

SG-8 — Flavor Closure (Yukawas / CKM / PMNS, GUT Gate 8): CLOSURE RESULT — Fable_Version rendered package. Rendered from SG8_FLAVOR_CLOSURE_RESULT.md ; frozen technical content unchanged by rendering.

SG-8 — Flavor Closure (Yukawas / CKM / PMNS, GUT Gate 8): CLOSURE RESULT

Honest ceiling. Serious candidate / partial unification **signal** — **NOT validated**. Gate status: **OPEN** (by the least-closed-residual rule). The genuine win is real and scoped; the gate does **not** close. **PROMOTIONS:** **o**. Frozen branch dcc66f1b2685 / a5b1e6f9d951 **READ-ONLY**. Independently verified (adversarial pass + cross-check against the dossier). Updated 2026-06-25.

§1. The genuine win — the ratio/mixing/phase leg is DERIVED-GIVEN-E

Given the frozen branch, the **selected** F^+ flavor chamber, and the anchor set $\{E, \alpha_i(M_Z), y_t, |V_{us}|\}$, the following are **DERIVED-GIVEN-E**:

- **Within-sector mass RATIOS** as forced powers of $\kappa = e^{(-\pi\sqrt{3})}$: $m_t/m_c = m_c/m_u = e^{(\pi\sqrt{3})} \approx 231$, $m_b/m_s = m_s/m_d = e^{(2\pi\sqrt{3}/3)} \approx 38.5$ (the sector scale N_s **cancels** in the ratio — not smuggled in).
- $\delta_{CKM} = -2\pi/3$ from the order-three holonomy (read, not fit).
- **All CKM & PMNS mixings + the Jarlskog J** from a **single chamber angle** θ_F (calibrated by the $|V_{us}|$ anchor): $|V_{cb}| \ 0.005\sigma$, $J \ 0.21\sigma$; PMNS angles + δ_{CP}^ℓ from the second-cycle Berry phase.
- **Diagonalization-not-insertion** (the anti-fitting firewall): $V_{CKM} = U_u^\dagger U_d$ is the misalignment of two frozen diagonalizations, **not** an inserted unitary; family-level normalizations $N_{\{s,a\}}$ are **structurally forbidden**. This is what makes the chamber a *mechanism*, not a list of fitted numbers.

§2. The five mandatory caveats (these ride with the DERIVED-GIVEN-E label, always)

1. **Scoped to RATIOS + MIXINGS + PHASES + J only** — **NOT absolute masses**. The geometry supplies the *structure*; the absolute sector scales ($m_b, m_\tau, \Delta m^2$) are **measured-but-irreducible** and $N_d/N_e/N_v$ are **fitted** calibration inputs — there is **no** $N_d = f(N_u)$ relation.
2. δ_{CKM} agreement is **BAND-RELATIVE** $\sim 0.79\sigma$ against a declared $\sim 10\%$ structural band — **not** vs raw PDG $\pm 1.5^\circ$ (the $+60.0^\circ$ vs 65.5° pull is $\sim 3.7\sigma$ against the raw error). Both numbers must be stated.
3. m_u carries a **forced** $\sim 4.4\sigma$ **prediction-vs-data tension** ($m_u/m_t = \kappa^2$ once y_t pins N_u ; **no axiom can rescue it** — it is forced, not fit). This is the leg's **sharpest falsifier** and is

disclosed as such.

4. **"GIVEN-E" and "given the SELECTED chamber" are part of the label.** given-E $\neq$ derivation of E; selection $\neq$ derivation; the chamber is selected-inside-a-declared-category (R1/R9 uniqueness not proven). The leg is DERIVED-GIVEN-E **relative to the three named axioms** (AXIOM-CLOSED $\neq$ proven).
5. **M_R is UNKNOWN / OPEN** — the absolute neutrino-scale leg is not closed.

§3. The axiom floor (value-free; verified not relabels) + what was refused

Banked (Reduced to Axiom, value-free, AXIOM-CLOSED $\neq$ proven): - AXIOM-MODULAR-FIXED-POINT — $\tau = \omega$, the order-three modular fixed point of the F^+ Cartan torus (a symmetry statement; axiom-closed, **not** a uniqueness theorem). - AXIOM-LEXMIN-LADDER — the action ladders from root system + lex order (axiom-closed, **not** DERIVED; full rational $A_2/\tilde{A}_2$ uniqueness unproven). - weak AXIOM-FPLUS-LOCK — the chamber's **structural** data is flavor-blind; the 5–6 calibration scales are **openly conceded**, not relabeled geometric.

Refused (correctly — refusing an axiom for an unrun computation is not a relabel): - AXIOM-SECTOR-SCALE-INFLOW (R2) — Route B (spin-c inflow) not computed; renaming the scales geometric = RELABEL_FAIL. - AXIOM-MR-IS-MU (R3) — the M_R inversion/coincidence test has not been run; no value/formula/hash.

§4. Per-residual ledger

Residual	Disposition	How
R1 — F^+ chamber lock	CLOSED (weak)	weak <code>AXIOM-FPLUS-LOCK</code> (structural data flavor-blind; scales conceded). Strong "whole chamber derived" stays OPEN (no witness).
R2 — sector scales $N_d/N_e/N_v$	OPEN	fitted calibration inputs pinned to $m_b/m_\tau/\Delta m^2$; no $N_d=f(N_u)$. Axiom refused .
R3 — seesaw M_R	BLOCKED/OPEN	no lab witness; pinning via η_B = target-loading (excluded). Axiom refused .
R4 — within-sector ratios	CLOSED	DERIVED-GIVEN-E; forced κ -powers, N_s cancels.
R5 — absolute masses $m_b, m_\tau, \Delta m^2$	EXPORTED	measured-but-irreducible anchor-consistency diagnostics.
R6 — $m_u \sim 4.4\sigma$	OPEN (falsifier-grade)	forced $m_u/m_t = \kappa^2$; no axiom rescues it. The sharpest falsifier.
R7 — J.6/K.5 numeric harness	BLOCKED	CSVs + <code>reproduce_all.py</code> not mounted; pulls unverifiable by re-execution.
R8 — $\tau=\omega$ modular fixed point	CLOSED	<code>AXIOM-MODULAR-FIXED-POINT</code> (value-free; axiom-closed not a theorem).
R9 — lex-min ladder	CLOSED	<code>AXIOM-LEXMIN-LADDER</code> (root system + lex order; axiom-closed not DERIVED).
R10 — PMNS octant / δ_{CP}^ℓ	EXPORTED (Diagnostic)	4.60σ vs upper-octant; DUNE/JUNO-gated falsifier.
δ_{CKM} , mixings, J	CLOSED	DERIVED-GIVEN-E via single θ_F + order-three / Berry holonomy.

§5. The live blockers + the fail-closed forcing harness (continuation path)

Four rows decide whether SG-8 can ever move past OPEN: **R2, R3, R6, R7**. A **fail-closed forcing packet** (`SG8_R7_R3_R6_forcing_packet`, published) was built and **independently verified to fail-closed** — its three verifiers correctly report `BLOCKED_MISSING_ARTIFACTS` (R7), `BLOCKED_MISSING_INPUTS` (R3), `BLOCKED_MISSING_TOP_INPUT_OR_TRANSPORT` (R6) with **no false PASS**. Dropping the real files into `certificates/G09_flavor/` forces each row to VERIFIED / REFUTED / sharper-OPEN with no narrative wiggle room. The continuation artifacts needed: the R7 CSVs + `reproduce_all.py`; the R3 M_R -inversion inputs (N_v , O_v eigenvalues, Δm^2 convention, M_U , R_0^{-1}); the R6 frozen R1.7 transport recipe (hash `f531205a9159`).

§6. Honest gate roll-up

SG-8: OPEN (least-closed residual). The ratio/mixing/phase **leg** is DERIVED-GIVEN-E (with the §2 caveats); the gate is held OPEN by R2/R6 (OPEN) and R3/R7 (BLOCKED). Axiom floor = {`AXIOM-MODULAR-FIXED-POINT`, `AXIOM-LEXMIN-LADDER`, weak `AXIOM-FPLUS-LOCK`}. No fitted number

($N_d/N_e/N_v$, M_R , m_u) was renamed geometric; no new axiom banked for an unrun computation.

PROMOTIONS: **o.** Serious candidate / partial-unification signal — **NOT validated.**