route**; a specialist construction would close it.
UQF-7 — fermion quantization	Are the chiral fermions consistently quantized with no light mirror partners?	**AUDIT (OPEN)**	The no-light-mirror structure is checked perturbatively; consistent with the LEP neutrino count.	The non-perturbative coset-twist quantization has no known route.
UQF-9 — UV completion	Is there a genuine high-energy completion (a non-Gaussian fixed point)?	**AUDIT (OPEN)**	A candidate fixed point exists at a declared truncation.	A full UV completion is a **global open problem** (shared with all of quantum gravity); the missing object (a 6th heat-kernel coefficient) is necessary-not-sufficient.
UQF-10 — compactification stability	Is the compact geometry stable as a quantum theory?	**AUDIT (OPEN)**	—	Blocked by UQF-9 (needs loop control of the moduli potential, which needs the UV completion).
UQF-11 — non-perturbative QCD	Confinement, the mass gap, the hadron spectrum, chiral symmetry breaking.	**AUDIT**	UV data supplied; a named lattice / partner-community program.	The IR certificate **cannot** come from the UV framework; this includes the Yang-Mills mass gap (Section 3) and is **USED, not proven**.
UQF-12 — strong CP	Why is the strong-interaction CP angle so tiny?	**AUDIT (OPEN)**	A boundary-parity candidate with a low-confidence prediction.	Theory is done; awaits the neutron-EDM measurement (observation bet — Section 3).
UQF-14 — unitarity / causality / locality	Does the theory respect these above the cutoff?	**AUDIT (OPEN)**	The standard-QFT consistency is inherited below the cutoff.	Graviton-sector unitarity above the cutoff is blocked by UQF-9.
UQF-15 — no hidden-sector leakage	Are there no extra unaccounted forces?	**AUDIT (OPEN)**	A force-ledger exhaustiveness argument.	Depends on the Phase-4 audit completing; exhaustiveness is a universal-negative.

Quantum roll-up: all eight rows AUDIT. The Born-rule legs (Section 3) reduce to two named axioms but the rule itself stays open. The framework's honest boundary is that it is a **UV-data supplier**, not an IR-spectrum prover.

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3. The TOE walls and roots

This is the capstone layer: the three root assumptions everything reduces to, and the famous walls. **None of these walls was proved.** The deepest honest finding of the whole programme: *the items that close are exactly the ones anchored on an already-measured invariant; the items that stay open are the ones with no clean invariant — or whose only anchor would be the answer itself.*

The three roots

- **GRANULARITY** (reality has a smallest operational step) — **AXIOM-CLOSED.** Reduced to one named posit: a uniform positive minimum "grain." Its residue is Planck's constant (the smallest real action step). The attempt to *derive* the uniform floor from finite resources fails cleanly (a countermodel shows finiteness can be bought without a uniform floor), so the uniform law is named as the bottom, not derived.
- **SCALE** (the size of the compact geometry / the hierarchy) — **OPEN.** The attempt to anchor the scale cell independently of the electroweak hierarchy is **confirmed circular**: the only available anchor *is* the hierarchy itself, and the map from cell to weak scale is invertible by construction. As a derivation this is a relocation, so the honest standing is OPEN.
- **SHAPE** (the 13D geometry itself) — **OPEN.** Selected-but-not-forced in the absolute (SG-1 / SG-2 / SG-3 family above). The minimality-of-realization claim rests on an undischarged universal-negative ("no admissible competitor is simpler"), and the observed content E is itself un-forced.

Lambda — the cosmological constant

- **The catastrophe-half** (why isn't the vacuum energy enormous?) — **DISSOLVED (conjecture-grade).** The catastrophe assumed gravity reads the *absolute* vacuum energy, which is **unmeasured** — every vacuum-energy effect ever measured probes only *differences*. Drop that premise (via unimodular gravity / sequestering) and the catastrophe dissolves. But this is a conjecture about reality, not a proof, and the quantum protection of the finite shifts is contested. **Dissolved is not solved:** a sequestering-grade engineering residual remains open.
- **The value** (~10^-122 in Planck units) — **measured-but-irreducible (Weinberg-OPEN).** The number is measured ((2.3 meV)^4); **no reduction of it exists** in this framework or anywhere. The Weinberg anthropic argument restates it; it does not derive it. It is recorded as a number that, for now, just is.

The continuum Yang-Mills mass gap (Gap-02)

- **Plain status: Precisely-OPEN.** This is the Clay Millennium problem, and it is unsolved here. The gap is *observed* (short-range strong force, massive hadrons, the measured running of the strong coupling), so it is a real, observation-locked wall — not an artifact.
- **What is established:** The implication "uniform clustering implies the gap" is rigorous (via an all-operator lemma). The remaining open object has been localized precisely to **one inequality** (a "marginal Kotecky-Preiss" cluster-expansion convergence condition) that must hold uniformly through the d=4 marginal band where the coupling is order one.
- **What is open:** Whether that inequality holds is the whole wall. Every observation-preserving geometric modification *relocates* into a strictly harder subproblem; the difficulty (d=4 marginal coercivity) is invariant under every legal move. **The geometry settles the gap's origin (SU(3) from the shape), but never its proof** — which lives in continuum constructive quantum field theory. A floored ("cost-floor") reframe puts the continuum out of scope by choice and leaves a finite, checkable-but-could-fail inequality; it does not solve the Clay problem.

- **What would close it:** A proof of that one inequality (or, per the Clay statement, most likely a genuinely new idea). The geometry supplies no constructive lever here.

Strong CP (Gap-03 / UQF-12)

- **Plain status: OPEN (observation bet).** The theory is done — it pins a candidate CP angle with a low-confidence prediction and a pre-registered falsifier.
- **What would close it:** A neutron-EDM measurement inconsistent with the predicted angle would falsify it; no further theory work closes it — data does.

Gap-06 (initial-boundary wavefunctional / Weyl curvature)

- **Plain status: OPEN — no known route.** The low-entropy initial-boundary condition (a Penrose-style Weyl-curvature prerequisite) is **posited, not specified.** Genuinely owed.
- **What would close it:** A specialist must construct *and* justify the boundary wavefunctional and the Weyl condition (not merely posit them).

Gap-13 / Gap-15 (the state-space measure for the Born selector)

- **Plain status: OPEN — no known route.** The measure on the space of states that the Born selector needs is undeclared; the inter-sector weights have no clean invariant yet.
- **What would close it:** Construct a canonical measure (the BORN-A2 axiom names this debt but does not pay it). *(Gap-13 designates the same family of measure/consumer obligations; it stays open with Gap-15.)*

The Born rule (the two legs)

- **Leg A1 — non-contextuality (the functional form ρ -> Tr(ρE)): AXIOM-CLOSED.** An explicit countermodel shows the theory's own gauge axioms do *not* force non-contextuality, so the standard non-contextuality hypothesis must be **imported** as one named, value-free axiom. The color-center route is genuinely reduced, but the global operator-algebra type stays import-dependent and import-forbidden. The Born functional form itself stays **OPEN**.
- **Leg A2 — the selector measure: OPEN.** A maximal-symmetry chamber selector sharpens the vague infinite-dimensional posit into a finite, target-free one, but uniqueness fails and a residual point-mass input is disclosed. Open.

BG-10 — baryogenesis (the matter/antimatter asymmetry eta_B)

- **Plain status: 0 of 4 at certificate grade.** The asymmetry eta_B ~ 6.1e-10 is *measured* (CMB + BBN), so this is an observation-locked wall. Four leptogenesis computations would fix it; none has been run at certificate grade.
- **Rule A (the CP phase): AXIOM-CLOSED.** The continuum CP phase reduces to one finite, checkable integer (a mod-8 spin-c/Pin sign bit). Crucially, the geometry's **default value gives the wrong sign** — so the axiom *departs* from the target rather than being fitted to it (a structure-first datum). The required quarter-phase is a new axiom, not derivable from the existing chamber data.

- **Rules B and C: OPEN / BLOCKED.** Rule B (the neutrino-Yukawa norm) is OPEN — its only candidate axiom had a keystone identical to the value that lands eta_B in-window, so it was killed as a relabel. Rule C (the density matrix / flavor projector) is BLOCKED — an independent check shows the proposed flavor-democracy symmetry is in direct tension with the frozen flavor data (2-dimensional commutant vs 3 distinct eigenvalues), and the density-matrix inputs are missing.
- **M_R (the seesaw scale): no witness / BLOCKED.** The high-scale CP recipe is recipe-absent; the candidate scale M_R = kappa x M_U is a *candidate in tension* — it departs from the corpus's own stated seesaw scale by a factor of ~231.
- **Caution (load-bearing):** the widely-quoted "kappa-cubed-over-pi" manifest giving eta_B = 6.0545e-10 is **true by construction** (its keystone was reverse-engineered to land in the window) and must **never** be cited as a prediction.
- **What would close it:** Derive the high-scale CP invariant from the geometry, then compute eta_B *blind* and compare to the window — accepting falsification.

a6 / Gap-01 (the 6th heat-kernel coefficient, the UV-completion input)

- **Plain status: OPEN (with a SCHEME-ANCHORED magnitude).** The clean, scale-free content is genuinely derived (an exact dimensionless ratio 124/315 for the color factor, dual-validated). But the dimensionful magnitude rides an injected scale, so it is scheme/scale-anchored, not derived.
- **By-products of the audit:** a real ~31% curvature error inside the corpus a6 engine was found and must be corrected; a separate derivative-sector ratio was confirmed (the engine is half-right, half-wrong); the orbifold-defect total is genuinely BLOCKED (the boundary heat-kernel is known in the literature only to lower order).
- **What would close it:** Fix the shared scheme object (Section 4), correct the curvature input, and obtain the defect total (currently blocked).

R4 / the bordism lever (a NOT-A-WALL, recorded for honesty)

- **Plain status: NOT-A-WALL as a lever; value still UNKNOWN.** The candidate geometric "anomaly lever" on the mass gap is dead — a 't Hooft anomaly can be satisfied by a gapless theory, so even a nonzero lever does *not* force a gap. But its underlying bordism *value* is genuinely unknown (one spectral-sequence differential is undetermined). **This is not "R4 solved" — only the lever is closed-negative; the value is inert and load-bearing on nothing.**

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4. The computation-debt finding (NEW — already live in GUT.md)

This is the most important new result in this register and the reason **Gate-7 now reads "Diagnostic only"** in the live manuscript.

The plain finding

Three quantitative objects that *looked* derived from the frozen geometry — the gauge **threshold vector** (Gate-7), the moduli loop coefficient **c_loop** (the moduli-stabilization certificate), and the **a6** magnitude (the UV-completion input) — were each attacked with a blind, pre-registered computation run straight from the geometry plus standard physics, then independently audited. The result:

- **The blind runs recover the SIGNS but not the MAGNITUDES.** The geometry genuinely fixes the *direction* of each correction (which way each gauge row moves). It does **not** fix the size.
- **The corpus threshold rows are FITTED-to-target, not formula-derived.** The threshold harness exists on disk, but it **hardcodes** the threshold vector, and the rows do **not** reproduce from the cited per-row formula. The cleanest test case — the S^2 row, where the formula is unambiguous — comes out about **18x off** the value the ledger asserts, **independently verified.** So the claim "no row is a free parameter" is false: the rows are declared/fitted.

The cascade (three debts are really one)

The three objects do **not** pose three independent questions. They **collapse onto one shared technical decision**: *which heat-kernel object is the finite one-loop coefficient* — a scale-invariant object (which the blind runs use, and which sends the color row to zero) versus a dimension-laden object (which the corpus uses to reach its numbers). Settle that one decision and all three numbers move together; leave it and all three stay anchored. A follow-up phase named the physics-forced candidate and discredited the corpus's specific object on three independent legs (wrong dimensional index, dimensional inconsistency, self-failing arithmetic) — but conservatively held the decision **OPEN** (SCHEME-ANCHORED), because the physics-forced object is not *proven* unique.

What this does and does not mean

- **Gate-7 is downgraded to Diagnostic-only, and this is live-corrected in GUT.md.** The threshold gate is now a diagnostic that recovers the right sign structure, not a closed unification certificate.
- **Signs are geometric; magnitudes are object-dependent.** That is the honest split.
- **Unification is NOT refuted.** The sign structure is real recovered physics; the gate is **reopened as a diagnostic**, not falsified. The corpus threshold vector is simply **not a derived vector** — it is an unverified, internally self-inconsistent scheme artifact.
- **This touches none of the Class-F walls.** The Yang-Mills mass gap stays Precisely-OPEN; Lambda's value stays Weinberg-OPEN; Lambda's catastrophe-half stays dissolved-not-solved. The heat-kernel decision is a finite-matching question, not a route across any wall.
- **No promotion.** The blind values are not promoted; the audit by-products (the ~18x threshold self-inconsistency, the ~31% a6 curvature error) are *corrections the corpus should make*, not closures.

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5. Honest tally and how to check this yourself

The tally

Counting the graded items across all three papers (the per-gate geometry residuals + the gate-level rollups + the famous physics walls): the disposition buckets below sum to **43 final dispositions.** *(The master internal ledger lists 46 graded line-items; the difference is that the threshold / c_loop / a6 SCHEME-ANCHORED cascade is counted once here — as the single shared decision it really is — rather than as its three component objects.)*

Disposition	Count	Plain meaning
DERIVED	2	A mechanical reproducibility check and a given-spectrum gauge tie. Neither lowers the assumption floor.
AXIOM-CLOSED	8	Reduced to one named, unproven, value-free assumption each. The gap stays open.
OPEN	22	Genuinely unsolved — the dominant outcome.
BLOCKED	6	A route exists but a required file/recipe/input is missing or contradictory.
SCHEME-ANCHORED	1 (cascading to 3 objects)	The threshold / c_loop / a6 magnitudes — one shared, named, still-open scheme decision.
DISSOLVED	4	A false/unmeasured premise dropped; the residual obligation stays open.
RELABEL_FAIL (as a final disposition)	0	No "closure" survived that merely renamed the unknown.

The headline number: 0. Zero root assumptions and zero famous walls were derived from below. The two DERIVED items are a reproducibility check and a given-spectrum tie — neither lowers the floor. **PROMOTIONS: 0.**

The walls that remain standing, stated plainly: - **Yang-Mills mass gap:** Precisely-OPEN. - **Cosmological-constant value:** measured-but-irreducible (Weinberg-OPEN); its catastrophe-half is dissolved-not-solved. - **Baryogenesis (eta_B):** 0 of 4 at certificate grade. - **Strong CP:** open observation bet (awaits the neutron-EDM measurement). - **Moduli loop certificate (c_loop):** the well is decided; the certificate is open. - **Non-perturbative QCD (the UQF-11 family):** AUDIT — the framework supplies UV data only.

How to check this yourself

- **The live per-gate dossiers** (one per GUT gate, SG-1 through SG-10) are on this site under `PER_GATE_DOSSIERS/` — each records the gate, its technical witness, its honest caveats, and its status. The dispositions in Section 1 are consistent with those dossiers.
- **The per-gate status ledger** (`SCOPED_GUT_PER_GATE_STATUS_LEDGER.md`) gives the one-paragraph honest status of each gate.

- **The open-walls register** (`OPEN_WALLS_REGISTER.md`) localizes each famous wall to the single fact/exponent/computation that would close it, alongside its companion irreducible ledger of numbers that "just are."
- **The reproducibility scripts** (the frozen-branch reproducer and the per-gate certificate harnesses, under the GUT manuscript's `certificates/` directory) regenerate the content hashes blind. Note, per Section 4, that the threshold harness hardcodes its vector — that is precisely the finding that downgraded Gate-7.
- **The Gate-7 correction is live in GUT.md** itself: Gate-7 reads **Diagnostic only** (threshold rows fitted-to-target, not formula-derived).

Closing statement

This is a **serious candidate / partial unification — NOT validated.** The geometry is frozen and reproducible, not proven unique. The structural gates close only given the observed particle content; they do not produce it. The famous walls — the Yang-Mills mass gap, the cosmological constant — stand exactly where physics left them. The newest finding is a correction, not a promotion: the threshold gate is now a diagnostic that recovers the right signs but not the magnitudes, and unification is reopened-as-diagnostic, neither closed nor refuted.

The value of this register is being right about which is which.

PROMOTIONS: 0. Frozen 13D branch `dcc66f1b2685` / `a5b1e6f9d951` READ-ONLY, unmutated. No wall closed. No number newly derived.

Compiled 2026-06-24 as a publication-grade consolidation of the live per-gate dossiers, the per-gate status ledger, the open-walls register, the closure-campaign results, and the computation-debt anchoring finding. The dispositions were produced by an internal honesty methodology (attack -> adversarial verify -> conservative disposition); only the resulting dispositions are published here.