Public release copy. Source: `32_lambda.md`, Gravity Frontier Research, David Vávra, Independent Researcher, Prague. SHA-256 of the Markdown source: `02c637418c3ce6c7f4b70a3fc24decabb838214797e71e110526b33b19e879f9`. First published at vavradev.com/research on 2026-11-04. The text below is the published copy of the source (punctuation normalized for publication: no em dashes).

32, LAMBDA: where the constructible (CNC) description of odd-prime quantum computation ends (program LAMBDA under doc 31 §6), DECIDED AT THE SECOND FREEZE

*Program decision document, v1.1, 2026-10-29 (v1.0 = the STOP document of 2026-10-28, preserved byte-identical as `analysis/32_lambda.v1.0.md`, sha256 `52b6835d7a642c6813b0f77ab095518fe449bf2a774d71e0c5da9eedbaeb6f89`; this v1.1 supersedes it as the document of record and keeps its STOP as history, §0). STATUS: DECIDED, the typed outcome of record is the conjunction of the registered letters of doc 31 §5 that hold, each by its own text, none ranked: ESCAPE-AT-2 in both registered sub-types (ESCAPE-BY-PRODUCT by $|S\rangle\otimes|S\rangle$, $|N\rangle\otimes|N\rangle$, $|S\rangle\otimes|N\rangle$; ESCAPE-BY-ENTANGLED by $D_{j^2k^2}|+\rangle|+\rangle$, all twenty registered R6 states and, new at this freeze, the one reserved cell RC-2c = $D_{j^2k}|+\rangle|S\rangle$); CNC-HOSTED-AT-2 does not hold for the registered list; THRESHOLD-3 evaluated by corollary ($n(|S\rangle) = n(|N\rangle) = 2$ at d = 3; every copy number n ≥ 2 of $|S\rangle$ and of $|N\rangle$ lies outside C_n, Corollary M4 of Lemma M, gate-confirmed, engine-reproduced, rigor-confirmed); the n = 3 rung typed exactly as the spec owner's addendum typed it and the hostile re-gate confirmed: "no open row at this freeze: every registered n = 3 row is a corollary of n = 2 certificates (Lemma M / Lemma C / the ancilla lemma)"; NOT-DECIDED-BELOW-CAPS only where a data lane printed it, never upgraded; VERTEX-CENSUS and the update tables as data. The v1.0 outcome G31-0-STOP is SUPERSEDED by its own remedy chain, the gate's §5 relabel list applied by the spec owner's dated addendum, the survival rule re-applied on a registered family of 262 cells with the conditioned screen (no survivor), the hostile re-gate PASS with one mandatory dated repair of the addendum's F5 record, the mechanism note with a sealed hand prediction at the one reserved cell, the engine's run of record on that cell (OUTSIDE C_2, 4.1 s, exact Farkas certificate; the n = 3 battery green with 26 lifted functionals priced to exact global minimum 0 over the whole Theorem-1 pool; ξ_max(3,3) = 13 EXACT), the four co-runner rows, and the two adversarial legs (rigor: PASS, every verdict of record re-derived by own routes from an own enumeration of the pool; physics/steelman: PASS WITH REWORDINGS, the counterexample attempt failed on every registered front), superseded, never reversed; NOT A KILL (KΛ-0..7 ruled by every leg, none fired). Every sentence below carries doc 31 §5's riders and KΛ-5/KΛ-6; "constructible" means the Zurel–Heimendahl CNC class by its letter and nothing else; a HOSTED outcome never feeds "classical"; an OUTSIDE placement never feeds a cost or advantage sentence of any kind; the gravity-bridge lane is "the p = 3 lattice gate", a data lane, never headline; the qubit precedent is quoted only "as cited by Zurel–Heimendahl from Raussendorf et al. 2020", with its states and its numerical grade; nothing here is about any prime other than 3 or about physical gravity; licensing is never posting; defer-until-big governs every export; external quotation of every sentence of this program stays BLOCKED behind G31-2 (the closing audit at the untouched reserve ≥ 9,700,003) and G31-3 (the M-Λ7 re-sweep with the Lemma M / Lemma C cite-check rows).**

Refuted forecasts first, across the whole program (declared parity; the registration's own words): P-Λ2 REFUTED (the judge: R1, R2, R3 INSIDE C_2, ~60%, all three OUTSIDE with exact Farkas certificates; the d = 3 copy-number threshold of $|S\rangle$ and $|N\rangle$ is 2); **P-Λ4 REFUTED** (the judge: the R6 INSIDE fraction strictly between 0 and 1, ~55%, 0/20 INSIDE; the registered "thin" gloss is dropped on the physics leg's ruling HS-16 and replaced by its letter: none of the twenty registered Z[ω]-amplitude random states is hosted); **PC-3 (HR-2) REFUTED** (the spec leg: all three marginals INSIDE, ~60%, the label marginal OUTSIDE, −7/40); **PC-4 REFUTED** (two "reserved" two-qutrit cells were products with a stabilizer factor); **the spec's survival rule REFUTED at the gate** (six reserved cells decided at freeze by Lemma C, a theorem in hand); **H-5's sub-clause REFUTED** (the gate's own: an X-basis conditional of $D_{jkl}|+++\rangle$ decides it too); **CF-1/CF-2/CF-3 and OR-1 REFUTED** (the pilot's own census forecasts); **F-5, F-L2-4 (second clause), A-4, A2 (first clause) REFUTED** (the scouts' own); **AF-7's premise, AF5-1, AF5-2, AF6-1, AF-5's rule clause and AG-2 REFUTED** (the addendum's own: the $|+\rangle|\tau\rangle$ class is RC-2c up to a Clifford; no survivor in any family; the one "open as far as the theorems reach" class was a product in disguise); **G2-4 and G2-6's deciding-key clause REFUTED on the F5 family** (the re-gate's own: the addendum's 40 pinned F5 cells were not the registered ladders, a defect of its `a_core.py`, repaired by a dated amendment the owner applies); **F-RC-2's support clause landed on neither worded branch** (the engine's reading; its JSON types it "the ~45% branch (not $a^{\perp}$)" while its report says "neither branch as worded" and the rigor leg finds the minimum attained on $a^{\perp}$ / pencil / Lagrangian-plane / E supports as well as on 27 deltas, a labelling discrepancy inside one leg's record, verdict-neutral, reported here); **F-ii-1, F-ii-7, F-ii-12, F-R0b (as registered), F-R5 REFUTED** (the co-runners' own); **RV-11's premise slip** (the rigor leg's: the record does store every CLOSED update pair's decomposition, the stronger check was run, 7/7); the physics leg's **four own defects** (a units slip, a denominator slip caught by its own registered control, two text-classifier truncations) and **this leg's three dated repairs of its own check script** (a registration count slip; a count-of-presentations slip; the comment-swallows-a-comma trap met twice, §7.4). **Confirmed:** P-Λ3, P-Λ5, GL-F1..F3, HC-1, CX-1..3, V-1..V-15, PC-0/1/2/4′, SF-0, SF-2, SF-3, SF-7, SF-8, G-1..G-11, H-1..H-11 (bar H-5's sub-clause), AF-1..AF-4, AF-6, AF-8, AG-1, AG-3, AR-1, AR-3, G2-1..G2-3, G2-5, G2-7..G2-11, HD-A1..A4, F-M-1, **F-RC-1 (the note's hand prediction: RC-2c OUTSIDE C_2, ~70%)**, F-RC-4, F-RC-5, EF-1..EF-8, F-iv-1..4, F-iii-1..2, F-ii-3/5/6/10, F-R1, F-R4, F-R7, RV-1..RV-16, PF-1..PF-11, PA-1..PA-3, SF-SYN-1, SF-SYN-3 (one discrepancy, the known one), SF-SYN-4 (data). **Not decided / not scored:** P-Λ6 (caps), SF-1/SF-4/SF-6/SF-9 as scored in §5, GL-F4 (decided at freeze by corollary), F-M-2, F-RC-3 (the INSIDE branch did not occur), F-ii-2/4/8/9/11, F-R2 (NO-KINK at d_max ≤ 3 exact; NOT-INSTANTIABLE beyond), F-R3, F-R6, SF-SYN-2 (refuted: three repairs, §7.4).

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0. Order of record, the v1.0 STOP, this chain's remedy, the pins

0.1 The order, and what each step did (every leg: registration sealed with sha + sub-second stamp before the script that tests it; exact arithmetic; `python3.12 -I`; isolated sha-verified copies only; canon pins before/after byte-identical; new files only)

Binding order (doc 31 §6, with the house rule since doc 26 §5): pilot → verifier gate → spec freeze → hostile gate → mechanism note → engine → two adversarial legs → synthesizer → doc 32. The first freeze ran it to the hostile gate and stopped there; the second freeze ran the remedy the gate prescribed and completed the order. In sequence:

1. **The judge (doc 31, 2026-10-28)** registered the question, the state list S, the typed outcomes of equal standing, the forecasts P-Λ-ctrl..P-Λ7 with declared parity, the kill criteria KΛ-0..7, the bands and the scout lanes L1–L4 **[J]**.
2. **The scouts L1+L4, L2, L3** (scout grade, before the spec freeze): KΛ-2 NOT FIRED (no printed two-qutrit membership, no odd-prime two-qudit vertex census); the control rows literature-anchored (the 2022 Erratum's counterexample (a) at (2,3)); R5 NOT-REGISTERED by its own letter; ξ_max(2,3) = 7 and ξ_max(3,3) = 13 printed (cites); sympy never a deciding engine; the magic-number conventions **[L]**.
3. **PILOT-Λ** (M-Λ1, build + rows stages): the exact instrument; the control gate PASS 9/9; the 53 open rows decided (ESCAPE-AT-2 in both sub-types; P-Λ2 and P-Λ4 REFUTED, reported first); the 10^4-draw vertex census; the update closure at the cap; the 27 registered diagonal-phase classes of the p = 3 lattice gate at n = 2 **[P]**.
4. **The pilot verifier M-Λ2**: PASS, every certificate re-derived by own routes from an own enumeration of V_CNC(2,3) built from ZH Theorem 1 directly and by closure BFS; two own LP routes; KΛ-0 and KΛ-7 do not fire **[V]**.

5. **The spec freeze M-Λ3** (`lambda_spec/SPEC.md`): the family and the typed outcomes verbatim; the wording ladder; Lemma M registered with its proof and applied as the decided-at-freeze pre-check (the threshold rows, HR-2 and its 12 point-control images, RC-3d/3g/3i relabelled OUTSIDE C_3 by corollary); the reserved unseen cells of §8 **[S]**.
6. **The hostile gate G31-0** (M-Λ4): **STOP** on SPEC §11(e)'s third clause, every reserved three-qutrit cell decided at freeze by Lemma C (the conditioned outcomes), a theorem in hand the spec leg had not applied; every §3.4/§6.3 relabel of the spec CONFIRMED by own route; the remedy prescribed (§5 of the ruling) **[G]**. **Doc 32 v1.0 typed this STOP** (NOT A KILL) on 2026-10-28 23:42 CET and blocked quotation behind G31-2 + G31-3.
7. **The remedy chain (the second freeze, 2026-10-29), as the gate prescribed and README's remedy line records:** (a) **the spec owner's addendum G31-1** (`lambda_spec/SPEC_ADDENDUM_1.md`): the gate's seven relabels applied verbatim; the garbled class list fixed (the one-square span); the survival rule re-applied on a registered family of 262 cells (139 one-square diagonal classes on $|{+}{+}{+}\rangle$ with their cross-term presentations, 40 monomial-Clifford ladders, 83 Norrell-payload gates) through the 36-conditional screen, 232 DECIDED OUTSIDE C_3 by Lemma C with exact certificates, the rest controls or RC-2c-dependent, the five battery survivors found by the full affine group AGL(3,3) to be SUM-type images of (a cubic class) ⊗ $|+\rangle$ (controls); **no survivor, the n = 3 rung typed "no open row at this freeze"**; RC-2c the one reserved cell, at n = 2 **[A]**; (b) **the hostile re-gate G31-0 pass 2**: **PASS** on that typing by own route (4136 conditionals of all 281 cell records decided by an own engine, 0 caps; the five products confirmed by own canonical forms; RC-2c open by every theorem in hand) **with one MANDATORY DATED REPAIR**: the addendum's 40 pinned F5 cells are not the registered ladders (its `a_core.py` dropped a composition phase cubic in the register labels); the REGISTERED F5 cells by own route are 21 DECIDED OUTSIDE C_3 by Lemma C (the same 21 class indices) and 19 hidden products (SUM-images of a cubic class ⊗ $|t\rangle$, INSIDE C_3 controls), control for control, decided for decided, the typing unchanged **[G2]**; (c) **the mechanism note** (`lambda_engine/MECHANISM_NOTE.md`, sealed before any engine code): the per-family mechanism, the structural constraint an n = 3 escape would have to satisfy, and **the hand prediction F-RC-1: RC-2c OUTSIDE C_2, ~70%, parity declared [N]**; (d) **the engine** (`lambda_engine/ENGINE_REPORT.md + ENGINE_ROWS.md`): the pilot reproduced from an isolated copy (113/113 rows verdict- and certificate-identical); the n = 3 battery green (18/18; 26 lifted functionals priced to exact global minimum 0 over the whole Theorem-1 pool by own pricing; the INSIDE controls with explicit decompositions by the letter; 10^4 closures with no OTHER shape); ξ_max(3,3) = 13 EXACT by an own branch-and-bound pruned by proven bounds only, with a pair-only second route closing every branch and a symmetry-free route typed NOT-DECIDED at its node cap; **RC-2c OUTSIDE C_2** (the run of record 06:48:14.223–06:48:18.359 CET, 651 columns, 20 rounds, 4.1 s, y·W = –333333333/1000000000, global minimum 0 by the copy's support-wise pricing AND by an own Theorem-1 pricing AND by an own membership run), **F-RC-1 CONFIRMED**; ΛG-1 on the $|+\rangle|S\rangle$ input completed by that one verdict (9 hosted + 18 following RC-2c, all 21 orbit members re-run with their own certificates); the four RC-2c-dependent cells OUTSIDE C_3 with explicit n = 3 certificates **[E]**; (e) **the co-runners** (`lambda_corunners/REPORT.md`, M-Λ8 (i)–(iv), data, never headline): PRE-R's jump-the-queue condition NOT MET by its letter; the CAUSAL–MAGIC law-shape rows (no second instance at three qubits: the AF/BW class is the unique non-causal three-qubit stabilizer product basis class; the four-qubit F4′ instances NOT-DECIDED-BELOW-CAPS with certified lower bound 7/8); ξ_max(3,3) = 13 cite-verified; the 2601.15842 Appendix-C parity defect located in one line (ΔM = 0 exactly on every registered instance; (C35) non-zero) **[C]**; (f) **the rigor verifier** (`lambda_verify/RIGOR_REPORT.md`): **PASS**, every verdict of the record re-derived by own routes (own pool both ways, 40,536 supports / 17,893,624 points; every n = 2 Farkas certificate priced to exact global minimum 0; every decomposition re-summed by the letter; the 26 lifted functionals by an own n = 3 pricer; Lemma M / Lemma C / the ancilla lemma as explicit matrices, 3,540 cases; RC-2c OUTSIDE by two own LP routes, exactly –1/3 on the own rational simplex; ξ_max(3,3) = 13 by an own search; the stage-(g) update certificates re-derived for the first time; the F5 repair re-derived), no DEFECT touching a verdict, two rows NOT-REPRODUCED as data **[R]**; (g) **the physics/steelman verifier** (`lambda_verify/PHYSICS_REPORT.md`): **PASS WITH REWORDINGS**, the counterexample attempt failed four ways (the authors' own unit-modulus enlargement collapses onto V_CNC by their Theorem 3; the two largest non-CNC vertex families of the record's own census do not host the product row; the product-closed repair exits $\Lambda_2(3)$ entirely, no product of a magic state with a $\Lambda_1(3)$-vertex is a point of $\Lambda_2(3)$; and a genuine nonnegative Λ-representation of $|S\rangle\otimes|S\rangle$ exists, exhibited with 25 exactly certified multi-modulus vertices); the precedent's own measure computed exactly at odd prime for the first time ($R(|S\rangle\otimes|S\rangle) = 7/4$); three headline sentences ruled OVER-REACH with a REWORD-TO (HS-4 strength, HS-7 abbreviation, HS-16 gloss), four wording precisions, one strengthening, every one applied in this document **[X]**; (h) **this synthesis** (`lambda_synthesizer/`): the outcome typed from the pre-registered letters only; every verdict number regressed against the JSON of record; own exact arithmetic at the number level; the ladder ruled rung by rung; the lessons drafted; nothing upgraded **[SYN]**.

Legs of record (the files, their sealed shas and stamps, their pins):

leg	registration (sha256; sealed)	report / ruling (sha256)
judge (doc 31)	`dq5_judge_probe/` registration `672c3a12…` 2026-10-28 09:43:59 CET	`31_dream_question_5.md` `a092b4a3395187df5a65b8ea0af0530bad0cc191a417df5e76169a2476b42e7`
scouts L1+L4 / L2 / L3	10:55:58 / 10:59:40 / 10:57:02 CET, each before its first net or script	`lambda_scout_L1L4.md` `dd0c6f5b493afd7eb4de7be430494e6bd8c05bdf25ac2c1ce926736e5f7e4f0` `lambda_scout_L2.md` `22f7aaf7b345454dfb9edd751ab96b8db587b19cdbda68ea437ed48913feed0` `lambda_scout_L3.md` `8b6b4c4bfa7e22b9925f2cab332db658d0183bbbe1f86b718d1769e56eec1b0`
PILOT-Λ (build + rows)	`lambda_pilot/REGISTRATION.md` `eab097faac9dedc9db75a21ec342d7a5bd2883e140c877cfd9bc6aa4e2d281bf` 11:08:21 CET; five addenda	`lambda_pilot/BUILD_REPORT.md` `a0d66eb2ee18dd4fa508a65f24e5c51d70feb3389aed90edebd3db9b73aac0f` `lambda_pilot/PILOT_REPORT.md` `7f748d544d9028e2fc6495711c2144bc51c72452a9b68fd4f5e2e43de13ed56`
pilot verifier M-Λ2	`lambda_pilot/verifier_ML2/REGISTRATION_VERIFIER.md` `b9b6324d73872785e7a07801259a308c6be150dda677ad1582a9c7897f818782` 20:43:23 CET	`lambda_pilot/VERIFIER_RULING.md` `f13adfc171eb62631d58929e56d800239015884e391e26eade3720cf91440e2`
spec freeze M-Λ3	`lambda_spec/precheck/PRECHECK_REGISTRATION.md` `c0805dac4f4969665d1ddae59335b97ae75a3fb4f039b7d63c7137db4214426d` 21:41:18.215 CET	`lambda_spec/SPEC.md` `5cb73b3d0d6eb2ecedb59357d533647f61d3d427867bf059c6f10a9b0b27fa6` (body `a3df1c0f9830b4771c1a2b8864d951639706f2a7d6b6dc7ef5dd63934921feb` FROZEN 21:59:03.092 CET
hostile gate G31-0	`lambda_spec/gate_G31_0/GATE_REGISTRATION.md` `8398e2a2d5c942e0dc8885fc0e8263c189150bb82ccb52e74cea5bacfc28922b` 22:19:32.686 CET	`lambda_spec/G31_0_RULING.md` `1c24c2005dd13f4cbd3b66b34ae99561e8dd54b5dd5ac27b1c0ce3ceedd6fc0`
doc 32 v1.0 (STOP document)	`lambda_doc32/DOC32_REGISTRATION.md` `68cceccd72091405d644dbea52b0a2fffc3db42fd89a64d775eabcb152f373af` 23:19:33.040 CET	`analysis/32_lambda.v1.0.md` `52b6835d7a642c6813b0f77ab095518fe449bf2a774d71e0c5da9eedbaeb6f8` (the former `32_lambda.md`)

leg	registration (sha256; sealed)	report / ruling (sha256)
spec owner's addendum G31-1	`lambda_spec/addendum_1/ADDENDUM_REGISTRATION.md` `2e274f98569e464b4aa4c30a12bc0e51ed9e0ce9728dd0484a6db748f7b5e3d5` 2026-10-29 00:14:57.745 CET; five further registrations	`lambda_spec/SPEC_ADDENDUM_1.md` `893c9d9ccec78443012b13add2f4b7b62dfbc3387395a6952f5b2562947c7d2` (body `1d1caf243ebf901fa3625be8257af9882c9cefcf0ffa2f3eba43ece6a5be217`
hostile re-gate G31-0 pass 2	`lambda_spec/gate_G31_0_pass2/GATE2_REGISTRATION.md` `66beb1f8cf363f5e9d97d46ec4cace71e23f22c852601852817f1dc12274c6fb` 02:19:56.777 CET; addendum `39811257c09f88c21446627b3135f53ef6caaef33d9c278be3e4db982b9e5361` 02:48:29.696 CET	`lambda_spec/G31_0_RULING_2.md` `ee16486823b83063745e0c065300be74f98b11b38e22e8e2254d569e4928db1`
mechanism note	`lambda_engine/hand/HAND_MANIFEST.sha256` stamped 05:56:02.869 CET (the hand facts)	`lambda_engine/MECHANISM_NOTE.md` `ac4c7f2553ceca8a3c88077ab440d8cf9dc8878429d4a48049a96ba2eff57ef` sealed 06:01:08.737 CET before any engine script
engine	`lambda_engine/engine/ENGINE_REGISTRATION.md` `c478d20d92bad657b2ba506a3ad522398557a61854b8c767995ff5144c7deb5b` 06:16:37.482 CET; `ENGINE_REGISTRATION_2.md` `114cf35cb7de00aab096affda205960e5352919acca7fbdd739a267072fa67f9` 06:39:51.354 CET	`lambda_engine/ENGINE_REPORT.md` `42059e9a63c4ea24d9b4ebe4095027b4b78ffa177a904736f532cae1f3a783c` `lambda_engine/ENGINE_ROWS.md` `e1af3d7b78c4731d8c11b980ddffeabab3296b9ba46ab02acc62710ac0aa2ac`
co-runners M-Λ8	`lambda_corunners/REGISTRATION.md` `eabcb0815ee6b20ae8451a5747f94c43342ed80986c642686fa84f5acc369032` 06:22:56.256 CET; three addenda	`lambda_corunners/REPORT.md` `9452e5d8d95e3016e53dd0a45c8a86a14f0b2f352b840d7c6d2c8ff2459875`
rigor verifier	`lambda_verify/REGISTRATION_RIGOR.md` `aaef37fccd97ea48e677bf706c52fd5514732056ac7cff33d61fe2a66200f5c6` 08:23:53.451 CET	`lambda_verify/RIGOR_REPORT.md` `79c2cf8aaafd472fca5005adc53eea7847eaa073f9dc609dfa2bd5dcab3426a`
physics/steelman verifier	`lambda_verify/PHYSICS_REGISTRATION.md` `eb23ffdb275a1a1cd9ab3f55531f22a9736d5a1d8ab324b5a70aa6a82702e3e4` 08:25:45.660 CET; addenda `55d12ff9807e9e65ffbb3d1e2c4dfddcf9daaef1ad0bbcaf599b2366b3853075` 08:45:56.242, `0dd5381fa10153b4ae44f02455b39ed523dba18a48f280c53320302189feb7a3` 08:57:57.431 CET	`lambda_verify/PHYSICS_REPORT.md` `179803084b65fc487389a076b11ac43bd4852b1cc78b8a829a1eb9c678844d4`
this synthesis	`lambda_synthesizer/SYNTH_REGISTRATION.md` `0423c2c081e13888bcf8001ac92dc77e69ddfe98f3b9f0d014c2f61537bd806d` 09:24:02.078 CET	this document (v1.1)

0.2 Canon pins and discipline of this leg

`lambda_synthesizer/pins_before.txt`, 2934 files (the whole corpus except `lambda_synthesizer/`, `.DS_Store`, `__pycache__`; `32_lambda.md` v1.0 INCLUDED), sha256 of the list `2a0a4a7422897e2ebf18c411ddaa6d4b2a7ff5fc9300719fbe263003a90626fc`, 2026-10-29 09:21:36.084868 CET; restricted to the files outside `lambda_verify/` it equals the physics leg's `lambda_verify/phys_pins_after.txt` (2716 files) with changed 0, missing 0, added 0, no leg touched the corpus between the last leg's end and this leg's start. The registered rule (SC-1): every pinned file byte-identical after the leg except exactly one CHANGED file, `32_lambda.md` (the mandated supersession v1.0 → v1.1, after the byte-identical copy to `analysis/32_lambda.v1.0.md` was made and verified: sha256 `52b6835d7a642c6813b0f77ab095518fe449bf2a774d71e0c5da9eedbaeb6f89` = the before-sha of `32_lambda.md`); the added files are `analysis/32_lambda.v1.0.md`, `papers/26_lambda/*` and `lambda_synthesizer/*` only. End-of-leg facts: `lambda_synthesizer/pins_after.txt`, 2946 files, 2026-10-29 09:51:32.405776 CET, sha256 of the list `3fc3e907d65aa98b6f9da28dbddc2c7703f77728163896cbc6b3273b1e7876a2`; against `pins_before.txt`: before 2934 after 2946 changed 1 missing 0 added 12, changed 1 (`32_lambda.md`), missing 0, added 12 (11 under `papers/26_lambda/`, 1 `analysis/32_lambda.v1.0.md`, 0 other); the one changed file is this document, superseded as registered; every other pinned file byte-identical. This leg drew no prime (SC-6 certifies twenty-one tokens and five composite bases by own trial division), imported or executed no engine of any leg (the record's JSON read as data; own Z[ω] arithmetic at the number level), ran no LP, decided no row, and wrote nothing outside the three mandated places and its own directory; README, memory and SUBMISSION_STATUS are the owner's to fold.

The question, doc 31 §5, verbatim (the dream form, the operational form and the typed outcomes of equal standing; every rung of this document is scored against these letters and no other):

> **Dream form**
>
> **Where does the classical description of quantum computation end?** Every quantum computation with magic states has a finite hidden-variable description: a probability distribution over the vertices of the Λ-polytope, updated stochastically by Clifford gates and Pauli measurements (Zurel–Okay–Raussendorf–Heimendahl 2024). The only *constructible* part of that description at an odd prime, the CNC phase space of Zurel–Heimendahl (2024): noncontextual pieces of phase space glued along commuting observables, hosts strictly more than Gross's Wigner function, and at one qutrit it hosts everything. **Does it still host every state of two qutrits, or does the escape from constructible classical description begin at two particles, and with which states, product or entangled, and at what copy number?**

> **Operational form**
>
> On $\Lambda_2(3) = \{W \in R^{81} : \Sigma W = 1, \Sigma_{u \in L}\ W_u \geq 0$ for each of the 360 affine Lagrangian planes L of $Z_3^4\}$ (the 360 pure two-qutrit stabilizer states; ZORH's definition, read today), let **V_CNC(2,3)** := $\{A_\Omega \hat{}\ \gamma = (1/9)\ \Sigma_{b \in \Omega}\ \omega \hat{}\{-\gamma(b)\}\ T_b : \Omega$ a CNC set of Z_3^4 per Zurel–Heimendahl Theorem 1, a subspace, or $\cup\{k=1\}\hat{}\{\xi\} \langle a_k, I \rangle$ *with I isotropic, $a_k \in I\hat{}\perp$ pairwise non-commuting, and γ a noncontextual value assignment on Ω}, enumerated exactly from the judge's census of its 40,536 closed supports; its convex hull* **C_2 := conv V_CNC(2,3)** *satisfies Wigner simplex $\subsetneq C_2 \subsetneq \Lambda_2(3)$ (left: the support-18 CNC vertex has entries −1/9; right: the 22 + 18 certified multi-modulus vertices). For a state list* **S** *frozen in the pilot docstring before any enumeration, controls INSIDE: the 360 stabilizer states, registered Wigner-nonnegative mixtures, $|S\rangle\otimes|0\rangle$ and $|N\rangle\otimes|0\rangle$ (the ancilla lemma: $\Omega \times \langle z \rangle$ is of form (ii), so $A_\Omega \hat{}\ \gamma \otimes |j\rangle\langle j|$ is a CNC point, a corollary, registered so it is never a finding); controls OUTSIDE: the 22 judge-certified and 18 scout-certified multi-modulus vertices (points of Λ, not states; the Farkas machinery must reject every one); open rows: R1 $|S\rangle\otimes|S\rangle$, R2 $|N\rangle\otimes|N\rangle$, R3 $|S\rangle\otimes|N\rangle$ ($|S\rangle = (|1\rangle - |2\rangle)/\sqrt{2}$, $|N\rangle = (-|0\rangle + 2|1\rangle - |2\rangle)/\sqrt{6}$, the qutrit Strange*

> *and Norrell states; Wigner functions rational), R4 the entangled family D_f\|+⟩\|+⟩ with D_f = Σ{j,k} ω^{f(j,k)}\|jk⟩⟨jk\| for the registered non-quadratic phase functions f ∈ {jk², j²k, jk² + j²k, j²k²} over Z_3 (f = jk is Clifford, a control), R5 the maximal-mana two-qutrit pure states of Wang–Wilde–Su 2020 if that paper lists them (else typed NOT-REGISTERED), R6 twenty seeded random states with amplitudes in {0, ±1, ±ω, ±ω²} (rational Wigner functions; exact LP needs exact data, Haar states are not registrable), **decide by exact rational LP, with a Farkas certificate on every failure, whether ρ ∈ C_2.** Second question, same engine: the Clifford-orbit census of the non-CNC vertices of $Λ_2(3)$ (canonical forms under Sp(4,3) ⋉ Z_3^4, 10^4 exact draws) and, per class, whether its Pauli-measurement update decomposes over found classes (CLOSED) or not (LEAKS), the "update rules" problem of Ipek–Okay 2312.10734 at the first odd-prime instance. Second rung (only on CNC-HOSTED-AT-2 for the product rows, or as a data lane): the copy-number threshold at d = 3, \|S⟩^{⊗3}, \|N⟩^{⊗3}, \|S⟩\|S⟩\|N⟩ in C_3 := conv V_CNC(3,3) (729 coordinates, 30,240 facets; supports by Theorem 1 with symmetry; column generation with exact pricing). **Typed outcomes of equal standing: CNC-HOSTED-AT-2** (every registered state inside C_2, controls as forecast, the constructible model survives two particles; the escape, if any, begins at n ≥ 3, and the threshold rung runs); **ESCAPE-AT-2** (a certified two-qutrit state outside C_2 with its Farkas certificate and Clifford orbit, the first odd-prime state the constructible model cannot host; sub-typed ESCAPE-BY-PRODUCT, which would put the d = 3 copy threshold at 2 against the qubit 3, or ESCAPE-BY-ENTANGLED); **THRESHOLD-3** (second rung: n* ∈ {3, > 3} for the Strange/Norrell copies, typed per state); **NOT-DECIDED-BELOW-CAPS** (enumeration or LP caps hit; caps printed; never upgraded); plus the data outcomes VERTEX-CENSUS (orbits with multiplicities under caps) and UPDATE-CLOSED / UPDATE-LEAKS per class.

Ceiling rider (fused; binding on every sentence of this document, including the headline sentence S-Λ-1 and every data sentence), doc 31 §5's mandatory riders, verbatim:

Mandatory ceiling riders, fused from day one. In-class: d = 3, n = 2 (n = 3 for the threshold rung), the registered state list; "constructible" means the Zurel–Heimendahl CNC phase space, nothing else; never "efficient" or "efficiently simulable" for anything (ZH's efficiency is conditional on an unproven polynomial bound on ξ, their open problem 3; 2110.12318 §4 makes no efficiency claim); never "not simulable", never "no nonnegative model exists" (the 2110.12318 / 2407.10349 guards doc 20 already carries: every state has a nonnegative Λ-representation by Theorem 1); never "quantum advantage begins at two qutrits"; "the escape from classical description" always with "constructible (CNC)" attached; the two-qubit Λ (eight Clifford orbits, two cnc, Okay–Zurel–Raussendorf 2104.05822) and the qubit copy precedent (two copies inside, three outside, Raussendorf et al. 2020 as cited by ZH) are quoted, never re-derived; a CNC-HOSTED-AT-2 outcome never feeds a "classical" sentence; licensing is never posting; defer-until-big governs every export.

To which this program adds, from its freeze (SPEC §0, §5, §6) and its legs: the gravity-bridge lane speaks only of "the p = 3 lattice gate" and never of physical gravity, every lane shorthand written out in full ("the p = 3 lattice gate's registered diagonal-phase classes", never "the gravity classes"); the physical gate's output is NOT-REGISTRABLE in an exact rational LP (doc 21's rider [D]: the continuous angle has no exact p = 3 image); a HOSTED placement never feeds "classical"; an OUTSIDE placement never feeds a cost or advantage sentence of any kind; a null anywhere never feeds a classicality sentence about gravity and a positive never a quantum one (doc 20's standing riders travel whole); Lemma M and Lemma C are elementary corollaries of printed lemmas (ZH 2407.10349 Lemma 5 / Corollary 3; the 2022 Erratum's construction; RBTOZ Lemma 11's qubit form), stated with "d an odd prime" in their hypotheses and with the t = 0 branch split (the physics leg's HS-13), cite-check rows for M-Λ7, never findings; the comparison with the qubit precedent names the states on both sides and the numerical grade of the qubit side (Raussendorf et al. 2020 Table IV, floating-point LP values, as cited by Zurel–Heimendahl) and is a one-prime datum, never a law (KΛ-6); magic numbers are printed as $‖W‖_1$ with the labelled derived quantity and the log base, and the CNC negativity R with its convention (R = 1 ⟺ hosted); every typed sentence is in-class, d = 3, n ≤ 3, the registered states, "constructible" = the Zurel–Heimendahl CNC class by its letter (Definitions 1–2, Eq. (17), Theorem 1 of 2407.10349) and nothing else; **licensing is never posting; defer-until-big governs every export. Nothing in this document reaches the dream form beyond its first odd-prime two-particle instance: at two qutrits the registered record is decided with exact certificates re-derived by four own routes on its load-bearing rows; at three qutrits every registered row is a corollary of two-qutrit certificates, and no three-qutrit state was decided by an n = 3 LP.**

Tag legend (every claim below carries its confirmer). [J] doc 31. **[L]** the scouts (scout grade). **[P]** the pilot's runs of record. **[V]** the pilot verifier's own routes. **[S]** the spec leg's pre-check. **[G]** the hostile gate's own routes (first pass). **[A]** the spec owner's addendum (the 262-cell screen, two engine copies). **[G2]** the hostile re-gate's own routes (second pass). **[N]** the mechanism note's hand facts (scripted, exact, one leg). **[E]** the engine leg (the isolated pilot copy + own n = 3 pricing + own second routes). **[C]** the co-runner leg. **[R]** the rigor verifier's own routes (an own enumeration of the pool two ways; own pricers at n = 2 and n = 3; own exact simplex; own matrices). **[X]** the physics/steelman verifier's own routes (own pool; own orbit builder; own column generation over $Λ_2(3)$; own R). **[SYN]** this document's checks (`lambda_synthesizer/synth_check.py`: pins, seventeen manifests, the registration order of every leg, the record regressed as data, own Z[ω] arithmetic at the number level, RC-2c's Wigner function, its certificate's value, the eight Corollary-C2 identities, the ξ witness and the Hoffman bound, twenty-one primes certified, the wording and sha and path scans of this text; the check of record is the last run in `lambda_synthesizer/synth_check.log`). **Legs that ran: all of them.** The five load-bearing n = 2 certificates (R1–R3, R4-j2k2, RC-2c) and the three cubic decompositions stand at FOUR own routes (**[P][V][G][X]**, with **[R]** a fifth on the pool and the pricing, the pilot's engine copy, the verifier's, the gate's, the rigor leg's and the physics leg's are five bodies of code that agree); every other n = 2 row at three own routes (**[P][V][R]**, plus **[G]** on 11 teeth); every corollary row at spec + gate + engine + rigor strength; RC-2c at engine + rigor + physics strength; nothing is at one leg's strength except where the document says so (the census orbit test, the engine's 18 further orbit-member certificates, the one-leg hand facts of the note).

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1. Registration of this leg (`lambda_synthesizer/SYNTH_REGISTRATION.md`, sha256 `0423c2c081e13888bcf8001ac92dc77e69ddfe98f3b9f0d014c2f61537bd806d`, sealed 2026-10-29 09:24:02.078 CET, before `synth_check.py` was born at 09:28:17.167 and before a line of this document existed)

Assembly rules R1–R9 (frozen; applied). R1 the outcome type is the conjunction of the registered letters that hold, each by its own text, none ranked, no new type, the v1.0 STOP superseded by its remedy chain and never reversed, NOT A KILL; R2 strength labels follow the legs that re-derived each claim and the verifiers' row verdicts are the unit (a row CONFIRMED by the rigor leg carries its verdict at rigor grade; a row NOT-REPRODUCED or DEFECT carries no verdict from that leg); the physics leg's per-headline rulings are applied, every OVER-REACH sentence written in its REWORD-TO form, every LICENSED sentence with its riders, the HS-5 strengthening stated beside ΛW-3; R3 the ladder ruled rung by rung with the spec's status words, no rung re-worded after a readout, one headline sentence S-Λ-1 entered whole-with-riders and BLOCKED for quotation behind G31-2 + G31-3; R4 every forecast scored by its registration letter, refutations first; R5 the gravity lane a data section, "the p = 3 lattice gate" only, shorthands written out; R6 the co-runners data, PRE-R's condition reported and acted on by nobody; R7 lessons drafted never entered, owner items listed, D-Λ "could compose" only; R8 the supersession order (copy first, verified; then v1.1; v1.0's text never edited; the doc-32 leg's manifest entry for `../32_lambda.md` verified against the copy); R9 wording (bans only inside the BANLIST and V blocks; every "classical" and "gravity" hand-read on the full line; the qubit comparison with states and grade; the bare Veitch label never, Veitch's sn, Def. 10, is the labelled form).

Checks SC-1..SC-9 (forecasts declared; the script hashed before each run; every run appended to `synth_check.log`; the check of record = the last run in that log): SC-1 pins (attribution at the start: changed 0 / missing 0 / added 0 against the physics leg's end state; at the end exactly one CHANGED file,

`32_lambda.md`); SC-2 seventeen manifests from inside their directories (the known exceptions: the pilot verifier's bare-name ruling entry, D-V8; the doc-32 leg's `../32_lambda.md` entry against the copy; the comment lines of four manifests); SC-3 the registration order of every second-freeze leg on sub-second stamps vs file births vs log mtimes, and every sealed sha equal to its file; SC-4 the record regressed as data (every verdict number this document prints: the engine's RC-2c run and orbit, the teeth, the battery, ξ_max and its two follow-ups, the rigor leg's eleven JSON statuses, the physics leg's seven JSON (margins, reach, orbits, R intervals, the 25-vertex witness, 3722), the co-runners' six JSON, the addendum's screen and AGL records, the re-gate's own screen and F5 table, the pilot's census / open rows / update closure, the spec leg's pre-check, the gate's eight deciding conditionals and five probe candidates); SC-5 own exact arithmetic (RC-2c's Wigner function from its definition in the house convention equals the pinned one entry by entry; the record's Farkas functional has $y_u \geq 0$ on all 81 points with 27 zeros and $y \cdot W = -333333333/1000000000$ by own dot product; the eight Corollary-C2 identities and p_s; the survival-rule arithmetic; the thirteen witness vectors of ξ_max(3,3) pairwise non-commuting under the own symplectic form and the SRG(364,120,38,40) eigenvalues 8, −10 with the Hoffman bound 28; the $n^* = 2$ arithmetic); SC-6 twenty-one tokens prime and five round bases composite by own trial division, and the closing-audit / successor tokens absent from every log, JSON, sha256, stamp and txt file of the whole LAMBDA record except as classified quoted band-plan text in the physics leg's two text-scan outputs (17 mentions, each inside a quoted sentence of the record that says "≥ 9,700,003 … UNTOUCHED" or "no reserve (>= 9,700,003) … token is drawn", none a draw; §7.1 D-X5); SC-7 this document (0 ban hits outside the marked blocks; four V blocks exact; every sha a pinned or own file or a sealed body sha; every backticked record path present; the letters and S-Λ-1 present; no placeholder; "classical"/"gravity" lines listed for hand reading); SC-8 `papers/26_lambda/` (README; PDF manifest; nine PDFs sha-equal to the L2 lane's sources); SC-9 the v1.0 copy sha-equal to the pinned v1.0. **Runs:** run 1 (09:28, no document yet) 32/36, four FAIL lines, all this leg's own: a registration count slip (the physics manifest has 95 entries, its first line a comment), a count-of-presentations slip (the addendum's AGL record stores the 16 surviving presentations of the 5 classes), a check that counted simple census classes without the "drawn" qualifier (227 drawn + 3 among the undrawn control/extra classes = 230 known), and a token scan that did not classify quoted band-plan text; repaired as v2, whose patch appended a comment inside a call and swallowed a comma (a SyntaxError at compile; never run; kept under `dev/`), as v3, whose patch appended a comment inside a list literal and swallowed another comma (a runtime TypeError after 32 PASS lines; kept under `dev/`), and as v4 (hashed 09:31:17.527 CET): run 4 PASS 38/38 before any line of this document (SC-7 and SC-1b not yet runnable); the run of record on this text and the final pins: §10. **SF-SYN-2 ("at most two dated repairs") REFUTED** (three; the house's own gate-leg lesson about comments and commas, met twice in one leg, §7.4).

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2. Results per rung

2.1 The n = 2 rung, ESCAPE-AT-2 in both sub-types, extended by RC-2c (every row by its own exact certificate; strengths per R2)

row	verdict	certificate (y·W; or the decomposition)	G_2-orbit (size / stabilizer)	Schmidt rank	$\|\|W\|\|_1$ (negative mass = Veitch's sn, Def. 10)	strength
R1 $\|S\rangle\otimes\|S\rangle$	**OUTSIDE**	Farkas y, exact global minimum 0 over all 17,893,624 CNC points (attained on an $a^{\perp}$ support), $y \cdot W = -4339285717/9000000000$	3,645 / 1152	1	25/9 (8/9)	[P][V][G][R][X], five bodies of code; own certificates by [V] (two routes), [G] ($y' \cdot W = -8/9$), [R] (route A −8/9; route B $t^* = 29/56$, −27/56), [X] (margin 8/9 at $\|y\|_{ll_\infty} \leq 1$)
R2 $\|N\rangle\otimes\|N\rangle$	**OUTSIDE**	$y \cdot W = -3/10$ (minimum 0 on an ovoid(7) support)	58,320 / 72	1	25/9 (8/9)	[P][V][G][R][X]
R3 $\|S\rangle\otimes\|N\rangle$	**OUTSIDE**	$y \cdot W = -1327868851/3000000000$	29,160 / 144	1	25/9 (8/9)	[P][V][G][R][X]
R4 $D_{\{jk^2\}}\|{+}{+}\rangle$, $D_{\{j^2k\}}\|{+}{+}\rangle$, $D_{\{jk^2+j^2k\}}\|{+}{+}\rangle$ (the three cubic diagonal states; = GL2[0,1,0], [1,0,0], [1,1,0])	INSIDE	$t^* = 1$; each an exact equal-weight mixture (1/3, 1/3, 1/3) of three CNC vertices of the $a^{\perp}$ type (support a hyperplane of 13 lines, γ nonlinear, the J-C2 class)	25,920 / 162 (one orbit with the eight cubic classes)	2, 2, 3	7/3 (2/3)	[P][V][G][R][X], the decompositions re-summed by the letter by every leg; own decompositions of the same three-term form by [V], [G], [R]
R4 $D_{\{j^2k^2\}}\|{+}{+}\rangle$ (= GL2[0,0,1])	**OUTSIDE**	$y \cdot W = -5/16$	87,480 / 48 (with the eight other c = 1 classes and R6-07)	2	59/27 (16/27)	[P][V][G][R][X]
R6-01 … R6-20 (`random.Random(20261028)`, amplitudes in {0, ±1, ±ω, ±ω²}; regenerated by [R] with 0 redraws)	**OUTSIDE (20/20)**	$y \cdot W \in [-1291688383/3240000000, -1/5]$, each exact	2,099,520 / 2 (13 rows); 4,199,040 / 1 (3); 699,840 / 6 (2); 87,480 / 48 (R6-07)	3 (18 rows), 2 (R6-06, R6-19)	7/3 … 23/9	[P][V][R]; [G] on R6-01; [R]'s route A on R6-01, R6-07, R6-19
the 8 cubic classes GL2 O1 ∪ O2 ($a\,j^2k + b\,jk^2$, $(a,b) \neq (0,0)$)	INSIDE (8/8)	the same three-term form	25,920 / 162	2 or 3	7/3	[P][V][R]; [G] on GL2[2,2,0]
the 18 classes with a j^2k^2 term, GL2 O3 ∪ O4 ∪ O5	**OUTSIDE (18/18)**	$y \cdot W = -5/16$ on every one (G-covariance within two orbits, c = 1 and c = 2, complex conjugation is not a Clifford operation)	87,480 / 48 each	2 or 3	59/27	[P][V][R]; [G] on GL2[0,0,2]
GL2[0,0,0] (the quadratic control class)	INSIDE	a stabilizer state (729/729 quadratic profiles stabilizer)	360	-	1	[P][V][G][E]
RC-2c = $D_{\{j^2k\}}\|{+}\rangle\|S\rangle$ (the reserved cell of the second freeze; class [1,0,0] on the $\|{+}\rangle\|S\rangle$ input of the p = 3 lattice gate)	**OUTSIDE**	the run of record 2026-10-29 06:48:14.223 → 06:48:18.359 CET (the isolated pilot engine; 651 columns, 20 rounds, 1 exact round, 4.1 s, the pilot's caps 4000 / 500 / 900 s): an exact Farkas functional y (81 entries in [0, 2], 27 of them 0) with exact global minimum 0 over all 17,893,624 CNC points and **$y \cdot W = -333333333/1000000000$**; the engine's own Theorem-1 pricing: minimum 0, the same value; the engine's own membership run: OUTSIDE, 651 columns, 2.9 s, the same value; [R]: both pinned functionals at own-pool minimum 0, route A OUTSIDE (own $y' \cdot W = -167/1440$), route B OUTSIDE ($t^* = 2/3$; own Farkas value **−1/3 exactly**, 12,084	77,760 / 54 (own BFS by [N], [E], [R], [X]; contains RC-2d, the $\|{+}\rangle\|\tau\rangle$ class $D_{\{j^2k\}}\|{+}\rangle(\|0\rangle+\|1\rangle)$ and the complex conjugate $D_{\{2j^2k\}}\|{+}\rangle\|S\rangle$; no product member; no decided n = 2 row of record in it)	2	2 (1/2), the smallest of every undecided row of the second freeze	[E][R][X][SYN]; **the first LP ever run on RC-2c or any member of its orbit was the run of record**, after the note's prediction was sealed (06:01:08.737 CET) and transcribed into the engine's registration 2 (06:39:51.354 CET) and before `e4_rc2c.py` was born (06:43:40.451 CET),

row	verdict	certificate (y·W; or the decomposition)	G_2-orbit (size / stabilizer)	Schmidt rank	$\|\|W\|\|_1$ (negative mass = Veitch's sn, Def. 10)	strength
		exact pivots); [X]: the pinned functional re-priced over its own pool to minimum 0 with the pinned value; this document: y_u ≥ 0 on all 81 points, y·W = −333333333/1000000000 by own dot product on an own Wigner function [SYN]				the order verified by [R] and [SYN]

Sub-typing by the registered Schmidt-rank rule: ESCAPE-BY-PRODUCT by R1–R3 (the copy sentence belongs to these rows only); ESCAPE-BY-ENTANGLED by R4-j2k2, every R6 row (all of Schmidt rank ≥ 2) and RC-2c (rank 2). No R6 row is a product. **CNC-HOSTED-AT-2 does not hold** for the registered list S ∪ {RC-2c}; **NOT-DECIDED-BELOW-CAPS did not occur** on any n = 2 row (54/54 decided; the largest run 1761/4000 columns, 57/500 rounds, 7.7/900 s in stage (e); 651 columns and 4.1 s on RC-2c).

The n = 2 anatomy the certificates support (data; a statement about 54 registered states; never a theorem about "all cubic states", SF-5). Within the registered diagonal-phase family $D_f|+\rangle|+\rangle$ (27 classes a j^2k + b jk^2 + c j^2k^2) membership in C_2 is decided by the quartic weight c (INSIDE iff c = 0 among the non-quadratic classes), each INSIDE row an exact equal-weight mixture of three a^⊥-type CNC vertices, each OUTSIDE row carrying the one Farkas value −5/16 by G-covariance within two orbits; the product rows R1–R3, all twenty R6 rows and RC-2c are OUTSIDE with their own certificates; **the three Wigner-based magic monotones of R1–R3 tie** ($\|W\|_1$ = 25/9; negative mass 8/9; mana ln(25/9)) with three different Wigner multisets and three different certificates, a tie in a Wigner-based magic monotone forecasts nothing about the CNC hull (the physics leg's HS-18 precision: the CNC negativity R is not a forecaster but a restatement, R = 1 ⟺ hosted). **The mechanism note's reading**, at n = 2 the constructible (CNC) hull hosts one non-Clifford ingredient at a time (a magic state beside a stabilizer state, or one cubic gate on stabilizer inputs) and rejects their combination, is consistent with RC-2c's verdict and with every row of record, and remains a reading of 54 + 27 registered rows, not a theorem (HS-17, LICENSED as a reading) [N][E][X].

ΛG-1 on the $|+\rangle|S\rangle$ input of the p = 3 lattice gate, COMPLETED by one verdict (data lane, never headline; §2.6). Of the 27 diagonal classes $D_{a\ j^2k + b\ jk^2 + c\ j^2k^2}|+\rangle|S\rangle$: on the Strange support $k^2 = 1$ every phase reduces to a $j^2k + b\ j + c\ j^2$, so the 9 classes with a = 0 are (a local Clifford on register 1)($|+\rangle|S\rangle$), products with a single-qutrit stabilizer factor, INSIDE C_2 by the ancilla lemma (controls; the quadratic control class and RC-2a/RC-2b among them), and the 18 classes with a ≠ 0 lie in RC-2c's Clifford orbit, every one re-run through the engine copy after the run of record with its own certificate (21/21 orbit members OUTSIDE, 485–651 columns, 3.1–6.1 s, every value −333333333/1000000000 by G-covariance of the located certificates) [N][E]; [R] re-derived the 9 + 18 split by own code and re-decided three orbit members by its own LP route; the engine's 18 further per-member certificates are not stored (verdicts only), **their OUTSIDE is G-covariance of an own-verified pool, labelled NOT-REPRODUCED by [R] as a stored certificate and carrying no verdict from that leg (R2)**; the registered diagonal family of the p = 3 lattice gate is thereby decided on both registered inputs (F-RC-5 CONFIRMED; H-4 of the note).

What the physics leg added at n = 2 (own routes; data rows available to the record; §3.5): (i) **the product obstruction**, no product of two $\Lambda_1(3)$-vertices with a non-delta factor lies in $\Lambda_2(3)$ (0 of 6,480); $|S\rangle\langle S| \otimes V$ and $|N\rangle\langle N| \otimes V$ lie outside $\Lambda_2(3)$ for every one of the 81 $\Lambda_1(3)$-vertices V, while $|+\rangle\langle +| \otimes V$ and $|0\rangle\langle 0| \otimes V$ lie inside for all 81 (the ancilla lemma's control, showing the test has teeth), so the natural product-closed enlargement of the CNC class exits the polytope that defines the model (the mechanism note's H-7/H-8 by an independent route) [N][X]; (ii) **two failed enlargements**, $|S\rangle\otimes|S\rangle$, $|N\rangle\otimes|N\rangle$, $|S\rangle\otimes|N\rangle$, $D_{j^2k^2}|+\rangle|+\rangle$ and RC-2c are OUTSIDE conv(V_CNC ∪ X62) (X62 = the own-generated Clifford orbit of the two-modulus census class, 174,960 vertices, $|F|^2 \in \{1/3, 1\}$; exact margins 22/27, 8/27, 2/27, $429692/27 \cdot 10^{-6}$, 1/4 at $\|y\|_\infty \le 1$) *and $|S\rangle\otimes|S\rangle$ is OUTSIDE conv(V_CNC ∪ X62 ∪ X396) (X396 = the four-modulus class's orbit, 1,399,680; margin 5/9; the quartic row and RC-2c NOT-DECIDED-BELOW-CAPS against the second enlargement in the run of record, printed, never upgraded) [X]; (iii)* ***the constructive witness****, an explicit exact convex decomposition of W{$|S\rangle\otimes|S\rangle$} over 205 own-certified vertices of $\Lambda_2(3)$ using 25 multi-modulus (non-CNC) vertices with $|F|^2$ multisets {1, 1/12, 1/3}, {1, 1/16, 1/4}, {1, 1/27, 1/3}, {1, 1/13, 1/39}, {1, 1/25, 1/3} (vertex families beyond the two census classes), so ΛW-3's sentence is constructive, never a no-go [X]; (iv)* **the precedent's own measure, exact at odd prime for the first time**, the CNC negativity R(ρ) = min{Σ|q_P| : W_ρ = Σ q_P W_P, P ∈ V_CNC(2,3)} (RBTOZ's cnc robustness; R = 1 ⟺ hosted) by own column generation with an exact signed primal (upper bound) and an exact dual (lower bound): $R(|0\rangle|0\rangle) = 1$ exactly (control); **$R(|S\rangle\otimes|S\rangle) = 7/4$ exactly** (bounds met); $R(|S\rangle\otimes|N\rangle) \in [4500000/3000001, 3/2]$; $R(D_{j^2k^2}|+\rangle|+\rangle) \in [37285718/27000009, 29/21]$; R(RC-2c) ∈ [3999999/3000001, 4/3]; $R(|N\rangle\otimes|N\rangle) \in [25/21, 4/3]$ (four of six as certified intervals) [X]; (v) **the hull's reach along the segment from the uniform CNC point** (an upper bound from each certificate; a decomposition at half of it): at most 13/22 of the way to $|S\rangle\otimes|S\rangle$, 41/50 to $|N\rangle\otimes|N\rangle$, 77/95 to $|S\rangle\otimes|N\rangle$, 14017352/14271419 ≈ 0.982 to $D_{j^2k^2}|+\rangle|+\rangle$, 128/137 to RC-2c, and at least half of each [X]. Both measures agree on an anatomy the n = 2 certificates alone did not state: **the product of two magic states is the furthest outside of every registered row, and the rows with one non-Clifford ingredient (RC-2c; the quartic class) are the closest**, which is why the pilot's registered gloss "the hull is thin around the stabilizer polytope" is dropped (HS-16 OVER-REACH: no certificate measures a thickness, and these numbers certify no uniform thinness) and P-Λ4's refutation is stated by its letter only.

2.2 The n = 3 rung, "no open row at this freeze: every registered n = 3 row is a corollary of n = 2 certificates (Lemma M / Lemma C / the ancilla lemma)"; THRESHOLD-3 by corollary

The two lemmas in hand, stated with their hypotheses (the physics leg's HS-13 precisions applied; both elementary corollaries of printed lemmas, ZH 2407.10349 Lemma 5 / Corollary 3, the 2022 Erratum's construction, RBTOZ Lemma 11's qubit form, cite-check rows for M-Λ7, never findings; re-derived as explicit matrices over Z[ω] by [G] (210 + 2520 + 864 cases), [R] (260 + 3120 + 160) and [X] (400 + 72 trace cases; 4800 + 864 conditioning cases), with every hypothesis tested). Let d be an odd prime (so β ≡ 0 and "noncontextual" is additivity on commuting pairs), n ≥ 2, and P = A_Ω^γ a CNC point of n qudits by ZH's letter. **Lemma M** (the spec leg's): $\mathrm{tr}_i(A_{\Omega}^{\gamma}) = A_{\Omega_i}^{\gamma_i}$ with $\Omega_i = \iota_i^{-1}(\Omega)$, $\gamma_i = \gamma \circ \iota_i$, a CNC point of n − 1 qudits; so tr_i maps C_n into C_{n-1}; Corollary M2 lifts a Farkas functional of tr_i $\rho \notin C_{n-1}$ to $\tilde{y}(u', u_i) := y(u')$, attaining its minimum 0 at $P' \otimes |s\rangle\langle s|$ (a CNC point by the ancilla lemma); Corollary M3 (two-directional with the ancilla lemma): $\rho \otimes |s\rangle\langle s| \in C_{n+1} \iff \rho \in C_n$ for every single-qudit stabilizer state $|s\rangle$; Corollary M4: $\rho^{\otimes 2} \notin C_2 \Rightarrow \rho^{\otimes n} \notin C_n$ for every n ≥ 2. **Lemma C** (the gate's): for a pure single-qudit stabilizer state $|s\rangle$ at ONE position i (stabilizer group a Pauli line ⟨c⟩ with value r), **either $\mathrm{Tr}((1 \otimes |s\rangle\langle s|_i)\, P) = 0$ and the block $\langle s|_i\, P\, |s\rangle_i$ vanishes, or $t := \mathrm{Tr}((1 \otimes |s\rangle\langle s|_i)\, P) \in \{1/d, 1\}$ and $\langle s|_i\, P\, |s\rangle_i = t \cdot P'$ with $P' \in$ V_CNC(n−1, d)** (the t = 0 branch met 434 + 10 times by [X], 102 by [G], 332 by [R], not a corner case); Corollary C1: $\rho \in C_n$ and $p_s := \mathrm{Tr}(\rho(1 \otimes |s\rangle\langle s|)) > 0 \Rightarrow$ *the conditional state $\sigma_s \in C${n−1}*; Corollary C2 lifts a Farkas functional y of $\sigma_s \notin C_{n-1}$ to $\tilde{y}_s(u', u_i) := y(u') \cdot 1[u_i \in \ell_s]$ (ℓ_s the affine line of Z_d^2 on which $W_s = 1/d$), with $\tilde{y}_s \cdot W_P \ge 0$ for every CNC point and $\tilde{y}_s \cdot W_\rho = p_s \cdot (y \cdot W_{\{\sigma_s\}}) < 0$, minimum 0 at $P'_{\min} \otimes |s\rangle\langle s|$. Lemma M's Corollary M2 is the special case "sum over the d outcomes of one basis", so the conditioned test subsumes the trace test and is strictly finer (the six first-pass cells: 18/18 partial traces INSIDE, 9–26 of 36 conditionals OUTSIDE). Both are one-directional (never INSIDE) and empty at n = 2 ($C_1 = \Lambda_1(3)$ hosts every single-qutrit state), which is why RC-2c stayed open while every registered n = 3 cell fell.

The addendum's screen (G31-1; [A]), the re-gate's own screen ([G2]) and the rigor leg's re-derivation ([R]), the record of the n = 3 rung:

family (registered before any member was read; `lambda_spec/addendum_1/ADDENDUM_REGISTRATION.md`, 00:14:57.745 CET)	cells	DECIDED OUTSIDE C_3 by Lemma C (exact certificates)	controls (INSIDE C_3)	RC-2c-dependent	open
F1, the one-square diagonal classes D_f|+++⟩ (the ten reduced cubic monomials with at most one squared variable; 139 classes under the monomial affine group Aff_3, with the 27 cross-term presentations of every pass-1 survivor)	139 classes (150 presentations screened)	**132** (deciding conditional and lifted value per class in `a2_screen.json`; among them the gate's RC-3a #97, RC-3b #29, RC-3e #98)	2 products of a cubic class with |+⟩ (D_{kl²}, D_{kl²+k³}) + **the 5 battery survivors F1[2], F1[28], F1[104], F1[109], F1[112]** (every one of their 36 conditionals INSIDE C_2 on every battery-distinct presentation by both engine copies) found by the full affine group AGL(3,3), 303,264 substitutions, orbits of 104 polynomials, 0 double-square images, to be SUM-type Clifford images of (a two-qutrit cubic class) ⊗ |+⟩ (the explicit substitutions: f = j²k, 2jk² + 2j²k, jk², jk² + 2j²k, jk² + j²k on the free variable l): INSIDE C_3 by the ancilla lemma, **controls, never open cells**; the tell was their Wigner value multiset coinciding with the 12 line-control knob cells'	0	0
F5, the ladders Σ|j⟩|k⟩ ⊗ A^j B^k|τ⟩ of two non-commuting non-Pauli order-3 monomial Cliffords on a stabilizer input (40 classes)	40	**21** (the a-type ladders, τ an X/XZ-eigenstate: diagonal-phase cells on |+++⟩ with a one-square cubic part, F1-type cells in disguise; by the re-gate's OWN certificates on the REGISTERED ladders; the same 21 class indices the addendum decided on its other states)	**19** (the Z-type ladders: exactly the SUM-image |j,k,l⟩ ↦ |j,k,l + j a_A + k a_B⟩ of D_f|+⟩|+⟩ ⊗ |t⟩ with f a cubic class (c = 0), hidden products, INSIDE C_3 by the ancilla lemma and Clifford covariance; the addendum's "19 three-qutrit stabilizer states" replaced by this typing in the owner's dated amendment, §9.5)	0	0
F2τ, the one-square gates on the Norrell-orbit payload D_f|+⟩|+⟩|τ⟩, τ ∝ |0⟩ + |1⟩ (83 classes under Aff_2)	83	**79**	0	**4**: F2τ[1], F2τ[2] = |+⟩_j ⊗ χ with χ in RC-2c's orbit; F2τ[24], F2τ[26] = SUM-images of |+⟩*k* ⊗ *D*{±j²l²}|+⟩|τ⟩, in BOTH directions (Corollary M3 + covariance); after the engine: **OUTSIDE C_3** with explicit n = 3 certificates (the Corollary-M2 lifted functional of the product, transported by the SUM gate's point map, priced to global minimum 0 by the engine's own n = 3 pricing with ỹ·W_cell = −333333333/1000000000, 4/4) [E] [R]	0
the teeth (8 cells)	8	RC-3a 21/36, RC-3b 22/36, RC-3h 9/36 (its payload X-outcome-0 conditional exactly |S⟩⊗|S⟩, by lookup), R7-02 36/36, HD3-a, HD3-b	HR-C1 0/36; the line-control knob cell WM-G3-δ[ID1|line|X|k1] 0/36	-	-
the gate's probe (first pass; data)	5	R7-02/03/04 36/36 each; D_{jk²l²}|+++⟩ and D_{j²kl²}|+++⟩ 26/36 each	-	-	0

Survival rule of SPEC §8 ("≥ 4 cells, ≥ 2 diagonal classes, ≥ 2 n = 3 states"), re-applied by its letter after the screen and the theorems in hand: reserved cells RC-2c only, 1 cell, 1 diagonal class, 0 n = 3 states; the rule FAILS; with 0 survivors the rung is typed, verbatim, "no open row at this freeze: every registered n = 3 row is a corollary of n = 2 certificates (Lemma M / Lemma C / the ancilla lemma)", a result of equal standing, never a failure, never a kill (the addendum's registration 1 §8(ii)); **PASS at the re-gate** by own route on every cell the addendum registered (4136 distinct conditionals of all 281 cell records decided by an own engine on an own pool, 2743 OUTSIDE, 1393 INSIDE, 0 caps; every own OUTSIDE certificate lifted and verified on its cell, 4575/4575; every addendum-DECIDED cell DECIDED by own route; every CONTROL / RC-2c-DEPENDENT / SURVIVES cell 0/36 by own route; RC-2c decided by no theorem in hand; the seven §5 relabels applied verbatim; every registration before the script it governs; no reserved state run through any LP) with one MANDATORY DATED REPAIR of the addendum's F5 record (the pinned F5 cells = ω^{g(j,k)} × the registered ladders with g a cubic register phase in span{j²k, jk²}, a defect of the addendum's `a_core.py` `mc_compose`, which dropped a composition phase that depends on both register labels; the registered ladders screened by own route: 21 decided, 19 hidden products; control for control, decided for decided, the typing unchanged) [G2]; **re-derived by the rigor leg** (every F1, F2τ and teeth cell regenerated from its registered definition equals the pinned amplitudes; the F5 finding re-derived, all 40 pinned vectors differ from own ladders by a register phase with the re-gate's cubic counts; the 19 Z-type registered ladders are SUM-images of (a cubic class, c = 0: [0,1,0] ×6, [0,2,0] ×6, [1,1,0] ×3, [2,1,0] ×2, [1,2,0] ×2) ⊗ \|t⟩, none a stabilizer state; every stored deciding certificate of the 232 decided cells re-derives; the five survivors' substitutions give the stated cubic classes by own polynomial arithmetic) [R]. SF-5 stands one level up: this is a statement about the 262 registered cells (plus the 8 teeth), at d = 3, n = 3; it says nothing about any three-qutrit state outside the registered families.

The teeth at n = 3, every corollary row's certificate reproduced by two independent n = 3 pricers over the whole pool presented by ZH Theorem 1 (the engine's `e_core.py` and the rigor leg's `PencilPricer`; both: the 729 deltas ∪ pencils over every isotropic l of dimension 0 / 1 / 2 with the quotient points pairwise non-commuting, the dim-0 branch-and-bound pruned only by the remaining-negatives sum and a clique-cover bound, never by a printed size; subspaces with linear γ never priced; completeness = ZH Theorem 1, regressed by 10^4 (engine) + 3,900 (rigor) own closures with no OTHER shape and by the rigor leg's census of the ten Witt types of subspaces of Z_3^6):

lifted functional (form; the n = 2 certificate it rests on)	cell(s)	engine: own global minimum / attained	ỹ·W_cell (pinned = engine = rigor)	rigor
Corollary M2, R1-SS lifted (position 2 traced)	|S⟩^{⊗3}; |S⟩|S⟩|N⟩; HR-C2 |S⟩|S⟩|0⟩	0 / dim-1 pencil ξ = 4	−4339285717/9000000000 (each)	0, ỹ ≥ 0 on the 729 deltas, the identity exact
Corollary M2, R2-NN lifted	|N⟩^{⊗3}	0 / delta	−3/10	0
Corollary M2, the pinned ỹ of `pc_addendum1.json` (the label marginal)	HR-2 (and its 12 point-control images by covariance)	0 / delta	−7/40	0
Corollary M2, the pinned ỹ (tr_0)	RC-3d; RC-3g; RC-3i	0 / dim-1 pencil ξ = 4	−4334862371/27000000000; −3362637349/54000000000; −12466878337/216000000000	0
Corollary C2, the gate's deciding conditionals (p_s = 2/9, 2/3, 5/9, 5/9, 4/27, 19/27)	RC-3h; RC-3f; RC-3a; RC-3e; RC-3b; RC-3c	0 / delta (dim-0 B&B nodes 139,294; 130; 1,131; 10,534; 348,248; 11,394)	−16/81; −8/27; −493/3888; −1/81; −32/243; −44/243	0
data: the other OUTSIDE marginals of `pc_precheck.json` (10) and the two Lemma-C data rows (HR-2 0|a1s0, RC-3d 0|Z1)	-	0 (12/12)	−7/40; −4334862371/27000000000 ×3; −3362637349/54000000000 ×2, −5/16; −12466878337/216000000000, −21111057703/216000000000, −6776338421/72000000000; −2419/58320; −1/180	0

26 functionals in all, 26/26 at exact global minimum 0 with the pinned values by both legs; the largest pairwise non-commuting set met by any dim-0 search is 7 (SF-8); the whole engine battery 215.7 s; the attaining SHAPE is data, not a check (a functional can attain 0 on a delta with ỹ_u = 0 and on a pencil, the rigor leg's precision (b)). **INSIDE at n = 3 without an n = 3 LP:** HR-C1 = |N⟩|0⟩|+⟩ decomposed over 6 product CNC points of Z_3^6 (|N⟩'s n = 1 decomposition ⊗ |0⟩⟨0| ⊗ |+⟩⟨+|; the pilot's one-sided LP had found a 28-term certificate of the same placement), R4-jk2 ⊗ |0⟩⟨0| over 3, each of the 12 line-control knob cells over 3, every term verified by the letter (closed support, unit moduli, phases additive on commuting pairs), weighted sum = the row; 14/14 by [E], 14/14 by [R]. KΛ-0 at n = 3 did not fire (SF-1, SF-2 CONFIRMED).

*THRESHOLD-3 (the letter: "n ∈ {3, > 3} for the Strange/Norrell copies, typed per state"), evaluated:** the registered copy sequences |S⟩^{⊗3}, |N⟩^{⊗3}, |S⟩|S⟩|N⟩ are outside C_3 by corollary (the lifted functionals above, at exact global minimum 0 by two n = 3 pricers); with R1–R3 at n = 2, *n*(|S⟩) = *n*(|N⟩) = 2 at d = 3** (one copy inside $C_1 = \Lambda_1(3)$, two copies outside C_2), and by Corollary M4 **every copy number n ≥ 2 of |S⟩ and of |N⟩ lies outside C_n**, REACHED BY COROLLARY, gate-confirmed, engine- and rigor-reproduced. The comparison with the qubit precedent, in the only form licensed (the physics leg's HS-7): *at d = 3 the copy-number threshold of the registered single-qutrit magic states |S⟩ = (|1⟩ − |2⟩)/√2 and |N⟩ = (−|0⟩ + 2|1⟩ − |2⟩)/√6 is n* = 2, with exact Farkas certificates; at d = 2, Raussendorf et al. 2020 report numerically (Table IV, floating-point LP values, as cited by Zurel–Heimendahl) that two copies of |H⟩ are positively represented over the qubit cnc phase space and three are not, different states, a different prime, exact on one side and numerical on the other; a one-prime datum on each side, never a law, an index or a monotonicity in d (KΛ-6)*; in the precedent's own measure, two copies of |S⟩ have R = 7/4 exactly at d = 3 where two copies of |H⟩ have R = 1.0 and three copies R = 1.283 at d = 2 (numerical, as cited), the magnitudes are not comparable across d (different phase spaces and normalisations); only the "= 1 or > 1" dichotomy is [X].

Every registered n = 3 row, placed (Wigner simplex ⊂ C_3 ⊂ $\Lambda_3(3)$; every placement a corollary of an n = 2 certificate or an explicit product decomposition; no n = 3 LP decided any state): OUTSIDE C_3, |S⟩^{⊗3}, |N⟩^{⊗3}, |S⟩|S⟩|N⟩, HR-C2, HR-2 and its 12 point-control images, RC-3a, RC-3b, RC-3c, RC-3d, RC-3e, RC-3f, RC-3g, RC-3h, RC-3i, F2τ[1], F2τ[2], F2τ[24], F2τ[26], and the 232 decided cells of the screen (its 21 F5 cells by the re-gate's own certificates on the registered ladders); INSIDE C_3, HR-C1, R4-jk2 ⊗ |0⟩, the 12 line-control knob cells (each with an explicit decomposition at n = 3), the 2 + 5 F1 products and the 19 F5 products (by the ancilla lemma and an explicit Clifford map); in the Wigner simplex, HR-1 (uniform 1/27 on one Lagrangian coset; Gross; a control decided at the build). Every one of the 44 registered n = 3 rows of the engine's (h′) battery has an exact rational Wigner function in $\Lambda_3(3)$ (ΣW = 1, all 30,240 plane sums ≥ 0) [E][G][R]; the n = 3 orbit canonicalizer is NOT COMPUTED (no method registered; no verdict depends on it).

2.3 VERTEX-CENSUS and HC-1 (data under caps, never "complete"; strength per the physics leg's HS-4)

10^4 objectives under `default_rng(2026102802)`, each minimizer over $\Lambda_2(3)$ located by HiGHS and certified EXACTLY as a vertex by the pilot's own Bareiss route (10,000/10,000; 0 fallbacks; 0 LP failures) [P]; classification by ZH Theorem 3 + footnote 3; orbits under $G_2 = Sp(4,3) \ltimes Z_3^4$ by invariants then an exact orbit test. **Result, in the licensed form:** *at least 3,722 Clifford-orbit classes of vertices of $\Lambda_2(3)$ outside the constructible (CNC) class are certified by Clifford invariants alone* (the pair (exact Wigner value multiset, exact |F|² multiset) is a G_2-invariant; 3,722 distinct pairs among the 3,783 pinned drawn representatives, 25 collision groups, the largest of 13; every drawn class carries a Pauli coefficient of modulus ≠ 1, ZH Theorem 3's one-way direction; two routes [P][X]); *the pilot's exact orbit test finds 3,783 drawn classes (3,766 drawn once; 227 of the drawn classes simple, with exactly 80 tight facets; 230 simple among all known classes once the 3 simple control/extra classes are counted) and ≥ 3,822 with the 40 control vertices and the 4 disclosed extras (one leg)*; a sample at 10^4 draws, never complete, the census is far from saturation (the five ovoid(7) CNC vertex classes, orbit 6.1×10^6 points in all, were never drawn: a sampling statement). The rigor leg re-certified 91 classes (the 7 CNC vertex classes, classes 62, 396 and 25, every class holding a control vertex, 40 random non-CNC classes) as exact vertices with the pinned invariants [R]; the physics leg re-certified the two-modulus class and 25 drawn classes and generated the two largest orbits (174,960; 1,399,680) by own BFS [X]. The two-qubit precedent (eight Clifford orbits, two cnc, OZR 2104.05822, quoted, never re-derived) does not transport to (2,3). **HC-1 (Heimendahl's printed conjecture, vertex ⇔ inclusion-maximal support among the closed sets other than E ∧ nonlinear γ; "[Zur21] private communication" its only printed support):** consistent with the exact vertex flags on all 34 CNC classes (the five ovoid(7) classes and the a^⊥ class are exactly the non-delta vertex classes; the ovoid(7) class with linear γ and the a^⊥ class with linear γ are not vertices; no non-maximal support carries a vertex) [P][V][R], a datum at one instance; never "the conjecture holds".

2.4 The Pauli-measurement update closure (stage (g); data at the cap; now re-derived)

685 (class, a, s) pairs over 6 of 3822 non-CNC classes at the registered 10,800 s cap: CLOSED 575 (67 Wigner-nonnegative post-states by the delta decomposition; 508 over named CNC points, a^⊥, delta and pencil(3) terms; no non-CNC orbit point was needed in any stored certificate), LEAKS 0, no-outcome 107, NOT-DECIDED-BELOW-CAPS 3; complete single-Pauli UPDATE-CLOSED tables for C62, C3279, C177 over the classes found at 10^4 draws; P-Λ6 NOT-DECIDED (caps) [P]. **The rigor leg re-derived every pair**, the post-measurement operator rebuilt by own 9 × 9 Q(ω) matrices from the class's census vertex and the own projector; the 685 outcome traces equal the stored ones; all 575 CLOSED decompositions re-sum by the letter to the own post-

measurement Wigner function; the three complete classes at 120/120 with 0 bad, the first re-derivation of the stage-(g) certificates [R]. The absence of LEAKS is the absence of an OUTSIDE certificate at the cap, not a completeness claim; the 3816 classes not reached are NOT RUN; never "the table is complete" without "over the classes found at 10^4 draws".

2.5 ξ_max(3,3) = 13 EXACT (M-Λ8(iii), a control: a printed computer value re-certified; a finite-geometry datum and nothing else, KΛ-6)

The maximum pairwise non-commuting set of three-qutrit Pauli lines = the independence number of the collinearity graph of W(5,3) (364 points, SRG(364, 120, 38, 40), eigenvalues 8 and −10, Hoffman bound 28, own arithmetic by [E], [R], [SYN]). **The engine's run of record:** an own bitset branch-and-bound pruned ONLY by the Hoffman size cap 28, a clique-cover bound (a greedy partition of the candidates into mutually commuting classes) and the symmetry "every maximum set contains the fixed non-collinear pair {0, 13}" (rank-3 transitivity of Sp(6,3)) with an explicitly constructed subgroup K of the pair stabiliser (41 generators, each checked symplectic and pair-fixing; 2 orbits of sizes 2 and 160 on the 162 common non-neighbours): **13, every branch closed, 53,735 nodes, 0.2 s; witness {0, 13, 17, 104, 176, 236, 261, 279, 281, 326, 336, 339, 360}** (vectors in `e3_xi.json`; 78/78 pairs non-commuting under the own symplectic form, 13 distinct lines, re-checked here [SYN]); the pair-only labelled follow-up (no subgroup) closes every branch at 13 in 688,455 nodes / 3.5 s; the fully symmetry-free follow-up hit its 3×10^8-node cap with best 13 and no 14-set, NOT-DECIDED-BELOW-CAPS, printed, never upgraded [E]. **The rigor leg's own route:** the transvection group transitive on the 364 points AND on the 44,226 non-collinear pairs by own BFS; an own max-clique search on the 162 common non-neighbours with a greedy colouring bound, never a printed size: 13, every branch closed, 660,154 nodes; W(3,3): maximum 7 with 2880 maximum sets [R]. The printed values (Sarkar–Yoder 2024 §4.2 eq. (15); Smaldore 2024 Remark 3.3) are cites re-found verbatim in the sha-pinned sources by the co-runner leg (78/78 under the halves convention; 47/78 interleaved, the halves reading is the paper's) [C]. ZH's open problem 3 (polynomial growth of ξ_max in n) is cite-decided in print (BBIR 2026 Thm 2.1, folklore via Blokhuis–Moorhouse 1995 / Arslan–Sin 2011: a polynomial of degree d − 1), the exponent at d = 3 open between the printed constructions and the Hamada-sharp bound $2n^2 + n + 1$ (L2's derivation, own exact ranks 11 and 22; verifier-owed and still owed) [L]. Never a sentence about the cost of anything.

2.6 The gravity-bridge data lane (doc 31 M-Λ6, extended by the owner's standing purpose; mandatory as a data lane, never headline; "the p = 3 lattice gate" only; doc 20's riders travel whole; every shorthand written out)

What the registered slice contains and does not contain (doc 21 re-read by the pilot and the spec leg: §1.2 "Gate of record", Theorem M, the species identification S-WM-4; the cells WM-G3-c / WM-G3-geo / WM-G5-geo / WM-G3-δ of `analysis/witness_magic_target_spec.md` §2; the knob family's letter transcribed from the isolated engine copy, never run through it). Doc 21's gate of record is the two-QUBIT branch-diagonal family $(P_1(a) \otimes P_2(b)) \cdot CZ(\Delta)$, Δ = −211/672 at the committed operating point, typed non-Clifford by Theorem M; its registered odd-prime analogue cells are the diagonal (profile-door) cells. The registered slice is the complete cube-root-of-unity diagonal-phase family on two qutrits, $D_f|+\rangle|+\rangle$ for $f : Z_3^2 \to Z_3$ (19,683 functions modulo the 729 quadratic = Clifford ones, doc 21's own census): the 27 classes $[a,b,c] \leftrightarrow a\,j^2k + b\,jk^2 + c\,j^2k^2$; and, at the second freeze, the same 27 classes on the $|+\rangle|S\rangle$ input. **It contains** the $|+\rangle|+\rangle$-output of every two-qutrit diagonal gate whose phases are cube roots of unity, WM-G3-c (bilinear, Clifford) and WM-G3-geo (affine at p = 3, Clifford), both the stabilizer control class [0,0,0]; and the two-qutrit factor of every line-control knob cell $(f(j,m) = \kappa\, m\,(j - j^2)$, cubic part $-\kappa\, j^2m$: GL2[2,0,0] / GL2[1,0,0], the cubic orbit O1). **It does not contain:** (i) the physical gate's own output $CZ(\Delta)|{+}{+}\rangle$ or any two-qubit object (d = 2 is the polytope $\Lambda_2(2)$ of OZR 2104.05822, quoted, never re-derived); (ii) any coupling $\mathrm{diag}(e^{i\Delta \cdot g(j,k)})$ with $\Delta \notin (2\pi/3)\mathbb{Z}$, its Wigner data lie in $\mathbb{Q}(\cos\Delta, \sin\Delta)$, irrational at the committed Δ and for every Δ off the lattice, hence **NOT-REGISTRABLE** in an exact rational LP (doc 21's own [D]: "the continuous angle has no exact p = 3 image"; never open, never "not hosted"); (iii) WM-G5-geo (p = 5 is $\Lambda_2(5)$, data in $\mathbb{Q}(\sqrt{5})$); (iv) the point-control knob cells (three-qutrit objects, HR-2's class); (v) any "species-2"/spectral object (doc 21's spectral door is CLOSED on the faces).

rung	row(s)	placement	how decided	status	confirmers
ΛG-0	the physical gate's output $CZ(\Delta)\|{+}{+}\rangle$, Δ = −211/672	NOT-REGISTRABLE	Wigner data in $\mathbb{Q}(\cos\Delta, \sin\Delta)$: no exact p = 3 image (doc 21 [D])	stands	[P][S][X] (the in-class consequence re-checked: every registered lane row rational, the physical gate's not)
ΛG-1, input $\|+\rangle\|+\rangle$	the p = 3 lattice gate's 27 registered diagonal-phase classes GL2[a,b,c]	the quadratic class and the 8 cubic classes INSIDE C_2; the 18 classes with a j^2k^2 term OUTSIDE C_2 (−5/16 on every one)	the pilot's certificates, three orbit facts (O0's orbit = the 360 stabilizer states; one cubic G-orbit of 25,920; two quartic-containing G-orbits of 87,480, c = 1 and c = 2), ORB-CONSIST; verifier- and gate-confirmed; reproduced verdict- and certificate-identically by the engine's battery; re-derived by the rigor leg	REACHED (certificate-grade)	[P][V][G][E][R]
ΛG-1, input $\|+\rangle\|S\rangle$	the 27 diagonal classes $D_f\|+\rangle\|S\rangle$	the 9 classes with a = 0 INSIDE C_2 (products with a single-qutrit stabilizer factor; the ancilla lemma); the 18 classes with a ≠ 0 OUTSIDE C_2 (RC-2c's Clifford orbit; every one re-run with its own certificate, −333333333/1000000000)	RC-2c's run of record + G-covariance; the 9 + 18 split by [N], [E], [R]	**COMPLETED by one verdict** (certificate-grade for RC-2c at [E][R][X]; ORB-CONSIST on the 17 others, their stored certificates not re-derived by [R])	[N][E][R][X]
ΛG-2	HR-2 = $U_{G2}^{ID1}\|+,+,0\rangle$ (the write channel on the uniform label input) and its 12 point-control knob-cell images (payload Fourier / payload inversion / q_1 shift / conjugation, 12/12 verified on the pinned amplitudes)	outside the Wigner simplex (216 negatives, min −2/243, support 486); IN $\Lambda_3(3)$ (3121 tight facets); **OUTSIDE C_3**	Lemma M on the label marginal $\mathrm{tr}_{\{q_2\}}$(HR-2) = (8/9)$\|\hat{\phi}\rangle\langle\hat{\phi}\|$ + (1/9)$\|2,1\rangle\langle 2,1\|$ ($y \cdot W = -7/40$; the one-sided pilot test had hit its caps twice, NOT-DECIDED-BELOW-CAPS, never upgraded; its float plateau at 0.46 is not a verdict); independently Lemma C (0 | XZ-outcome 0, −2419/17280, lifted −2419/58320); both lifted functionals at exact global minimum 0 by two n = 3 pricers	REACHED BY COROLLARY (gate-confirmed; engine teeth reproduced; rigor-confirmed)	[S][G][E][R]
ΛG-2	the 12 line-control knob cells; HR-C1 $\|N\rangle\|0\rangle\|+\rangle$	INSIDE C_3, outside the Wigner simplex (54 negatives at −1/81 for the line cells)	explicit decompositions over product CNC points of Z_3^6 (3 terms each; HR-C1 6 terms), every term verified by the letter; every factor INSIDE C_2 by the gate's own engine; 0/36 OUTSIDE conditionals	INSIDE C_3 (certificate-grade at n = 3)	[P][V][G][A][E][R]
ΛG-2	RC-3g = $U_{G2}^{ID1}\|+,+,S\rangle$ (the write channel with the Strange-state payload)	outside the Wigner simplex; IN $\Lambda_3(3)$; **OUTSIDE C_3**	Lemma M on each of its three two-qutrit marginals (−3362637349/54000000000 ×2; the label marginal −5/16); all three lifted functionals reproduced	REACHED BY COROLLARY (gate-confirmed; teeth reproduced)	[S][G][E][R]

rung	row(s)	placement	how decided	status	confirmers
ΛG-3	the Λ-language re-pricing of doc 20's NEGATIVITY-REQUIRED: HR-1 (the N2 write-channel face on the registered boundary seeds |2,1,t⟩) vs HR-2	HR-1 INSIDE the Wigner simplex (uniform 1/27 on exactly one Lagrangian coset; Gross; a control decided at the build, the N2 negativity lives in the channel kernel, –2/9, not in the basis-seed output); HR-2 OUTSIDE C_3	as above	REACHED BY COROLLARY (gate-confirmed; teeth reproduced)	[P][S][G][E]

Reading of the lane, whole-with-riders: on the registered p = 3 lattice cell, the N2 write channel's output on the boundary seeds needs only Wigner points, its output on the uniform label input, and every point-control knob cell of doc 21's species-1 family, and the Strange-payload variant, needs points of $\Lambda_3(3)$ outside the constructible (CNC) class ("needs" = every nonnegative $\Lambda_3(3)$-representation must use at least one non-CNC point, and such representations exist by ZORH Theorem 1, the physics leg's HS-12 rider), the line-control knob cells are hosted; and on the two registered two-qutrit inputs the gate's diagonal classes are hosted exactly when they carry no j^2k^2 term (on $|+\rangle|+\rangle$) and no j^2k term (on $|+\rangle|S\rangle$). Statements about the p = 3 lattice gate's registered cells only, at d = 3, n ≤ 3; HOSTED never feeds "classical"; OUTSIDE never feeds a cost or advantage sentence of any kind; a null anywhere never feeds a classicality sentence about gravity, a positive never a quantum one; the physical gate's output is NOT-REGISTRABLE; nothing here is a sentence about physical gravity, about Δ, or about the committed two-qubit gate beyond "its continuous angle has no exact p = 3 image"; this lane re-prices doc 20's NEGATIVITY-REQUIRED in Λ-language and touches no committed verdict (the carriers are nonnegative in Λ by construction). In print there is no bridge from the Λ-polytope or the CNC phase space to gravity, spacetime, holography or the measurement problem (L1/L4's nets N20/N20b: 0 postings since 2024-07; no citer of any anchor gravity-themed) [L]; the only bridge is this lane. The physics leg read every "gravity" line of the record on the full line: 104 mentions, every one a lane name, a rider or a forecast id; 0 physical-gravity sentences [X]. **The shorthand rule (HS-REWORD, the physics leg §5):** "the 26 gravity classes" and "the gravity lane's open n = 3 row" are retired in any export, write "the p = 3 lattice gate's 26 registered non-quadratic diagonal-phase classes" and "the lane's one open n = 3 row".

2.7 The co-runners (doc 31 M-Λ8 (i)–(iv); cheap, self-terminating, data, never headline; `lambda_corunners/REPORT.md`; tokens 9,400,049 / 9,400,063 as fingerprints only) [C]

- **(iv) The 2601.15842 Appendix-C parity defect, one line (a verification duty; 15/15).** The defective statement is Appendix C's parity term (C35), not the main text: on every registered instance (IV-A, IV-B, IV-C by brute force with the exact fourth Haar moment through the symmetric projector of Sym^4; the paper's own 2×2 periodic lattice, 4 sites, 8 links, |G| = 8, d_0 = 256, d_G = 32, by the permutation-trace identity with every tr((PΠ_G)^k) for all 65,536 Paulis) the exact SE gap of the Z_2 gauge-invariant subspace is **0**, as the main text's eq. (32) states (tr(Q^0Π_symΠ_G^{⊗4}) = 187/8 and tr(Q^GΠ_sym^{(32)}) = 187 = (d_G+1)(d_G+2)/6 on the torus; E_G M^0 = E_G M^G = 31/35), while (C35) at l = 2 prints 1/154, 1/20, 1/70, 1/4 on the same instances; the hand derivation tr(Q^0Π_symΠ_G^{⊗4}) = (d_G/d_0)(d_G+1)(d_G+2)/6 for a stabilizer subspace CONFIRMED on all four. A datum about an arithmetic identity in that paper's own quantity; the information scout's P-A3 row is answered; nothing about what a zero or non-zero gap would mean.
- **(iii) ξ_max(3,3) = 13, the cite-check row (a CONTROL by L2's relabel; 10/10):** both printed sentences re-found verbatim in the sha-pinned sources; the printed 13-set regresses as 13 distinct pairwise non-commuting three-qutrit Pauli lines (78/78 under the (x|z)-halves reading; 47/78 interleaved, the halves reading is the paper's). The exact maximum search is the engine's (§2.5), not this row's.
- **(ii) CAUSAL–MAGIC law-shape rows (data; never a front; trigger KQ-3 NOT FIRED at start and end, the Kunjwal listing unchanged, newest 2610.23367; one end-of-leg net HTTP 400, typed NOT RUN).** The registered second and third three-qubit instances do not exist: over the Z/X alphabet 4096 functions, **744 orthonormal stabilizer product bases = exactly the 744 Baumeler–Wolf-consistent process functions** (orthonormal ⟺ logically consistent, exhaustively), 680 causal, 64 non-causal, 10 classes under party permutations × flips × basis swaps of which **one is non-causal, the AF/BW (SHIFT) class** (64 tables, one orbit); over Z/X/Y 531,441 functions, 17,793 orthonormal, 16,065 causal, 1,728 non-causal, **all in ONE class, AF/BW again**, typed NO-INSTANCE-AT-n=3 (a datum for 2609.40223's open question (c) at d = 2, n = 3, PRODUCT bases only). The adversary's first instance regressed (P_SO*(SHIFT) = 7/8 with 379 informative nodes; P_causal*(AF/BW) = 3/4 by two routes); the control decided at freeze by Theorem 2 (P_SO* = P_causal* = 1). Four qubits: the cyclic-neighbour family F4 has 8048 orthonormal members, all causal (NO-INSTANCE-IN-F4; F-ii-7 refuted); the family F4′ (AF/BW on parties 1–3 plus a passive fourth party) has 254 genuinely non-causal members in 31 classes; at the first two instances F4′-2 (ϕ = 00000010) and F4′-3 (ϕ = 00000001) the single-qubit-Pauli adaptive optimum equals the target (1 + P_causal*)/2 = 7/8 exactly and saturates (depths 4, 6, 8: 625 nodes), while the all-Pauli informative mode reached depth 3 (1/2) and hit the registered cap at depth 4, *NOT-DECIDED-BELOW-CAPS at n = 4 with the certified lower bound P_SO ≥ 7/8** (a depth-capped value is a certified lower bound, never upgraded); the law-shape HOLDS within the single-qubit class and is NOT SCORED for the full SO class. Rider: the adversary's P_causal* is the scout's operationalization of the "guess the process function" game; these numbers are data about the adversary's definitions, never a verdict on the authors' open question (b); the qutrit SPB alphabet was not enumerated (the adversary's DP is a qubit DP).
- **(i) PRE-R, REGGE-EXACT's pre-check: a report for the owner only, acted on by nobody; LAMBDA's order of record is untouched; nothing is re-ranked.** The continuum treatment was frozen exactly BEFORE any optimum was read (the registration's §4(0) and ADDENDUM_2 §2: an own first-principles derivation of the finite-order problem, super-convergent amplitude with s↔u built in, the low-energy coefficients c_{a,b} = ⟨K_{a,b}⟩ with the exact rational Gegenbauer Taylor coefficients at D = 10, the kernel formula CONFIRMED symbolically after a dated correction of the registration's hand formula; the crossing null constraints at every degree with exact independent counts 1, 1, 1, 2, 2, 2, 3 for d = 1..7, the invariant-theory count, F-R0b refuted as registered; a positive measure on w ∈ (0, $1/M^2$] × a frozen finite spin set; dual non-negativity on an interval decided EXACTLY by square-free decomposition + Sturm counting; certificates = an exactly feasible rational primal (lower bound A) and dual (upper bound B); "EXACT" only when the own rational simplex with exact column generation terminates with a continuum-feasible dual; the float LOCATE unusable at these magnitudes, spins to 10^3 mix $\mathcal{J}^{26}$ ~ 10^{36} with 1, so the route of record is the exact simplex). **Results, typed per order:** the control (i), is Berman's "no spin ≥ 2 at the lightest mass" implied at finite order? **max λ_{1,2} is strictly positive at every finite order reached**: EXACT at d_max = 1 (5/106 at M^2 = 6/5; 1/26 at M^2 = 3/2) and d_max = 2 (3095/65766; 1238/32243), certified intervals with A > 0 at d_max = 3, 4, F-R1 TRUE 8/8: the sequential-spin constraint is a k → ∞ statement of the dispersive sum rules, not an exact consequence of any finite-order problem (the finite-order optimum pushes spin to the top of the frozen spin set at the threshold edge); the 2-state question (ii), d_max = 1, 2: **NO-KINK-AT-ORDER** ($V(m_1^2)$ EXACT and strictly positive at every registered point, one rational function, no support change); d_max = 3: NO-KINK on the registered points (certified lower bounds A > 0; NOT-EXACT intervals); d_max = 4: **NOT-INSTANTIABLE-IN-THIS-LEG** (the exact column generation stalls at a tangency, the dual of the semi-infinite LP is tangent to zero at the optimal atoms' algebraic positions, and the 60-s exact-LP cap bites); the 3-state peak (iii), at d_max = 3 the finite-order optimum gives the middle state ZERO weight at all seven registered m_2^2 points: FLAT, NO-PEAK-AT-ORDER-3, the location question NOT-DECIDED at higher orders. **The jump-the-queue condition of doc 31 §7 item 1, by its letter: NOT MET**, PRE-R returned no EXACT reading at any truncation of the kink (NO-KINK at d_max ≤ 3 exact; NOT-INSTANTIABLE beyond); the continuum treatment WAS frozen before any optimum was read, so the third conjunct holds and the first does not; test (d) is not reached. REGGE-EXACT stays runner-up 1 in doc 31's order. For the owner, what a funded week would need: the ℓ → ∞ column as an exact limit column, the exact simplex in a scaled basis, and the tangency handled by exact root isolation of the dual's double roots rather than rational column generation; the cheap exact facts of this leg (the control's positivity at every finite order; the top-spin edge atom in every optimum) are the registration's starting data. Never a gravity sentence; never a sentence about the k_max → ∞ limit.

2.8 What was not computed (explicit, so no later sentence can imply it)

No C_3 membership LP exists or was run by any leg on any registered state (every n = 3 placement is a corollary of an n = 2 certificate or an explicit product decomposition; the engine's n = 3 pool was built and exercised on the teeth only; the pilot's one-sided test over the product pool P_3 hit its caps and decides nothing about C_3). No n = 3 orbit canonicalizer exists (NOT COMPUTED; no verdict depends on it). No three-qutrit state outside the registered families (262 cells + the record's rows) was screened or placed. The vertex census is sampling (10^4 draws); the update closure covers 6 of ≥ 3822 classes. RC-2c's orbit members other than RC-2c itself were decided by the engine copy (verdicts only; the 18 further certificates not stored). ξ_max(n,3) for n ≥ 4 was not searched; the p-rank bound's derivation (L2's Hamada-sharp form) is still verifier-owed. The sympy cross-check is NOT RUN (L3: never a deciding engine). The Lemma M / Lemma C cite-check rows (M-Λ7) are OWED. The closing audit at the untouched reserve (G31-2) did not run; the M-Λ7 re-sweep (G31-3) did not run, every external quotation stays BLOCKED. Nothing at any prime other than 3, nothing at n ≥ 4, nothing about any state not in the record, nothing about physical gravity.

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3. Verifier rulings (every ruling by its own registered rule; this document neither upgrades nor downgrades any of them)

3.1 The pilot verifier M-Λ2, PASS (`lambda_pilot/VERIFIER_RULING.md`, 2026-10-28 21:25 CET) [V]

Own planes; own enumeration of the CNC supports from ZH Theorem 1 directly AND by closure BFS (40,536, symmetric difference 0); own assignment nullspaces (N_CNC = 17,893,624); every certificate of the pilot re-verified over the whole own pool by the symplectic-Fourier line-score route (42 + 40 OUTSIDE, 11 + 20 INSIDE); two own LP routes on 14 rows; 40 judge + 60 scout vertices re-certified; the decided-at-freeze test per open row (none decided); the order on sub-second stamps; six verdict-neutral repairs (transcribed for the owner in `lambda_spec/PILOT_REPORT_REPAIRS.md`); three own code defects disclosed. KΛ-0 and KΛ-7 do not fire.

3.2 The hostile gate G31-0, first pass, STOP (`lambda_spec/G31_0_RULING.md`, 23:10 CET) [G]

The gate's registered ruling rule (STOP iff Lemma M fails; or a §3.4 certificate fails own verification; or a reserved cell is found decided at freeze; or a registration postdates its script) fired on its third clause: every reserved n = 3 cell of SPEC §8 is DECIDED OUTSIDE C_3 by Lemma C with own certificates (§2.2's table in v1.0 and this document's teeth); Lemma M re-derived (210/210) and every §3.4/§6.3 relabel of the spec CONFIRMED by own route (14 + 38 pinned functionals, the 8 lifted ones); two of the eight reserved cells Clifford images of two others; the survival rule failed (RC-2c alone); the remedy prescribed (§5 items 1–7); the probe of the next five candidates in the registered order found every one decided (data). Not a kill. **This document keeps that STOP as the history of record and supersedes it: the remedy ran and passed.**

3.3 The hostile re-gate G31-0, second pass, PASS with one mandatory dated repair (`lambda_spec/G31_0_RULING_2.md`, 2026-10-29 02:51 CET) [G2]

The sealed ruling rule (STOP iff a control cell has an own OUTSIDE conditional; or a decided cell is open by own route; or RC-2c is decided by a theorem in hand; or a §5 relabel is missing or changed; or a registration postdates its script; or the "no open row" typing was entered over an undecided survivor; or a reserved state was run through an LP): none of (i)–(vii) fired. Own pool both ways; own engine teeth 15/15; the 42 pinned stage-(e) functionals re-priced over the own pool; Lemma C as own matrices 864/864; the family re-enumerated (139 / 40 / 83, the same representatives in the same order); own canonical forms under AGL(3,3) (29 classes; the five survivors + the 2 products in one class with a variable-free image) and AGL(2,3) (26 classes); RC-2c's orbit 77,760 by own BFS with no decided row of record in it, OPEN by every theorem in hand; the own screen of all 281 cell records (4136 conditionals, 0 caps; every addendum-DECIDED cell DECIDED by own route; every CONTROL / RC-2c-DEPENDENT / SURVIVES cell 0/36 by own route; 4575/4575 lifted certificates verified); the seven §5 relabels applied verbatim and verdict-neutrally; every registration before its script (one 3 ms gap disclosed, ordered on sub-second stamps). **The mandatory repair (its §3):** the 40 F5 cells the addendum pinned and screened are ω^{g(j,k)} × the registered ladders (g a cubic register phase in span{j²k, jk²}; the cause located in `a_core.py`'s `mc_compose`, which drops the constant exponent of a composition, for the ladder term A^j ∘ B^k that constant depends on both register labels); the REGISTERED F5 cells by own route: 21 DECIDED OUTSIDE C_3 by Lemma C (the same 21 class indices), 19 SUM-images of (a cubic class) ⊗ |t⟩ (INSIDE C_3 controls by the ancilla lemma; not stabilizer states); the typing of record moves on no cell; the owner applies the replacement of the addendum's F5 rows and the four precisions of its §6 as a dated additive amendment (§9.5). Two own check-logic defects disclosed; a registration slip ("287 cells") disclosed.

3.4 The rigor verifier, PASS (`lambda_verify/RIGOR_REPORT.md`, 08:22–09:15 CET; rigor band 9,500,047 / 9,500,089 as pins only) [R]

The ruling rule (sealed): per row CONFIRMED (every own-route check of the row's certificate passes) / DEFECT (an own exact computation contradicts a printed verdict-bearing quantity) / NOT-REPRODUCED (the printed quantity could not be rebuilt from the record); leg PASS iff no DEFECT touches a verdict of record. **The own instrument:** own conventions as explicit matrices over Q(ω); own planes at n = 2 and n = 3; an own pool two ways (a closure DFS; ZH Theorem 1 directly), identical, 40,536 supports / 17,893,624 points; an own support-wise pricer and an own Theorem-1 pencil pricer at n = 2 (agreeing on 60 random functionals); an own n = 3 pencil pricer (completeness = ZH Theorem 1, regressed on 3,900 own closures and the Witt-type census); route A (a HiGHS-located column generation with own exact pricing and exact certification) and route B (an own exact rational simplex with no float anywhere); own matrices for the lemmas. **Per-row verdicts (R2: a row's verdict from this leg stands only where CONFIRMED):**

row(s) of record	rigor verdict	own result (compact)
R1–R3 (ESCAPE-BY-PRODUCT)	**CONFIRMED**	own-pool minimum 0 with the pinned y·W; route A own certificates −8/9, −4/9, −4/9; route B on R1 t* = 29/56, own Farkas −27/56 (1248 exact pivots)
R4-j2k2 and the 18 quartic-containing classes	**CONFIRMED**	19/19 at minimum 0 with −5/16; own certificates on R4-j2k2 (−10/81) and GL2[0,0,2] (−479/6480)
R6-01..20	**CONFIRMED**	the draws regenerated (0 redraws); 20/20; route A on R6-01, R6-07, R6-19
the 11 INSIDE rows (three cubic R4 + 8 cubic classes)	**CONFIRMED**	the pinned decompositions decode to a^⊥ supports with nonlinear γ, weights 1/3 × 3, sums exact; route A own three-a^⊥ decompositions; route B on R4-jk2 t* = 1 (4213 pivots)
the 22 + 18 OUTSIDE controls; the 20 INSIDE controls	**CONFIRMED**	the scout's 60 draws replayed by an own LP; 40/40 functionals; 20/20 decompositions; an own ancilla-form certificate for |S⟩|0⟩ (2 a^⊥ terms) and |N⟩|0⟩ (5)

row(s) of record	rigor verdict	own result (compact)
KΛ-7: the 40 judge vertices; the 60 scout draws; the 34 CNC classes; HC-1; $\Lambda_1(3)$	**CONFIRMED**	exact rank 81 by own Bareiss elimination; own Z[ω] moduli (22 multi-modulus; J22 = the a^⊥ CNC point rebuilt from (Ω, γ)); 7 vertex classes; HC-1 34/34; 81 vertices of $\Lambda_1(3)$ all CNC
VERTEX-CENSUS (3829 entries)	**CONFIRMED on a 91-class sample**; the class count is data	every sampled class a vertex with the pinned invariants; the other 3738 classes and the canonicalizer not re-derived
the 30 marginals of the spec leg; Lemma M, Lemma C, the ancilla lemma	**CONFIRMED**	own partial traces and the sum rule 30/30; 10 functionals at minimum 0; 260 / 3120 / 160 matrix cases
the gate's 163 stored conditional certificates (the six deciding ones among them)	**CONFIRMED**	163/163 at own-pool minimum 0, p_s by own arithmetic, the lift identity; RC-3h's conditional exactly $\|S\rangle\otimes\|S\rangle$; route A re-decides RC-3h's and RC-3a's conditionals (–8/9; –8/45)
the 14 core + 12 data lifted functionals at n = 3; the 14 INSIDE n = 3 certificates	**CONFIRMED**	each $\tilde{y}$ rebuilt from its n = 2 certificate; the own n = 3 pricer returns 0 on 26/26; every term of the 14 decompositions closed + additive at n = 3
THRESHOLD-3 and the corollary rows (HR-2, RC-3d/3g/3i, the six first-pass cells)	**CONFIRMED**	the corollary chain re-derived whole
RC-2c	**CONFIRMED**	own W equals the pinned; both pinned functionals at own-pool minimum 0; route A OUTSIDE (–167/1440); route B OUTSIDE (t* = 2/3, –1/3 exactly, 12,084 pivots)
RC-2c's orbit and the $\|+\rangle\|S\rangle$ input (ΛG-1 completed)	**CONFIRMED** (orbit, the 9 + 18 split, three members by own LP); **NOT-REPRODUCED** for the engine's 18 further per-member certificates (not stored, their OUTSIDE is G-covariance of an own-verified pool)	own BFS 77,760; stabilizer 54; no product member
the four RC-2c-dependent F2τ cells	**CONFIRMED**	own amplitude identities; the SUM point map on own Wigner functions; the four pinned n = 3 functionals at own minimum 0
ξ_max(3,3) = 13	**CONFIRMED**	own SRG identity $A^2 = 120\ I + 38\ A + 40\ (J - I - A)$; transitivity on points and non-collinear pairs by own BFS; own max-clique search, 13, every branch closed (660,154 nodes); W(3,3): 7 with 2880 maximum sets
the addendum's screen (262 cells) and the re-gate's F5 repair	**CONFIRMED** (data lane)	every regenerable cell equals the pinned amplitudes; the F5 finding re-derived with the re-gate's counts; every stored deciding certificate re-derives; the five substitutions by own polynomial arithmetic
"no open row at this freeze"	**CONFIRMED**	every element the typing rests on re-derived; no cell of the registered families left undecided
the update closure (685 pairs; 575 CLOSED; 0 LEAKS; three complete classes)	**CONFIRMED** (data lane; the first re-derivation)	every pair's post-measurement operator by own 9 × 9 matrices; 685 traces; 575 decompositions re-summed; the 3 NOT-DECIDED pairs are cap statements
registration order, hashes, manifests, frozen shas of every leg; the wording of the six documents after the stop	**CONFIRMED**	every stamp precedes the scripts it governs; eleven manifests 0 bad; 0 ban hits; 15 "classical" lines all riders or quotations

Attempts to break the verdicts (the leg's own words, condensed): every ESCAPE verdict was attacked by trying to BUILD a decomposition, route A's column generation and route B's exact simplex both stop at an exact separating functional verified over the whole own pool (R1-SS at t* = 29/56; RC-2c at t* = 2/3), a proof that no CNC decomposition exists; every HOSTED verdict was attacked by trying to BUILD a Farkas functional, both routes reach t* = 1 and return explicit decompositions, a proof that no separating functional exists; the pool these proofs quantify over is the rigor leg's own, not any leg's census. **Precisions handed to the owner (verdict-neutral):** (a) VERIFIER_RULING §1 V-8 describes the four (b)-row certificates as a^⊥ terms only, the pilot's stored certificates for $|N\rangle|0\rangle$ and $|0\rangle|N\rangle$ also use deltas and pencil(3) terms (every term CNC; INSIDE unchanged; the a^⊥-only form re-exhibited by the rigor leg's own certificates); (b) the attaining shape printed per lifted functional is data (a functional can attain 0 on several shapes); (c) the note's H-6 ($|S\rangle\langle S|$ as a uniform mixture of 16 $\Lambda_1(3)$-vertices) is one of several decompositions (an exact 2-vertex one exists); (d) `e1_battery.py` was re-hashed unchanged in the engine's v2 after its run; (e) four manifests end with a comment line; (f) route B gives RC-2c's own Farkas value as –1/3 exactly (the record's located-and-rationalized –333333333/1000000000 is the same separation up to the rationalization; the pinned value stands as printed). Own defects disclosed (seven; none touching a verdict; §7.1). Not re-derived: the 18 orbit-member certificates (not stored), the census beyond the sample, the AGL orbit closures (the five substitutions verified instead), the 3453 INSIDE conditional decompositions beyond a 240-sample, the literature (the cite-check rows stay owed).

3.5 The physics/steelman verifier, PASS WITH REWORDINGS (`lambda_verify/PHYSICS_REPORT.md`, 08:22–09:10 CET; physics band 9,600,037 / 9,600,047 as fingerprints only) [X]

The ruling rule (sealed): a headline sentence is LICENSED iff every clause of its letter is backed by an exact certificate of record re-derived by this leg or by two earlier legs' own routes, or by a theorem in hand with its hypotheses satisfied, or by a printed statement quoted as cited, with the riders the record attaches and a strength label the legs earned; OVER-REACH iff a clause outruns its certificate; REWORD-TO given for each. **Duties (a)–(g) and their answers:** (a) the escape at two qutrits is NOT an artifact of the registered letter of V_CNC (four ways, §2.1 (i)–(iii) and the authors' own Theorem 3 closing the unit-modulus enlargement); (b) the copy comparison is like-for-like in the hull and the ladder's base, NOT in the states ($|S\rangle$, $|N\rangle$ vs $|H\rangle$, $|T\rangle$), the certificate grade (exact vs numerical) or, until R was computed here, the quantity, three asymmetries every statement of the pair must carry; (c) the ladder's sentences obey their certificates with the exceptions below; (d) Lemma C's reach is stated as a theorem with its hypotheses after two precisions (name "d an odd prime"; split the t = 0 branch), applied in §2.2; (e) the gravity-lane sentences obey their riders (one shorthand to retire, applied in §2.6); (f) the D-Λ composition table (§9.7); (g) what the Λ program's authors would say (they would accept the n = 2 record as the first odd-prime instance of their own open problem, ZH §7 remark 2, welcome R = 7/4 as the first exact value of their measure at odd prime, insist on the copy comparison's asymmetries, read "no open row" as scoped, object to "thin", reject "prime-indexed" as a claim and accept it as a question; and they would press that their §5.4 algorithmic discussion lives on $\tilde{V}$, not V, which is exactly why KΛ-5 forbids that sentence here). **The twenty headline rulings and how this document applies them:** HS-1 LICENSED (the typed STOP, kept as history, §3.2); HS-2 LICENSED, now four routes on the load-bearing rows (§2.1); HS-3 LICENSED with the nit "of $|S\rangle$ and of $|N\rangle$" (applied everywhere); **HS-4 OVER-REACH on strength** → the invariant-certified form (applied, §2.3); HS-5 LICENSED and strengthened by the constructive witness (applied, §4.3); HS-6 LICENSED; **HS-7 OVER-REACH as abbreviated** → the full form with states and grade (applied, §2.2 and §4.3; README's doc-32 entry carries the abbreviated form and is the owner's to fold); HS-8, HS-9 LICENSED; HS-10 LICENSED (RC-2c; now with [R] a separate route); HS-11 LICENSED (one gate, one prime, one input); HS-12 LICENSED at corollary grade with the "needs" rider (applied, §2.6); **HS-13 two precisions owed** (applied, §2.2); HS-14 LICENSED as scoped; HS-15 REWORD-TO ("a lower bound, under sampling, on the number of Clifford-orbit classes", applied); **HS-16 OVER-REACH, the "thin hull" gloss** → dropped (applied, §2.1 and the status block); HS-17 LICENSED as a reading; HS-18 LICENSED with "Wigner-based" (applied); HS-19

LICENSED (one leg + a labelled second route at the time; now also [R]); HS-20 LICENSED only as a composition target. **No headline sentence of the record is refuted; no verdict moves.** The leg's four own defects (a units slip in its Lemma-C checker; a denominator slip in its orbit builder caught by its own registered control PA-1b; two text-classifier truncations, the third leg in a row to find that defect shape in its own scanner; an assembly defect of the labelled follow-up) are disclosed in its §0, every one repaired, re-hashed and re-run; two rows of its PA-1 are NOT-DECIDED-BELOW-CAPS in the run of record (printed, never upgraded); four of its six R values are certified intervals. One precision for the owner found here (D-X5, §7.1): the report's sentence "no reserve token (≥ 9,700,003) … appears in any file of this leg" is true of draws and false of mentions, its own text-scan outputs quote the record's band-plan sentences (17 mentions, each inside a quoted line saying "untouched" or "no reserve … token is drawn"); verdict-neutral.

3.6 What stands, at what strength (R2 applied; the merged reading of all five verifying passes [V][G][G2][R][X] over the record)

- **The n = 2 membership record:** every row by its own exact certificate; the five load-bearing certificates (R1, R2, R3, R4-j2k2, RC-2c) and the three cubic decompositions at FOUR own routes (pilot copy, verifier, gate, physics) plus the rigor leg's own pool and pricers (five bodies of code agree on the pool: 40,536 supports, 17,893,624 points, the same histogram, the same assignment dimensions); every other n = 2 row at three own routes ([P][V][R]); the 21 orbit members of RC-2c at engine grade with [R] on three of them.
- **The corollary rows at n = 3:** Lemma M / Lemma C / the ancilla lemma as explicit matrices by three legs; every lifted functional at exact global minimum 0 by two independent n = 3 pricers; every explicit product decomposition by two legs; the "no open row" typing by the addendum's two engine copies, the re-gate's own engine and the rigor leg's re-derivation.
- **At one leg's strength, and labelled so:** the census' exact orbit test (3,783 drawn classes; the invariant-certified 3,722 at two routes); the engine's 18 further orbit-member certificates (verdicts only; by covariance); the mechanism note's hand facts (scripted and exact, one leg; their verdict-bearing consequence, F-RC-1, was decided by the engine's certificate, not by the facts).
- **Data lanes, re-derived or not:** the update closure now re-derived once ([R]); the co-runner rows at one leg's strength (their registrations and regressions stated); the physics leg's new data rows (the product obstruction, also [N]; the two enlargements; the 25-vertex witness; R; the reach intervals) at one leg's strength with its own registered controls.

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4. The typed outcome

4.1 The letters of doc 31 §5, evaluated by their own text (none ranked; the order follows only a letter's own "reported first")

letter (doc 31 §5 / SPEC §5 / the addendum)	holds?	by what
ESCAPE-AT-2, "a certified two-qutrit state outside C_2 with its Farkas certificate and Clifford orbit"	**YES, in both sub-types**	ESCAPE-BY-PRODUCT: R1–R3 (orbits 3,645 / 58,320 / 29,160); ESCAPE-BY-ENTANGLED: R4-j2k2 (87,480), R6-01..20, RC-2c (77,760), every certificate at ≥ three own routes, the load-bearing ones at four [P][V][G][R][X][E]
CNC-HOSTED-AT-2, "every registered state inside C_2"	**NO** (does not hold for S ∪ {RC-2c})	the rows above; the three cubic rows, the eight cubic classes and the nine a = 0 classes on $\|+\rangle\|S\rangle$ are hosted (positive data of equal standing; never "classical")
THRESHOLD-3, "n* ∈ {3, > 3} for the Strange/Norrell copies, typed per state"	*EVALUATED BY COROLLARY: $n(\|S\rangle) = n(\|N\rangle) = 2$* at d = 3; every n ≥ 2 copies of $\|S\rangle$ and of $\|N\rangle$ outside C_n** (the registered three-copy rows outside C_3 by lifted certificates at exact global minimum 0 by two n = 3 pricers)	the pilot's R1–R3 + Lemma M (Corollary M4) [P][V][S][G][E][R]; the qubit comparison only in the full form (§2.2)
the n = 3 rung (the addendum's typing; SPEC §8 as amended)	**"no open row at this freeze: every registered n = 3 row is a corollary of n = 2 certificates (Lemma M / Lemma C / the ancilla lemma)"**	the 262-cell screen with 0 survivors after the theorems in hand [A]; the re-gate PASS by own route [G2]; the rigor leg's re-derivation [R]; the engine's 26/26 teeth [E]
NOT-DECIDED-BELOW-CAPS, "enumeration or LP caps hit; caps printed; never upgraded"	**did not occur on any n = 2 row (54/54) nor on any corollary row; occurred, printed and never upgraded, in data lanes only**	the update closure (6 of 3822 classes at 10,800 s; 3 pairs at the per-row column cap); the pilot's one-sided HR-2 test (superseded by a corollary); the engine's fully symmetry-free ξ route (3×10^8 nodes; best 13); the physics leg's PA-1 on two rows against the second enlargement; PRE-R at d_max ≥ 4; the F4′ all-Pauli mode at depth 4
VERTEX-CENSUS (data)	orbits with multiplicities under caps	≥ 3,722 invariant-certified (two routes), 3,783 drawn / ≥ 3,822 known (one leg); a sample
UPDATE-CLOSED / UPDATE-LEAKS (data)	UPDATE-CLOSED for C62, C3279, C177 over the found classes; LEAKS 0 among 685 pairs; P-Λ6 NOT-DECIDED (caps)	[P][R]
ΛW-SPLIT ("product rows inside, entangled rows outside, a typed wall")	REFUTED BY THE DATA (the product rows are outside); no replacement rung	[P][V]
ΛW-INV ("a state outside $\Lambda_2(3)$")	never occurred	every registered row in Λ by regression; 44/44 n = 3 rows in $\Lambda_3(3)$ by own facets [E][G][R]
the v1.0 outcome G31-0-STOP	SUPERSEDED by its remedy chain (G31-1 executed; the re-gate PASS; the mechanism note; the engine; the co-runners; the two adversarial legs), superseded, never reversed; the STOP stands as the history of the first freeze	[G][A][G2][N][E][C][R][X]
a KILL (any of KΛ-0..7)	**NONE FIRED** (§4.6)	every leg

Outcome type of record: ESCAPE-AT-2 (ESCAPE-BY-PRODUCT ∧ ESCAPE-BY-ENTANGLED, RC-2c added) ∧ ¬CNC-HOSTED-AT-2 ∧ THRESHOLD-3-BY-COROLLARY (n* = 2) ∧ NO-OPEN-ROW-AT-THIS-FREEZE (n = 3), program COMPLETED under the second freeze; the v1.0 G31-0-STOP superseded; NOT A KILL. **Honest altitude unchanged: FIELD-lite, foundations-grade, a fact about the quantum/classical boundary of computation with exact certificates; not a sentence about gravity, spacetime or the cosmos; the judge's ~5% for Theorem-W altitude was right.**

4.2 The wording ladder (SPEC §5, frozen at the first freeze; the addendum's typing; ruled rung by rung with the spec's own status words; no rung re-worded after a readout)

rung	the licensed form (SPEC §5)	at the freeze (spec)	v1.0 (the STOP document)	now (this document)	strength
ΛW-0	FAIL	not fired	not fired	**not fired** (no KΛ-0/KΛ-7; no ARITH-ERROR verdict anywhere; KΛ-0 at n = 3 not fired)	-
ΛW-1	"non-CNC vertices exist at (2,3)" (the exhibit)	REACHED (certificate-grade)	REACHED	**REACHED (certificate-grade; on the record, KΛ-2 did not fire)**: 22 + 18 + ≥ 3,722 invariant-certified classes; one class and 25 drawn classes re-certified by [X], 91 by [R]	[J][P][V][R][X]
ΛW-2	"the registered states {…} lie / do not lie in the CNC hull (exact certificates)"	REACHED 53/53	REACHED 53/53	**REACHED 54/54** (RC-2c added; three own routes on every row, four on the load-bearing ones)	[P][V][G][R][X][E]
ΛW-3	ESCAPE-AT-2: "a nonnegative hidden-variable model over $\Lambda_2(3)$ for two-qutrit magic-state computation must use points outside the constructible CNC class for the state {…}", whole-with-riders only	REACHED	REACHED (R1–R3; R4-j2k2; R6; the 18 quartic classes as data)	**REACHED, LICENSED whole-with-riders for $\|S\rangle\otimes\|S\rangle$, $\|N\rangle\otimes\|N\rangle$, $\|S\rangle\otimes\|N\rangle$, $D_{j^2k}\|+\rangle\|+\rangle$, the twenty registered R6 states and $D_{j^2k}\|+\rangle\|S\rangle$, and CONSTRUCTIVE (HS-5): such a model exists, exhibited for $\|S\rangle\otimes\|S\rangle$ with 25 exactly certified multi-modulus vertices of $\Lambda_2(3)$**; never a no-go; never on a vertex; nothing about resource cost, any model's cost or advantage; a HOSTED outcome never feeds "classical"	[P][V][G][R][X][E]
ΛW-4	THRESHOLD-3: "at d = 3 the copy-number threshold of the registered single-qutrit magic states is n* = 2, and every copy number n ≥ 2 lies outside C_n", with "as cited by Zurel–Heimendahl from Raussendorf et al. 2020" for any qubit comparison	n* = 2 REACHED; "every n ≥ 2" BY COROLLARY (gate-pending)	both clauses; gate-confirmed	*both clauses: n = 2 REACHED (certificate-grade); "every copy number n ≥ 2 of $\|S\rangle$ and of $\|N\rangle$" REACHED BY COROLLARY (gate-confirmed; engine- and rigor-reproduced)*; the qubit comparison only in the full form (states; numerical grade; a one-prime datum, never a law)	[P][V][S][G][E][R][X]
ΛW-SPLIT	"product rows inside, entangled rows outside, a typed wall"	REFUTED BY THE DATA	REFUTED	**REFUTED BY THE DATA**; the observed structure travels as data (S-Λ-D1)	[P][V]
ΛW-INV	"a state outside $\Lambda_2(3)$"	never occurred	never occurred	**never occurred**	[P][V][G][E][R]
ΛW-5 (n = 3)	"the registered three-qutrit state {…} lies / does not lie in C_3 (exact certificate)"	BY COROLLARY for the §3.4 rows; NOT REACHED for the reserved cells	BY COROLLARY (gate-confirmed) for the §3.4 rows and, by Lemma C, for RC-3a/b/c/e/f/h; NOT REACHED for RC-2c	**REACHED BY COROLLARY (gate-confirmed; engine teeth reproduced; rigor-confirmed) for every registered n = 3 row of record**, OUTSIDE: the three-copy rows, HR-C2, HR-2 + 12 images, RC-3a..i, the four F2τ cells and the 232 decided cells of the screen (its 21 F5 cells by the re-gate's own certificates); INSIDE: HR-C1, R4-jk2 ⊗ $\|0\rangle$, the 12 line-control cells (explicit decompositions), the 2 + 5 F1 products and the 19 F5 products; **NOT REACHED by any n = 3 LP for any state (none exists); no open row at this freeze**	[S][G][A][G2][E][R]
ΛG-0	NOT-REGISTRABLE: "the committed coupling has no exact p = 3 image"	NOT-REGISTRABLE	stands	**stands**	[P][S][X]
ΛG-1	"the state the p = 3 lattice gate produces at class c (on the input {…}) lies / does not lie in the constructible CNC hull"	REACHED on $\|+\rangle\|+\rangle$ (27 classes, three orbit facts); NOT REACHED for RC-2c/RC-2d	the same; RC-2c OPEN	**REACHED on $\|+\rangle\|+\rangle$ (27 classes) AND COMPLETED on $\|+\rangle\|S\rangle$ (27 classes: 9 hosted, 18 not hosted) by RC-2c's verdict**	[P][V][G][E][R][X]
ΛG-2	"the write-channel output of the p = 3 lattice gate on the registered input {…} lies / does not lie in C_3"	REACHED for the line cells; BY COROLLARY, gate-pending, for HR-2 / the point cells / RC-3g	BY COROLLARY (gate-confirmed)	**REACHED for the 12 line-control cells and HR-C1 (INSIDE C_3, explicit decompositions at n = 3); REACHED BY COROLLARY (gate-confirmed; teeth reproduced; rigor-confirmed) for HR-2, its 12 point-control images and RC-3g (OUTSIDE C_3)**	[P][S][G][E][R]
ΛG-3	the Λ-language re-pricing of doc 20's NEGATIVITY-REQUIRED	BY COROLLARY (gate-pending)	BY COROLLARY (gate-confirmed)	**REACHED BY COROLLARY (gate-confirmed; teeth reproduced)**, with the "needs" rider	[P][S][G][E]

4.3 The headline sentence of record, S-Λ-1 (ENTERED, whole-with-riders, at the strength the legs give it; assembled only from sentences the record licensed and the physics leg ruled LICENSED or REWORD-TO, in that form; external quotation BLOCKED behind G31-2 + G31-3; licensing is never posting)

> "Program LAMBDA, the first odd-prime two-particle instance of where the constructible (CNC) description of quantum computation ends, on the registered family of doc 31 §5 at d = 3, is decided at two qutrits with exact certificates re-derived by four own routes on its load-bearing rows: at one qutrit the constructible (CNC) class is everything; at two qutrits the constructible (CNC) hull C_2 hosts the three cubic diagonal-phase states $D_{jk^2}|+\rangle|+\rangle$, $D_{j^2k}|+\rangle|+\rangle$, $D_{jk^2+j^2k}|+\rangle|+\rangle$ and none of $|S\rangle\otimes|S\rangle$, $|N\rangle\otimes|N\rangle$, $|S\rangle\otimes|N\rangle$, $D_{j^2k^2}|+\rangle|+\rangle$, the twenty registered random states and $D_{j^2k}|+\rangle|S\rangle$, so a nonnegative hidden-variable model over $\Lambda_2(3)$ for two-qutrit magic-state computation must use points outside the constructible (CNC) class for those states, and such a model exists: an explicit nonnegative representation of $|S\rangle\otimes|S\rangle$ over $\Lambda_2(3)$ uses 25 exactly certified multi-modulus vertices. At d = 3 the copy-number threshold of the registered single-qutrit magic states $|S\rangle = (|1\rangle - |2\rangle)/\sqrt{2}$ and $|N\rangle = (-|0\rangle + 2|1\rangle - |2\rangle)/\sqrt{6}$ is n* = 2, with exact Farkas certificates, and every copy number n ≥ 2 of $|S\rangle$ and of $|N\rangle$ lies outside C_n; at d = 2, Raussendorf et al. 2020 report numerically (Table IV, as cited by Zurel–Heimendahl) that two copies of $|H\rangle$ are positively represented and three are not, different states, a different prime, exact on one side and numerical on the other; a one-prime datum, never a law. In the precedent's own measure, the CNC negativity of $|S\rangle\otimes|S\rangle$ is R = 7/4 exactly. At least 3,722 Clifford-orbit classes of vertices of $\Lambda_2(3)$ outside the constructible (CNC) class are certified by Clifford invariants alone (the pilot's exact orbit test finds 3,783 drawn classes and at least 3,822 with the controls, one leg; a sample at 10^4 draws, never complete). At three qutrits there is no open row at this freeze: every registered three-qutrit row is a corollary of two-qutrit certificates (Lemma M / Lemma C / the ancilla lemma), the registered copy rows, the write-channel rows of the p = 3 lattice gate and 232 screened cells outside C_3 with lifted certificates priced to exact global minimum 0 over the whole pool by two independent routes, the product rows inside C_3 with explicit decompositions, and no three-qutrit state was decided by a three-qutrit LP. The program's first freeze stopped at its hostile gate because every reserved three-qutrit cell was decided at freeze by a conditioning lemma nobody had applied; the remedy the gate prescribed ran and passed, and no kill criterion fired. Everything is a statement about these registered states at d = 3, n ≤ 3, 'constructible' meaning the Zurel–Heimendahl CNC class by its letter; a hosted state is never called classical; nothing here is about the cost of simulating anything, about advantage, about any other prime, or about gravity."

Riders (fused; travel with every quotation): the ceiling rider in full (the verbatim doc 31 §5 block in §0); the sub-typing (ESCAPE-BY-PRODUCT by R1–R3; ESCAPE-BY-ENTANGLED by R4-j2k2, R6 and RC-2c) by the registered Schmidt-rank rule; the qubit comparison only "as cited by Zurel–Heimendahl from Raussendorf et al. 2020" with the states and the numerical grade, the R magnitudes not comparable across d; Bozzetto–Hance 2605.09558 cited-and-distinguished beside any sentence on $|S\rangle\otimes|S\rangle$ (a convex-linear noncontextuality threshold of a MUB fragment, a different set and a different question); the 2022

Erratum cited whenever the ancilla lemma is used; Lemma M and Lemma C with "d an odd prime" and the t = 0 branch split, cite-check rows owed; "no open row at this freeze" scoped to the registered families (SF-5 one level up); the vertex-class count a lower bound under sampling; a HOSTED outcome never worded as "classical"; the lane "the p = 3 lattice gate" and absent from this sentence by R5; confirmers [P][V][G][G2][A][N][E][R][X][SYN]; **external quotation BLOCKED behind G31-2 (the closing audit at the untouched reserve ≥ 9,700,003) + G31-3 (the M-Λ7 re-sweep)**; defer-until-big governs every export.

4.4 Data sentences (recorded; none a rung)

- **S-Λ-D1 (the n = 2 anatomy):** §2.1's last paragraph, the quartic weight decides the diagonal family's membership (27 registered classes, three orbit facts); the Wigner-based monotones tie on R1–R3 and forecast nothing; the one-ingredient reading of the note consistent with every row; R and the reach intervals as the physics leg computed them [P][V][G][R][X][N].
- **S-Λ-D2 (THRESHOLD-3 by corollary):** as ΛW-4, with the lifted certificates [S][G][E][R].
- **S-Λ-D3 (Lemma C and the decided cells):** the lemma with its hypotheses; the eight first-pass cells with their deciding conditionals, p_s and lifted values; the 262-cell screen's 232 decided cells; the five AGL products; the F5 repair [G][A][G2][R].
- **S-Λ-D4 (the gravity-bridge lane):** §2.6 whole, with doc 20's riders [P][S][G][E][R][X].
- **S-Λ-D5 (the steelman's data):** the product obstruction, the two failed enlargements, the 25-vertex witness, R, the reach intervals [X]; the product obstruction also [N].
- **S-Λ-D6 (the co-runners):** §2.7, PRE-R's condition NOT MET [C].

Not licensed at any rung (restated without the banned strings; the ban lists are in §9.3): any sentence about the cost of simulating anything, about any model's cost, about advantage, about "classical" for a hosted state, about a universal threshold law at every prime from this one prime, about ξ_max as a complexity quantity, about "all cubic states" or "all quartic states" at any n, about any three-qutrit state not in the registered families, about the completeness of the vertex census, about the update table beyond "over the classes found at 10^4 draws", about Heimendahl's conjecture beyond "consistent on the 34 classes at (2,3)", about the hull being "thin" or any thickness, about "prime-indexed" as a finding, about physical gravity, Δ or the committed two-qubit gate beyond "its continuous angle has no exact p = 3 image"; the word banned under N1 never; the bare "classical" never for any outcome of this program.

4.5 Kill criteria of record (doc 31 §6, verbatim in §9.3), ruled by every leg: NONE FIRED

KΛ-0, the pilot's control gate PASS 9/9; KΛ-0 at n = 3 (SPEC §7.4) not fired (the engine's battery 18/18; 26/26 teeth); no ARITH-ERROR verdict in any leg. KΛ-1, no cap on any n = 2 row (54/54) nor on any corollary row; the caps hit in the data lanes printed and never upgraded (§4.1). KΛ-2, NOT FIRED (L1/L4, L2; nothing printed since: the physics leg read ZH 2407.10349 at full text and found the question posed and unanswered, §7 remark 2; the M-Λ7 re-sweep G31-3 still owed before any quotation). KΛ-3, not reached (ESCAPE-AT-2 occurred). KΛ-4, every leg within the deadlines of SPEC §10 (the engine build by 2026-11-04; the two legs and this document by 2026-11-11, all delivered 2026-10-29). KΛ-5 / KΛ-6, scanned clean on every report, the spec, the addendum, both rulings, the note, the engine report and rows, the co-runner report (the rigor leg: 0 hits on the six documents after the stop; the physics leg: 83 hits on twelve texts, every one inside a marked block or a never-line, 0 unclassified) and on this document (SC-7a). KΛ-7, not fired (the 40 judge and 18 scout vertices re-certified by the pilot, the verifier, the rigor leg; the 60 scout draws replayed by two legs).

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5. Forecast ledger (every registration scored by its own letter; declared parity; refutations first; COROLLARY rows never findings; every registration sealed before the script that tested it)

id (registrant; registered)	fate	certificate / confirmer
P-Λ2 (judge: R1, R2, R3 INSIDE C_2, ~60%; FALSE ⇒ ESCAPE-BY-PRODUCT, the d = 3 copy threshold 2)	**REFUTED, reported first**	three exact Farkas functionals; n*(|S⟩) = n*(|N⟩) = 2 [P][V][G][R][X]
P-Λ4 (judge: the R6 INSIDE fraction strictly between 0 and 1, ~55%)	**REFUTED**	0/20 INSIDE; stated by its letter only (the registered "thin" gloss dropped, HS-16) [P][V][R]
PC-3, HR-2 (spec leg: all three marginals INSIDE, ~60%)	**REFUTED**	the label marginal OUTSIDE (−7/40); HR-2 and 12 images OUTSIDE C_3 by corollary [S][G][E][R]
PC-4 (spec leg: RC-2a/RC-2b Schmidt rank ≥ 2, ~99%)	**REFUTED**	products with a stabilizer factor; replaced by RC-2c/RC-2d (PC-4′ CONFIRMED) [S][G]
the survival rule of SPEC §8 (spec leg: satisfied with 8 cells)	**REFUTED at the gate**; after the addendum's screen: 1 cell, 1 class, 0 n = 3 states, fails; the rung typed "no open row"	[G][A][G2][SYN]
H-5's sub-clause (gate: RC-3a's X-basis conditionals decide nothing)	**REFUTED** (the gate's own)	Σ_{kl=0}|k,l⟩/√5 OUTSIDE (−493/2160) [G][R]
CF-1 / CF-2 / CF-3 / OR-1 (pilot's census and orbit forecasts)	**ALL REFUTED**	3783 classes; the ovoid(7) classes undrawn; 5/40; two quartic orbits [P]
F-5 (L1/L4); **F-L2-4 second clause, A-4** (L2); **A2 first clause** (L3)	**REFUTED**, each reported first by its scout	the Erratum's (2,3) control statement; 13 printed; 25,920 = |PSp(4,3)|; sympy's failure instance-dependent [L]
AF-7's premise (addendum: the |+⟩|τ⟩ class to be decided by the engine)	**REFUTED**, the class is RC-2c up to a Clifford; typed RESERVED-NOT-RUN by a pre-run correction	[A][G2][E]
AF5-1, AF5-2 (a survivor in F5 / in F2τ); **AF6-1** (a cross-term presentation decides a candidate class); **AF-5's rule clause** (the survival rule met, ~12%); **AG-2** (F1[28] open as far as the theorems reach, ~60%)	**REFUTED**	0 survivors; the five "survivors" products in disguise by AGL(3,3) [A][G2][R]

id (registrant; registered)	fate	certificate / confirmer
G2-4 (re-gate: every pinned amplitude vector equals the own regeneration, ~90%); **G2-6's deciding-key clause**	**REFUTED on the F5 family** (40/40 differ; 16 keys differ), the addendum's `a_core.py` defect; the typing unchanged	[G2][R]
"287 cells" (re-gate registration slip)	corrected (281 distinct; the a6 cells are repeats)	[G2]
F-RC-2, support clause (note: the minimum on an a^⊥ support ~55% vs an ovoid(7)/pencil ~45%)	**neither worded branch**, attained on 27 deltas (y_u = 0) and on a^⊥ / pencil / Lagrangian-plane / E supports, no ovoid; the engine's JSON types it "the ~45% branch (not a^⊥)" and its report "neither branch as worded", a labelling discrepancy inside one leg's record (D-E4), verdict-neutral; **F-RC-2's caps clause CONFIRMED** (4.1 s in the first run of record)	[E][R]
F-ii-1 (co-runner: a non-AF/BW non-causal three-qubit class, 50/50); **F-ii-7** (F4 has ≥ 2 genuine classes); **F-ii-12** (saturation at F4′); **F-R0b** (as registered: the constraint counts); **F-R5** (exact termination at the control for d_max ≤ 4)	**REFUTED**	exact censuses; the cap; the rank count 1,1,1,2,2,2,3; EXACT only at d_max ≤ 2 [C]
RV-11's premise (rigor: the update pairs' decompositions not stored)	a premise slip, the record DOES store them; the stronger check run (r12 7/7)	[R]
the physics leg's own defects (a units slip; a denominator slip; two classifier truncations; a follow-up assembly defect)	disclosed, repaired, re-run; two caught by its own registered controls	[X]
SF-SYN-2 (this leg: ≤ 2 dated repairs, ~60%)	**REFUTED** (three; §7.4)	[SYN]
P-Λ3 (judge: some R4 or R5 OUTSIDE, ~50/50)	CONFIRMED (TRUE) by R4-j2k2; R5 NOT-REGISTERED by its own letter	[P][V][G][R][X]
P-Λ-ctrl (a)–(e) (judge; MANDATORY)	PASS 9/9 (after two dated check-logic repairs at the build's resume, neither a method failure); re-derived [V][R]; reproduced [E]	KΛ-0 does not fire
P-Λ1 (judge; ~75%)	CONFIRMED on all three clauses, re-typed (two clauses corollaries → controls; the a^⊥ clause a test of Heimendahl's conjecture, CONFIRMED by exact rank and HC-1); the unforecast datum: five ovoid(7) vertex classes	[P][V][G][R]
P-Λ5 (~80%); P-Λ7 (~99%); GL-F1..F3; HC-1 (~70%); CX-1..3; B-1..B-5	CONFIRMED (P-Λ7's ξ clause a cite)	[P][V][L][R]
P-Λ6 (judge; some class LEAKS, ~60%)	NOT-DECIDED (caps): 0 LEAKS among 685 pairs over 6 of 3822 classes; three complete tables	[P][R]
GL-F4 (pilot: HR-2 OUTSIDE C_3 ~50%)	NOT SCORED by the pilot (one-sided); DECIDED AT FREEZE BY COROLLARY at the spec (SF-3), the OUTSIDE branch holds by relabel, never as a finding	[S][G][E][R]
V-1..V-15 (pilot verifier)	ALL CONFIRMED	[V]
PC-0, PC-1, PC-2, PC-4′ (spec leg); PC-3 per row (RC-3a/3b/3e/3f/3h as forecast; RC-3c's I-marginal OUTSIDE did not occur; RC-3d/3g/3i's did)	CONFIRMED as stated	[S][G]
SF-0 ((h′))	CONFIRMED (43/43 by the gate; 44/44 by the engine; by the rigor leg)	[G][E][R]
SF-1 (the n = 3 battery passes, ~90%); SF-2 (the lifted certificates as teeth, ~95%)	**CONFIRMED** at the second freeze (18/18; 26/26 at exact global minimum 0 by two pricers)	[E][R]
SF-3 (GL-F4 re-scored)	CONFIRMED (gate-confirmed)	[S][G]
SF-4 (the scoring rule at the reserved cells)	applied: RC-2c scored against the note's letter only, F-RC-1 CONFIRMED; no relabel after a readout carried a verdict	[E]
SF-5 (the cubic/quartic pattern is not a theorem)	stands at every level (27 classes at n = 2; the 262 cells at n = 3)	-
SF-6 (ORB-CONSIST at n = 3, ~99%)	CONFIRMED where an orbit relation exists (the 12 point-control cells vs HR-2; RC-3e vs RC-3a; the four F2τ cells vs RC-2c)	[G][E]
SF-7 (pool completeness, ~97%); SF-8 (no partial ovoid > 13 met, ~99%)	CONFIRMED (10^4 closures, 0 OTHER; the largest set met 7; ξ_max(3,3) = 13 exact)	[E][R]
SF-9 (the reserved cells decide below the caps in ≥ 60% of rows)	CONFIRMED on the one reserved cell of the second freeze (1/1, 4.1 s); the §8 cells of the first freeze were relabelled, never run	[E]
G-1..G-11, H-1..H-11 (gate, first pass)	ALL CONFIRMED except H-5's sub-clause; two registration slips disclosed (14 functionals; 432/216 maps)	[G]
AF-1..AF-4, AF-6, AF-8, AF5-3, AF6-2, AG-1, AG-3, AR-1, AR-3 (addendum)	CONFIRMED; AG-4, AR-2 not scored / vacuous	[A]
G2-1..G2-3, G2-5, G2-7..G2-11, HD-G1..G7, HD-A1..A4 (re-gate)	CONFIRMED (HD-G5's parity clause on its ~60% side: the conjugate is in RC-2c's orbit, data)	[G2]
F-RC-1 (note: RC-2c OUTSIDE C_2, ~70%)	**CONFIRMED**, the run of record; two own routes; [R]'s two routes; [X]'s re-pricing	[E][R][X]
F-RC-3 (if INSIDE)	not applicable	-
F-RC-4 (the orbit and the four F2τ cells follow RC-2c; corollary); F-RC-5 (9 hosted + 18 following; data)	CONFIRMED (21/21; 4/4 with explicit n = 3 certificates; 9 + 18)	[E][R]
F-M-1 (the n = 3 battery passes whole, ~90%)	CONFIRMED	[E]
F-M-2 (no later addendum reserves a cell of the three families)	not scored (no later addendum)	-
EF-1..EF-8 (engine)	ALL CONFIRMED (113/113; 26/26; 14/14; 10^4/0; 13 exact; largest 7; 9 + 18)	[E]
F-iv-1..4, F-iii-1..2, F-ii-3/5/6/10, F-R1, F-R4, F-R7 (co-runners)	CONFIRMED; F-R2 NO-KINK at d_max ≤ 3 exact (NOT-INSTANTIABLE beyond); F-R3 flat at d_max = 3; F-ii-2/4/8/9/11, F-R6 not scored	[C]
RV-1..RV-16 (rigor)	ALL CONFIRMED on every verdict-bearing clause	[R]
PF-1..PF-11, PA-1..PA-3 (physics)	ALL PASS (PA-1 on one of three rows; the other two NOT-DECIDED-BELOW-CAPS)	[X]

id (registrant; registered)	fate	certificate / confirmer
SF-SYN-1 (no verdict moves, ~97%); SF-SYN-3 (one known discrepancy, ~80%); SF-SYN-4 (0 ban hits at the first full run, ~70%)	SF-SYN-1 CONFIRMED (SC-4 38/38 at run 4; SC-5 all own identities exact); SF-SYN-3 CONFIRMED (the F-RC-2 labelling discrepancy is the only one found); SF-SYN-4: CONFIRMED, the first full run on the final text had 0 ban hits outside the marked blocks (the draft pass had flagged two of this leg's own rider restatements that contained the Veitch label as a string; reworded without it before the final text existed)	[SYN]
the judge's honest odds (doc 31 §5.3)	battery green in a day (~75% within a week); R1–R3 decided, OUTSIDE (the 40% branch of ~60% INSIDE); R4 decided, one OUTSIDE, three INSIDE; ESCAPE-AT-2 occurred (~45%) in both sub-types; CNC-HOSTED-AT-2 did not (~35%); no NOT-DECIDED row at n = 2 (~25% said ≥ 1); the n = 3 rung "landed within the cycle" (~40%), landed by corollary with no open row, every registered three-copy row decided, no state by an n = 3 LP; a sentence quotable whole-with-riders within one cycle (~50%), licensed sentences exist (§4.3) but every external quotation is BLOCKED behind a closing audit that did not run; Theorem-W altitude (~5%), no, as the judge said in the first line	[J]; this document

6. Mechanism at supported strength (what the record supports; readings typed as readings; never a theorem about states outside the registered families)

1. **Why the n = 3 rung has no open row (the conditioned-outcome test, and the structural constraint it imposes).** Lemma M says a partial trace maps C_n into C_{n−1}; Lemma C says every single-qudit-stabilizer conditioning does too, and the trace is the p_s-weighted mixture of the d conditionals of one basis, so a mixture of conditionals can lie in C_2 while one conditional does not (the six first-pass cells: 18/18 traces INSIDE, 9–26 of 36 conditionals OUTSIDE). Both rest on the same two printed facts (a stabilizer projector is a sum of Weyl operators along one line; Ω is closed under inference) and both lift the n-level certificate by hand. The consequence: a reserved three-qutrit cell must have every one of its 36 single-qutrit-stabilizer conditionals inside C_2, 36 two-qutrit membership tests that must all come out INSIDE on a hull that already rejects every registered product of two magic states, every quartic diagonal class, every registered random state and RC-2c. On the record that forces, in every family screened, a stabilizer tensor factor up to a Clifford: the F1 one-square diagonal cells all of whose conditionals are hosted are exactly (linear)²·(linear) + quadratics, affine images of j^2k, i.e. (a cubic class) ⊗ |+⟩ up to a SUM-type Clifford (the note's §2.2; the addendum's five survivors; the re-gate's AGL(3,3) census: 29 classes under the full affine group, 22 decided, 7 with a variable-free image); the F5 ladders are hidden products (Z-type) or F1-type cells (a-type); the F2τ gates condition to generic Schmidt-rank-3 states (79/83) or to RC-2c's class (4/83). [G][A][G2][N][R]
2. **Why the diagonal classes fall by their conditionals (the Gauss-sum identity, regressed against the record).** For $D_f|{+}{+}{+}\rangle$ with f linear in the measured variable x_i, an XZ^a-outcome s gives the conditional $D_{C_i + (a - A_i)(B_i - s)^2}|{+}{+}\rangle$ whose y^2z^2 coefficient is $(a - A_i)\cdot(b_1^2 + b_2^2 + b_3^2 + 2b_4b_5)$ for $B_i = b_1yz + b_2y^2z + b_3yz^2 + b_4y^2 + b_5z^2 +$ (linear), a hand formula regressed exactly on 13,116/13,116 conditionals of the record (24 of the 24 F1 classes it decides are in the DECIDED set); a lone bilinear x_jx_k or a lone y^2z-type term is fatal, $(L^2)^2 = L^2$ is not; the non-constant-A_i regime gives non-diagonal conic/Gauss-sum mixtures ($\Sigma_{kl=0}|k,l\rangle/\sqrt{5}$-type states) decided by the n = 2 engine. The n = 2 pattern "INSIDE iff c = 0" (27 classes, data) therefore has an n = 3 image by conditioning, a corollary, never a theorem about all cubic states (SF-5). [G][N][A]
3. **Why RC-2c is outside, and what the certificate says about hosting (the note's reading, consistent with the verdict; still a reading).** RC-2c = $D_{j^2k}|{+}\rangle|S\rangle$ combines two non-Clifford ingredients each hosted on its own (the cubic gate on stabilizer inputs; the Strange state beside a stabilizer state). The cubic row's INSIDE certificate decodes to a controlled-frame identity $D(M \otimes |{+}\rangle\langle{+}|)D\dagger = (1/3)\Sigma_t\, CZ^t[(Z^{r_t}\, M\, Z^{-r_t}) \otimes V_t]CZ^{-t}$ valid for every payload M, whose three terms have disjoint negative supports at a stabilizer payload; at $M = |S\rangle\langle S|$ every term is a Clifford image of (a Strange-orbit state) ⊗ (a Λ_1-vertex), each outside $\Lambda_2(3)$, because no product of a magic single-qutrit state with a non-delta $\Lambda_1(3)$-vertex lies in $\Lambda_2(3)$ at all (0/81 for |S⟩ and |N⟩; 0/6480 non-delta pairs; the ancilla controls 81/81 inside), so any decomposition of RC-2c would have to cancel negativity across frames, a shape the record never produced; the engine's exact Farkas certificate says none exists. In the hull's own measure RC-2c is among the closest rows to the hull (R = 4/3; reach 128/137), the product of two magic states the furthest (R = 7/4; reach 13/22). "One non-Clifford ingredient at a time" is a reading of 54 + 27 registered rows; the two natural constructions of a three-qutrit escape not reachable by Lemma C (a magic control register over stabilizer branches; a cubic gate on a Norrell payload) collapsed to hidden products or to RC-2c; the existence of such a state is neither predicted nor excluded (SF-5 one level up). [N][E][X]
4. **Why the escape is not an artifact of the class (the steelman's four answers).** The authors' own enlargement, every Hermitian operator with unit-modulus Pauli coefficients, collapses onto V_CNC inside Λ by their Theorem 3 (read in their text); the two largest non-CNC vertex families of the record's own census do not host the product row; the product-closed repair exits $\Lambda_2(3)$ entirely; and the state's genuine Λ-representation needs 25 multi-modulus vertices. The escape is a fact about the constructible (CNC) class and the polytope that defines the model, at d = 3, n = 2, for the registered states. [X]
5. **The hierarchy at two qutrits, with located states on every boundary.** Wigner simplex $\subsetneq C_2 \subsetneq \Lambda_2(3)$: the 360 stabilizer states and the registered nonnegative mixtures in the simplex; the three cubic diagonal states, the eight cubic classes and the nine a = 0 classes on $|{+}\rangle|S\rangle$ inside C_2 but outside the simplex (the odd-prime non-delta CNC points of ZH §4.3 doing real work: three a^⊥-type vertices with weights 1/3); the three products of two magic states, the quartic row, every registered random state and RC-2c in $\Lambda_2(3)$ but outside C_2 (with an explicit 25-vertex Λ-representation for $|S\rangle\otimes|S\rangle$); and ≥ 3,722 Clifford orbits of Λ-vertices outside the constructible (CNC) class. At one qutrit the constructible (CNC) class is everything (81 vertices, all CNC, literature-decided, regressed by three legs); at two qutrits it hosts the registered cubic entangled states and the stabilizer-factor products and no registered product of two magic states and no registered random state, the first odd-prime two-particle instance of where the constructible (CNC) description ends, for the registered family, with certificates. [P][V][G][R][X]

7. Honesty

7.1 Merged defect table (every item of every leg of the second freeze with a disposition; the first freeze's items D-S1..D-S6, D-G1..D-G4, D-V1..D-V8, D-P1..D-P2, D-L1, D-J1, SD-1..SD-4 stand as v1.0 §5 tabled them, none touches a verdict; the two still owed to the owner are repeated in §9.5)

id	grade	defect	disposition
D-A1	MAJOR (record; the re-gate's mandatory repair)	the addendum's `a_core.py` `mc_compose` returns a composition modulo a global phase and drops the constant exponent $c_2a_1^2 + b_2a_1$, which for a ladder term A^j ∘ B^k is a cubic phase in BOTH register labels, so its 40 pinned F5 cells are D_g·(the registered ladder), other states; its F5 table (21 DECIDED; "19 three-qutrit stabilizer states") describes them, not the registered family	**the re-gate screened the registered ladders by own route: 21 DECIDED OUTSIDE C_3 by Lemma C (the same class indices), 19 hidden products (SUM-images of a cubic class ⊗ |t⟩, INSIDE C_3 controls, not stabilizer states); the rigor leg re-derived the finding; the typing moves on no cell.** The owner applies the F5 replacement and the four §6 precisions of `G31_0_RULING_2.md`

id	grade	defect	disposition
			as a dated additive amendment to `SPEC_ADDENDUM_1.md` (§9.5); lesson (x)
D-A2	MINOR (registration)	`ADDENDUM_REGISTRATION_2.md` 's AG-3 general sentence ("the one-square span is preserved by every A ∈ AGL(3,3) modulo quadratics") is false in general (68 of 139 F1 classes have a double-square image); true of the five survivors' orbits only	the re-gate's precision HD-G2; the owner marks it refuted in the amendment; verdict-neutral (the addendum's §3.5 read it correctly)
D-A3	NOTE	registration 4 → `a6_pass2.py` : 3 ms (ordered on sub-second stamps, not the visible gap SPEC §12 rule 1 asks for); the a6 cells are repeats of the run of record's pass-2 cells; registration 6's own count premise (23 products) wrong at run 1 (19 of the 23 were typed stabilizer states, itself replaced by D-A1's typing); F2τ[24]/[26] "one direction" → both directions; 139 / 83 class counts over-count the distinct cells (29 / 26 under the full affine groups)	disclosed by the addendum and the re-gate; verdict-neutral
D-G2a	LOW (re-gate; own)	`h3_screen.py` run 1 crashed on the leg's own "287 cells" slip; `h4_text.py` run 1 compared a log's birth with a later hash (false FAIL); the F5 finding appears as six FAIL lines of `h3_screen.json` (status FAIL at run 2), resolved by the addendum `GATE2_ADDENDUM_1.md` and `h5_f5.py` 9/9	repaired, re-hashed (v2, v3), run-1 artefacts under `dev/` ; the h3 FAIL status is the finding, not a defect of the record
D-N1	NOTE (note leg)	the hand facts are one leg's scripts (exact; `hand/` with manifest); the note's H-6 decomposition of $\|S\rangle\langle S\|$ over 16 Λ_1-vertices is one of several (the rigor leg's precision (c)); "one ingredient at a time" is a reading	stated by the note itself; F-RC-1 decided by the engine's certificate
D-E1	NOTE (engine; process)	a headings grep printed the note's status footer (the prediction's direction and probability) before the battery, disclosed first in registration 1; the verdict rests on an LP certificate no reading can bias	disclosed; lesson in the procedure variant (grep `^##` only)
D-E2	LOW (engine; own, before any hash)	the dim-0 branch of the pricer crashed on an empty-product reshape; the own membership route's exact phase stalled when the single attaining pencil was already a column; the orbit key assumed denominator 54; **a units slip**: the own pricer returns its minimum in the units of Y = D·y and the exact phase subtracted it without dividing by D, harmless whenever the minimum is 0 (every certificate of record) and caught only by a development test on a decided row whose located dual was not yet optimal	repaired before the hash of record; development tests on decided rows only; lesson (y)
D-E3	NOTE (engine; record)	the registration counted "sixteen core" lifted functionals; the JSON types 14 core + 2 data (the gate's HR-2 and RC-3d Lemma-C rows), every one of the 26 priced to 0; HR-C1's certificate has 6 terms (the pilot's one-sided LP found 28; both valid); `e1_battery.py` re-hashed unchanged in v2 after its run (the rigor leg's precision (d)); the report's §3 table prints a dim-1 pencil as the attaining point of	N⟩^{⊗3}'s lifted functional while the rows file generated from the JSON prints a delta, both are minimizers, the shape is data (the rigor leg's precision (b))
D-E4	MINOR (engine; record, found by this leg)	F-RC-2's support clause is typed two ways inside one leg's record: `e4_rc2c.json` "the ~45% branch (not a^perp)" vs `ENGINE_REPORT.md` §4.6 "neither worded branch"; the rigor leg finds the record's functional attains 0 on a^⊥ / pencil / Lagrangian-plane / E supports and on 27 deltas, no ovoid, so the a^⊥ branch is met among others and the dichotomy was not well-posed for a functional with zero entries on deltas	recorded here first (SF-SYN-3's one discrepancy); verdict-neutral (F-RC-1 is the forecast of consequence; F-RC-2's caps clause holds); the owner's call which label to fold
D-E5	NOTE (engine; caps)	the fully symmetry-free ξ_max route hit its 3×10^8-node cap (best 13, no 14-set), NOT-DECIDED-BELOW-CAPS, never upgraded; the pair-only route closed every branch	printed as data beside the run of record; lesson (z)
D-C1	MINOR (co-runners; registration and derivation slips, caught by the leg's own regressions)	the registration's hand formula for K_{a,b} wrote δ_{b,0} for the s-channel term (both pole terms carry the Gegenbauer factor) and $(2j^2/(D-2) - 1)$ for $(4j^2/(D-2) - 1)$; v4 omitted the degree-1 constraint; `Poly.intervals` returns ((a,b), multiplicity) (a crash); a stale support index after columns were appended; v7 → v8 hashed in the same second as ADDENDUM_3 (sub-second order holds, the visible gap does not); the census script's `is_afbw` flag tied to the Z/X alphabet; F-R0b transcribed the label range as the constraint count	every one dated, superseded versions under `dev/` ; the kernel formula CONFIRMED symbolically after the correction (F-R0a); the run-1 float numbers discarded
D-C2	NOTE (co-runners; caps and scope)	the exact column generation stalls at d_max ≥ 3 at a tangency (NOT-EXACT intervals [A, B]); the 60-s exact-LP cap bites at d_max ≥ 4; the float scan is not a locate of record; the DP's all-Pauli mode capped at depth 4 on both F4′ instances; the qutrit SPB alphabet not enumerated; one end-of-leg net HTTP 400 (NOT RUN)	printed; nothing upgraded; the funded-week needs stated for the owner
D-R1	LOW (rigor; own, seven defects)	`r1_pool.py` run 1 stopped (a pure-Python GF(3) elimination, vectorized); `r3_certs_n2.py` run 1 crashed on Gross-decided marginals with no LP certificate and expected a^⊥-only (b)-row certificates; `r4` / `r7` run 1 overflowed int64 on per-entry `limit_denominator` (now a common denominator per rung); `r5` run 1 scored the SHAPE of the attaining point (data, not a check); `r9` run 1 read three manifests' trailing comment lines as entries and tested the hosting heuristic on truncated lines, run 2 flagged the re-hashed `e1_battery.py` ; `r10` 6/7 on its own premise slip (re-run as r12 7/7); `r12` run 1 crashed on the 67 nonnegative post-states; `r11` run 1 did not know the sealed BODY shas	repaired, dated, re-hashed (v1 → v3 → v6 of `r_core.py`), superseded versions and run-1 logs under `dev/` ; final runs of record all PASS
D-R2	NOTE (rigor; precisions (a)–(f))	V-8's description of the (b)-row certificates; the attaining shape as data; the note's H-6 non-uniqueness; `e1_battery.py` re-hashed; four manifests' comment lines; route B's exact −1/3 for RC-2c	the owner's to fold; verdict-neutral
D-X1	LOW (physics; own, caught by its own controls)	a units slip in its Lemma-C checker (3^{n−1} for 3^n: every true 1/3 read as 1); a denominator slip in its orbit builder (the second census class has denominator 36, the builder scaled by 81), caught by PA-1b (5 of 10 orbit members failed to re-certify); two text-classifier truncations (a line excluded only on "never"; a 220-character excerpt); a missing helper in the follow-up (NameError after PA-2 had printed PASS)	repaired, re-hashed (v3, v7, v9/v10, v12), superseded versions under `phys_dev/` ; lessons (cc), (dd)
D-X2	NOTE (physics; caps)	PA-1's two remaining rows NOT-DECIDED-BELOW-CAPS in the run of record (the X396 pricing walks 1.4 M vertices six times per round within an 1800 s cap); PA-2 and PA-3 run in the labelled follow-up with the same pool, caps and forms (identical results)	printed first; nothing upgraded
D-X3	INFO (physics)	PF-2's fingerprints are of the pool minimum (0) and carry no information; one mechanical FAIL line of its text scan resolved by hand (the co-runner's Appendix-C script mentions a qubit and the value 2, the dimension of a gauge-invariant subspace)	disclosed
D-X4	NOTE (physics; strength)	its pool and machinery are one body of code written against the record's conventions (adopted so pinned functionals could be re-priced, a deliberate, disclosed dependency); four of six R values are certified intervals; the reach intervals' upper bounds come from the record's certificates (not necessarily optimal duals)	stated by the leg

id	grade	defect	disposition
D-X5	INFO (physics; wording, found by this leg)	the report's §10.5 "no reserve token (≥ 9,700,003) and no successor token (≥ 9,800,003) appears in any file of this leg" is true of draws and not of mentions: its own text-scan outputs (`phys_v5_text.json`, `phys_v8_check.{json,log}`) quote the record's band-plan sentences, 17 mentions, every one inside a quoted line that says "untouched" or "no reserve … token is drawn" (SC-6b classified them on the full context)	recorded; verdict-neutral; a wording precision for the owner
SD-5	LOW (this leg; repaired)	`synth_check.py` run 1: four FAIL lines, all this leg's own, the physics manifest's entry count (95, its first line a comment); the addendum's AGL record stores 16 presentations, not 5 classes; the simple-class count without the "drawn" qualifier (227 drawn, 230 known); the token scan without a classifier for quoted band-plan text; **v2's patch appended a comment inside a call and swallowed a comma (SyntaxError; never run); v3's patch appended a comment inside a list literal and swallowed another comma (a runtime TypeError after 32 PASS lines)**, the house's own gate-leg lesson, met twice; v4 (hashed 09:31:17.527 CET) PASS 38/38	v1–v3 kept under `lambda_synthesizer/dev/` with the run-1 log and JSON; the check of record = the last run in `synth_check.log`; SF-SYN-2 refuted; lesson (ff)
SD-6	INFO (scope)	this document re-derived no Farkas functional over the pool, no decomposition, no vertex certificate, no n = 3 pricing (five legs did); its own arithmetic is at the number level (RC-2c's Wigner function and certificate value, the eight C2 identities and p_s, the ξ witness and the Hoffman bound, the survival rule, the primes)	stated, not dressed
SD-7	INFO (record)	the two reports' statements of the simple-class count ("227 classes") count the DRAWN classes; the census JSON holds 3829 entries (3783 drawn + 39 control + 4 extra non-CNC + 7 CNC) with 230 simple non-CNC classes in all	a precision; data

7.2 Doc 31 §8's own risk statements ("what would make this the wrong choice"), answered again at the second freeze

risk as registered	what happened
"The owner wants frontier discovery about how the universe works, and this is foundations-grade."	Honoured; the altitude is unchanged and said in the first line: FIELD-lite, foundations-grade, the program decided, with exact certificates re-derived by four own routes, where the constructible (CNC) description of odd-prime quantum computation ends at the first two-particle instance for the registered family, and that every registered three-particle row follows by corollary. Not a sentence about gravity, spacetime or the cosmos; the gravity-bridge lane is data by the owner's standing purpose and says so at every row.
"It may be literature-decided."	It was not (KΛ-2 NOT FIRED at the scouts; the physics leg read ZH at full text and found the question posed, §7 remark 2, and unanswered); the re-sweep G31-3 is still owed before any quotation.
"It may be thin."	It was not thin at n = 2 (ESCAPE-AT-2 in both sub-types; RC-2c added); at n = 3 the thinness that appeared is of the kind the stop named: every registered three-qutrit row is a corollary, and the families built to pass the conditioned screen collapsed to hidden products, the rung has no open row at this freeze.
"The exhibit was cheap, and cheapness is a warning."	The delta is where the judge put it: the registered rows with declared parity (two of the judge's own forecasts refuted), the certificates verified over the whole pool by five bodies of code, the 3,722-class invariant-certified census, the steelman's enlargements and the constructive witness, the two legs, and the discipline that found a record defect (the F5 cells) by regenerating every cell from its registered definition.
"A proxy became a definition by a theorem the scout had not cited."	Checked at full text by L1 and again by the physics leg against ZH Theorem 3 and §6 Eq. (68): the unit-modulus class is exactly V_CNC inside Λ, the letter is not a free parameter of the question.
"The ancilla lemma and the qubit precedent cut the forecast."	They did, and two further lemmas cut the n = 3 rung to corollaries; the fifth instance of the decided-at-freeze lesson is this program's (§9.6).
"Is it truly discovery about how the universe works?"	At its own altitude, yes: the n = 2 anatomy with certificates; n* = 2 at d = 3 (states and grade named); R = 7/4; the vertex zoo's invariant-certified lower bound; HC-1; Lemma C as the finer decided-at-freeze test and the structural constraint it imposes. At the owner's altitude, no.
"What DECISIVE export it could compose into later (never claimed now)."	None claimed; D-Λ named only as "could compose" (§9.7).

7.3 What could still be wrong (the legs' own words, merged)

Lemma M and Lemma C are elementary and re-derived as matrices by three legs on random Theorem-1 points, not proved in print in the conditioned form (the cite-check rows are owed; a printed lemma makes the relabels cited corollaries, which they already are). The n = 3 pool's completeness is ZH Theorem 1's published classification, regressed by two legs on 10^4 + 3,900 own closures and a Witt-type census, not re-proved. Every leg's pool and pricer is one body of code, but five bodies of code agree on the n = 2 pool and on every shared certificate, and two independent n = 3 pricers agree on 26/26 functionals. The census' exact orbit test is one leg's (the invariant-certified 3,722 is two). The engine's 18 further orbit-member certificates are not stored (their OUTSIDE is G-covariance of an own-verified pool, regressed on three members). The one-ingredient reading, the Gauss-sum mechanism and the structural constraint are readings of the registered families, not theorems about three-qutrit states in general. The co-runner rows are at one leg's strength. The closing audit at the untouched reserve has not run, so every sentence stays in-house and unquoted.

7.4 This leg's own defects (disclosed first in the status block; SD-5 above)

Three dated repairs of `synth_check.py`, two of them the comment-swallows-a-comma trap the house procedure already names (the gate leg's and the engine leg's lesson), are the whole defect record of this leg; SF-SYN-2 ("at most two") is REFUTED. The check script was hashed before each run (v1 09:28:17.195, v2 09:30:21.730, never run, v3 09:30:36.168, crashed at runtime, v4 09:31:17.527 CET); every superseded version and the run-1 log/JSON are under `lambda_synthesizer/dev/`; the check of record on this text is the last run in `lambda_synthesizer/synth_check.log` (§10). The JSON key survey before the registration was two read-only scratch scripts (disclosed in the registration). No prime drawn; no engine run; no committed or pinned file modified except the mandated supersession of `32_lambda.md` after its byte-identical copy.

7.5 Wording of this document

Scanned by `synth_check.py` SC-7 for the KΛ-5/KΛ-6 strings and doc 31 §8's bans outside the marked blocks (0 hits of record); every "classical" and every "gravity" line listed by the script and read by hand on the full line: every "classical" is the program's name ("the constructible (CNC) classical description"), a rider ("never feeds 'classical'"), a quotation or the altitude line; every "gravity" is the lane's name, a rider, a forecast id or the standing-purpose sentence; no hosted outcome is worded as classical; no sentence is about physical gravity; the qubit precedent is quoted only as cited with its states and grade; Lemma M and Lemma C carry their hypotheses; magic numbers carry their conventions; the bare Veitch label never (Veitch's sn, Def. 10, is the labelled form).

8. Ledger

- **Bands and primes (binding; every token named here re-certified by this leg's own trial division, SC-6a; nothing decided by a prime anywhere in this program): consumed by the program: twelve**, 9,400,009 / 9,400,019 (PILOT-Λ: mod-p ranks of the vertex flags, certificate fingerprints; re-used as fingerprint moduli by the spec leg's pre-check and by the engine's reproduction of the pilot), 9,400,021 / 9,400,043 (the engine: fingerprints of its own route's certificate on RC-2c), 9,400,049 / 9,400,063 (the co-runners: fingerprints of exact rationals), 9,500,021 / 9,500,041 (the pilot verifier: mod-p regression ranks), 9,500,047 / 9,500,089 (the rigor leg: mod-p pins of exact tight-system ranks and fingerprints), 9,600,037 / 9,600,047 (the physics leg: fingerprints). **Certified and never used:** 9,600,091 / 9,600,103 (the physics band's remaining tokens). **Closing-audit reserve ≥ 9,700,003 (9,700,027 / 9,700,039 / 9,700,063 certified), UNTOUCHED**; its designated consumer is G31-2 only; no reserve or successor token occurs as a draw in any log, JSON, hash or stamp file of the record (SC-6b: 711 files scanned; the 17 mentions are quoted band-plan sentences inside the physics leg's two text-scan outputs, classified, D-X5). **Successor band ≥ 9,800,003 (9,800,009 / 9,800,027 certified), fallow.** The round bases 9,400,001 = 13 × 317 × 2281, 9,500,001 = 3 × 7 × 73 × 6197, 9,600,001 = 79 × 137 × 887, 9,700,001 = 47 × 206383, 9,800,001 = 3^3 × 23 × 43 × 367 are composite (regression of doc 31's J-A). Every earlier reserve (≥ 9,300,001 doc 30; ≥ 8,900,029 doc 28; ≥ 8,550,001 doc 27; ≥ 6,600,001; ≥ 7,300,001; ≥ 7,700,071; ≥ 8,100,073; ≥ 8,500,007) stays its owner's and untouched. The gate, the re-gate, the addendum, the note, the doc-32 leg and this leg drew no prime.
- **Caps (printed with every verdict; none upgraded):** the pilot's per-row 4000 columns / 500 rounds / 900 s (max 3129 columns at a control; 1761 / 57 / 7.7 s in the open rows; 651 / 20 / 4.1 s on RC-2c; 6.1 s on an orbit member); the census ≤ 9000 s (374 s); the update closure 10,800 s (HIT: 6 of 3822 classes; 3 pairs at the per-row column cap); the one-sided HR-2 test (two cap hits; superseded by a corollary); the spec's pre-check ≤ 90 min (135.6 s); the gate's own engine ≤ 41 s per row; the addendum's screen 150 min (79.7 min after the teeth; the gate's engine copy ≤ 41 s per call; 366 calls); the re-gate's own engine ≤ 3.0 s per call (4136 calls, 122 s on 10 workers; 0 caps); the engine's n = 3 battery ≤ 6 h (215.7 s), per exact pricing call ≤ 5 × 10^7 nodes (max 348,248), the ξ search ≤ 4 h / 2 × 10^8 nodes (0.2 s / 53,735), its symmetry-free route ≤ 1 h / 3 × 10^8 nodes (HIT; best 13), its pair-only route 3.5 s; the co-runners' registered caps (the 60-s exact-LP cap at d_max ≥ 4 HIT; the DP depth-4 cap HIT on both F4′ instances); the rigor leg's own LP ≤ 70 s per row (route B 12,084 pivots on RC-2c); the physics leg's 1800 s global cap (HIT on PA-1's two remaining rows; PA-2/PA-3 in the labelled follow-up, identical results); every verdict quantity exact over Q.
- **Canon pins (every leg byte-identical before/after; files added meanwhile attributed by path, never claimed):** the pilot's 1954 / 2044; the verifier's 2195; the spec leg's 2244; the gate's 2284; the doc-32 leg's 2336; the addendum's 2358; the re-gate's 2451; the note's 2501; the engine's 2535 (+ 75 added by the co-runner leg); the co-runners' 2598 (+ 94 added by the engine leg); the rigor leg's 2716 and the physics leg's 2716 (both legs in `lambda_verify/`, attributed by prefix); **this leg: 2934 files before** (`lambda_synthesizer/pins_before.txt`, sha256 `2a0a4a7422897e2ebf18c411ddaa6d4b2a7ff5fc9300719fbe263003a90626fc`, 09:21:36.085 CET) and after: 2946 files (`pins_after.txt`, 2026-10-29 09:51:32.405776 CET, sha256 `3fc3e907d65aa98b6f9da28dbddc2c7703f77728163896cbc6b3273b1e7876a2`): before 2934 after 2946 changed 1 missing 0 added 12; the one changed file is `32_lambda.md` (this document; its v1.0 bytes preserved at `analysis/32_lambda.v1.0.md`). No committed or pinned file was written by any leg of the second freeze (NN_*.md, README, memory, SUBMISSION_STATUS, the engines, the scout reports, the frozen spec, the pinned addendum, both rulings, the note, every earlier leg's files, untouched; every repair to a pinned document is a dated additive amendment the owner applies); the one change of this leg is the mandated supersession of `32_lambda.md` after its byte-identical copy.
- **New files created by the second freeze (the only writes of record):** `lambda_spec/addendum_1/` (92 entries) + `lambda_spec/SPEC_ADDENDUM_1.md`; `lambda_spec/gate_G31_0_pass2/` (49) + `lambda_spec/G31_0_RULING_2.md`; `lambda_engine/` (the note, `hand/` (17), `dev/`, pins, manifest (33)) + `lambda_engine/engine/` (95) + `lambda_engine/ENGINE_REPORT.md` + `ENGINE_ROWS.md`; `lambda_corunners/` (84); `lambda_verify/` (the rigor leg's 124 entries; the physics leg's 95 `phys_*` entries); `lambda_synthesizer/` (this leg), `analysis/32_lambda.v1.0.md`, `papers/26_lambda/` (README, PDF manifest, nine sha-verified PDFs), and `32_lambda.md` (this v1.1).
- **Dated deviations / amendments of the second freeze:** (1) the addendum's pre-run correction of `a2_screen.py` (the $|+\rangle|\tau\rangle$ class typed RESERVED-NOT-RUN before its first run) and its two labelled follow-ups (agreeing with the run of record on all 129 shared cells); (2) the re-gate's two check-logic repairs and its mandatory F5 repair of the addendum's record (the owner's amendment); (3) the note's check-script slip (a pins-file sha; repaired as v2 before sealing); (4) the engine's development repairs before any hash (D-E2) and its two labelled ξ follow-ups; (5) the co-runners' four dated corrections (D-C1) and the three addenda; (6) the rigor leg's seven own defects (D-R1) with three versions of `r_core.py`; (7) the physics leg's four own defects (D-X1) and its labelled follow-up; (8) this leg's three repairs of its check script (SD-5); (9) the order of record's "report = doc 32" discharged twice, as the STOP document v1.0 at the first freeze and as this decision document v1.1 at the second.
- **Files of record (sha256, full; the second freeze's s):** `lambda_spec/SPEC_ADDENDUM_1.md` `893c9d9ccec78443012b13add2f4b7b62dfbc3387395a6952f5b2562947c7d23` (body `1d1caf243ebf901fa3625be8257af9882c9cefcf0ffa2f3eba43ece6a5be2121`); `lambda_spec/addendum_1/ADDENDUM_REGISTRATION.md` `2e274f98569e464b4aa4c30a12bc0e51ed9e0ce9728dd0484a6db748f7b5e3d5`; `lambda_spec/addendum_1/a2_screen.json` `a7c844bfbe1230db4844dd88220089587475913 4f81654920b2841645bf04159`; `lambda_spec/G31_0_RULING_2.md` `ee16486823b83063745e0c065300be74f98b11b38e22e8e2254d569e4928db18`; `lambda_spec/gate_G31_0_pass2/GATE2_REGISTRATION.md` `66beb1f8cf363f5e9d97d46ec4cace71e23f22c852601852817f1dc12274c6fb`; `lambda_spec/gate_G31_0_pass2/GATE2_ADDENDUM_1.md` `39811257c09f88c21446627b3135f53ef6caaef33d9c278be3e4db982b9e5361`; `lambda_spec/gate_G31_0_pass2/h3_screen.json` `f55bee3df1c3d168b282ea711b09b9f1f81e8e195e02c3007e142da329249707`; `lambda_spec/gate_G31_0_pass2/h5_f5.json` `97b4fbd7764af46211484f11bd29a94ae063405ec3d8ea562cfa21eef0ad78fd`; `lambda_engine/MECHANISM_NOTE.md` `ac4c7f2553ceca8a3c88077ab440d8cf9dc8878429d4a48049a96ba2eff57efb`; `lambda_engine/engine/ENGINE_REGISTRATION.md` `c478d20d92bad657b2ba506a3ad522398557a61854b8c767995ff5144c7deb5b`; `lambda_engine/engine/ENGINE_REGISTRATION_2.md` `114cf35cb7de00aab096affda205960e5352919acca7fbdd739a267072fa67f9`; `lambda_engine/engine/e4_rc2c.json` `f9b77c7879f467505364239192d03cdfb331755e003c0ab74380d42e14e32b94`; `lambda_engine/engine/e2_teeth.json` `6a7721f757e791cb158afbdf511510f3ee789e77a2afd6ac14a514a6b49f6256`; `lambda_engine/engine/e3_xi.json` `0817aaf9b80a853d90d9e86445ea8796a8e43e5dd7f75bedaefd1264066a8d12`; `lambda_engine/engine/ENGINE_ROWS.json` `57ed5ed48adde6ad90be4d77f305631486b4752a54419f99ac0a7e5fa5f2469d`; `lambda_engine/ENGINE_REPORT.md` `42059e9a63c4ea24d9b4ebe4095027b4b78ffa177a904736f532cae1f3a783d8`; `lambda_engine/ENGINE_ROWS.md` `e1af3d7b78c4731d8c11b980ddffeabab3296b9ba46ab02acc62710ac0aa2ad0`; `lambda_corunners/REGISTRATION.md` `eabcb0815ee6b20ae8451a5747f94c43342ed80986c642686fa84f5acc369032`; `lambda_corunners/REPORT.md` `9452e5d8d95e3016e53dd0a45c8a86a14f0b2f352b840d7c6d2c8ff245987533`; `lambda_corunners/cr1b_prer_exact.json` `0966edc9ba370ff2253f1b84515d079b062130fa2f01eff8b26819d48a298497`; `lambda_corunners/cr2c_dp_f4prime.json` `21bcdc6a538198f0d22bb1da8c26a079e9e6802a667a084c16cfb6fc01d36648`; `lambda_corunners/cr4_appendixC.json` `40d2c6a49d75e1e6238b6d305daf9ab70d7f425b7827449d29f78053046a72cd`; `lambda_verify/REGISTRATION_RIGOR.md` `aaef37fccd97ea48e677bf706c52fd5514732056ac7cff33d61fe2a66200f5c6`; `lambda_verify/RIGOR_REPORT.md` `79c2cf8aaafd472fca5005adc53eea7847eaa073f9dc609dfa2bd5dcab3426a1`; `lambda_verify/r7_rc2c.json` `842e47ee8b62c1e56325afcb3824066c7044e4f4996507d776dc87482c3617b3`; `lambda_verify/PHYSICS_REGISTRATION.md` `eb23ffdb275a1a1cd9ab3f55531f22a9736d5a1d8ab324b5a70aa6a82702e3e4`; `lambda_verify/PHYSICS_REPORT.md`

`179803084b65fc487389a076b11ac43bd4852b1cc78b8a829a1eb9c678844d47` ; `lambda_verify/phys_v3_steelman.json`
`3ff823c1beaa4b48b7ac45c06e447f26b5e20d23974d2508e841969f9ef456c6` ; `lambda_verify/phys_v4_census.json`
`14c0a2c03016baef0c5cbbe335329772b0ffcaab7ee95c82578a953de8f1796b` ; `lambda_verify/phys_v6_lambda.json`
`0fa7d2ff3bfe45c456430932c6eca8d02df7c7ceebef9b422f641be7cfd515e9` ; `lambda_verify/phys_v7_followup.json`
`065362f0c5fddc153a7483bcee41f47102811264f38d5a412729b5ac74af3a2f` ; `README.md` (at the time of this leg, the owner's fold of 2026-10-28 23:48 CET)
`936f19d6c30ee748037c9bc1f0805575c24078b013d4471bcc93a6c28dc12529` ; this leg's registration `lambda_synthesizer/SYNTH_REGISTRATION.md`
`0423c2c081e13888bcf8001ac92dc77e69ddfe98f3b9f0d014c2f61537bd806d` ; `lambda_synthesizer/synth_check.py` v1
`acf8ece4ee4b0e953eb7041f284eafeaae93758eb05be5e2ead2ac6cfb2de76c` , v2 `df4fdd4f08b72a1bb0b2095efdae130d41a053b337b50ede34166e5d2b0494f0` (never run), v3 `e494c9c5a93b81fdd1436d0aaccb05cdd89f08fa51437373804d2257cffb2cdb` (crashed), v4 (of record) `22ac5e6a1d45afa77be702f30c66459fe4bb0b201519329993dfbfd09aab7670` . The first freeze's files of record are listed in `analysis/32_lambda.v1.0.md` §6 and stand unchanged (pins).

- **Process:** every leg of the second freeze launched its runs detached and waited on them by pid or in the foreground, and ended with its logs; no background process of any LAMBDA leg remains (other sessions' processes, a Python bridge, a Next.js dev server, a Drive helper, an iPhone bridge, an invoice collector, were observed and left alone); `python3.12 -I` only; this document assembled from ten draft chunks (under `lambda_synthesizer/dev/draft/`) with the four verbatim blocks extracted from doc 31 by line number, never retyped, and four end-of-leg placeholders filled last by a count-asserted replacement, then re-checked; no README / memory / SUBMISSION_STATUS edit by any leg (the owner folds); nothing posted.

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9. Consequences

9.1 Pointer-row ruling (G31-5): NONE ENTERED, the default holds; candidate rows drafted

The material-change rule, quoted from the house precedents that govern it: "*adding any pointer row would be a fresh registration decision, not an entitlement of this run*" (doc 15 §6.1 + v1.1; docs 17 / 19 / 21 / 23 / 24 / 25 / 27 / 28 / 30 §7.1 and v1.0 §7.1, NONE ENTERED on the same rule). **No committed law changed status here**, the program's n = 2 record is new, its n = 3 content is corollary rows and controls, and the gravity lane touches no committed verdict by construction. Per target: **doc 20 (NEGATIVITY-REQUIRED), NO ROW**; candidate drafted, NOT entered: "*[doc 32 v1.1 ΛG-3, gate-confirmed by corollary, engine- and rigor-reproduced] on the registered p = 3 lattice cell the N2 write channel's output on the registered boundary seeds lies in the Wigner simplex, and its output on the uniform label input lies in $\Lambda_3(3)$ outside the constructible (CNC) hull C_3 (its two-qutrit label marginal outside C_2, $y \cdot W = -7/40$, lifted; Lemma C independently); every nonnegative $\Lambda_3(3)$-representation of it uses a non-CNC point and such representations exist (ZORH Theorem 1); doc 20's riders travel whole.*" **Doc 21 (the gate of record; the species-1 knob cells), NO ROW**; candidate drafted, NOT entered: "*[doc 32 v1.1 §2.6] the 24 WM-G3-δ knob cells on the registered uniform inputs are placed, the 12 line-control cells INSIDE C_3 with explicit decompositions at n = 3, the 12 point-control cells OUTSIDE C_3 as HR-2's images; the registered diagonal-phase slice contains WM-G3-c and WM-G3-geo (the stabilizer control class) and does not contain the committed two-qubit gate's output or any coupling off the lattice (2π/3)Z (NOT-REGISTRABLE in an exact rational LP, rider [D]); on the $|+\rangle|S\rangle$ input the gate's diagonal classes are hosted exactly when they carry no j^2k term.*" Doc 21's Theorem M, S-WM-1..4 and the wall untouched. **Doc 31, NO ROW; the owner folds the relabels of record** (the first freeze's list in v1.0 §7.1 plus: the n = 3 rung's typing; RC-2c's verdict; M-Λ8(i) PRE-R's condition NOT MET; M-Λ8(ii) NO-INSTANCE-AT-n=3; M-Λ8(iii) 13 EXACT; M-Λ8(iv) one line). **Docs 19 / 22–30, Papers A / B / C / F / M / S, 21a, NO TEXT CHANGE.** Any future entry of the drafted candidate rows is a fresh registration decision at or after G31-2.

9.2 Paper assessment

Neither a paper amendment nor a new note, now. (i) The n = 2 record (ESCAPE-AT-2 with certificates at four own routes; $n^* = 2$ at d = 3 with the states and grade; R = 7/4 exactly; the invariant-certified vertex zoo; HC-1; three update tables; the product obstruction and the 25-vertex witness) is the kind of computation doc 31 §8 named as Paper S's "natural fourth computation", but doc 31 also said "never claimed now", and the record has no closing audit: every sentence is BLOCKED (G31-4). (ii) An exportable data note (the census, R, the enlargements, of direct interest to the Λ program's authors, who hold the unpublished (2,3) numerics) would be a posting-shaped act under defer-until-big; the house's edge is the certified, registered record. (iii) The n = 3 content is corollary rows; a note on the conditioned decided-at-freeze test and the structural constraint would be a methods note of the house's own discipline. Timing: defer-until-big governs; any quotation event owes G31-2 + G31-3 first; posting order, if ever, per `SUBMISSION_STATUS.md` .

9.3 Never-claimables (inherited whole + this program's; binding on every sentence, including S-Λ-1 and S-Λ-D1..D6)

Inherited verbatim, the kill criteria of record (doc 31 §6), in force on every leg and on every quotation:

Kill criteria of record (pre-frozen here; to be frozen verbatim in the pilot docstring)

- **KΛ-0 (pilot gate, method).** Any P-Λ-ctrl clause fails ⇒ the machinery is broken; stop before any open row; repair dated; re-run.
- **KΛ-1 (caps).** V_CNC enumeration or the membership LP exceeds the registered caps ⇒ NOT-DECIDED-BELOW-CAPS for the affected rows, caps printed; never upgraded; the vertex census and the update closure still run.
- **KΛ-2 (literature-decided).** A printed two-qutrit (or general odd-d) membership statement for any registered row, or a printed odd-prime two-qudit vertex census, found at M-Λ1(a) or by a leg ⇒ cite, stop that rung; the exhibit then travels as corroboration only.
- **KΛ-3 (thinness).** CNC-HOSTED-AT-2 on every registered row AND the n = 3 rung outside budget ⇒ a positive typed note ("the constructible model hosts every registered two-qutrit state"), no front; the owner decides whether to fund the threshold rung.
- **KΛ-4 (budget).** One week engine + the pilot verifier + two legs; no extension without a dated owner ruling.
- **KΛ-5 (wording bans).** Any drift toward "efficient", "not simulable", "no nonnegative model", "quantum advantage begins at …", "the classical world ends at two qutrits", "requires QM", or a CNC-HOSTED outcome worded as "classical" ⇒ stop the sentence at the licensed rung.
- **KΛ-6 (growth bans).** No drift toward "why quantum", toward a universal threshold law at every prime from one prime, or toward an efficiency-of-simulation sentence from a membership fact; the ξ_max rows are data about a finite-geometry quantity, never a complexity sentence.
- **KΛ-7 (exhibit withdrawal).** A leg fails to re-certify any of the 40 judge vertices or 18 scout vertices by its own route ⇒ the exhibit is withdrawn from the record and reported first.

Inherited verbatim, the standing wording bans (doc 31 §8, last paragraph):

Every claim in this document inherits the corpus's standing wording bans: "undecidable" (N1), "gravity is a magic factory", "QM derived", "requires QM", the bare "cannot write history and keep perfect time", "no nonnegative model exists", "not simulable", "loophole-free" bare; a null anywhere never feeds "gravity is

classical"; a positive never feeds "gravity is quantum"; a CNC-HOSTED outcome never feeds "classical"; "efficient" never appears in a sentence of this program; licensing is never posting; defer-until-big governs all external timing.

This program's own (the ban strings appear below only as the list of what is banned):

- never "efficient", "efficiently simulable", "efficiency of simulation" for anything (ZH's conditional polynomial-time sentence rests on their open problem 3 and on $\tilde{V}$, not V; the printed polynomial bound on ξ_max (L2) is a finite-geometry fact and changes nothing here, KΛ-5/KΛ-6); never "not simulable"; never "no nonnegative model exists" (every state has a nonnegative Λ-representation by ZORH Theorem 1, and one is exhibited for $|S\rangle\otimes|S\rangle$); never "quantum advantage begins at two qutrits" or at any n; never "the classical world ends at two qutrits"; never "requires QM"; never "why quantum"; never a CNC-HOSTED outcome worded as "classical"; never a universal threshold law at every prime from one prime ($n^* = 2$ is a d = 3 datum about $|S\rangle$ and $|N\rangle$; the qubit "two in, three out" is about $|H\rangle$ and $|T\rangle$, numerical, quoted as cited, never re-derived, never placed in a sequence with it; "prime-indexed" only as a question with its "(or is not)"); never an efficiency-of-simulation sentence from a membership fact; never "undecidable" (N1); never "gravity is a magic factory"; never "QM derived"; never "loophole-free" bare; a null anywhere never feeds "gravity is classical"; a positive never feeds "gravity is quantum"; never "sum-negativity" or "sum negativity" bare (always $\|W\|_1$ with the labelled convention and the log base; the CNC negativity R with its definition).
- never "the n = 3 question is decided" or "no three-qutrit state escapes": the rung is "no open row at this freeze" for the registered families; no state was decided by an n = 3 LP; RC-2c is decided, its orbit by covariance.
- never "the constructible model hosts every cubic state" / "no quartic state" (SF-5: 27 registered classes at n = 2; 262 registered cells at n = 3); never "the vertex census of $\Lambda_2(3)$" as a number (≥ 3,722 by invariants; 3,783 drawn; ≥ 3,822 known; a sample); never "the update table is complete" without "over the classes found at 10^4 draws"; never "Heimendahl's conjecture holds" (consistent on 34 classes at one instance); never "Lemma M / Lemma C is new" (elementary corollaries of printed lemmas; cite-check rows owed); never "the hull is thin" (no certificate measures a thickness; R and the reach intervals are state-dependent).
- never a sentence about the committed two-qubit gate beyond "its continuous angle has no exact p = 3 image (NOT-REGISTRABLE)"; never a sentence about physical gravity, Δ, or the Perimeter output from this program; the lane is "the p = 3 lattice gate", data, never headline, its shorthands written out.

Per-export obligations: G31-2 (closing audit at the untouched reserve ≥ 9,700,003) + G31-3 (the M-Λ7 re-sweep with the Lemma M / Lemma C cite-check rows and the triggers of v1.0 §2) before any quotation (G31-4); the ceiling rider (the verbatim doc 31 §5 block of §0) and doc 20's rider stack with every sentence that touches the lane; Bozzetto–Hance 2605.09558 beside any sentence on $|S\rangle\otimes|S\rangle$; the Erratum beside any use of the ancilla lemma; the physics leg's REWORD-TO forms wherever HS-3/4/5/7/13/15/16/18 are quoted; INSPIRE `refersto:recid:` for citers; defer-until-big; licensing is never posting.

9.4 Gates

gate	content	status
M-Λ2 (the pilot verifier gate)	own routes for every object of the pilot; KΛ-0 / KΛ-7 ruled	**EXECUTED, PASS** (2026-10-28 21:25 CET) [V]
G31-0 (the hostile gate on the first freeze)	(a)–(e) of SPEC §11	**EXECUTED, STOP on SPEC §11(e)(iii)** (23:10 CET) [G]; typed by v1.0; **superseded by its remedy**
G31-1 (the remedy: the spec owner's dated addendum + a re-gate of SPEC §8)	the seven relabels; the survival rule re-applied with the conditioned screen; the re-gate's battery	**EXECUTED, the addendum 2026-10-29 01:57 CET ("no open row at this freeze"); the re-gate PASS 02:51 CET with one mandatory dated repair of the addendum's F5 record (the owner's amendment, §9.5)** [A] [G2]
the mechanism note; the engine; the co-runners; the two adversarial legs; the synthesizer	the binding order's remaining steps	**EXECUTED**, the note sealed 06:01:08.737; the engine 06:16–07:02 (RC-2c OUTSIDE; 26/26 teeth; ξ 13); the co-runners 06:14–08:11; the rigor leg 08:22–09:15 PASS; the physics leg 08:22–09:10 PASS WITH REWORDINGS; this document [N][E][C][R][X][SYN]
G31-2 (closing audit at the untouched reserve ≥ 9,700,003)	re-scoped for the completed program: third-band re-execution of the 54 open rows' and the 60 control rows' certificates through own second paths at fresh reserve tokens (an own pool; the direct Wigner-numerator pricing route); the 26 lifted functionals by an own n = 3 pricer with a different decomposition of the pool (the explicit (I, γ_I, {a_k}) enumeration for dim I = 1 and 2; an independent dim-0 search); the 262-cell screen's 232 deciding conditionals re-derived by own route; the 18 further orbit-member certificates of RC-2c computed and stored; the census' orbit test on a fresh sample; L2's p-rank bound (ranks 11 and 22; the Hamada-sharp form) certified; the co-runners' exact rows regressed; **a registered hand probe computed after its registration timestamp:** (i) a fresh conditional of RC-3b at a named XZ^a-outcome with its predicted class and lifted value; (ii) the deciding conditional of a fresh R7 draw (R7-05, the registered generator continued) and its 36/36; (iii) the 36 conditionals of a named line-control knob cell all INSIDE; (iv) RC-2c's own Farkas value by a third exact LP route (the direct numerator route) equal to −1/3 up to rationalization	**OWED, gates external quotation only (not the outcome).** Reserve UNTOUCHED.
G31-3 (scoop re-sweep; M-Λ7)	the triggers of v1.0 §2 dated and checked; the Lemma M / Lemma C cite-check rows (ZORH §6; RBTOZ Lemma 11; ZH Lemma 5 / Corollary 3 in the conditioned form); Zurel–Davis / Bozzetto–Hance versions; the Bilkent engine's qudit status; Sarkar–Yoder / Smaldore / BBIR citers; INSPIRE primary; 11 s spacing after a 429	**OWED (armed, not fired).**
G31-4 (external quotation of S-Λ-1, S-Λ-D1..D6 and the licensed rungs ΛW-1..5, ΛG-1..3)	whole-with-riders only (§4.3's rider list + the ceiling rider + §9.3 + the physics leg's REWORD-TO forms)	**BLOCKED** until G31-2 + G31-3. Licensing is never posting.
G31-5 (pointer rows)	the material-change rule	**RULED THIS DOCUMENT: NONE ENTERED** (§9.1; candidate rows drafted-not-entered).
G31-6 (standing)	per-export re-sweep inherited permanently (G19-6 / G20-4 / G21-5 / G22-2 / G24-2 / G25-2 / G26-5 / G28-5 carried); method notes binding (two own LP routes, never a solver's value as a verdict; sub-second stamps with a visible gap; superseded scripts under `dev/`; the conditioned test and the full affine group before any (n+1) registration; no pruning by	**STANDING.**

gate	content	status
	printed values; pin every amplitude against an independent construction before a screen; store every certificate a report counts; classify every wording hit on the full line; compile AND smoke-run every patched script before hashing; magic numbers with their convention)	
The post-meeting block (G26-2 + G30-2 after 2026-10-30; one owner's block per document)	unchanged in order and ownership	**gates nothing here and is gated by nothing here** (doc 31 §0 item 2).
Owner items	§9.5	**HANDED TO THE OWNER.**

9.5 Owner items (handed, never done by agents; every one a dated additive amendment or a fold, never an edit of a pinned file)

1. **Fold README, memory and SUBMISSION_STATUS** (this document's status line; the lane's completed ΛG-1 row; the n = 3 rung's typing; the twelve consumed tokens; the abbreviated copy-threshold sentence in README's doc-32 entry rewritten in the HS-7 form).
2. **Apply** `lambda_spec/PILOT_REPORT_REPAIRS.md` (the pilot verifier's six repairs; still owed from v1.0) by the count-asserted patcher pattern, or quote them as the readings of record.
3. **The addendum's F5 amendment** (`G31_0_RULING_2.md` §3 (i)–(iv) and §6 items 1–5): replace the F5 rows of `SPEC_ADDENDUM_1.md` §0, §3.3, §3.4, §7 by the registered cells' own-route table (`lambda_spec/gate_G31_0_pass2/h5_f5.json` `F5_own_table`; certificates in `h3_screen.json`), disclose the `a_core.py` defect, retype the 19 cells as SUM-images of (a cubic class) ⊗ $|t\rangle$, mark AG-3's general sentence refuted, note F2τ[24]/[26] both directions and the 29 / 26 affine class counts.
4. **The rigor leg's precisions (a)–(f) and the physics leg's amendment lines 1–11** (`PHYSICS_REPORT.md` §10.2: HS-4, HS-7, HS-16, HS-3, HS-13, HS-15, HS-18, HS-5, the lane shorthands, the new data rows, the lessons (aa)–(dd)), applied in this document's own sentences; the owner decides whether the record files get dated notes.
5. **The verifier manifest's path slip** (D-V8; a dated note, still owed from v1.0); the four manifests' trailing comment lines (a note that a strict parser must skip them).
6. **D-E4** (the engine's F-RC-2 label): which of the two readings to fold, the JSON's or the report's; this document reads "neither branch as worded, the $a^{\wedge}\perp$ branch met among others".
7. **The Lemma M / Lemma C cite-check rows (M-Λ7)** and **G31-3**; **G31-2** only if a quotation event is ever wanted; **D-Λ** only as "could compose" (§9.7).
8. **PRE-R:** the jump-the-queue condition is NOT MET; REGGE-EXACT stays runner-up 1; a funded week's needs are stated in §2.7, the owner's call, no recommendation here.
9. **The procedure entry** `gated-frontier-research-front.md`: the owner may record the second freeze's variants (the addendum, the re-gate, the note, the engine, the co-runners, the two legs, this synthesis) and the lessons below.
10. `papers/26_lambda/` is opened by this leg with the L2 lane's nine sources (sha-verified copies) and a README; the L1/L4 texts stay where that lane left them (the local corpus and the scratchpad), to be added under the same manifest discipline if wanted.

9.6 Lessons for the owner's list (drafted, not entered; continuing doc 31 §8's (m)–(o), v1.0 §7.5's (p)–(v), the addendum's (w), the re-gate's (x), the engine's (y)–(z), the physics leg's (aa)–(dd))

- **The decided-at-freeze lesson, fifth instance (the one the task names):** docs 23, 24, 25 and 28 died at a gate or a pilot because a decisive-grade question was posed on an instrument that decides it at freeze; LAMBDA's first freeze reserved six three-qutrit cells that a conditioning lemma nobody had applied, Lemma C, a two-line extension of the spec leg's own Lemma M, decided from two-qutrit certificates, and the hostile gate caught it before a prediction existed. The new form of the lesson: **an (n+1)-level cell drawn from n-level certificates is decided at freeze by every conditioning that maps the (n+1)-hull into the n-hull, and the finest such conditioning in hand (every single-site stabilizer outcome, every position) must be run through the n-level engine before any cell is reserved; after it, the families built to pass it collapsed to hidden products under the full affine group, so the second screen is the full symmetry group, not the one the battery is invariant under.** (p)–(t) and (w) of the record are its instances.
- **(ee)** A STOP document is superseded, never edited: when the remedy chain the gate prescribed runs and passes, the synthesizer copies the STOP byte-identical into `analysis/`, writes the decision document as a dated v1.1 whose §0 keeps the STOP as history, and the manifest entry that pinned the STOP is thereafter verified against the copy.
- **(ff)** Comments appended by a text patch swallow commas twice in one leg: a patched script is compiled AND smoke-run before it is hashed, and a hash made before the smoke-run is a superseded version under `dev/`, never a version of record.
- **(gg)** A report's count of a sampled census ("227 simple classes") must say which population it counts (drawn vs known); the record's JSON held 230 and the number is a precision, not a defect, print both with their qualifiers.
- **(hh)** A leg's claim "no reserve token appears in any file of this leg" must be made on draws, not mentions: a text scan that quotes the record's band plan carries the tokens as text; the scan of record classifies every mention on its full context and asserts "no unclassified mention".
- **(ii)** A forecast with an either/or on the attaining SHAPE of a minimum is ill-posed for functionals that vanish on deltas (the minimum is attained on many shapes); register shape forecasts as "attained on at least one X-type support" or not at all; and one leg's record must carry one label for one forecast (the JSON and the report disagreed).
- **(jj)** Store every certificate a report counts (the engine's 18 orbit-member runs are verdicts only); a verifier's row verdict NOT-REPRODUCED on a stored-nowhere certificate is the synthesizer's strength label, and it lowers the row to covariance.
- **(kk)** A steelman's first move is the authors' own enlargement read in their text, its second the record's own census, its third the enlargement that would host the row, and the deepest answer may be that the repair exits the polytope that defines the model; its cheapest refutation of a geometric gloss is the hull's own measure (R), computed rather than argued (the physics leg's (aa), (bb), restated for the synthesizer: apply the REWORD-TO lines in the decision document itself, never leave them for the export).

9.7 Next calculation (per doc 31 §7, applied to a completed program; the when-instead letters evaluated, not re-ranked)

1. **Nothing is owed by this freeze to reach the typed outcome.** What stays owed is the quotation chain only (G31-2, G31-3) and the owner items of §9.5.
2. **D-Λ (doc 31 §8(i)), "could compose", never claimed (the physics leg's conjunct table, §6 of its report):** Gross simplex $\subsetneq C_2 \subsetneq \Lambda_2(3)$ at n = 2 with certified states on both boundaries, could compose at certificate grade (four routes); the n = 2 membership table, could compose with the rider "registered states"; the copy-number threshold at d = 3, could compose as a one-prime datum with the states and the qubit side's grade; the hierarchy at n = 3 with certified states on every boundary, does NOT compose (corollary rows only; no state certified on the C_3 boundary); the house's located

carriers in the hierarchy, compose as a data lane, never headline; the vertex census, as a lower bound under sampling; the update tables, as data at the cap; "prime-indexed (or is not)", never as a finding, only as the composition target's own question with its "(or is not)"; doc 31 §8(ii), does not compose (cite-decided in print; forbidden as a sentence by KΛ-5/KΛ-6; the authors' algorithmic discussion lives on V̄); §8(iii), a rider, not a conjunct; the steelman's data (the product obstruction, the enlargements, the witness, R, the reach), compose as data. The honest composition today: *the odd-prime anatomy of constructible (CNC) explainability at two qutrits, with the three-qutrit rows carried as corollaries of the two-qutrit certificates.* Any composition is a fresh registration at or after G31-2.

3. **REGGE-EXACT (doc 31 §7 item 1):** PRE-R ran; its jump-the-queue condition is NOT MET by its letter (no EXACT at any truncation of the kink; the continuum frozen before any optimum was read); it stays runner-up 1; a funded week is the owner's call (§2.7).
4. **COSMIC-RG (item 2):** its when-instead letter does NOT fire (LAMBDA completed; it stopped at neither KΛ-2 nor KΛ-0); its remaining clause ("if the owner prefers a discrete-cosmology front") is the owner's; the pre-check first if taken.
5. **HIDDEN FREENESS (item 3):** the owner's preference only; the 6–12 month scoop clock argues for the pilot soon if at all.
6. **CS-PHASE as an engine, the duties, the watch items (items 4–6); the post-meeting block (item 7); the closed lines (item 8):** unchanged.
7. **What survives of this program as data lanes (never fronts), worth a run band only if a successor wants them:** the vertex census toward saturation (3,783 of ≥ 3,822 orbits at 10^4 draws; the class count open; the invariant-certified 3,722); the update tables beyond 6 classes; ξ_max(n,3) at n = 4 (the Hoffman bound 82; the p-rank bound 37; the printed constructions) under the proven-bound rule; the p-rank bound's verification (L2; still verifier-owed); the n = 3 escape question outside the registered families (the note's §2.7 structure as the registration template: every one of the 36 conditionals in the INSIDE orbit types, no stabilizer tensor factor in the orbit, no product multiset, a family that must be designed, not drawn); the co-runners' continuations (the qutrit SPB alphabet; the F4′ all-Pauli mode at depth ≥ 4; a funded PRE-R week); the Lemma M / Lemma C cite-check rows.
8. **Gates for this document's own sentences:** G31-2 + G31-3 → G31-4, only if a quotation event is ever wanted; defer-until-big governs; nothing here is posted.

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10. Provenance of this document

Read in full before the registration of this leg: doc 31 §5–§9 (the question, the riders, the typed outcomes, the mandates, the forecasts with parity, the bands, the kill criteria, the lanes, the runners-up, the honesty section, the provenance); `lambda_pilot/PILOT_REPORT.md`, `VERIFIER_RULING.md`, `BUILD_REPORT.md`, `README.md`; `lambda_spec/SPEC.md` *(whole),* `G31_0_RULING.md`, `G31_0_RULING_2.md`, `SPEC_ADDENDUM_1.md`, `PILOT_REPORT_REPAIRS.md`; `32_lambda.md` *v1.0 (whole); the house procedure* `gated-frontier-research-front.md` *with its LAMBDA variants (whole);* `lambda_engine/MECHANISM_NOTE.md`, `ENGINE_REPORT.md`, `ENGINE_ROWS.md` *(whole),* `engine/ENGINE_REGISTRATION.md`, `ENGINE_REGISTRATION_2.md` *(header);* `lambda_corunners/REPORT.md` *(whole),* `REGISTRATION.md` *(§4's letter);* `lambda_verify/RIGOR_REPORT.md`, `PHYSICS_REPORT.md` *(whole),* `REGISTRATION_RIGOR.md` *(§3),* `PHYSICS_REGISTRATION.md` *(§1–§3); the three scout reports (whole);* `lambda_spec/gate_G31_0_pass2/GATE2_ADDENDUM_1.md`, `GATE2_REGISTRATION.md` *(§5);* `lambda_spec/addendum_1/ADDENDUM_REGISTRATION.md` *(§8);* `lambda_doc32/DOC32_REGISTRATION.md` *and* `doc32_check.py` *(the check template); docs 27 and 30 (the decision-document precedents: their status blocks, §1, §5–§8); README's doc-31 and doc-32 entries;* `papers/26_adjudicator/README.md` *(the corpus-directory precedent); the JSON key structures and printed values of every leg of record (two read-only scratch surveys, disclosed).* ***This leg, in order (2026-10-29 CET):*** *pins before, 2934 files, 09:21:36.085 → the registration sealed 09:24:02.078 (sha256* `0423c2c0…`*) →* `synth_check.py` *born 09:28:17.167, hashed v1 09:28:17.195 → run 1 (32/36; four own FAIL lines, §7.4) →* `analysis/32_lambda.v1.0.md` *copied and verified (sha256* `52b6835d…` *= the pinned v1.0) →* `papers/26_lambda/` *opened (nine sha-verified copies, PDF manifest, README) → v2 09:30:21.730 (a swallowed comma; never run) → v3 09:30:36.168 (a swallowed comma; crashed at runtime) → v4 09:31:17.527 → run 4 PASS 38/38 before any line of this document → the ten draft chunks written under* `lambda_synthesizer/dev/draft/` *→ assembled with the four verbatim blocks of doc 31 extracted by line number → the draft check (SC-7 on the draft text; repairs of wording, shas and paths dated in the log) → the document written to* `32_lambda.md` *→ pins after → the four placeholders filled by a count-asserted replacement →* ***the final check (the run of record, last in*** `lambda_synthesizer/synth_check.log`***)*** *→ the manifest of* `lambda_synthesizer/` *(MANIFEST.sha256, written last) written last. Records (all new,* `lambda_synthesizer/`*):* `tools_pins.py`, `pins_before.txt` *(+* `.stamp`*),* `SYNTH_REGISTRATION.md` *(+* `.sha256`, `.stamp`*),* `synth_check.py` *(v4 of record; v1–v3 under* `dev/`*),* `scripts_prerun{,_v2,_v3,_v4}.sha256` *(+* `.stamp`*),* `synth_check.log` *(append-only; every run),* `synth_check.json` *(the last run),* `dev/` *(the superseded script versions, the run-1 log and JSON, the draft chunks, the assembler and filler scripts),* `pins_after.txt` *(+* `.stamp`*),* `pins_diff.txt`, `MANIFEST.sha256`*. No committed document, engine, row, result, log, state, paper, README, memory or SUBMISSION_STATUS file was edited;* `32_lambda.md` *was rewritten only after its byte-identical copy; no engine was imported or run; no prime was drawn; no background process was launched or left (other sessions' processes observed and left alone);* `python3.12 -I` *only. End-of-leg facts: pins after, 2946 files at 09:51:32.406 CET (changed 1, this document; missing 0; added 12:* `analysis/32_lambda.v1.0.md` *and the eleven files of* `papers/26_lambda/`*); the check of record on the filled text is the last run in* `lambda_synthesizer/synth_check.log` *(its final line prints the count); the manifest of* `lambda_synthesizer/` *was written after it, last of all.*

Wording (KΛ-5/KΛ-6). This document is scanned by code for the standing bans outside the BANLIST block and outside its marked verbatim quotations (SC-7a); every "classical" and every "gravity" outside those blocks was listed by the script and read by hand on the full line (§7.5).

*Status: PROGRAM LAMBDA DECIDED at the second freeze (2026-10-29) at FIELD-lite, foundations grade, outcome of record ESCAPE-AT-2 (both sub-types; RC-2c added) ∧ ¬CNC-HOSTED-AT-2 ∧ THRESHOLD-3-BY-COROLLARY (n = 2 at d = 3 for |S⟩ and |N⟩) ∧ NO-OPEN-ROW-AT-THIS-FREEZE (n = 3); the v1.0 G31-0-STOP superseded by its executed remedy, never reversed; no kill criterion fired; the pilot verifier PASS, the hostile gate STOP → re-gate PASS, the rigor leg PASS, the physics/steelman leg PASS WITH REWORDINGS (applied); the gravity-bridge lane data, ΛG-1 completed on both registered inputs of the p = 3 lattice gate; PRE-R's jump-the-queue condition NOT MET; G31-2 (closing audit; reserve ≥ 9,700,003 UNTOUCHED) and G31-3 (re-sweep) OWED only for a quotation event; G31-4 BLOCKED; G31-5 NONE ENTERED; nothing posted; licensing is never posting.**