Public release copy. Source: `30a_exclusion_table.md`, Gravity Frontier Research, David Vávra, Independent Researcher, Prague. SHA-256 of the Markdown source: `8db4fad3efa55564b57cd15fbdb1552a2ec14915f912ce48b941a06297c854c3`. 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).

The living exclusion table: what the first tabletop test of gravitationally induced entanglement refutes, what it leaves standing, and what no experiment of its class can decide

Final v1.0, 2026-09-25. In-house deliverable M-A3 of program ADJUDICATOR (`29_dream_question_4.md` §5), assembled 2026-09-24 after the pilot (M-A1), the verifier gate (M-A2, ruling PASS), the scout lanes L1–L4 and the one bounded reproduction (M-A4, row R04), and finalized after the two adversarial legs of M-A6: a certificate-rigor leg (every number re-derived by its own routes; M-1 certified a third time by a disjoint route; 13 of the 23 rows re-typed from their deciding texts with no value class moved; 72/72 quotations re-found by a second extraction route; PASS-WITH-REPAIRS) and an experimentalist steelman (every verdict quantity regressed exactly, 14/14; PASS-WITH-REPAIRS, with two defects blocking export). They forced five substantive repairs: **(1)** a null with full visibility is now a two-statistic condition, a flat pair/single ratio R **and** a clean single-mass scan on both masses, because a member of N-1's class whose forced noise is partner-independent leaves R at exactly 1 (and CQ gravity's self-decoherence is caught only by that scan); the scan's reach u_s is the campaign's to state, and N-1's class is cornered iff $-\ln(1 - r_R) - \ln(1 - u_s) \le 211/1944$ (§2.5, §7); **(2)** Theorem W′'s null branch now carries 21a §7's first sub-branch condition, an extracted angle $\hat{\Delta}$ consistent with 0: a witness null with $\hat{\Delta} \neq 0$ is the classical-channel fingerprint, a diagnostic that refutes nothing (§1, §9, §14); **(3)** SAT-1's size is labelled with its parametrization: 3.3×10^{-13} rad is doc 27 §3.9's value at $\Delta\phi \approx 1$ rad over 2 s and d = 200 μm, a sup over time in a step-onset model, while at the committed operating point the same form gives 8.38×10^{-14} rad, and the discrepancy of the second difference is exactly 0 from 2.33 ps into the hold (§6); **(4)** R04's NSB verdicts now name the spin-readout pointer they need: under a Stern–Gerlach position readout the row's own Bohmian mechanism reads 1.1319 on the two-setting witness from product wave functions while passing single-mass fringe statistics exactly, so W6 (ii)'s lab certificate is necessary, not sufficient (§2.2, §5 R04, §13); **(5)** every margin carries its phase basis (hold-only; on E1's total-phase contours, 0.5–0.9 rad at the design point, N-1's ratio is ×3.31–×1.78), the device-independent price is labelled as the unfiltered two-setting CHSH figure (0.956106 with local filtering), V_s is defined as E1 defines it, R08's contrapositive regains the row's linearity premise, and the one-line summary carries every condition its verdicts need. The smaller wording, scope and notation repairs are listed in the verification record. **No verdict cell moved:** every row's type and P / N / S value class, N-1 = INSTANCE, M-1 = $1/(1 + 4|\sin \Delta|)$ and its branch, SATURATED, the typed outcomes and the kill-criteria ledger stand; no licensed sentence and no verbatim quotation of the record changed. Every number newly printed was re-certified by this finalization's own exact arithmetic before entry, or carries its grade (LP-located, float, toy model). Verification record: §15; repair ledger: [FIN]. Supersedes draft v0 (sha256 `3edeab695d0df581…`, preserved as `analysis/adj_note_finalize_v0_snapshot.md`). **Licensing is never posting.** This note is in-house and is never posted by this program. A quotation event, if one is ever wanted, owes the closing audit at the untouched reserve (≥ 9,300,001) and a fresh literature re-sweep first; defer-until-big governs all external timing.

Grade: a bounded DUTY, never a discovery claim. Every verdict below is a corollary of the house's licensed theorems and of the account's own text, labelled so before the run. The note adds no verdict of its own: each cell is transcribed from the pilot's census as re-typed by the gate, the lanes and the reproduction (their records are named in the provenance section). The two M-A6 legs moved no cell's value class; their repairs are to lab-facing conditions, scope labels, riders and wording, each listed in §15. It is self-contained. No reading of the program documents is assumed.

Companion documents. [W] `06_witness_theorem.md` (Theorem W, W1–W6, Definitions 1–3, Corollaries W1/W2, Theorem W′). [E1] `05a_E1_visibility_note.md` (the visibility scan and its null clause). [E1M] `21a_E1M_magic_note.md` (the magic layer; §7, what a null means). [WM] `21_witness_magic.md` (Theorem M). [AH] `01_witness_analysis.md` – `03_relativistic_bound.md` (the Aziz–Howl reproduction and bound). [VH] `analysis/van_hove_adjudication.md` (the reproduction template, 18/18). [LM] `analysis/lemma_M_mediation.md` (Lemma M and its fingerprint table). [ORD] `29_dream_question_4.md` (the order of record). [PIL] `analysis/adj_pilot_results.md` + `adj_pilot_rows.jsonl`. [GATE] `analysis/adj_pilot_verifier.md`. [LANES] `papers/26_adjudicator/SCOUT_ADJ_LANES.md`. [REPRO] `analysis/adj_repro_r04.md`. [RIG] `analysis/adj_note_rigor.md` and [STL] `analysis/adj_note_steelman.md` (the two adversarial legs of M-A6). [FIN] `analysis/adj_note_finalize.md` (the repair ledger of this Final v1.0). Every number is traced in Appendix A.

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0. Reported first

1. **Triggers (KA-6): none fired, at any leg.** The four Adjudicator triggers were re-dated at the start and at the end of every leg on this note: the assembly (2026-09-24, 22:20:46–22:23:05 and 22:43:55–22:46:11 CEST), the steelman (23:05:10–23:09:04 and 23:30:16–23:34:03), the rigor leg (23:08:31–23:10:29 and 23:41:09–23:42:57) and this finalization (2026-09-25, 00:01:45–00:03:39 and 00:31:43–00:33:33; §15). MOVW's promised paper (ref. [7] of arXiv:2511.07348) has not posted: 2511.07348 is still v1 (published = updated = 2025-11-10T17:51:36Z), and the two title nets on its title return only 2511.07348 and 2510.19969. No BMV/GIE collaboration has announced data or a data timeline. The Andriolo group has not posted. No direct scoop of Theorem W or Theorem M appeared. Every leg's nets returned exactly the lanes' end state (21:59:06–22:00:56), with 0 differences. So there is no row R24.
2. **The two adversarial legs of M-A6: PASS-WITH-REPAIRS each; no verdict cell moved.** The rigor leg ([RIG]) re-derived every number by its own routes, certified M-1 a third time by a disjoint route, re-typed 13 of the 23 rows from their deciding texts (no value class moved) and re-found all 72 quotations by a second extraction route. The experimentalist steelman ([STL]) tried to break every row's reading, the saturation map's sizes and the conventions of N-1 and M-1 from the bench. Two defects blocked export and are repaired here: (a) a null with full visibility needs a clean single-mass scan as well as a flat pair/single ratio, because a member of N-1's own class whose forced noise is partner-independent gives $R \equiv 1$ on both masses ($V_s = 0.897144$ on each), and CQ gravity's self-decoherence is caught only by that scan; (b) Theorem W′'s null needs the extracted angle $\hat{\Delta}$ consistent with 0, because a one-way classical channel gives a witness null with $\hat{\Delta} = \Delta$. The other repairs (SAT-1's size label, R04's readout rider, the device-independent price, the phase basis, V_s's definition, R08's linearity premise, the one-line summary) are listed in §15 and in [FIN].
3. **KA-2 not fired; a letter gap flagged for the owner.** From R04's own Bohmian mechanism with a Stern–Gerlach position readout, the steelman built a completion whose gravity is a c-number potential (Definition 2 (D)) and whose two-setting witness reads $1 + C - C^2 = 1.1319 > 1$ from product wave functions. Theorem W is not in question: the completion's joint outcome statistics are not the Born statistics of its own wave functions, so it violates W6 (ii), a premise of the theorem, and the witness's separable bound is sound only under W6 (ii). It is a construction outside the row's computation and carries no verdict. KA-2's letter says "a model inside W1–W5", while the theorem's premise set is W1–W6; aligning the letter is the owner's (a record-side candidate in [FIN]).
4. **KA-1 fired by its letter in the reproduction of R04, and the order of record's P-A3 ("no reproduction contradicts a paper's own stated computation", ~90%) is FALSE by its letter.** Struyve's printed eq. (31) (arXiv:2510.20991 v2) carries exactly twice the Newton–Schrödinger mean-field

phase that the paper's own eq. (29) gives on its own normalized state. The printed eq. (46) and the W_NS curve of its Fig. 1 inherit the slip: at the committed geometry the reproduced W_NS is 0.07775, the printed one 0.28683. **The contradiction is verdict-neutral and touches no premise of Theorem W or Theorem M.** Every cell of R04 keeps its value class under both forms (§5, R04). The paper's qualitative claim, that the two semi-classical members give distinct witness signatures, stands.

5. **The gate refuted the pilot's headline.** The pilot typed all 23 rows DAF-BY-DEFINITION and ruled that KA-0 fires. The gate re-typed R04 as NEEDS-REPRODUCTION, because one of its null-column verdicts (the NSB member) rested on a small computation that neither the row's text nor any committed certificate settles. **KA-0 therefore did not fire, and the order of record's phrase "a note, not a front" is NOT entered as this table's outcome** (§13). The owed computation was then done of record: it confirms the pilot's number and verdict exactly.
6. **KA-ctrl fired at the pilot's first control run** (a quote-comparison defect: a line-end hyphen and typographic quotes). After a dated repair of the comparison layer only, the control re-ran 4/4. It is recorded as PASS-AFTER-DATED-REPAIR, never as a first-run pass.
7. **The one thin verdict.** Struyve's NSB member is refuted by a null with full visibility by a margin of **×1.2474** over the registered reach (hold-only phase), and only under the row's own Born-rule assumption and a spin readout whose pointer is not the diamonds' own position (§5, R04). At E1's statistics that is 0.88σ per contour point and about 2.5σ at the scan level. This must always be printed as thin. It is never "excluded by an order of magnitude".
8. **Refuted forecasts of the program** (each is a result):
    - The pilot's: DAF 17–20 of 23 (it found 23, and the gate then found 22); NOT-INSTANTIABLE 1–4 (0); control 4/4 on the first run (2/4); the M-1 point forecast $F^* \in [0.70, 0.92]$ ($F^* = 0.4473$).
    - The gate's: type agreement on all 23 rows (22); a facet with entries in $\{0, \pm 1/3, -1\}$ (the gate's facet has entries in $\{-1, 0, 1\}$); every quote found by its first extractor (87/90, the rest by a second); gate PASS-KA0-NOTE (PASS); F^*_{CSP} equal to the octahedron bound ($F^*_{CSP} = F^*_{Cliff}$, float grade).
    - The order of record's: P-A3 (item 4). P-A5's descriptor "an $O(\Delta\phi^2)$-order single-mass deficit" is refined: the forced deficit is **first order** in the entangling phase (P-A5 itself is TRUE).
    - The two M-A6 legs' (each reported first in its own record): the rigor leg's R1 description of the pilot's M-1 census route (it is a Pauli-transfer closure, not a unitary one; corrected by that leg's R1-A before any M-1 computation) and its FC-2 (the SAT-1 defect sat in the body labels, not in Appendix A); the steelman's forecasts that a smooth closed split/hold/recombine sequence leaves a $1/c^2$ residual (it is $1/c^4$), that the dephasing hull boundary λ^* equals the L1-ball bound 0.764027 ($\lambda^* = 0.514230$, LP-located), the sixth decimal of λ_{ent} (0.924876042), and that the position-readout completion's frame maximum is exactly $1 + C - C^2$ (it is 1.131908, off the symmetric frame, after a first grid run below the registered interval).
    - The assembly leg's and this finalization's own: see §15.
9. **Sequencing, disclosed.** Doc 29 §5 orders "scout lanes → assembly freeze → bounded reproductions". The reproduction of R04 was assigned right after the gate and ran alongside the lanes (21:27–21:58). It wrote no assembly text and froze nothing of this note. The owner rules whether the order matters.

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1. The question, and the answer in one page

> **When the first tabletop experiment observes, or fails to observe, gravitationally induced entanglement, which published account of gravity does it kill, which does it leave standing, and what will no experiment of its class ever decide?**

The experiment is the BMV protocol (Bose et al. arXiv:1707.06050 / PRL 119, 240401). Two ~10^{-14} kg micro-diamonds, each carrying an NV spin, are put into two-branch spatial superpositions in adjacent Stern–Gerlach interferometers. They interact only gravitationally for a hold time τ, are recombined, and the two spins are read out. The registered model set **M26** is 23 rows: every published classical, hybrid, stochastic, device-independent or platform account that claims GIE-adjacent outcomes through 2026-09-24, frozen before any row was read. Each row is typed in three columns: **(P)** what a certified positive does to it; **(N)** what a null does to it; **(S)** what it contributes to the list of questions no experiment of this class can settle.

If the experiment certifies entanglement (a certified positive in the sense of Definition 1, §2.2, under the assumptions W1–W6), the result licenses exactly one sentence: no classical degree of freedom carried this entanglement. Either a non-classical mediator did, or the interaction is a nonseparable direct quantum gate with no carrier (Theorem W, §2.3). Against the 23 rows:

- It **refutes 9 on their own formulations**: the Aziz–Howl c-number class and the seven comments that adjudicate it (R03, R06); Struyve's additively separable semi-classical potentials (R04; its Bohmian member for a spin readout whose pointer is not the diamonds' own position, §5); the Koopmanian commuting mediator (R09); every commutative C*-algebra mediator (R11); Oppenheim's classical-quantum gravity in its locally correlated realisations (R12); the non-entangling members of the Fabiano–Fujita–Matsumura–Carney minimal-noise class (R13); the effective Markovian classical-quantum description of Tomizuka–Takeda (R15); and a classical gravitational-wave background as a driver (R23, with a scope rider).
- It **reclassifies 3 without refuting them**, because what those accounts call "classical" is not classical in Definition 2's sense: van Hove hybrid gravity (R10), the Diósi–Penrose and Aziz–Howl mechanisms as Di Biagio types them (R05), and Płodzień et al.'s semi-classical pair term (R07). A positive is consistent with each of them and certifies exactly the non-classical ingredient each one has.
- It is **compatible with the other 11**: two classical-carrier papers whose classical reproductions do not reach the committed protocol (R01, R02), an indirect-inference argument (R08), a thermal-noise threshold (R14), two device-independent protocols (R16, R17) and five platform / theory rows that predict a positive (R18–R22).

If the experiment fails to see entanglement at sufficient sensitivity and the Z-conditioned fringes show no second difference ($\hat{\Delta}$ consistent with 0), the null certifies unconditionally that gravity imparted no second-difference phase in the probed regime. Read under linear phase additivity, it refutes only the conjunction {quantized gravity $\wedge$ linearized coupling $\wedge$ quantum mechanics for matter at these scales} (Theorem W′, §2.4). So it refutes every row whose entanglement prediction runs through that conjunction, wherever the predicted phase is resolvable; through W′'s unconditional clause it also contradicts, wherever resolvable, the rows that predict a second-difference phase by another mechanism (R05's listed theories, R07's pair term, R10, R13's non-local member, R18's pair term). It leaves every non-entangling account standing, since a null is their own prediction. A witness null with $\hat{\Delta} \neq 0$ (and a deficit tracking Δ^2) is not this branch: it is the classical-channel fingerprint of 21a §7, a diagnostic that refutes nothing. **A null never feeds a classicality claim**: modified-coupling quantum models predict a null too.

If the null comes with full visibility, measured by E1's pair/single visibility ratio $R = 1$ on the fixed-phase contours for both masses **and** by E1's single-mass scan bounding any anomalous single-interferometer contrast loss of either mass ([E1] §3, §6 signature 4; the partner-independent share of a forced noise cancels in R by construction), it also refutes the classical-channel accounts that are forced to decohere where they would have entangled:

- Oppenheim's CQ gravity (R12), by the committed E1 clause, through the single-mass scan (its forced decoherence is partner-independent);

- the whole non-entangling class of arXiv:2603.26075 (**cell N-1**, §7): its own theorem forces a noise rate at least equal to the entangling rate, which at the committed geometry is a deficit of at least 0.0528 on the hold-only phase, ×5.358 over REACH when the single-mass scan's reach is REACH too (in general the class is cornered iff $-\ln(1 - r_R) - \ln(1 - u_s) \le 211/1944$, §7);
- Struyve's NSB member (R04), thinly (×1.2474; 0.88σ per contour point) and conditionally (the row's Born-rule statistics and a spin readout whose pointer is not the diamonds' own position);
- the Markovian limit of R15 (which is R12's class).

The deterministic no-entanglement accounts with no forced noise stay standing even then. A flat pair/single ratio alone refutes none of these: a member of N-1's class whose forced noise is partner-independent leaves R at exactly 1 on both masses (its V_s is 0.897144 on each).

What no experiment of this class can decide is the saturation map (§6). There are six discriminators, each with a size (SAT-2 to SAT-6 at the committed geometry; SAT-1 in doc 27's parametrization, with its committed-point value):

- whether the entangler was a mediator or a direct gate: at most one light-crossing phase, $\le 3.3 \times 10^{-13}$ rad in doc 27's parametrization and 8.38×10^{-14} rad at the committed point, present only as a transient that is exactly 0 from 2.33 ps into the hold;
- a retardation test: 0.667 ps timing at 200 μm;
- quantization beyond non-commutativity: $\langle n_g \rangle \approx 1.3 \times 10^{-57}$ radiated gravitons (C^2-smooth ramps);
- van Hove versus quantized linear gravity: identical in every mass-side statistic;
- the Clifford-exception coupling: $\tau_\pi = 25.0136$ s (hold-only), outside every registered platform;
- local-hidden-variable matter statistics: split only by a Bell test; unfiltered two-setting CHSH needs visibility above 0.98799697 (above 0.956106 with local filtering; the minimum over all Bell tests is not committed), against 0.864790 for the witness.

The honest form of any "closes the loophole" sentence is this table.

One cell carries a physics reading (M-1, §8). Under the campaign's own white-noise benchmark, the noisy gravitational gate is no longer a mixture of Clifford unitaries once the visibility exceeds $\mathbf{F^* = 1/(1 + 4|\sin \Delta|) = 0.447343871026845}$. That is far below the entanglement witness's own threshold, 0.864790. At every visibility where the witness can fire, the noisy gate is certifiably outside the convex hull of Clifford unitary channels (and, as data, the same holds under the campaign's branch-diagonal dephasing, §8). The witness, not the gate's magic, is the bottleneck. This is a gate-typing number (a Paper-M row), never a law.

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2. The instruments, stated for an experimentalist

Only licensed instruments are used: Theorem W and Theorem W′ ([W], Paper B), Theorem M ([WM], Paper M), the E1 and E1-M protocols ([E1], [E1M]), the certificates of docs 03/04/05, and doc 19's two in-house classical carriers. Nothing below is new; this section only says what each instrument is, so that the rows can be read.

2.1 The protocol and the committed geometry

Branch separations are $s_{RL} = d - \Delta x$, $s_{LL} = s_{RR} = d$, $s_{LR} = d + \Delta x$. The branch phases are $\phi_b = Gm^2\tau/(\hbar\, s_b)$. On the two spin (branch-label) qubits, the hold is the diagonal gate $U = (P(a) \otimes P(b))\cdot CZ(\Delta)$, with local phases a, b and the **second-difference phase $\Delta = \phi_{LL} + \phi_{RR} - \phi_{LR} - \phi_{RL}$**. Only Δ is invariant under local phase changes. It is the entangling phase: the delivered state has concurrence $C = |\sin(\Delta/2)|$, and entanglement $\iff \Delta \notin 2\pi Z$. All values below are at the committed operating point (the Bose et al. design):

quantity	value	note
m; d; Δx; d − Δx; τ	10^{-14} kg; 450 μm; 250 μm; 200 μm; 2.5 s	Bose et al. design; 200 μm is the Casimir–Polder floor
$Gm^2/\hbar$	63.3 μm·rad/s	the E1 pin
Δ	**−211/672 = −0.313988 rad**	exact rational, hold segment only; the ramps add to the measured total
$C = \|\sin(\Delta/2)\|$; witness value $W = 1 + C$	0.156350; 1.156350	separable bound of the witness: 1
$F_{ent} = 1/(1 + C)$	0.864790	white-noise visibility above which the two-setting witness fires
$F_{magic} = (1 + \cos\Delta)/2$	0.975555 (7dp 0.9755547)	visibility above which the state-level magic witness fires
$\tau_\pi = 1680\pi/211$ s	25.0136 s	hold time at which the gate's nonlocal part becomes the Clifford CZ(π) (a family theorem, never a lab point; hold-only, so a lab's τ_π would be shorter)

The **white-noise benchmark** of the campaign is the state $\rho_F = F|\psi(\Delta)\rangle\langle\psi(\Delta)| + (1 - F)I/4$ with $\psi(\Delta) = CZ(\Delta)|{+}{+}\rangle$ in the calibrated frame. Its channel form is $F\cdot\mathcal{U}_\Delta + (1 - F)\cdot\mathcal{D}$, where $\mathcal{D}$ is the completely depolarizing two-qubit channel.

Phase basis. Every margin and threshold in this note is evaluated on the hold-only Δ above. E1's contours are fixed in total accumulated phase, split and recombine included, 0.5–0.9 rad at the design point ([E1] §2, §5); §14 item 4 gives the margins there. No value class changes over that range.

2.2 What counts as a positive, and what counts as classical

Definition 1 (certified positive result) has three clauses, all load-bearing:

- (1) A spin–spin entanglement statistic with a *sound* separable bound is observed above the certified noise and systematics budget. This is the corrected two-setting witness (bound 1, design value 1.1563; the PRL version of record prints the sound pair) or a physical Bell-grade statistic.
- (2) The excess over the electromagnetic (Casimir–Polder) channel is budgeted explicitly, by a stated margin or by the (d, τ) scan that separates 1/r from $1/r^4$ scaling.
- (3) The statistic is a per-run i.i.d. correlator, with no joint quantum processing of several runs.

Definition 2 (classical), verbatim:

> **Definition 2 (classical).** The three corpus senses, each excluded separately: **(K)** kinematic/GPT, simplex state space, hypercube effects, standard composition (GGS Def. 1); **(D)** dynamical c-number, gravity a function with no state space; **(O)** ontological hybrid, classical phase-space variable with quantum back-reaction (CQ master equations, Oppenheim class).

A model can call its gravity "classical" and still fall outside all three senses. Van Hove hybrids are the standard case: their "classical" observables do not commute. Such a model is **reclassified, not refuted**: a positive is consistent with it and certifies exactly the non-classical structure it has.

The assumptions W1–W6, abridged; each has an operational certificate in [W] §1.2:

assumption	content (abridged)	lab certificate
W1 closed labs (+ A1′)	every branch-dependent operation is generated inside each lab; every exterior branch record is dressed and erased at recombination	E1's pair/single visibility ratio (§2.5)
W2 / W2b	no coherent matter transport at witness order (doc 03's bound: accessible transfer entanglement $10^{-O(10^7)}$); the EM channel is priced	binding spectroscopy; single-mass controls; the (d, τ) scan
W3	sector-wise composition is exact at the order the protocol composes	theorem-level only
W4	"mediated" is read by Lemma M's definition (§2.6)	infeasible at BMV, which is why Theorem W's conclusion is a disjunction
W5	subsystem independence, free settings, separable initial state	preparation and calibration runs
W6	(i) no superdeterminism, fair sampling; (ii) standard quantum mechanics and the Born rule for matter and spin readout	(i) not certifiable, as in every Bell test; (ii) single-mass fringe statistics ([W] §1.2): necessary, not sufficient, a Bohmian semi-classical completion read out by position passes them exactly while its joint statistics are not Born ([STL] D2; §5, R04); a Bell test (SAT-6) is the only general discharge

2.3 Theorem W: what a certified positive licenses

Under W1–W6, a certified positive means the degree of freedom that coupled the two labs is **non-classical** in Definition 2's sense. Exactly one of two readings holds, and they agree on all mass-side data: **(I)** a mediating degree of freedom exists and is non-classical; or **(II)** there is no mediator, and the interaction is a nonseparable direct quantum gate on the joint matter system (the constraint-solved Newtonian term). Mass-side data cannot separate (I) from (II). The sentence the program licenses for a positive run, verbatim:

> A certified positive (all three Definition-1 clauses) licenses: "no classical degree of freedom carried this entanglement, either a non-classical mediator did, or the interaction is a nonseparable direct quantum gate with no carrier." Experimentalists should quote that sentence.

The scoreboard of record, which this table extends to the 2026 model set, verbatim:

> **Corollary W2 (scoreboard).** Under W1–W6, a certified positive refutes, each on its own formulation: AH's c-number QFT claim (already closed internally [V]); Diósi's static-background class; mean-field/SN; Struyve; Sienicki; the decohered-field benchmark; KTM; Oppenheim CQ (all realizations satisfying his own locality/cluster structure, per the scoped Corollary C5); every finite-GPT-classical mediator. None survives as an explanation of the observed statistic.

Corollary W1 would collapse reading (II) through a relativistic-embedding argument (Belenchia et al.). It is [cited], never re-derived, and **this table never consumes it**.

2.4 Theorem W′ and the null branches: what a null licenses

"Sufficient sensitivity" means three things. The decoherence budget, independently certified by single-mass controls, leaves 1.1563 resolvable with margin. The multi-point (d, τ) scan excludes the measure-zero accident $\Delta = 2\pi n$. Sampling is fair (W6). Verbatim:

> **Theorem W′.** At sufficient sensitivity, a null certifies **unconditionally**: the gravitational channel imparts no second-difference phase, branch phases compose additively at the probed regime (entanglement $\iff \Delta \neq 2\pi n$ is exact [V, 01]).

> **Under it:** the null refutes the conjunction {quantized gravity $\wedge$ linearized coupling $\wedge$ QM for matter at these scales}.

"Under it" means under linear phase additivity. Without that assumption, the null says nothing about whether a mediator is quantum, because nonlinearly composing quantum mediators also predict a null. The E1 clause of record adds a second axis, verbatim:

> *null + full visibility at design Δϕ* also kills the surviving classical-channel class, KTM/Oppenheim-CQ are forced by the decoherence–diffusion trade-off to an O(1) visibility deficit at $\Delta\phi = O(1)$ [cited]

The E1-M note refines the other half of that clause into a diagnostic. It governs here, verbatim:

> Two sub-branches: witness null with $\hat{\Delta} = 0$ at sufficient sensitivity is Theorem W′'s case; witness null with $\hat{\Delta} \neq 0$, together with a visibility deficit tracking Δ^2, is the classical-channel fingerprint: a diagnostic, never a certificate

Here $\hat{\Delta}$ is the entangling angle extracted from the Z-conditioned fringes (§2.6). So Theorem W′'s branch needs a witness null at sufficient sensitivity **and** $\hat{\Delta}$ consistent with 0: a one-way classical channel gives a witness null with $\hat{\Delta} = \Delta$ exactly ([STL] CK-S11), which is the second sub-branch. Sufficient sensitivity is quantified in the lab's observables in §14 item 3. **A null never feeds a classicality claim**: every classical model in the corpus predicts a null, but so do modified-coupling quantum models, and affirming the consequent is unavailable.

2.5 E1: the visibility scan that gives a null its second axis

E1 ([E1]) runs the planned BMV sequence at several geometry and hold-time pairs chosen to keep the entangling phase fixed, interleaved with single-mass drops.

- **V_c** is the contrast of one mass's σ_x/σ_y fringes conditioned on the partner's σ_z outcome. Its ideal value is 1 at every geometry.
- **V_s** is the same contrast in single-interferometer runs.
- **The E1 statistic is R = V_c/V_s.** Every partner-independent decoherence channel cancels in R.

The hypothesis class E1 was built to corner, verbatim:

> **H1b, classical-channel gravity**: gravity acts as a classical information channel (Kafri–Taylor–Milburn, NJP 16, 065020 (2014), ref [7] of the Bose paper itself; Oppenheim's classical–quantum theory with its decoherence–diffusion tradeoff). These models *cannot* entangle and are forced to decohere at a rate tied to the coupling that would have entangled, deficit O(1) exactly where $\Delta\phi = O(1)$, with the entanglement witness co-suppressed.

The reach of a null with full visibility. On the Gaussian benchmark $1 - F_{E1} = c\cdot\Delta\phi^2$ (E1's suppression function, written F_{E1} here so that it is never confused with M-1's white-noise weight F), a null across E1's baseline scan bounds $c < 0.1$ at 2σ ([E1] §7). At the committed $\Delta\phi = |\Delta| = 211/672$ this is the registered yardstick:

> **REACH := 0.1·Δφ² = 44521/4515840 = 0.0098588524.**

A class whose forced deficit at the committed geometry is at least REACH in R, or at least the single-mass scan's reach u_s in V_s, is cornered by a null with full visibility. E1 states its reach for R only ($c < 0.1$ at 2σ). The partner-independent channels, which cancel in R, are caught by E1's single-mass scan and only there, verbatim:

> (ii) universal-monitoring variants of H1b (classical-channel models that monitor each mass regardless of partner, these cancel in the pair/single ratio and are caught *only* here)

The reach u_s of that scan is the campaign's to state. This note's figures price V_s at REACH too (the pilot's registered rule): that is the equal-reach case r_R = u_s = REACH. For N-1's class the general condition is $-\ln(1 - r_R) - \ln(1 - u_s) \le 211/1944$ (§7). u_s is a lab-facing condition introduced by the steelman leg after readout; it carries no verdict.

Rider (the gate's, with V_s as E1 defines it; the steelman's D6): V_c must be formed for both masses from the same two-spin shots (each mass's fringes conditioned on the other's σ_z), and V_s for both masses from left-only and right-only single-interferometer runs interleaved in the same run blocks ([E1] §4, §7, §10 item 4). Otherwise a member whose noise sits (in the limit) entirely on one mass escapes a one-mass null. The campaign's pair shots supply both V_c's, and its interleaved single-mass drops supply both V_s's.

2.6 Theorem M, E1-M, Lemma M, and the in-house classical carriers

Theorem M ([WM]; licensed sentence S-WM-2) adds five assumptions M0–M4 (stabilizer input, branch-diagonal channel, calibrated frame, a measurement route, per-run statistics) to W1–W6. Under them, a certified positive whose extracted angle interval excludes πZ also certifies that the gravitational coupling implemented a **nonlocal non-Clifford gate**. The primary extraction is route (a″) of E1-M: $\hat{\Delta} = \phi_c(B = R) - \phi_c(B = L)$, the difference of A's fringe phase given B's branch outcome. It is exactly invariant under local phase changes. Without the M-assumptions no magic conclusion follows from the committed correlators at any witness value. The certificate is about the induced gate on the matter sector, never about the mediator.

Lemma M ([W] §2.1, [LM]) defines "mediated" (M0 interposition, M1 autonomy, M2 locally factorized coupling, M3 finite propagation speed, M4 carriage). Its adequacy table fingerprints every corpus configuration:

- linearized quantum gravity: MEDIATION;
- the Aziz–Howl c-number field: MODULATION;
- the Diósi static background: NO CHANNEL;
- the Schrödinger–Newton mean field: MODULATION (feedback);
- KTM and Oppenheim's CQ: CLASSICAL MEDIATION, which cannot entangle;
- the constraint-solved Newtonian channel: DIRECT GATE;
- matter crossing the cut: TRANSFER;
- the Sienicki channel: MODULATION (classical label);
- Struyve's separable potential: NO CHANNEL.

Each row below carries this **Lemma-M fingerprint** (LMF): FINGERPRINTED if the row's model is a row of that table, READABLE if its M1/M2 status can be read off its own text, N/A if it posits no mediator.

Doc 19's in-house classical carriers are the simplex carrier S and the commutative-readout Koopman carrier K. They are the house's own classical models on the same constraint structure. The Koopmanian row R09 is the literature instance of the K lane.

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3. How to read the table

Row types (the gate's):

- **DAF-BY-DEFINITION**: every column is decided by the row's own text plus the licensed instruments' definitions and committed certificates, with no new computation.
- **NEEDS-REPRODUCTION**: some column's verdict depends on a computation that neither the row's text nor any committed certificate settles, so a bounded reproduction is owed.

The census has **22 DAF-BY-DEFINITION rows and one NEEDS-REPRODUCTION row (R04)**, and that reproduction is now of record. No row is NOT-INSTANTIABLE or OUT-OF-SCOPE; one sub-entry (2608.17688) is OUT-OF-SCOPE and carries no verdict.

(P), what a certified positive does. The class is found by the first matching rule, in this order:

- **NO-P-CLAIM**: the row makes no claim about GIE outcomes.
- **COMPATIBLE (regime)**: the row's own text restricts its claim to a regime that excludes the Definition-1 protocol, or states that certification needs a test the two-setting spin witness is.
- **REFUTED-BY-POSITIVE**: the model predicts no Definition-1 positive at a BMV-class geometry and its mediator is Definition-2 classical inside W1–W5 (the prong of Theorem W named). A comment or no-go row takes the class of the model it adjudicates.
- **RECLASSIFIED-NOT-REFUTED**: the model predicts entanglement while calling its gravity "classical", but it is not Definition-2 classical (the non-classical ingredient named from its own text). If instead it were Definition-2 classical inside W1–W5, that would be a counterexample to Theorem W (KA-2). No row is.
- **COMPATIBLE**: the row predicts a positive without claiming classicality.

(N), what a null does, in three branches:

- **(N-a)** Theorem W′. A witness null at sufficient sensitivity with $\hat{\Delta}$ consistent with 0, under linear additivity, REFUTES a row whose entanglement prediction runs through {quantized gravity ∧ linearized coupling ∧ QM for matter}; through W′'s unconditional clause (no second-difference phase) it also contradicts, wherever resolvable, a row that predicts such a phase by another mechanism; it LEAVES-STANDING a row that predicts no entanglement.
- **(N-b)** E1's clause. A null with full visibility (R flat at 1 **and** a clean single-mass scan, both masses read) REFUTES a row forced to a deficit of at least the reach of the statistic that carries it (REACH for R, u_s for V_s; this note's figures take u_s = REACH), and LEAVES-STANDING deterministic no-entanglement classes with no forced deficit.
- **(N-c)** 21a §7. The classical-channel fingerprint (a witness null with $\hat{\Delta} \neq 0$ and a deficit tracking Δ^2) is DIAGNOSTIC-ONLY.

(S), the saturation map. The discriminator(s) the row bears on that no BMV-class experiment splits, with the committed size, or NONE.

Two checks per row. The zero-computed-content test (**ZCC**: is the violated W/M assumption readable off the row's own text?) passed on every P-bearing row. So did the Lemma-M fingerprint check.

Quotations. Each quotation is a deciding sentence, verbatim, from the latest arXiv version, given as [arXiv id, version, PDF page]. Where the pilot read an older version, the gate and the lanes supplied the latest version's sentence (the gate's D2), and it is quoted here. A row's own conclusion words are the row's, never adopted.

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4. The table at a glance (23 registered rows)

Type: **DAF** = DAF-BY-DEFINITION; **REPRO** = NEEDS-REPRODUCTION, reproduced of record. N gives (N-a) Theorem W′ / (N-b) a null with full single-mass visibility. "where resolvable" = wherever the row's predicted phase is resolvable at the probed regime.

row	account	type	(P) a certified positive	(N) a null: (N-a) / (N-b)	(S) saturation map
R01	Schlegel–Kumar–Paterek–Dakić 2605.20330 *(control)*	DAF	COMPATIBLE: its classical reproduction does not reach the committed protocol (its own regime clause)	not reached / LEAVES-STANDING	NONE
R02	Schlegel–Dakić–Del Santo 2512.14834 v2 *(control)*	DAF	COMPATIBLE: the spin witness is its "incompatibility beyond phase-space measurements", paired with Wigner-negative states	LEAVES-STANDING (no null claim)	NONE
R03	Aziz–Howl, Nature 646, 813 (2510.19714) + 7 comments *(control)*	DAF	REFUTED-BY-POSITIVE: c-number field, Definition 2 (D); Corollary W2; prong (I.3)	LEAVES-STANDING / LEAVES-STANDING	NONE
R04	Struyve 2510.20991 v2 (separable semi-classical potentials)	REPRO	REFUTED-BY-POSITIVE: (D); Corollary W2 names "Struyve"	LEAVES-STANDING / NS: LEAVES-STANDING; **NSB: REFUTES, thin ×1.2474, Born-rule and readout conditional**	NONE
R05	Di Biagio 2511.02683 v5	DAF	RECLASSIFIED-NOT-REFUTED: its entanglers are the direct pair gate (Diósi–Penrose) and quantum matter (Aziz–Howl)	refutes each listed GIE-predicting theory where resolvable; thesis stands / no forced deficit posited	NONE
R06	Tibau Vidal–Iyer 2607.03429	DAF	REFUTED-BY-POSITIVE: the AH class; its diagnosis is TRANSFER	LEAVES-STANDING / LEAVES-STANDING	NONE
R07	Płodzień et al. 2605.06577	DAF	RECLASSIFIED-NOT-REFUTED: the entangler is the linear pair operator (the direct gate)	REFUTES the pair term where resolvable / LEAVES-STANDING	NONE
R08	Plávala 2508.03052 v4	DAF	COMPATIBLE: an indirect inference, not a Definition-1 certificate	REFUTES its derived positive (by its own contrapositive) /,	NONE
R09	Marletto–Vedral 2507.11713 (Koopmanian) + 2608.17688	DAF	REFUTED-BY-POSITIVE: commuting mediator; prongs (I.2) / (I.5)	LEAVES-STANDING / LEAVES-STANDING	NONE
R10	Ulbricht–Bermúdez Manjarres–Reginatto 2601.21555 (van Hove) *(control)*	DAF	RECLASSIFIED-NOT-REFUTED: non-commuting van Hove observables	REFUTES (it predicts the quantum secular phase) / no forced deficit stated	**mediator-sector algebra: 0 in every mass-side statistic**
R11	Ludescher–Loveridge–Galley–Müller 2507.13201	DAF	REFUTED-BY-POSITIVE: commutative C*-algebra mediators; prong (I.2)	LEAVES-STANDING / LEAVES-STANDING	NONE
R12	Oppenheim PRX 13, 041040 (1811.03116) + Oppenheim–Sajjad 2605.05375	DAF	REFUTED-BY-POSITIVE: (O); scoped Corollary C5; prong (I.2)	LEAVES-STANDING / **REFUTES** (committed E1 clause, through the single-mass scan; corroborated by N-1)	NONE
R13	Fabiano–Fujita–Matsumura–Carney 2603.26075 v2	DAF	REFUTED-BY-POSITIVE: its named non-entangling members	non-entangling members LEAVE-STANDING / **N-1: REFUTES, ×5.358** (hold-only phase; both reaches at REACH)	NONE (its entropic/graviton split has no committed size)
R14	Li–Miki–Chen 2605.26215	DAF	COMPATIBLE: a platform threshold (coupling must beat thermal noise)	a noise-dominated null is not at sufficient sensitivity: LEAVES-STANDING	NONE
R15	Tomizuka–Takeda 2604.06891	DAF	REFUTED-BY-POSITIVE: the effective Markovian CQ description only	DIAGNOSTIC-ONLY / its Markovian limit is R12's class	NONE
R16	Kent–Pitalúa-García 2109.02616 (device-independent)	DAF	COMPATIBLE: discharges W6 (ii) by spacelike separation	LEAVES-STANDING (no null claim)	**DI price: $v_{DI} = 0.98799697$ (unfiltered CHSH; 0.956106 filtered) vs 0.864790**
R17	Das–Alimuddin–Storz–Chu–Bose 2608.08778 (device-independent)	DAF	COMPATIBLE: Theorem W's disjunction per source–probe pair	LEAVES-STANDING (no null claim)	NONE new (the Fork-1 class inside each pair)
R18	Wakakuwa 2607.19141 (clock GIE)	DAF	COMPATIBLE: a CZ(Δ)-type gate on internal energies	REFUTES the pair term where resolvable; Scheme 1 bears on LPI only	NONE new (τ_π)
R19	Wakakuwa–Petruzziello–Lantano–Huelga–Plenio 2606.31678 (frame dragging)	DAF	COMPATIBLE: linearized quantum gravity	REFUTES where resolvable	**retardation = the Fork-1 class (SAT-1: ≤ 3.3 × 10^{-13} rad in doc 27's parametrization; 8.38 × 10^{-14} rad at the committed point)**
R20	Braccini–Serafini–Bose 2602.19306 (SGI)	DAF	COMPATIBLE: operator-valued Newtonian coupling	REFUTES where resolvable	**Clifford-exception coupling, $\tau_\pi = 25.0136$ s**
R21	van Manen–Blankenstein–Mazumdar 2609.22501 (quadratic curvature)	DAF	COMPATIBLE: Stelle gravity	REFUTES where resolvable	NONE (the Yukawa terms shift Δ by −5.3 % to −7.1 % at λ = 52 μm but split neither reading)

row	account	type	(P) a certified positive	(N) a null: (N-a) / (N-b)	(S) saturation map
R22	Salih 2609.04104 v6 (a horizon)	DAF	COMPATIBLE: the retarded potential is an effective quantum field by its own text	LEAVES-STANDING (no null claim)	NONE at the committed geometry
R23	Nandi 2609.09931 (a GW mediator)	DAF	REFUTED-BY-POSITIVE: a classical GW background, (D) (scope rider)	LEAVES-STANDING the classical-GW class	NONE at the committed geometry

Tally. P classes: **9 REFUTED-BY-POSITIVE, 3 RECLASSIFIED-NOT-REFUTED, 11 COMPATIBLE**. The pilot and the gate agree 23/23; no row is OUTSIDE-PREMISES or a counterexample. Types: **22 DAF-BY-DEFINITION + 1 NEEDS-REPRODUCTION (R04)**. No row lies inside W1–W5 with a Definition-2-classical mediator and a Definition-1 positive (P-A4 TRUE; KA-2 not fired). Theorem W stands on every row.

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5. The rows in full

R01, Schlegel–Kumar–Paterek–Dakić, arXiv:2605.20330 v1, DAF-BY-DEFINITION, P: COMPATIBLE *(control row)*

- **(P) COMPATIBLE (regime).** The row's own text restricts its classical reproduction to three conditions: Wigner-positive initial states, the second-order expansion of the potential, and quadrature measurements. By the row's own criterion, BMV falls in the category its classical model does not cover (the non-Wigner-positive, cat-state category). Its classical model evolves the masses as Newtonian phase-space distributions, which the row says would violate the Heisenberg uncertainty relation, so the premise at stake is W6 (ii). Its statistic is a quadrature covariance witness, not Definition 1's per-run spin–spin witness.
- **(N)** (N-a) Not reached: its classical model has no instance in the Definition-1 regime, by its own criterion. (N-b) LEAVES-STANDING: a deterministic phase-space flow carries no forced deficit.
- **(S)** NONE. Its three discriminators (Wigner negativity, the cubic term, non-quadrature readout) are regime conditions the committed protocol already meets.
- **Checks.** ZCC PASS. LMF READABLE: there is no mediating degree of freedom, only a direct classical Newtonian potential between classically evolved masses (the direct-gate fingerprint in classical form).
- **The discriminating-regime rider** (the order of record's first-row rider). The committed E1 / E1-M protocol violates each of the row's three reproduction conditions. It uses a non-Gaussian cat-state preparation (each mass in a two-branch spatial superposition), spin readout (the two-setting witness, E1's conditional fringes, E1-M's Z-conditioned fringe difference; never quadratures), and a geometry outside the quadratic expansion of the potential: at $\delta x/d = 5/9$ the quadratic term carries 56/81 of the committed Δ and the beyond-quadratic terms 25/81 (30.9 %) ([STL] D9). So the row's classical model has no instance there. This is decided by the row's text and the committed protocol, with no computation.
- [2605.20330 v1 p6] "Classical mechanics can reproduce signatures of gravitational entanglement when experiments are restricted to Wigner-positive initial states, second-order expansion of the gravitational potential, and quadrature measurements."
- [2605.20330 v1 p3] "Notably, the BMV proposal falls into this category [2, 3]."
- [2605.20330 v1 p1] "This does not contradict the presence of quantum signatures, as the corresponding classical model involves states which would violate the Heisenberg uncertainty relation."

R02, Schlegel–Dakić–Del Santo, arXiv:2512.14834 v2, DAF-BY-DEFINITION, P: COMPATIBLE *(control row)*

- **(P) COMPATIBLE (rule C2).** The row states that certifying genuine entanglement needs a test beyond phase-space statistics, and names "incompatibility beyond phase-space measurements". Definition 1's two-setting spin witness is such a test, and Theorem W concludes "non-classical", nothing more.
  - **Lanes' rider (p6).** The row narrows its own abstract: incompatibility is necessary but not sufficient, and reliable only when paired with Wigner-negative states or non-Gaussian dynamics. The committed protocol pairs the spin witness with Wigner-negative cat-state preparations (R01's own p3 places BMV there). Spin readout is not a phase-space measurement. So COMPATIBLE stands on the row's stricter clause, and the control verdict is unchanged.
- **(N)** LEAVES-STANDING: the row makes no null-bearing claim.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF N/A: an operational statement about phase-space statistics, with no mediator model.
- [2512.14834 v2 p1] "Thus, certifying genuine quantum entanglement requires additional tests, such as Wigner negativity, incompatibility beyond phase-space measurements, or nonlinear dynamics."
- [2512.14834 v2 p6] "incompatibility should be viewed as a necessary but not sufficient condition for detecting genuine quantumness."

R03, Aziz–Howl, "Classical theories of gravity produce entanglement", Nature 646, 813 (arXiv:2510.19714 v3), with seven comments and rebuttals, DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE *(control row)*

- **(P) REFUTED-BY-POSITIVE.** By Corollary W2 ("AH's c-number QFT claim") and prong (I.3), the model's gravity is a c-number field, Definition 2 (D).
  - **The verdict can be read off AH's own v3 text at the BMV geometry.** The effect is small for BMV masses and times (p14). Where it is present, AH themselves say a quantum mediator entangles the objects (p15), which is Lemma M's TRANSFER reading (the carrier is quantized matter). Doc 03's bound closes the transfer channel's magnitude at BMV, a W2 premise.
  - **The flip of record is contested, and the verdict does not rest on it.** The house's reproduction (docs 01–03, 2026-08-01) contradicts AH's stated conclusion at one step: Fork 2, the diagonal-amplitude projection. Tibau Vidal–Iyer (R06, §IV) and Di Biagio v5 (p10) hold that AH's fourth-order term stands. Gundhi–Infantino–Bassi v3 concede rank two "in general" and attribute it to diffusion. Either way the class is REFUTED-BY-POSITIVE: the entanglement is either an artefact or carried by quantum matter, and it is negligible at the committed geometry by AH's own text.
- **(N)** (N-a) LEAVES-STANDING: the class predicts no second-difference phase, so a null is its own prediction. (N-b) LEAVES-STANDING: a deterministic c-number class carries no forced deficit.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (the c-number field: MODULATION).
- [2510.19714 v3 p1] "Here, we argue that the classical gravitational interaction can transmit quantum information, and thus generate entanglement through physically local processes."
- [2510.19714 v3 p3] "In a classical theory of gravity, the gravitational field is classical."
- [2510.19714 v3 p14] "For relatively small masses $M \approx 10^{-14}$ kg and large times $t \approx 2$ s [4], ϑ is substantially smaller than ϕ."

- [2510.19714 v3 p15] "Since it is a quantum mediator that is entangling the objects, this process does not break previous theorems on how LOCC cannot create entanglement."
- [2511.02683 v5 p10] "As it stands, there is no concrete evidence that the computation is wrong."

Sub-entries. Each is typed on its own line. Each is a comment adjudicating the AH class (rule C3), so each is REFUTED-BY-POSITIVE, with LEAVES-STANDING in both N branches and S NONE:

sub-entry	its diagnosis → fingerprint	deciding sentence
Marletto–Oppenheim–Vedral–Wilson 2511.07348 v1	the claimed entanglement would be carried by quantized matter → TRANSFER	[2511.07348 v1 p1] "We show that their model does not produce entanglement. Even if the model produced entanglement, it would be mediated by the quantised matter interaction, and not gravity."
Sienicki 2511.20717 v1	the standard inference stands → MODULATION (classical label)	[2511.20717 v1 p1] "With these clarifications in place, the standard BMV inference, that the observation of gravity-mediated entanglement strongly indicates nonclassical gravitational degrees of freedom, remains intact."
Diósi 2511.00852 v3	an exact product for the static c-number background → NO CHANNEL	[2511.00852 v3 p1] "We show that the perturbative result of Aziz and Howl in interaction picture is inconsistent with our exact and simple non-perturbative derivation in Heisenberg picture, that fundamentally precludes the claimed entanglement."
Schneider 2511.19242 v3	a Newton–Cartan analysis of gravity as a mediator → READABLE	[2511.19242 v3 p1] "But classical gravity cannot mediate entanglement on independent grounds."
Tang–Yang–Xue et al. 2512.13675 **v4** (read at v2; the gate's D2)	binding makes the matter channel exponentially short-ranged → TRANSFER	[2512.13675 v4 p1] "Thus the proposed classical matter-mediated mechanism does not challenge the usual interpretation of GIE as evidence for nonclassical gravity once physical localization and finite-time matter dynamics are treated consistently."
Gundhi–Infantino–Bassi 2604.19696 **v3** (read at v2; **diagnosis changed**)	free-evolution diffusion between the objects → TRANSFER (the fingerprint note now reads TRANSFER, not Fork 2)	[2604.19696 v3 p1] "Therefore, it is the free evolution, not the classical gravitational potential, which acts as the entangling mechanism in the scenario considered by the authors."
Xue–Tang–Yang–Han–Kan–Liu 2604.16276 v1	"essentially classical mechanics", negligible with Gaussian wavepackets → TRANSFER	[2604.16276 v1 p1] "Once a correct treatment using Gaussian wavepacket is adapted, the resulting effect will be negligibly small."

R04, Struyve, "Absence of gravitationally induced entanglement in certain semi-classical theories of gravity", arXiv:2510.20991 v2 (J. Phys. A 59, 185302), NEEDS-REPRODUCTION, reproduced of record, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3).** The row's class is the Newton–Schrödinger (NS), Newton–Schrödinger–Bohm (NSB), GRW-flash and Döner–Großardt potentials. By its own theorem it is additively separable and predicts no entanglement. Its gravity is a c-number potential sourced by the actual configuration: Definition 2 (D). Corollary W2 names "Struyve", and Theorem W prong (I.3) applies. The reproduction confirms the NSB case: its ensemble is exactly a product, $\rho_NSB = \rho_1 \otimes \rho_2$, and the row's own witness value W_NSB = 0.100298105048 is ≥ 0 at the committed geometry. There is no Definition-1 positive at any hold time. This holds for a spin readout whose pointer is not the diamonds' own position, e.g. the optical NV readout. With a Stern–Gerlach re-split along the interferometer axis and a position readout (the readout of the SGI platforms, R20), the row's own p5 mechanism makes each partner's σ_z outcome its hold-time branch. The member then gives V_c = 1, $\hat{\Delta} = \Delta$, R = 1 and a two-setting witness of $1 + C - C^2 = 1.1319$ from product wave functions: an LHV statistic (CHSH ≤ 2) whose joint outcomes are not Born, i.e. a W6 (ii) failure that single-mass fringe statistics cannot detect ([STL] D2; re-derived in this finalization on the quantile model). That completion is outside the row's computation and carries no verdict. SAT-6's Bell test, or $\langle Y_A\, Y_B \rangle$ in the calibrated frame divided by V_s,A·V_s,B (1 for the quantum state against $\cos^2(\Delta/2) = 0.9756$ for the completion), separates it.
- **(N) (N-a) LEAVES-STANDING.** No member imparts a second-difference phase on any conditional fringe ($\hat{\Delta} = 0$ exactly, for a non-positional spin readout; see the (P) cell), so a W′ null is each member's own prediction.
- **(N) (N-b), member by member.**
  - **NS: LEAVES-STANDING.** A deterministic mean field: V_c = 1, R = 1, no forced deficit.
  - **NSB: REFUTES by E1's clause, THIN.** Under the row's own Born-rule statistics (p10), each mass is phased by the partner's actual position. The ensemble is exactly the product of the two single-mass marginals of the Newtonian quantum state, so $V_c = |\cos(\Delta/2)|$ for both masses and both partner outcomes, V_s = 1, and $\hat{\Delta} = 0$. The forced pair-only deficit is **$1 - \cos(\Delta/2) = 0.0122982745690$ against REACH = 0.0098588523951, a ratio of ×1.2474** (hold-only phase; ×1.2435–×1.2290 on E1's total-phase contours, §14 item 4).
  - **The margin is thin at every geometry, by construction.** $1 - \cos(\Delta/2) \geq \Delta^2/8 - \Delta^4/384 \geq \Delta^2/10$ whenever $\Delta^2 \leq 48/5$, and the ratio tends to exactly 5/4 as Δ → 0: a coefficient of 1/8 against the registered 1/10.
  - **Döner–Großardt and GRW-flash: member residue, no verdict.** The row states no BMV-regime values for their free functions or flash parameters.
- **(N) (N-c) No conditional imprint.** NSB's whole E1 signature is conditional-contrast loss, carried by R. So 21a §7 item 1's imprint clause ("a classical channel that reads one mass's branch and phases the other imprints the same second difference") does not describe it. A null of this member's kind is Theorem W′'s case plus an E1 deficit, never a classicality claim. (Under the position-readout completion the member would instead show the imprint, $\hat{\Delta} = \Delta$ with V_c = 1; rider (ii) assigns such completions no verdict.)
- **(S)** NONE. The NS/NSB witness split (reproduced 0.07775 vs 0.10030 at the committed geometry and t = 2.5 s) and E1's R split separate two members that both predict no entanglement. Neither splits Theorem W's two readings.
- **The KA-1 letter (reported first, §0 item 4).** The printed eq. (31) is ×2 on all four mean-field phase terms relative to eq. (29) applied to the row's own normalized state (21). The only reading that restores the printed form sums the partner's potential over both of its branches instead of averaging it, which the row's normalization excludes. The reproduced NS witness is $W_NS = 1 - \cos^2(\gamma t\delta/(d^2 - \delta^2))$, where $\gamma = Gm^2/\hbar$, t is the hold time and δ the superposition size (the row's notation). Its value is **0.07775** at the committed geometry; the printed eq. (46) gives 0.28683. The printed W_NS peak of Fig. 1 is at 6.949 s; the reproduced curve peaks at 13.90 s (both at CODATA constants, the figure's own parameters; at the 63.3 μm·rad/s pin the printed peak is at 6.948 s). Eqs. (35), (47), (28), (43), (44) and (45) are reproduced exactly. **Verdict-neutral:** every cell above holds under both forms, and no premise of Theorem W or M is touched.
- **Riders, fused to the NSB cell:**
  - (i) Thin, as above: at E1's statistics (σ(R) ≈ 1.4 % at 10^4 shots per point, [E1] §7) the deficit is 0.88σ per contour point and about 2.5σ at the scan level ([STL] D14).
  - (ii) Conditional: it holds under the row's p10 Born-rule statistics, its quantum-equilibrium initial configuration (p7), **and a spin-readout pointer independent of the diamonds' positions** (the (P) cell above). The row's own p5 says Bohmian semi-classical positions are generally not Born-distributed, and a non-Born completion carries no verdict.

    - (iii) Scope: the typed model is the row's eq. (30), with the self-interaction dropped. The i = j terms of its eq. (8) would act on V_s; they are not computed and carry no verdict.
- **Checks.** ZCC PASS. LMF FINGERPRINTED: Struyve's additively separable V is NO CHANNEL; the SN class is MODULATION (feedback); NSB's ensemble is exactly the Sienicki classical-label form Σ p(c) U_A ⊗ U_B, MODULATION (classical label).
- [2510.20991 v2 p10] "We have shown that semi-classical theories for gravity with an additively separable potential do not generate entanglement."
- [2510.20991 v2 p5] "Among the potentials considered above, only the Newtonian potential is capable of generating entanglement."
- [2510.20991 v2 p7] "Hence, the ensemble is described by a statistical mixture of the (non-entangled) states |ψmn⟩, each occurring with equal probability."
- [2510.20991 v2 p10] "It is assumed that the measurement statistics is governed by the Born rule."
- [2510.20991 v2 p5] "These positions are generally not distributed according to the Born rule [20, p. 10]."
- [2510.20991 v2 p5] "In Bohmian semi-classical models, on the other hand, measurement outcomes are determined by the particle positions."
- [2510.20991 v2 p10] "While this assumption does not generally hold (as discussed at the end of section 2), it appears reasonable in the present context, because of the sharp localization of the wave packets, in particular at the final stage where the spin measurements take place."

R05, Di Biagio, arXiv:2511.02683 v5 (2026-09-16; retitled "Gravity-induced entanglement is not a theory-independent witness of nonclassicality of the gravitational field"; the pilot read v4, the gate's D2), DAF-BY-DEFINITION, P: RECLASSIFIED-NOT-REFUTED

- **(P) RECLASSIFIED-NOT-REFUTED (rule C4).** The row's GIE-predicting "classical gravity" theories violate statespace or mediation, never classicality alone (its Table II). The non-classical ingredient is named from its own text:
    - **Diósi–Penrose (DP).** v5 says the DP field is classical in the sense of having a well-defined value everywhere. But the row also says the DP dynamics fails the statespace and mediation assumptions, and its entangler is the direct pair gate: Theorem W's reading (II). Doc 06 v1.1 reconciles the Trillo–Navascués DP result: all of its entanglement is the direct gate.
    - **Aziz–Howl.** The effect is carried by quantum matter (TRANSFER).

  A positive is consistent with both and certifies Theorem W's disjunction. (Gate D6: the ingredient named is the direct gate, not the field.)
- **(N)** (N-a) A W′ null contradicts each listed GIE-predicting theory wherever it predicts a resolvable phase (the row states no BMV-regime magnitudes). The row's thesis stands. (N-b) No forced-deficit class is posited. Not typed: the Diósi–Penrose model's own collapse-noise floor, a model-parameter question (R_0) that the row does not state ([RIG] N5).
- **(S)** NONE. The row's gauge-relativity of mediation (Coulomb vs Lorenz / de Donder) is the published form of why Theorem W's readings differ only in the S1–S3 signatures: the committed disjunction, with no new discriminator.
- **Checks.** ZCC PASS: the violated assumption is named in the row's Table II for every theory it lists. LMF READABLE: statespace failure = Lemma M's M1 failure, mediation failure = M2; DP = DIRECT GATE, AH = TRANSFER.
- **Occupancy.** Its Table II is a prior seven-theory assumption ledger (§10).
- [2511.02683 v5 p9] "None of these contradict the LOCC-like no-go theorems: they only invalidate the claim that detection of GIE is incontrovertible proof of nonclassicality of the gravitational field."
- [2511.02683 v5 p10] "No theory that predicts GIE violates only the classicality assumption."
- [2511.02683 v5 p9] "This dynamics does not satisfy the statespace and mediation assumptions in the Newtonian limit, because the field values are entirely dependent on the outcome of the matter measurements."
- [2511.02683 v5 p9] "Either way, the gravitational field in the DP model is classical in the precise sense that it has a well-defined value at all spacetime events."
- [2511.02683 v5 p10] "So the Aziz–Howl effect is also due to a failure of the mediation assumption."

R06, Tibau Vidal–Iyer, arXiv:2607.03429 v1 (with "Howl 2510.19714", which is R03's primary), DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3).** A comment adjudicating the AH class. Its diagnosis is a matter-sector exchange (leakage) channel plus postselection onto the localised branch subspace: Lemma M's TRANSFER row. Its remedy (distinct species, a barrier) is W2's transfer-exclusion certificate. Its "Howl 2510.19714" is R03's primary, read once and never counted twice. Intra-row data: it disputes the separability computation of 2604.19696 (its p11), but both rebuttals type the AH class the same way, so no verdict moves.
- **(N)** LEAVES-STANDING / LEAVES-STANDING.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (TRANSFER).
- [2607.03429 v1 p1] "We therefore argue that the Aziz–Howl mechanism lies outside the assumptions of the BMV witness: it is a matter-sector cross-talk effect in a classical background, not entanglement mediated by classical gravitational degrees of freedom."
- [2607.03429 v1 p1] "The non-separable term relies on a quantum-matter exchange channel between the two interferometers and is present only when the two systems are modelled as excitations of the same matter field."

R07, Płodzień et al. arXiv:2605.06577 v1, DAF-BY-DEFINITION, P: RECLASSIFIED-NOT-REFUTED

- **(P) RECLASSIFIED-NOT-REFUTED (rule C4, first match).** The row places its model in a "semiclassical formulation". Its entangler is the nonseparable linear pair operator acting on the joint wavefunction: the Newtonian direct gate, Theorem W's reading (II). The nonlinear self-field preserves the Schmidt spectrum (the row's analytic result) and is the Schrödinger–Newton class. A positive is consistent with the model and certifies exactly its pair term, never the self-field. (Rule C5 would give COMPATIBLE, with the same effect.)
- **(N)** (N-a) The pair term's phase is REFUTED by a W′ null wherever resolvable; the self-field alone predicts the null. (N-b) Deterministic nonlinear evolution, with no forced deficit: LEAVES-STANDING.
- **(S)** NONE. The row works in 1D regularized head-on scattering; its Wigner-negativity and shattering signatures do not split Theorem W's readings.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (pair term: DIRECT GATE; self-field: MODULATION (feedback)).
- [2605.06577 v1 p1] "Analytically, we show that the nonlinear self-field preserves the Schmidt spectrum, whereas direct entanglement generation arises from the nonseparable pair potential."

- [2605.06577 v1 p19] "Consequently, any semiclassical formulation combining Diósi–Penrose self-localization with Newtonian mutual attraction must explicitly define whether the interaction preserves separability as a mean field or operates as a nonseparable pair interaction."

R08, Plávala, arXiv:2508.03052 v4 (the pilot read v3; v4 corrects one theorem hypothesis, a typo), DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** The row derives a positive: gravity-mediated entanglement inferred from a single-mass verification of the Schrödinger equation plus one of two assumptions, under (completely) positive evolution. It posits no classical model. Its indirect inference is not a Definition-1 certificate (there is no two-mass spin witness), and Theorem W is silent on it. The row's conclusion wording is its own, never adopted.
- **(N)** (N-a) A null at sufficient sensitivity contradicts the row's derived positive. By the row's own contrapositive, it refutes {the single-mass verification $\wedge$ linear, (completely) positive evolution $\wedge$ (Assumption 1 $\vee$ Assumption 2)}: the row assumes linearity explicitly (p1) and names the Schrödinger–Newton equation as the nonlinear case its theorem excludes, so a nonlinear model evades it ([RIG] D3). A campaign that has not itself run the single-mass verification refutes the conjunction with that verification still inside it ([STL] §2). Theorem W′ reads the same null, under linear additivity, as refuting {quantized gravity $\wedge$ linearized coupling $\wedge$ QM for matter}.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF N/A.
- [2508.03052 v4 p1] "Specifically, we prove that if we experimentally verify the Schrödinger equation for a single delocalized system interacting gravitationally with an external mass, then, under one of two reasonable assumptions, the time evolution of two delocalized systems will lead to gravity-mediated entanglement."
- [2508.03052 v4 p3] "Thus any theory of gravity that does not predict GME and is consistent with (2) has to violate both assumptions."
- [2508.03052 v4 p1] "We assume that the time evolution is linear"

R09, Marletto–Vedral, "Can entanglement be mediated by a Koopmanian system?", arXiv:2507.11713 v1, with 2608.17688 v1, DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3).** The Koopmanian mediator (commuting x_1, p_2 encoding a classical particle, coupled through $\lambda x_1(\sigma_z1 + \sigma_z2)$) is Definition-2 classical: a commutative mediator algebra. The row proves its dynamics factorizes into local unitaries, and entanglement would need non-commuting variables. This matches the house's own finding that the Koopman–von Neumann phase, not the classical marginal, is the entangling degree of freedom. Theorem W prongs (I.2) / (I.5).
- **(N)** (N-a) LEAVES-STANDING: its unitary factorizes, so there is no second-difference phase. (N-b) A sharp classical state phases each qubit deterministically, with no forced deficit: LEAVES-STANDING.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF READABLE: an autonomous commutative mediator that cannot entangle. Doc 19's K carrier is the house's in-house instance of this row.
- **Sub-entry 2608.17688 (Marletto–Vedral, a dynamical-consistency no-go on hybrid models): OUT-OF-SCOPE (no GIE-outcome claim), no verdict.** Its local-vs-direct dichotomy coincides with Theorem W's (I) / (II); recorded only.
- [2507.11713 v1 p1] "We then prove that the resulting dynamics can never lead to entanglement between the two qubits."
- [2507.11713 v1 p2] "This is because of the classical condition (implemented in our model by the fact that the observables of the two different systems commute)."
- [2608.17688 v1 p4] "Our conclusions concern hybrid models satisfying three assumptions: (i) the quantum sector obeys the standard operator algebra, (ii) the combined dynamics is generated by a Hamiltonian and is unitary, and (iii) the interaction is local."

R10, Ulbricht–Bermúdez Manjarres–Reginatto, hybrid van Hove gravity, arXiv:2601.21555 v1, DAF-BY-DEFINITION, P: RECLASSIFIED-NOT-REFUTED *(control row)*

- **(P) RECLASSIFIED-NOT-REFUTED (the template of record).** The model entangles two qubits through a mediator it calls classical. But its classical observables are van Hove operators that do not commute, $[\hat{O}_q, \hat{O}_p] = i\hbar$ exactly. That is not a commutative algebra, not Lemma C's CQ class, and not GGS-classical at the joint level: it is outside Definition 2 by construction. The house reproduced the calculation exactly ([VH], 18/18: their calculation is correct). A positive is consistent with the model and certifies exactly what it has: non-commuting / phase structure in the mediator. The committed wording is "reclassified, not refuted".
- **(N)** (N-a) **REFUTES**: its predicted second-difference phase equals the fully quantum secular rate (the polaron identity), so a W′ null refutes it exactly as it refutes the quantized conjunction. (N-b) No forced deficit stated.
- **(S) Mediator-sector algebra (van Hove prequantum vs quantized linear gravity): SATURATED.** The two differ in no mass-side statistic. Separating them needs mediator-sector discriminators (product-algebra or uncertainty tests), not the witness.
- **Checks.** ZCC PASS. LMF READABLE.
- [2601.21555 v1 p1] "In this letter, we demonstrate that entanglement by a classical mediator is possible within the framework of hybrid van Hove theory, showing that existing no-go theorems on that matter do not universally apply to hybrid theories in general."
- [2601.21555 v1 p2] "Finally, we emphasize that many no-go theorems about hybrid systems do not apply to HvH theory; namely, those that assume that classical observables must be represented by commuting operators and those that assume that they must form a product algebra, as these assumptions do not hold for van Hove operators."

R11, Ludescher–Loveridge–Galley–Müller, arXiv:2507.13201 v2 (J. Phys. A 59, 215302), DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3, a no-go row).** Mediators modelled as commutative unital C*-algebras of any cardinality, in alternating A–G / B–G rounds and their limits, cannot mediate entanglement. This is Theorem W prong (I.2); the house's Lemma C is the dynamical, instrument-level strengthening of this very row. The row itself says the Diósi–Penrose model entangles by a non-local mechanism and "would not be ruled out", which is Theorem W's reading (II).
- **(N)** LEAVES-STANDING: a null is the no-go class's prediction, and no forced deficit is posited.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF READABLE.
- [2507.13201 v2 p1] "We show that these systems cannot mediate entanglement between two quantum systems A and B, even if A and B are themselves infinite-dimensional or described by arbitrary unital C$*$-algebras (as in quantum field theory), composed with an arbitrary C$*$-tensor product."
- [2507.13201 v2 p1] "though some of these, such as the Diosi-Penrose model [14, 15], predict entanglement mediation via a non-local mechanism [16] and hence would not be ruled out by the observation of GME."

R12, Oppenheim, "A postquantum theory of classical gravity?", PRX 13, 041040 (arXiv:1811.03116 v3), with Oppenheim–Sajjad arXiv:2605.05375 v2, DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3).** A classical stochastic spacetime with quantum back-reaction: Definition 2 (O). Its locally correlated realisations predict a null, by the LOCC argument its own text gives. Corollary W2 (the scoped Corollary C5) and prong (I.2) apply, with coverage scoped as in [W]: bounded, block-local, cluster-separable and Diósi–Penrose realisations at proof grade; Hermitian cross drift/diffusion couplings at derivation grade. The sub-entry is the covariant version and belongs to the same class.
- **(N)**
  - (N-a) LEAVES-STANDING: a null is the locally correlated prediction.
  - **(N-b) REFUTES by the committed E1 clause.** The KTM / Oppenheim-CQ decoherence–diffusion trade-off forces an O(1) visibility deficit at $\Delta\phi$ = O(1). This is cited to the committed clause, not to any single sentence of the row (gate D5). The refutation runs through E1's single-mass scan: CQ's forced decoherence of a superposed mass is a self-effect, present with the partner absent, so it cancels in R by construction and is caught only there ([E1] §3, signature 4; [STL] D1).
  - **Independent corroboration at the committed geometry, by N-1 (§7).** 2603.26075 states that CQ gravity always produces noise above its entangling threshold, which puts Markovian CQ inside N-1's class (deficit ≥ 0.0528 > REACH). Per the gate, the sub-entry's own non-Markovian coefficient exceeds the Markovian minimum, so it cannot lower that floor.
  - The sub-entry's own 2026 decoherence floors are preliminary, linearised and Markovian by its own statement. They are row data: cited, never re-derived.
  - (N-c) The classical-channel fingerprint (a witness null with $\hat{\Delta} \neq 0$ and a deficit tracking Δ^2) is DIAGNOSTIC-ONLY.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (Oppenheim CQ: CLASSICAL MEDIATION, which cannot entangle).
- [1811.03116 v3 p32] "Finally, the locally correlated realisations considered here predict a null result to recently proposed experiments to test the quantum nature of gravity[167–170]."
- [1811.03116 v3 p38] "This follows from results in entanglement theory[191, 192] that entanglement between two separated systems cannot be created through the exchange of fully decohered systems[193] (sometimes called Local Operations and Classical Communication)."
- [2605.05375 v2 p1] "Mathematical consistency requires spacetime to evolve stochastically."
- [2605.05375 v2 p23] "All of these bounds rest on the linearised, Markovian treatment of this section and should be regarded as preliminary."

R13, Fabiano–Fujita–Matsumura–Carney, "Minimal noise in non-quantized gravity", arXiv:2603.26075 v2 (the N-1 class), DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE

- **(P) REFUTED-BY-POSITIVE (rule C3, first match on the row's named non-entangling members).** The row's central theorem is a no-go: every Galilean-invariant, time-local, Newton-on-average model that does not entangle must inject a minimal noise.
  - **CQ gravity** is refuted by a certified positive. It is Definition 2 (O); the row flags its non-entangling property as a theory question it believes true.
  - **The local entropic model** is refuted by a certified positive too. Its medium is a thermal qubit lattice, a quantum many-body system by the row's own description (gate D4), so a positive refutes it through its own no-entanglement prediction (p11), not through Definition 2.
  - **Member data, no verdict.** The non-local entropic model entangles for every parameter choice, through a standard quantum many-body mediator coupled to relative positions. It is COMPATIBLE, inside Theorem W's disjunction.
- **(N)**
  - **N-1 (§7): the non-entangling class is an INSTANCE of E1's clause, and a null with full visibility REFUTES it, ×5.358 over REACH** (hold-only phase; both statistics read at REACH; the general two-reach condition in §7).
  - (N-a) LEAVES-STANDING for the non-entangling members, since a null is their prediction. The entangling member's Newtonian phase is refuted by a W′ null wherever resolvable.
- **(S)** NONE for the map. The row's own degeneracy (an entanglement measurement cannot distinguish the entropic and graviton models; a sufficiently sensitive noise measurement can) is split inside a BMV-class campaign:
  - by noise, since the entropic decoherence is pair-dependent and so enters E1's R;
  - by the row's own p10 (lanes' rider), possibly also by a choice of witness.

  Its size is set by the model's free parameters, so it has no committed size and no saturation entry.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (CQ: the Oppenheim CQ row; the Newtonian term: the direct-gate row; measurement-feedback models: the KTM row).
- [2603.26075 v2 p1] "We demonstrate that for any such model to be non-entangling, a quantifiable, minimal amount of noise must be injected into any experimental system."
- [2603.26075 v2 p2] "This conclusion requires only the minimal assumptions that the model is Galilean invariant, time-local, and reproduces Newton's laws on average."
- [2603.26075 v2 p9] "In other words, CQ gravity always produces noise above the entangling threshold of Eq. (26)."
- [2603.26075 v2 p9] "This is a pure theory question about the model; we believe it is true, but there has been some recent controversy around the issue [42–44]."
- [2603.26075 v2 p11] "Thus the local entropic model cannot produce any entanglement, and would be ruled out if gravitationally-mediated entanglement was observed."
- [2603.26075 v2 p10] "Thus we conclude that the non-local entropic gravity model does produce entanglement between massive objects, independent of any free parameter choices in the model."
- [2603.26075 v2 p12] "Thus an entanglement measurement cannot distinguish the entropic and graviton models, while a sufficiently sensitive noise measurement can."
- [2603.26075 v2 p10] "However, it should be emphasized that the actual pattern of entanglement differs, so a specific choice of entanglement witness could distinguish the two cases."

R14, Li–Miki–Chen, "Universal Bound for Entanglement Generation", arXiv:2605.26215 v1, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5, a platform row).** The row types no account of gravity. Its theorem says when a positive can occur at all: the bilinear coupling must beat white thermal noise, since $S_A S_B \geq K_g^2$ preserves separability, and neither initial states nor mediators lower that threshold. Its coupling $K_g = 2Gm^2/d^3$ is the one the gate's own expansion of the Newtonian potential gives. A positive, when it occurs, certifies Theorem W's disjunction. The row's mediator statement (a mediator is absorbed into one side of a bipartition) is neutral for Theorem W.
- **(N)** (N-a) A null inside the row's noise-dominated region is not at Theorem W′'s "sufficient sensitivity": no model is refuted (LEAVES-STANDING). Above threshold, W′ applies as registered. In the lab's own observable (data, [STL] §2; re-certified in this finalization): under symmetric branch-diagonal dephasing with single-interferometer contrast V_s on each mass, the committed-geometry state is separable for $V_s \leq 0.855799$ and the committed witness is silent for $V_s \leq 0.924876$; that is R14's noise-dominated region on this platform.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF N/A.
- [2605.26215 v1 p1] "As an application to gravity-induced entanglement, we show that the gravitational interaction must dominate over thermal noise for entanglement to arise."
- [2605.26215 v1 p1] "In particular, this bound cannot be relaxed by changing the initial state or by introducing mediator systems, although such ingredients may enhance the amount of entanglement once it is generated."

R15, Tomizuka–Takeda, arXiv:2604.06891 v1, DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE (the effective description only)

- **(P) REFUTED-BY-POSITIVE (rule C3, first match), for the effective description only.**
  - Where the row's reduced dynamics is classical-quantum (a positive semi-Wigner operator), the effective mediator is Definition-2 classical (O). In the short-memory limit it is exactly the Markovian CQ dynamics of R12. A certified positive refutes that effective CQ description at the regime, i.e. shows that its validity condition fails there.
  - The row's generic non-Markovian kernels couple a traced quantum environment directly to the matter, which is outside Lemma C's scoped class. There a positive refutes nothing of the row: the traced field is quantum, and Theorem W's disjunction covers it.
  - The row disclaims being a model of gravity itself (p13; gate D6).
- **(N)** The row's own conclusion is the committed ban, in its words: agreement with CQ models does not determine whether the mediator is fundamentally classical. A null or a CQ-consistent deficit is DIAGNOSTIC-ONLY. (N-b) Its Markovian limit is R12's class, under E1's clause. Its non-Markovian kernels fall outside N-1's time-local premise.
- **(S)** NONE.
- **Checks.** ZCC PASS. LMF READABLE: a hidden quantum mediator with a traced environment, whose effective CQ sector is the Oppenheim CQ row in the Markovian limit.
- [2604.06891 v1 p1] "In the short-memory limit, the reduced evolution reproduces Markovian classical–quantum dynamics of Oppenheim and collaborators."
- [2604.06891 v1 p1] "Our results imply that a classical mediator can arise effectively from decohered quantum dynamics, so that experimental agreement with classical-quantum models does not uniquely determine whether the mediator is fundamentally classical."
- [2604.06891 v1 p13] "We therefore do not claim to have derived an effective classical–quantum description of gravity itself."

R16, Kent–Pitalúa-García, arXiv:2109.02616 v3 (PRD 104, 126030), a device-independent protocol, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** The protocol is BMV, then transfer of the spin state to photons and a CHSH test at spacelike separation. The row's local-hidden-variable loophole is W6 (ii) together with W6 (i). Theorem W's certificate is conditional on W6 (ii); the row discharges that premise at the price of spacelike separation. A Bell violation then supplies Theorem W's entanglement premise without W6 (ii).
- **(N)** No null-bearing claim: LEAVES-STANDING.
- **(S) The device-independent price.** A CHSH violation from the white-noise-degraded committed output state needs visibility **above $v_{DI} = 1/\sqrt{(1 + \sin^2(\Delta/2))} = 0.98799697$** (unfiltered two-setting CHSH at perfect detection), against the witness's 0.864790. With local filtering before the settings (the sequential test), CHSH needs visibility above 0.956106 ([STL] D4; the closed form for symmetric diagonal filters re-derived in this finalization; general complex filters found nothing lower at float grade); the minimum over all Bell tests is not committed. The discriminator is "local-hidden-variable matter statistics vs quantum", which the Definition-1 witness cannot split under W6 (ii). This is a near-corollary, registered so that it is never a finding. The row's own protocol targets a near-singlet ($|\Delta|$ near π), outside the committed geometry.
- **Checks.** ZCC PASS. LMF N/A (a readout and certification protocol; its gravitational step is BMV's).
- [2109.02616 v3 p1] "We propose to extend the entanglement generated by the BMV experiment to distant quantum particles in a Bell experiment."
- [2109.02616 v3 p2] "There is clearly a logical loophole in this inference, since we know that local hidden variable theories can simulate arbitrary entangled correlations in any experiment – such as the BMV proposals – that does not involve measurements in spacelike separated wings."

R17, Das–Alimuddin–Storz–Chu–Bose, arXiv:2608.08778 v1, a device-independent protocol, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** The protocol has pre-entangled source spins at spacelike separation, local source–probe gravitational couplings, and a CHSH test on the probes. A violation certifies that each local source–probe channel is not entanglement-breaking: Theorem W's disjunction per pair, with W6 (ii) discharged. The row's reading, that the source correlations are imprinted on the gravitational fields, is not licensed beyond that disjunction. In the constraint-slaved (Newtonian) sector the local field is a dressing of the local mass (doc 05; W1), and the row's own model is the Newtonian potential in operator form.
- **(N)** No null-bearing claim: LEAVES-STANDING.
- **(S)** NONE new. The spacelike separation is between the two wings, never across a source–probe pair. Within a pair the mediated-vs-direct discriminator stays the Fork-1 light-crossing class (SAT-1: $\lesssim 3.3 \times 10^{-13}$ rad in doc 27's parametrization, 8.38×10^{-14} rad at the committed point). Its size at the row's own geometry is not committed.
- **Context, not a row:** Athreya et al. 2609.02009, a Bell violation in motional states of massive particles.
- **Checks.** ZCC PASS. LMF FINGERPRINTED per pair: the Newtonian channel, where the direct-gate and linearized-QG readings are mass-side identical.
- [2608.08778 v1 p1] "Two masses with embedded entangled spins (e.g. two diamonds with their NV-centre spins entangled) are placed well outside each other's light cones"
- [2608.08778 v1 p3] "Step 5 involves only local measurements."
- [2608.08778 v1 p3] "In this proposal, the quantum correlations of the entangled source masses is imprinted onto their respective gravitational fields, which in turn mediate correlations to the probe masses."

R18, Wakakuwa, clock GIE, arXiv:2607.19141 v1, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** Two trapped quantum clocks are coupled by a Newtonian pair term on their internal energies. In the energy basis this is a CZ(Δ)-type gate, so Theorem M applies verbatim. The row reads entanglement as a signature of a quantum source, and in its Scheme 1 as a genuinely quantum violation of local position invariance (LPI). A positive certifies Theorem W's disjunction; the LPI reading is the row's own.
- **(N)** (N-a) Scheme 1 predicts a null iff quantum LPI holds, so a null there bears on LPI only. The operator-product term's phase is refuted by a W′ null wherever resolvable.
- **(S)** NONE new. The Clifford-exception coupling is Theorem M's family theorem, $\tau_\pi = 25.0136$ s at the committed geometry.
- **Checks.** ZCC PASS. LMF FINGERPRINTED: the direct-gate Newtonian row, internal-energy version.
- [2607.19141 v1 p3] "We show, as the following theorem, that entanglement will be generated between the two clocks if and only if the two Hamiltonians do not commute."
- [2607.19141 v1 p2] "We focus on the low-energy regime in which the gravitational interaction is described by the Newtonian potential."

R19, Wakakuwa–Petruzziello–Lantano–Huelga–Plenio, frame dragging, arXiv:2606.31678 v1, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** Entanglement arises from the quantized Lense–Thirring coupling. The row derives it from a first-quantized Hamiltonian and from the on-shell action of linearized quantum gravity. Its own reading is conditional ("under the standard locality/mediator assumptions"): Theorem W's disjunction, never more.
- **(N)** (N-a) Its prediction runs through {quantized gravity ∧ linearized coupling ∧ QM for matter}, so a W′ null REFUTES it wherever its phase is resolvable.
- **(S) Retardation is the Fork-1 class.** The row's retardation correction (the entangling phase accrues only once a signal can reach the probe) is the mediated-vs-direct discriminator: **$\leq 3.3 \times 10^{-13}$ rad** in doc 27's parametrization and **8.38×10^{-14} rad** at the committed point (SAT-1). The correction is a step-onset construction; for a mass-conserving smooth split the retarded pair potential has no O(1/c) term at all (data, [STL] §3). Frame dragging is stationary and branch-diagonal, so the row adds no discriminator above that size. Its own geometry's size is not committed.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (linearized QG: MEDIATION in the path-integral presentation; the first-quantized Hamiltonian is the direct-gate presentation; mass-side identical by the polaron identity).
- [2606.31678 v1 p1] "Under the standard locality/mediator assumptions used in existing arguments, the resulting entanglement would witness non-classicality of the gravitational interaction."
- [2606.31678 v1 p6] "which restrict the entangling phase to the portion of the trajectory over which a gravitational signal can propagate between the source and the probe at the finite speed c."

R20, Braccini–Serafini–Bose, the mass-independent SGI family, arXiv:2602.19306 v1, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** Two Stern–Gerlach interferometers are entangled by the leading-order, operator-valued Newtonian interaction, with a mass-independent entangling phase. The gate is CZ(Δ)-type, so Theorem M applies verbatim.
- **(N)** (N-a) The quantum-Newtonian prediction is refuted by a W′ null wherever resolvable. Its open-dynamics noise is environmental and posits no forced gravitational deficit.
- **(S) The Clifford-exception coupling of Theorem M: $\tau_\pi = 25.0136$ s** at the committed geometry, a family theorem and never a lab point. On the row's own family the exception is a tunable phase. That is scout grade, not of record: M-A5 (a), an optional row not typed here.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (the Newtonian direct-gate and linearized-QG rows, mass-side identical).
- [2602.19306 v1 p1] "The entangling phase between the two qubits generated by the leading-order gravitational interaction of the massive degrees of freedom is found to be mass-independent, both for unitary and open dynamics, irrespective of the temperature and squeezing of the initial states."

R21, van Manen–Blankenstein–Mazumdar, quadratic curvature, arXiv:2609.22501 v1, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** Quantized quadratic (Stelle) gravity: a massive spin-2 ghost and a massive spin-0 mode add Yukawa terms to the potential. It predicts entanglement, and a positive certifies Theorem W's disjunction. The ghost-modified potentials only shift Δ.
- **(N)** (N-a) Refuted by a W′ null wherever resolvable.
- **(S)** NONE: the Yukawa terms shift Δ but split neither reading. By the row's own sentence the corrections are suppressed once $d \gg \lambda$, and the Compton wavelengths it takes as experimentally allowed are ≤ 52 μm. At the largest allowed $\lambda = 52$ μm they act at the closest branch separation, 200 μm = 3.85 λ, where the row's eq. (17) moves the committed Δ by −5.3 % ($m_0 = m_2$) to −7.1 % (scalar decoupled) ([STL] D8; re-derived in this finalization): comparable to the ±5 % trajectory model the witness frame needs.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (linearized QG, MEDIATION, with two added massive mediator species).
- [2609.22501 v1 p1] "We investigate gravitationally generated entanglement in two quantum harmonic oscillators induced by quadratic (Stelle) gravity, including corrections up to 1.5 post-Newtonian order."
- [2609.22501 v1 p9] "We may expect that the quadratic gravity corrections becomes suppressed once $d \gg \lambda$, and the massive spin-2 and spin-0 contributions becomes negligible."

R22, Salih, a horizon, arXiv:2609.04104 v6, DAF-BY-DEFINITION, P: COMPATIBLE

- **(P) COMPATIBLE (rule C5).** Retarded (time-delayed) gravitational potentials entangle freely falling superpositions across a Schwarzschild horizon. The row itself treats the classical retarded potential as an effective description of an underlying quantum field, and states that it does not violate the LOCC prohibition. By its own text, it is a mediated entangler, Theorem W's reading (I). Its regime lies outside Theorem W's BMV regime; at BMV its model is the Newtonian limit.
- **(N)** No null-bearing claim: LEAVES-STANDING.
- **(S)** NONE at the committed geometry. Its retarded-potential structure is the Fork-1 class (SAT-1), outside the BMV regime.
- **Checks.** ZCC PASS. LMF READABLE (the quantum field as carrier: the MEDIATION reading, by its own sentence).
- [2609.04104 v6 p1] "We then show within a gravitational time-delayed-potential model that entanglement can be created between freely falling spatial superpositions across an event horizon."
- [2609.04104 v6 p6] "Notably, our semiclassical approach does not violate the prohibition on generating entanglement from separable states by LOCC; rather, the classical retarded potential is an effective low-energy description of an underlying quantum field, consistent with recent proposals for local entanglement mediated by a quantized gravitational field [18]."

R23, Nandi, a GW mediator, arXiv:2609.09931 v1, DAF-BY-DEFINITION, P: REFUTED-BY-POSITIVE (scope rider)

- **(P) REFUTED-BY-POSITIVE (rule C3, first match on the row's classical-GW no-go).** A classical (prescribed or stochastic) gravitational-wave background drives each detector mode by local terms, so the evolution factorizes and cannot generate correlations. This is Definition 2 (D), Theorem W prong (I.3) and Lemma C.
  - **Scope rider (gate D6).** A BMV near-field positive does not test an externally supplied GW background as such. The P verdict bears on the classical-GW class in the row's own GIE-adjacent protocol, or on the holistic c-number reading through (I.3).
  - **Member data, no verdict.** The quantized GW mode, as a common quantum mediator, entangles the detector modes: COMPATIBLE, reading (I).
- **(N)** (N-a) LEAVES-STANDING the classical-GW class. The quantized-GW member's prediction is refuted by a null only where its phase is resolvable, outside the BMV geometry.
- **(S)** NONE at the committed geometry. The radiative sector at BMV is W1's $\langle n_g \rangle \approx 1.3 \times 10^{-57}$ class.
- **Checks.** ZCC PASS. LMF FINGERPRINTED (classical GW: the c-number row as a prescribed drive, MODULATION; quantized GW: MEDIATION).
- [2609.09931 v1 p1] "We demonstrate that classical gravitational-wave backgrounds can induce mixedness in the detector state but cannot generate genuine quantum correlations between the detector subsystems."

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6. The saturation map: what no BMV-class experiment can split, with sizes (SAT-2 to SAT-6 at the committed geometry; SAT-1 in doc 27's parametrization)

This is the founding document's "stated failure mode (still a landmark result)" in precise form. Each entry is a discriminator that a BMV-class run cannot resolve, with its committed size. The honest form of every "closes the loophole" sentence is this table (the ceiling riders, §12).

entry	discriminator	what it would split	size	rows bearing on it	status
SAT-1	the light-crossing phase $\|V_AB\| \cdot d/c$	Theorem W's reading (I), a mediator, from (II), a direct gate	**$\leq 3.3 \times 10^{-13}$ rad** in doc 27 §3.9's parametrization ($\Delta\phi \approx 1$ rad over 2 s, d = 200 μm; a sup over time in the two-point step-onset model); **8.38×10^{-14} rad** at the committed point, a transient that is exactly 0 from 2.33 ps on (below)	R17 (per pair), R19 (its retardation correction), R22 (outside BMV)	SATURATED
SAT-2	retardation / locality timing	an entanglement onset delayed by $\geq d/c_M$ vs onset at $t = 0^+$	**$d/c = 0.667$ ps** at 200 μm, against a hold of 2.5 s	R19	SATURATED (infeasible)
SAT-3	field quantization beyond non-commutativity (radiative, transverse-traceless content; interposition)	a mediator's own radiated quanta	**$\langle n_g \rangle \approx 1.3 \times 10^{-57}$** gravitons per run ($C^2$-smooth quintic ramps, $\tau_acc = 0.5$ s, [E1] §9; non-C^2 ramps carry no fixed number)	R23	SATURATED
SAT-4	the mediator-sector algebra	van Hove prequantum gravity vs quantized linear gravity	**0** in every mass-side statistic (the polaron identity)	R10	SATURATED (needs mediator-sector probes)
SAT-5	the Clifford-exception coupling (Theorem M)	a maximal witness (W = 2) on a gate with no magic	**$\tau_\pi = 1680\pi/211$ s = 25.0136 s** (hold-only)	R18, R20	outside every registered platform (a family theorem, never a lab point)
SAT-6	local-hidden-variable matter statistics vs quantum statistics (W6 (ii))	the witness's reliance on standard quantum mechanics for the masses	**$v_DI = 0.98799697$** (unfiltered two-setting CHSH, perfect detection; **0.956106** with local filtering) vs the witness's **0.864790**	R16, R17	split only by a Bell test above those visibilities; the minimum over all Bell tests is not committed

Where SAT-1 comes from (the Fork-1 corollary, doc 27 §3.9). For sources coupled linearly to a free field, the mass-side reduced state is at every time (direct phase gate) × (dressing overlap). For the massless field, the entangling second difference is exactly $\Theta_AB(t) = V_AB \cdot \max(0, t - d/c)$. So every mass-side protocol sees readings (I) and (II) differ by at most the phase of one light-crossing. An interposition instrument is either an instrument on the transverse-traceless sector (whose share is $\langle n_g \rangle \sim 10^{-57}$) or a which-path measurement of the matter, and that is the same operation in either reading. In this class, "no gravitational shielding" is a theorem of the constraint structure, not a technology limit.

SAT-1 at the committed operating point (both M-A6 legs, exact; re-certified in this finalization). Applied branch by branch, $\Theta_b(t) = V_b \cdot \max(0, t - s_b/c)$ with $V_b = Gm^2/(\hbar\, s_b)$: every branch's offset $V_b \cdot s_b/c$ equals $Gm^2/(\hbar c)$, so the offsets cancel in the second difference. The retarded-minus-instantaneous discrepancy is piecewise linear in t; its magnitude peaks at $(25/63) \cdot Gm^2/(\hbar c) = 8.38 \times 10^{-14}$ rad at $t = (d - \Delta x)/c = 0.667$ ps (the same number as $(|\Delta|/\tau)(d - \Delta x)/c$) and is exactly 0 from $t = (d + \Delta x)/c = 2.33$ ps on, long before readout. The 3.3×10^{-13} rad of record is the same form evaluated at doc 27's generic BMV parametrization ($\Delta\phi \approx 1$ rad over 2 s, d = 200 μm) as a sup over time. The order of record's P-A7 pairs that figure with "at the committed geometry" ([RIG] N10): a record-side wording for the owner, with no effect on SATURATED. Data (the steelman's, not of record): for a mass-conserving smooth split the O(1/c) term of the retarded potential vanishes by continuity, and a Liénard–Wiechert toy of a closed split/hold/recombine sequence leaves a residual scaling as $1/c^4$. On that reading no final-state phase measurement splits (I) from (II) at O(1/c); what remains is a picosecond transient, SAT-2's timing class.

SATURATED holds (P-A7 TRUE). No row supplies a discriminator between Theorem W's two readings above these sizes. The disjunction is the permanent deliverable of the BMV class. The only on-paper decider is Corollary W1's cited embedding argument, which this table never consumes.

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7. Cell N-1: the minimal-noise class of arXiv:2603.26075 at the committed geometry

The object. 2603.26075 v2 proves that every Galilean-invariant, time-local, Newton-on-average model that does *not* entangle must inject a minimal noise. The cell asks whether that class, at the committed geometry, is an instance of E1's committed decoherence–diffusion clause (and so is cornered by a null with full visibility) or escapes it.

First act: decided by committed text. The row's floor (its eqs. (34)–(36) and Appendix B) says a non-entangling member needs $4\Gamma_1\Gamma_2 \geq \alpha_G^2 \delta x^4 + \beta^2 \delta x^4/4$, and hence **$\Gamma_1 + \Gamma_2 \geq \alpha_G \delta x^2$: the noise rate is at least the entangling rate.** This is E1's committed H1b clause ("forced to decohere at a rate tied to the coupling that would have entangled") in the row's generality. The row itself calls it an extension of the Kafri–Taylor inequality. Here Γ_a is the row's single-body decoherence rate of mass a (its eq. (30): the loss rate of $|\langle \sigma_ \rangle|$ at t = 0, so mass a's single-mass visibility decays as $e^{-2\Gamma_a t}$), $\alpha_G = Gm_1m_2/d^3$ (the row's eq. (11)), δx the superposition size, and β a correlated-noise term that only raises the floor. **N-1 = INSTANCE (P-A5 TRUE).**

The gate's disjoint derivation. Take two qubits with $H = J\, Z \otimes Z$ (second-difference phase rate 4J), local dephasing rates g_a and a correlated term b. The first-order rate of the partial-transpose eigenvalue from $|{+}{+}\rangle$ is $dN/dt|_0 = \tfrac{1}{2}[\sqrt{((g_1 - g_2)^2 + (2J)^2 + (2b)^2)} - (g_1 + g_2)]$. That is exactly the row's eq. (34), under $\alpha_G \delta x^2 = 2J$. The gate's own expansion of $-Gm^2/|d + x_1 - x_2|$ gives the bilinear coefficient $2Gm^2/d^3 = 2\alpha_G$, and R14 prints the same coupling.

The evaluation (a confirmation of record; exact Fractions and certified exponential enclosures).

1. At the committed geometry, $\alpha_G \delta x^2/\hbar$ = **211/4860 s^{-1}**.
2. With visibility exponents $E_a = 2\Gamma_a t$: $E_1 + E_2 \geq$ **211/972**, and $E_1 E_2 \geq (211/1944)^2$, so $\max_a E_a \geq$ **211/1944**.
3. With both statistics read at REACH (the registered rule), the adversary's best move splits that mass's noise equally between a pair-only channel (which enters R) and a partner-independent channel (which enters V_s). This gives $E =$ **211/3888** on each.
4. **Minimal forced deficit: $1 - e^{-211/3888} = 0.0528232369$, against REACH = 0.0098588524, a ratio of ×5.358 (hold-only phase). INSTANCE.**

Two reaches (the steelman's D1, re-derived in this finalization; a lab-facing condition that carries no verdict). E1 states one reach, for R; the partner-independent share of a forced noise goes to the single-mass scan, whose reach u_s the campaign must state. With r_R the reach on R and u_s on each mass's V_s, a member escapes iff, on both masses, its pair-only exponent stays below $-\ln(1 - r_R)$ and its partner-independent exponent below $-\ln(1 - u_s)$. Since $E_1 E_2 \geq (211/1944)^2$, **the class is cornered iff $-\ln(1 - r_R) - \ln(1 - u_s) \leq 211/1944$**; at $r_R =$ REACH this is $u_s \leq 1 - e^{-211/1944}/(1 - \text{REACH}) = 0.0939233$. The member a flat ratio alone lets through has all of its forced noise partner-independent and symmetric, $E_1 = E_2 = 211/1944$: $R \equiv 1$ on both masses and $V_s = e^{-211/1944} = 0.897144$ on each. The printed ×5.358 (hold-only phase) is the equal-reach figure, $r_R = u_s =$ REACH.

Data, no verdict:

- With the exact committed phase in place of the row's quadratic expansion, the deficit is 0.075495 (×7.66). The quadratic-expansion second-difference phase, 211/972, is the exact $|\Delta| = 211/672$ times 56/81, so the expansion is conservative at $\delta x/d = 5/9$.
- With symmetric CQ-form noise, the V_s deficit is at least 0.102856.
- The forced deficit is **first order** in the entangling phase: the worst-case exponent is a quarter of the quadratic-expansion phase. This refines doc 29's descriptor "an $O(\Delta\phi^2)$-order single-mass deficit".
- On E1's total-phase contours (0.5–0.9 rad at the design point) the conservative ratio is ×3.31–×1.78 (quadratic share ≥ 56/81; §14 item 4); it falls to 1 only at a total phase of 1.52 rad.

Scope:

- Time locality is a premise of the row, so non-Markovian classical-quantum dynamics (R15) lies outside N-1.
- **Both masses must be read**: V_c for both masses from the same two-spin shots, and V_s for both masses from left-only and right-only single-interferometer runs (§2.5). Otherwise a member with (in the limit) all of its noise on one mass escapes a one-mass null. The row's general framework allows such a member, although no model the row instantiates is one.
- **The row's dissipator depends on positions only**, a choice the row makes explicitly and calls relaxable ([RIG] N7); its stated minimal assumptions are the three quoted in §5, R13.
- [2603.26075 v2 p2] "for simplicity and because this holds in all known example models, but it is easy to relax this condition if desired."
- The class's entangling members (the non-local entropic model) are not N-1's object.

What it means for a campaign. A null with full visibility refutes every non-entangling model of the row's class at once, with no model choice. That covers Markovian CQ gravity and the local entropic model: $R \approx 1$ within E1's reach r_R on the committed contours and each mass's V_s within u_s of its independently budgeted value (the single-mass scan, E1 signature 4), both masses read, with $-\ln(1 - r_R) - \ln(1 - u_s) \leq 211/1944$. A flat ratio alone refutes none of them: a member whose forced noise is partner-independent leaves R at exactly 1. The converse is not a certificate. A deficit of that size tracking $\Delta\phi$ is E1's signature 2, whose reading is a disjunction ([E1] §6) and a diagnostic. It never feeds a classicality claim.

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8. Cell M-1: the gravitational gate's own Clifford-hull threshold under the white-noise benchmark

The object. $F^* = \sup\{F : F \cdot \mathcal{U}_\Delta + (1 - F) \cdot \mathcal{D} \in \text{conv(two-qubit Clifford unitary channels)}\}$ at $\Delta = -211/672$, with $\mathcal{U}_\Delta$ the channel of $CZ(\Delta) = \text{diag}(1, 1, 1, e^{i\Delta})$ in the calibrated frame and $\mathcal{D}$ the completely depolarizing channel. The admissible F form an interval $[0, F^*]$, because $\mathcal{D}$ is itself in the hull. The cell is live because doc 21 typed the unitary gate (F_{STAB}, M_2, the exact 11520-element census) and 21a's 0.975555 is a threshold on states. Nothing committed typed the noisy channel.

Result: $F^* = 1/(1 + 4|\sin\Delta|) = 0.447343871026845$, certified from both sides by three disjoint routes (the pilot, the gate, and the rigor leg of M-A6).

	the pilot	the gate	the rigor leg (M-A6)
Clifford census	own ⟨H, S, CNOT⟩ closure, 11520, equal as a set to the committed engine's census (isolated copy, sha256 verified)	own $Sp(4, F_2)$ enumeration (720) × 16 sign vectors = 11520 channels; generators inside, closed	two own routes, equal as sets: a closure over exact Pauli-transfer matrices (disclosed as not disjoint from the pilot's) and a four-class normal form, 576 + 5184 + 5184 + 576 = 11520, built with no complex arithmetic
upper side (nothing above F^* is in the hull)	separating functional with entries in {0, ±1/3, −1}: $\langle W, R_C\rangle \leq 1$ at all 11520 Cliffords, $\langle W, R_U\rangle = 1 - 4\sin\Delta$	own facet with integer entries in {−1, 0, 1} (29 nonzero; 6858 Cliffords tight): same affine form, $\langle W, R_{\mathcal{D}}\rangle = 0$	own facet invariant under a 128-element group (the transpose anti-automorphism included): 31 nonzero entries in {±1/2, ±1}, maximum 1 on all 11520 Cliffords (3634 tight), $\langle W, R_{\mathcal{D}}\rangle = 0$, $\langle W, R_U\rangle = 1 - 4\sin\Delta$
lower side (F^* is in the hull)	explicit decomposition over 220 Clifford unitaries (point classes of sizes 1, 192, 3, 24), weights affine in (cos Δ, sin Δ), exact on all 256 Pauli-transfer entries, positive at Δ by Taylor intervals	own 185-element vertex decomposition (rank 185, no free parameters), an exact polynomial identity in (cos Δ, sin Δ), every weight positive at Δ	own orbit decomposition: 5 averaged point classes of 16, 1, 16, 16 and 1 Clifford unitaries (50 in all), weights affine in (cos Δ, sin Δ) summing to $1 - 4\sin\Delta = 1/F^*$, exact on all 256 entries, minimum weight 0.0244453 at Δ
certified interval width	$< 10^{-40}$	3.3×10^{-117}	5.7×10^{-71}

The three facets differ, and the rigor leg's 50-element support overlaps the pilot's 220 in 17 elements and the gate's 185 in 19.

Since $\langle W, R_{\mathcal{D}}\rangle = 0$ and $\langle W, R_U\rangle = 1 - 4\sin\Delta$, the boundary is $F^*(1 - 4\sin\Delta) = 1$; with $\sin\Delta < 0$ this is $F^* = 1/(1 + 4|\sin\Delta|)$.

Branch: P-A6 branch 1. $F^* = 0.4473 < F_{ent} = 0.864790$. A near-corollary registered in advance (NC-M1) makes branch 3 impossible: a channel in the Clifford hull maps $|{+}{+}\rangle$ to a stabilizer mixture, so $F^* \leq F_{magic} = (1 + \cos\Delta)/2$ always. Three readings follow:

- For every white-noise visibility F in (0.4473, 0.8648], the noisy gate channel lies outside the convex hull of Clifford unitary channels, while the committed entanglement witness is silent ($W_F = F(1 + C) \leq 1$).
- For every F above F_{ent}, where the witness can fire, the noisy channel is certifiably outside that hull.

- There is **no visibility band in which the witness fires while the noisy gate is already a Clifford mixture.** The anti-alignment of doc 21 (the maximal witness at $\Delta = \pi$ on a gate with no magic) has no noise-level counterpart at the committed geometry under this benchmark.

So the witness, not the gate's magic, is the bottleneck: 21a's witness-first gating rule acquires a channel-level reason. This holds for every entanglement certificate, not only the committed witness: the PPT threshold of ρ_F is $1/(1 + 2C) = 0.761789$, still far above F^* ([STL] §5; re-certified in this finalization).

Scope and wording:

- (i) White noise only. The apparatus noise is whatever E1's channel table says it is. Data (the steelman's D12, not of record; the bounds re-certified in this finalization): under the campaign's own branch-diagonal class (local dephasing with single-interferometer coherence λ per mass) the dephased gate is a unit-diagonal Schur-multiplier channel, so any decomposition into unitary channels uses diagonal unitaries only, and the Clifford-unitary hull question reduces exactly to the 32 diagonal Cliffords. From the entries that involve one mass's coherence alone, an L1-ball argument bounds the hull by $\lambda \le 1/(1 + |\sin\Delta|) = 0.764027$ on that mass; an LP locates the symmetric boundary at $\lambda^* = 1 - \sqrt{(|\sin\Delta|/(1 + |\sin\Delta|))} = 0.5142$ (LP-located, not certified). The dephased state is entangled only for $\lambda > 0.855799$, and the committed witness fires only for $\lambda > 0.924876$. So the branch-1 reading survives the change of noise model, and with one mass clean ($\lambda = 1$ on it) no dephasing of the other makes the gate a Clifford mixture.
- (ii) The registered hull is that of Clifford *unitary* channels. Against the larger completely-stabilizer-preserving set, the gate's float LP over all 36720 four-qubit stabilizer states located $F^*_{CSP} = 0.447343871$, equal to F^*_{Cliff}. That value is **LP-located, not certified**.
- (iii) The closed form also holds, with positive decompositions, at four development test angles. That is gate data, not of record.
- (iv) M-1 is a property of the modelled channel. A laboratory magic certificate still needs Definition 1 and M0–M4 (Theorem M). A lab measures M-1 only through process tomography, which the campaign does not run; its lab-facing content is a consistency guarantee: under white noise, and (as data) under branch-diagonal dephasing, no noise level exists at which the committed witness fires while the modelled gate is a Clifford mixture, so a Theorem-M positive never conflicts with the channel typing ([STL] §5).
- (v) M-1 is a gate-typing number and a Paper-M row, never a law. The ceiling riders govern its wording (§12).
- (vi) Notation: F here is M-1's white-noise weight; E1's suppression function is written F_{E1} (§2.5).

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9. What a campaign's outcome licenses, row by row

"Refutes" always means *on the account's own formulation, under the premises named*. A row "left standing" is not confirmed.

outcome	what it certifies	refutes	leaves standing	never
certified positive (Definition 1, all three clauses; W1–W6)	non-classical in Definition 2's sense: Theorem W's disjunction (a non-classical mediator, or a nonseparable direct gate with no carrier)	R03 with its seven comments; R04 (all four members; the NSB member for a non-positional spin readout, §5); R06; R09; R11; R12 with its sub-entry; R13's non-entangling members; R15's effective CQ description; R23's classical-GW class (scope rider)	**reclassified, not refuted:** R05, R07, R10 (each certified to carry exactly its non-classical ingredient); **compatible:** R01, R02, R08, R14, R16–R22	a verdict between readings (I) and (II) (SAT-1..SAT-4); anything beyond the disjunction
certified positive whose E1-M angle interval excludes $\pi\mathbb{Z}$, plus M0–M4	in addition: the gravitational coupling implemented a nonlocal non-Clifford gate (Theorem M)	as above	as above	magic of the mediator; hardness; the magic of any state without the calibrated frame
witness null at sufficient sensitivity with the extracted angle $\hat{\Delta}$ consistent with 0 (21a §7 item 1's first sub-branch; Theorem W′, under linear phase additivity)	no second-difference phase in the probed regime; refutes {quantized gravity $\wedge$ linearized coupling $\wedge$ QM for matter}	wherever resolvable: R07's pair term; R10; R13's non-local entropic member; R18's pair term; R19; R20; R21; R05's listed GIE-predicting theories; R08's derived positive (by its own contrapositive); R23's quantized-GW member (outside BMV only)	every non-entangling account (R03 + 7, R04, R06, R09, R11, R12, R13's non-entangling members, R23's classical-GW class); R15 (DIAGNOSTIC-ONLY: its non-Markovian kernels need not be non-entangling); the rows with no null claim (R02, R16, R17, R22); R14 below its noise threshold; R01 (not reached)	a classicality claim
null with full visibility (E1: $R \approx 1$ within r_R on the fixed-phase contours **and** each mass's V_s within u_s of its independently budgeted value, the single-mass scan, both masses read; for N-1, $-\ln(1 - r_R) - \ln(1 - u_s) \le 211/1944$)	in addition: no forced classical-channel noise down to those reaches	in addition: R12 (CQ gravity; committed clause, through the single-mass scan; corroborated by N-1); R13's whole non-entangling class (**N-1, ×5.358 at equal reaches, hold-only phase**); R04's NSB member (**thin ×1.2474; Born-rule and readout conditional**); R15's Markovian limit	the deterministic no-noise classes: R03 + 7, R04's NS member, R06, R09, R11, R01's phase-space flow, R07's self-field	a classicality claim
witness null with $\hat{\Delta} \neq 0$ and a deficit tracking Δ^2, or E1's signature 2 ($R = F_{E1}(\Delta\phi)$ collapsing across contours)	a diagnostic of the classical-channel class, or of non-erasable bookkeeping (E1's disjunction)	nothing	-	a certificate of anything; a classicality claim

Reading the "never" column. A positive never licenses more than Theorem W's disjunction; "quantized GR" or any slogan additionally consumes either picosecond-scale timing (SAT-2, infeasible) or Corollary W1's cited embedding argument, and must be flagged as doing so ([W] §6 item 1). A null never feeds a classicality claim at any grade: every classical account in the table predicts a null, but so do modified-coupling quantum models.

Two conditions a lab can drop by accident. A flat pair/single ratio alone is not a null with full visibility: it needs the single-mass scan too (a member of N-1's class with partner-independent noise leaves R at exactly 1). A witness null alone is not Theorem W′'s null: it needs $\hat{\Delta}$ consistent with 0 (a one-way classical channel gives a witness null with $\hat{\Delta} = \Delta$).

The table as a lab decision rule (drafted by the steelman leg, [STL] §6; every number certified in this finalization; a restatement of the rows above that carries no verdict of its own):

1. **Calibrate first, in the same run blocks.** For each mass, measure the single-interferometer contrast V_s (left-only and right-only runs), the readout confusion matrices and the local-phase frame, and record the spin-readout pointer (optical, or Stern–Gerlach position along the split axis).
2. **Is a null informative?** Under symmetric branch-diagonal noise the committed witness reads $V_s \cdot C + V_s^2$ in the calibrated frame, so a null carries information only if $V_s \ge 0.924876$ plus the witness's k-σ margin. Below $V_s = 0.855799$ the delivered state is separable at the committed geometry (R14's region).

3. **Positive** ($W - 1 \geq k\sigma_W$ in the calibrated frame; EM budgeted; per-run i.i.d.). Quote Theorem W's sentence verbatim (§2.3). It refutes the REFUTED-BY-POSITIVE rows on their own formulations; for R04's NSB member this needs a non-positional spin readout, or a Bell test, or $\langle Y_A Y_B \rangle / (V_{s,A} \cdot V_{s,B}) = 1$ within 0.0244 at your k (the position-readout completion gives 0.9756). If $\hat{\Delta}$'s interval also excludes πZ under M0–M4, add Theorem M's sentence.
4. **Witness null with Δ consistent with 0** (both mirrors, at k). Theorem W′'s case (§2.4): it refutes the resolvable-phase rows under linear additivity.
5. **Witness null with $\Delta \neq 0$.** The classical-channel fingerprint (21a §7): a diagnostic only, which refutes nothing and supports no classicality claim.
6. **Null with full visibility.** R flat within r_R of 1 on the fixed-phase contours for both masses, **and** each mass's V_s within u_s of its budgeted value (the single-mass scan), with $-\ln(1 - r_R) - \ln(1 - u_s) \leq 211/1944$ on the hold-only phase (at r_R = REACH, $u_s \leq 0.0939$; with the ramps, replace 211/1944 by half the total quadratic-expansion phase). That refutes N-1's whole non-entangling class (×5.358 when $u_s = r_R$ = REACH), CQ gravity (R12) only through the single-mass scan, and R04's NSB member (non-positional readout) only at the scan level, about 2.5σ (0.88σ per point). A flat ratio alone refutes none of them.
7. **Never available from this class of experiment:** a mediator/direct-gate verdict from any final-state phase (SAT-1: a transient of at most 8.38×10^{-14} rad at the committed point, gone 2.33 ps into the hold); a device-independent verdict from two-setting CHSH below visibility 0.98799697 unfiltered or 0.956106 filtered (other Bell tests not computed); any classicality claim from a null.

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10. Accounts outside M26 (listed with no verdict) and the occupancy of the ledger shape

Flagged accounts. These were surfaced by the lanes (2026-09-24) and are GIE-adjacent but outside the frozen M26 list. By the order of record's frozen-rule clause (doc 29 §4.2 (iv)(e)), a row added after reading is flagged and carries no verdict. Each enters as a typed row only by a dated re-registration.

id	account	why it is listed	note (no verdict)
2411.02287 v2	Trillo–Navascués: the Diósi–Penrose model predicts GIE	cited inside R01, R05, R11	the record's own typing is doc 06 v1.1's Prop C4 reconciliation: all of its entanglement is the direct gate (reading II)
2501.16253 v3	Angeli–Carlesso: Markovian hybrid CQ entangles only through non-local couplings	R13's reference trail	the record's quantitative Gaussian precedent for Lemma C's dividing line
2510.23584 v4	Lin–Mondal: quantized tidal-field parity entangles; semiclassical and stochastic gravity do not	a footnote of 2511.19242	not typed in the committed docs
2506.21122 v2	Tibau Vidal–Marletto–Vedral–Chiribella: a "locally classical" mediator with non-locally-tomographic coupling	R11 v2's conclusion; an L3 citer	Definition 2 (K) requires standard composition; doc 04 audits exactly this clause
2510.19969 v1	Marletto–Vedral, "Classical Gravity Cannot Mediate Entanglement by Local Means"	MOVW's ref. [8] (never their [7])	a would-be R03 sub-entry
2512.19806 v2	Spalvieri–Garmier–Giacomini: a per-sector mediation no-go on a lattice gauge theory	R05 v5's reference; an L3 citer	a no-go row
2609.26818 v1	Joseph: squeezing-enhanced GIE of trapped oscillators	a T2 net hit, non-firing	a platform / theory proposal
2304.00734 (= PRA 114, 023306 (2026))	Howl–Cooper–Hackermüller: GIE in atom interferometry with coherent, near-classical states	an L2 feed hit	its near-classical-state regime is where the classical-carrier genre (R01, R02) bites
2606.00255	Muciño (thesis): a semiclassical treatment of BMV predicting no entanglement and definite local phases	carried over from Scout B	a Schrödinger–Newton-class account
2605.26240	Miki–Li–Chen: pulsed-optomechanics GIE	an R14 citer	R14's sibling; the threshold is not lowered by input states
2602.12266 v2	Saldanha–Marletto–Vedral: a repulsive gravitational force as a non-entanglement witness	an L2 hit	Theorem W does not type non-entanglement witnesses; the paper's classical/quantum claim is its own
2510.20587 v2	Zarei et al.: graviton-propagator entanglement of fermionic qubits	an L3 citer	a quantum-gravity row; its static-limit null is model-specific, and by its own statement it is consistent with the static-limit BMV phase for spinless masses

Occupancy of the ledger shape (KA-3 NOT FIRED; OCCUPIED-BELOW-THRESHOLD). The lanes' registered letter needs four things of a posted classification before KA-3 fires:

- K1: it is posted;
- K2: it covers ≥ 5 GIE model classes;
- K3: it uses a uniform ledger of ≥ 2 named premises, marked per account;
- K4: ≥ 3 of its accounts are M26 accounts first posted on or after 2025-07-01.

The one near-threshold object is **Di Biagio's Table II** (R05; present in v4, retained in v5). It marks seven theories against {statespace, mediation, classicality}. K1–K3 hold. K4 fails: only Aziz–Howl is an M26 account of that date. It is a prior ledger, which the record already engages as the "adversarial mini-ledger" (doc 06 v1.1). **Cite and distinguish; no race.** The distinction:

- Its classicality is the GPT simplex; Definition 2 has three senses (K, D, O).
- It has no null column and no saturation map.
- It does not type the 2026 rows (the device-independent, noise-floor and classical-carrier genres).
- Its conclusion coincides in form with Theorem W's disjunction: a GIE positive refutes {statespace ∧ mediation ∧ classicality}, and Theorem W's reading (II) is its "mediation fails".

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11. The must-cite block

Carried on every export of this table, cite-and-distinguish unless marked otherwise. Each committed text is quoted verbatim from its source.

(a) Theorem W′'s anchors (doc 06 §5, v1.1 amendment). Both legs of the null converse must cite these:

> both legs must cite anchors (Matsui; 2510.20991; TN 2411.02287's closing remark that GIE-dynamics tests can falsify DP)

Matsui is arXiv:2607.20867: DSW-anchored graviton which-path decoherence at exact BMV parameters, the independent anchor of SAT-3's order class.

(b) The classical-carrier genre (doc 27 §7.7.4, rider add 1):

> **Must-cite block adds** 2512.14834 v2 (Schlegel–Dakić–Del Santo, "Entanglement without Quantum Mechanics: Operational Constraints on the Quantum Signature", v2 2026-09-16; PDF `3b026d345a5552ad…`, title-verified) next to 2605.20330, the classical-carrier genre's standard for which entanglement signatures a classical carrier can host

(c) The inherited magic-line block (M-1 is a Paper-M row; the R8-am block as carried by [E1M] §9):

> "Every export carries the G20-2 must-cite block in cite-and-differentiate: (i) **2608.12512 + 2607.16403v2**, universality-of-magic at algebra grade (type III von Neumann); differentiate: continuum structural necessity vs carrier-located exact finite certificates with a two-sided instrument (B-1/B-2 in-class); (ii) **2510.18967 + 2608.12472**, Wigner negativity of gravitational states via the gravitational path integral; differentiate: state-complexity monotone vs protocol-carrier adjudication with impossibility+location halves; no epistricted class, no pre-registration; (iii) **2512.10126 + 2601.22219**, law-level negativity adjudication in cosmology (CV/Hudson lane, verdicts in both directions; also parity precedent, an in-class/deflation verdict published as a discovery); mandatory with any instrument-novelty sentence (PC-D's PARTIAL carriers); (iv) **2606.19180v2**, stage-located SRE accumulation inside a gravity protocol (the SRE-corroboration-only rider does the work; necessity-one-sided already in-sentence); (v) **2607.12047** with 2306.14996/2403.07056/2607.10663 by name, Cao-line experimental arrival (magic-enriched HaPPY code on trapped ions); (vi) **2606.09971** alongside 2601.15842, cited in both verdict directions (the constraint-null's positive complement); (vii) **2604.06087 (+2604.06149)**, Gauss-law sectors are stabilizer codes (QRF-side null corroboration); (viii) with any W-B export: **2607.08508 + 2607.16968**, the magic-located-in-protocol genre (PC-B pressure set)."

(d) The lanes' adds (L2, 2026-09-24), as the lanes state them:

> Add 2210.14921 and 2302.03259 to the must-cite block.

- **2210.14921**: Perche–Ragula–Martín-Martínez, harvesting from the gravitational vacuum. An out-of-class route to "field quantization beyond non-commutativity" (SAT-3's scope).
- **2302.03259**: Foo–Mann–Zych, npj Quantum Inf. 12 (2026). The relativity of spacetime superpositions re-expresses GIE on a fixed background, which is the direct-gate reading. An assumption critique, not a classification.

(e) The W-row citations carried by [E1M] §3.1:

- Martín-Martínez & Perche, arXiv:2208.09489, in the W4 row (mediator locality; the quantum-controlled classical field).
- Boulle & Franzmann, arXiv:2512.17024, in the W5 row (subsystem independence under dressing and gauge constraints).

(f) The row-level canonical citations:

- Ulbricht–Bermúdez Manjarres–Reginatto 2601.21555 is the canonical citation for the "reclassified, not refuted" discipline (doc 06 v1.1).
- Di Biagio 2511.02683 v5's Table II is the prior ledger (§10).
- Ludescher et al. 2507.13201 is the kinematic no-go that Lemma C strengthens.
- Fabiano et al. 2603.26075 v2 is the minimal-noise theorem behind N-1.
- Kent–Pitalúa-García 2109.02616 and Das et al. 2608.08778 are the device-independent protocols behind SAT-6.

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12. Ceiling riders (verbatim), wording bans and never-claimables

The ceiling riders of the order of record, fused from day one, verbatim:

> DUTY grade: no sentence of this program claims a discovery; every verdict row is a corollary of the house's licensed theorems and the model's own text, labelled so before the run. A positive certifies "non-classical" in Definition 2's sense and the Theorem-W disjunction (a non-classical mediator, or a nonseparable direct gate with no carrier), never "quantum", never "gravity is quantum". A null never feeds "gravity is classical" (doc 06 §5; 21a §7). "Loophole-free" is never used bare, the saturation map is its honest form. The ledger adjudicates assumptions, never authors or priority; "reclassified, not refuted" wherever a model's "classical" lies outside Definition 2. Published exclusion bounds from sensor data are cited as row data, never re-derived (§4.2 (v)). "Gravity is a magic factory" never, M-1 is a gate-typing number. "Undecidable" never (N1). Licensing is never posting; defer-until-big governs every export; whether D1 is "big" is the owner's call and is never argued in this program's text.

Wording bans (KA-5), binding on every sentence of this note and on every quotation from it. The banned strings are quoted only in the list below; this note's text is scanned by code for them outside that list and outside verbatim quotations of the record (§15).

Banned (quoted only here): "gravity is quantum", "gravity is classical", "QM derived", "requires QM", bare "loophole-free", "the house settles the debate", "gravity is a magic factory", "undecidable"; a null feeding a classicality claim.

Never-claimables specific to this table:

- **The ledger adjudicates assumptions, never authors or priority.** A row "refuted" is refuted on its own formulation, under the premises named, by an outcome that has not yet occurred. It is not a judgement of the paper.
- **"Reclassified, not refuted"** is the only wording for R05, R07 and R10. "Consistent with a positive" is never "confirmed by a positive".
- **Published exclusion bounds from sensor data** are row data, cited and never re-derived. That includes the collapse-model and postquantum-classical literature and the 2026 floors of 2605.05375. The house computes only the three columns, N-1 and M-1.
- **N-1 and the NSB verdict are statements about what a future null would do.** They are not exclusions claimed today.
- **A flat pair/single ratio alone** never carries the null-with-full-visibility verdicts, and **a witness null with $\Delta \neq 0$** never carries Theorem W′'s.
- **SAT-1's 3.3 × 10^{-13} rad** is never printed as the size at the committed geometry: it is doc 27's parametrization (§6).
- **M-1** is a gate-typing number about a modelled channel under white noise. It is never a law, never a statement about the mediator, never a hardness claim (nonstabilizerness ≠ hardness).
- **No sentence here argues that the table, or D1 (the composition of Theorems W, W′, M, E1, E1-M and this table), is "big".** That is the owner's call.

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13. The typed outcome and the kill-criteria ledger

Typed outcomes, each by its own letter (doc 29 §4; the owner rules the headline of doc 30).

outcome	its letter	holds?
SCOREBOARD-BY-DEFINITION	every row readable off its own text, N-1 decided by committed text	**NO**: R04 needed a bounded reproduction (the gate's ruling)
SCOREBOARD-WITH-ROWS	one or two rows need a bounded reproduction on the van Hove template	**YES**: one row, R04, reproduced of record
ROW-FLIP	a reproduction contradicts a paper's own stated computation; reported first	**YES by its letter**: Struyve's eq. (31) / (46) / Fig. 1 (×2 in the NS mean-field phase). Verdict-neutral by a rule registered before the reproduction ran; no premise of Theorem W or M touched; reported first (§0 item 4)
COUNTEREXAMPLE	a model inside W1–W5 with a Definition-2-classical mediator delivering a Definition-1 positive	**NO** (P-A4 TRUE in the pilot, the gate, the reproduction and both M-A6 legs). The steelman's position-readout completion of R04's NSB member (1.1319 on the witness from product wave functions) is outside the row's computation, carries no verdict, and violates W6 (ii); KA-2's letter "inside W1–W5", against the theorem's W1–W6, is flagged for the owner (§0 item 3)
SATURATED	no BMV-class discriminator splits Theorem W's disjunction above resolution	**YES** (P-A7 TRUE; §6; SAT-1's size now carries doc 27's parametrization, which does not affect SATURATED)

The reproduction leg read the outcome as SCOREBOARD-WITH-ROWS plus a verdict-neutral KA-1 rider, on the ground that no cell's value class moved. That criterion is not in doc 29 §4's letter, so under the frozen-rule clause it cannot suppress an outcome whose letter holds. It is recorded here as that leg's reading, beside the letters, and carries no typed outcome.

"A note, not a front": NOT entered. M-A3 prints that phrase only when KA-0 fires. The gate ruled that KA-0 does not fire by its letter, because R04 is NEEDS-REPRODUCTION (the pilot's contrary headline is refuted). This document is an in-house note because M-A3 orders the table assembled as one, in the 05a / 21a pattern. The program is a DUTY because doc 29 grades it so. Neither fact is the KA-0 outcome.

The order of record's predictions:

prediction	forecast	outcome
P-A-ctrl: the census re-types the four adjudicated rows exactly	mandatory	FAIL at the pilot's first run (comparison layer) → KA-ctrl → dated repair → **PASS-AFTER-DATED-REPAIR**; reproduced 4/4 by the gate's own route
P-A1: ≥ 75% of rows DAF-BY-DEFINITION	~70%	**TRUE** (22/23)
P-A2: ≤ 2 rows NEEDS-REPRODUCTION	~70%	**TRUE** (1)
P-A3: no reproduction contradicts a paper's own computation	~90%	**FALSE by its letter** (R04, eq. (31) / (46)); verdict-neutral
P-A4: Theorem W stands	~99%	**TRUE**
P-A5: N-1 is an instance of E1's clause	~55%	**TRUE** (INSTANCE, ×5.358 at equal reaches on the hold-only phase; descriptor refined to first order)
P-A6: M-1 branch	55 / 40 / 5%	**branch 1** ($F^* = 0.4473 < 0.864790$); branch 3 excluded in advance by NC-M1
P-A7: near-corollaries regress; SATURATED	~99%	**TRUE** (its parenthetical size is doc 27's parametrization, [RIG] N10)

Kill criteria:

criterion	ruling
KA-ctrl (method)	FIRED at the pilot's first control run; repaired (dated); re-run PASS
KA-0 ("a note, not a front")	**NOT FIRED** (the gate)
KA-1 (row flip)	**FIRED BY ITS LETTER** (the reproduction); verdict-neutral; no W/M premise touched, so the re-audit clause does not apply
KA-2 (counterexample)	not fired (its letter "inside W1–W5", against the theorem's W1–W6, is flagged for the owner: §0 item 3)
KA-3 (framing scoop)	not fired (the lanes: OCCUPIED-BELOW-THRESHOLD; the ledger-shape nets of every leg 0, this finalization's included)
KA-4 (re-derivation budget)	not fired (one row needed computation)
KA-5 (wording)	this note is scanned by code (§15), again on this Final v1.0
KA-6 (trigger mid-run)	not fired at any leg: the assembly, both M-A6 legs and this finalization (start and end, §15)

14. Assumptions and caveats ledger

1. **Regime.** Every verdict is at the BMV regime and the committed geometry of §2.1. Rows whose own regime lies elsewhere (R22's horizon, R23's externally supplied gravitational wave, R16's near-singlet) are typed by their own text and the general lemmas, with scope riders.
2. **The positive column is conditional on W1–W6 and on all three clauses of Definition 1.** W6 (i) is not certifiable, as in every Bell test. W4's signatures are infeasible at BMV, which is why the conclusion is a disjunction.
3. **The null column is conditional on sufficient sensitivity** (the certified budget, the (d, τ) scan excluding $\Delta = 2\pi n$, fair sampling). W′'s interpretation needs linear phase additivity, and its branch needs $\hat{\Delta}$ consistent with 0 (21a §7). Sufficient sensitivity in the lab's observables ([STL] D5; re-certified in this finalization): under symmetric branch-diagonal noise with single-interferometer contrast V_s on both masses, the committed witness reads $V_s \cdot C + V_s^2$ in the calibrated frame, so a null is informative only above $V_s = 0.924876$ plus margin; below $V_s = 0.855799$ the delivered state is separable. E1's clause needs V_c for both masses from the pair shots, V_s for both masses from single-interferometer runs, and a stated single-mass reach u_s (§2.5, §7).
4. **REACH is the registered yardstick** ($c < 0.1$ at 2σ on E1's baseline scan, evaluated at the committed $\Delta\phi$; E1's function is F_{E1}, $1 - F_{E1} = c \cdot \Delta\phi^2$, not M-1's white-noise weight F). The exact Gaussian deficit at $c = 0.1$, $1 - e^{\{-\Delta^2/10\}} = 0.0098104$, lies below REACH, so the yardstick is the conservative one. The NSB margin (×1.2474) is thin at every geometry; N-1's (×5.358, hold-only phase) is not. **Phase basis** ([STL] D7; re-certified in this finalization): all margins are on the hold-only phase $\Delta = -211/672$. E1's contours are fixed in total accumulated phase ([E1] §5), 0.5–0.9 rad at the design point ([E1] §2); there NSB's ratio is ×1.2435–×1.2290 and N-1's conservative ratio ×3.31–×1.78 (quadratic share ≥ 56/81), F^* runs 0.343–0.242 against F_{ent} 0.802–0.697, and v_{DI} 0.971–0.917. N-1's margin falls to 1 only at a total phase of 1.52 rad. Every value class is unchanged.
5. **M-1 is a white-noise statement** about the hull of Clifford unitary channels. The completely-stabilizer-preserving extension is float-grade data only. Under branch-diagonal dephasing the steelman's data (§8 (i)) leave branch 1 unchanged.

6. **Text currency.** Every quotation is from the latest arXiv version as of 2026-09-24 (the gate's D2; the lanes' currency check). The lanes read 13 entries at full-text depth and 19 at claim-sentence depth, a disclosed deviation from their registered method. The residual risk is body text outside their claim net; no entry was found inconsistent at either depth. The rigor leg confirmed on the arXiv API that the quoted version is the latest for all 32 texts (2026-09-24 23:26:15), and re-typed 13 rows from full text with no value class moved.
7. **Row conclusions are the rows' own words** and are never adopted. That covers R08's inference wording, R17's "entangled curvatures" reading and R18's LPI reading.
8. **The flip of record** on Aziz–Howl (Fork 2) is contested in the literature and is not load-bearing for R03's verdict (§5, R03).
9. **MOVW ref. [7]** enters first the day it posts (KA-6). It carries the same title as 2511.07348, so a v2 of 2511.07348 that replaces the comment is a possible form of posting, and the version check of 2511.07348 is load-bearing. It announces a mediation / responsibility criterion. On posting, that criterion is typed against Lemma M before anything else, and the ledger-shape occupancy is re-ruled.
10. **Corpus path.** Doc 29 §5 names `papers/25_adjudicator/`; the lanes used `papers/26_adjudicator/`, which is the path of record for their texts.
11. **Nothing here is a discovery.** Every verdict is a corollary of licensed theorems and the rows' own texts. Two cells, N-1 and M-1, needed a small exact computation, and each was decided or certified before this assembly; M-1 was certified a third time by the rigor leg of M-A6, by a disjoint route.
12. **Sizes carry their parametrization.** SAT-1's 3.3×10^{-13} rad is doc 27 §3.9's value at $\Delta\phi \approx 1$ rad over 2 s and d = 200 μm (8.38×10^{-14} rad at the committed point); SAT-3's $\langle n_g \rangle$ is for C^2-smooth quintic ramps; v_DI is the unfiltered two-setting CHSH price at perfect detection; τ_π is a hold-only figure.
13. **W6 (ii)'s lab certificate is necessary, not sufficient** (§2.2): single-mass fringe statistics cannot detect a Bohmian semi-classical completion read out by position ([STL] D2).

One-line summary for the collaboration: *if your run certifies entanglement (sound witness, EM budgeted, per-run statistics), quote "no classical degree of freedom carried this entanglement; either a non-classical mediator did, or the interaction is a nonseparable direct quantum gate with no carrier". That refutes the c-number, separable-potential, commuting-mediator and CQ accounts on their own formulations (Struyve's Bohmian member only for a spin readout whose pointer is not the diamonds' own position), reclassifies the van Hove and direct-gate "classical" accounts without refuting them, and cannot tell a mediator from a direct gate (the Fork-1 discrepancy is a picosecond transient of at most 8.38×10^{-14} rad at the committed point, and 0 in the final-state phase). If it does not, at sufficient sensitivity and with your extracted angle Δ consistent with zero, you have refuted the conjunction of quantized gravity, linearized coupling and quantum mechanics for matter (under linear phase additivity); a null with $\Delta \neq 0$ is the classical-channel fingerprint, a diagnostic only. If, in addition, your pair/single visibility ratio is flat at 1 for both masses and your single-mass scan shows no anomalous contrast loss for either mass (reaches r_R on the ratio and u_s on the single-mass contrast with $-\ln(1 - r_R) - \ln(1 - u_s) \leq 211/1944$, which at r_R = REACH means u_s ≤ 0.0939), you have refuted every non-entangling Galilean, time-local, Newton-on-average account at once (×5.358 when both reaches equal REACH, on the hold-only phase), and Struyve's Bohmian member only thinly, by ×1.2474, and only under that paper's Born-rule statistics with a non-positional spin readout. A flat ratio alone refutes none of them: a member whose forced noise is partner-independent leaves the ratio at exactly 1. Either way you have said nothing at all about gravity being classical.*

Appendix A, Numbers provenance

Sources of record.

- **[PIL-rows]** `analysis/adj_pilot_rows.jsonl`: the census entries, the cells N-1 and M-1, the battery rows. **[PIL]** `analysis/adj_pilot_results.md`.
- **[GATE-state]** `analysis/adj_pilot_verifier_state.json` (keys `n1`, `m1`, `csp_data`, `typing`). **[GATE]** `analysis/adj_pilot_verifier.md`.
- **[REPRO-state]** `analysis/adj_repro_state.json` (stages `C`, `C_fig`, `D`, `W_data`). **[REPRO]** `analysis/adj_repro_r04.md`.
- **[LANES]** `papers/26_adjudicator/SCOUT_ADJ_LANES.md`.
- **[WM-rows]** `analysis/witness_magic_rows.jsonl` and **[WM-res]** `analysis/witness_magic_results.md` (the committed rows of doc 21).
- [E1], [E1M], [W], doc 27 §3.9.

Grades.

- **record**: a certified value of record of a committed program.
- **pilot / gate / repro**: a value of this program's record, certified where marked.
- **exact**: an exact rational identity.
- **data**: a recorded value that carries no verdict.
- **source**: quoted from a row's own text.
- **rigor / steelman**: a value of an M-A6 leg's record.
- **finalize**: a number newly printed in Final v1.0 and re-certified by this finalization's own exact arithmetic before entry (C1–C12, [FIN]); it carries no verdict.

The verdict quantities were re-evaluated by the assembly leg's own exact arithmetic (CK-A), again by both M-A6 legs by their own routes, and once more by this finalization's checks on the final text (§15). The numbers this finalization newly prints were re-certified before entry (certifications C1–C12 of [FIN]; grade "finalize"). That is a regression of the record, never a new verdict.

numbers	used in	source of record	grade
m = 10^{-14} kg; d = 450 μm; Δx = 250 μm; d − Δx = 200 μm; τ = 2.5 s	§2.1, §5	Bose et al. design, via [E1] §2 and [E1M] §2	source
$Gm^2/\hbar$ = 63.3 μm·rad/s	§2.1	[E1] §2	pin
Δ = −211/672 = −0.313988 rad	§2.1, §7, §8	[PIL-rows] battery I1, I1′; [WM-res] §1 (−0.313988); doc 21 (two routes)	exact / record
C = 0.156350; W = 1 + C = 1.156350; design value 1.1563	§2.1, §2.2	[WM-res] §1; [W] Definition 1	record
F_ent = 1/(1 + C) = 0.864790 (0.8648)	§1, §2.1, §4, §6, §8, §13	[WM-rows] MB-design `F_ent` [0.864790, 0.864791]; [PIL-rows] battery I2 and cell M-1 `F_ent` (0.8647901222…)	record
F_magic = (1 + cos Δ)/2 = 0.975555, 7dp 0.9755547	§2.1	[WM-rows] MB-design `F_fid_witness`; [PIL-rows] battery I2 (0.9755546984…)	record
τ_π = 1680π/211 s = 25.0136 s	§1, §2.1, §4, §5 (R18, R20), §6	[WM-rows] MA-ladders `tau_pi` [25.013628, 25.013629]; [PIL-rows] battery I7	record
c < 0.1 at 2σ (E1's null reach)	§2.5	[E1] §7	record

numbers	used in	source of record	grade
REACH = 0.1·Δφ² = 44521/4515840 = 0.0098588524 (0.0098588523951)	§2.5, §4, §5 (R04), §7	the pilot's registration R2 §G; [PIL-rows] cell N-1 `reach`; [GATE-state] `n1.reach`; [REPRO-state] `D.REACH`	exact
accessible transfer entanglement 10^−O(10^7)	§2.2	[W] W2 (doc 03's bound)	record
light-crossing phase 3.3 × 10^{-13} rad (3.335641 × 10^{-13} exactly at doc 27's parametrization Δφ = 1 rad, T = 2 s, d = 200 μm: (1/2 rad s^{-1})(200 μm/c))	§1, §4, §5 (R17, R19), §6, §12, §14	doc 27 §3.9 and `analysis/anchor_corunner.md` item 2 (C2c); [PIL-rows] battery I5; [RIG] §2; C11	record / pilot (a parametrization, not the committed point)
d/c = 0.667 ps at 200 μm	§1, §6	[W] §1.5 ("~0.7 ps"); [PIL-rows] battery I7 (0.667128 ps)	record / pilot
⟨n_g⟩ ≈ 1.3 × 10^{-57}	§1, §5 (R23), §6	[W] W1; [E1] §1, §9; [PIL-rows] battery I7	record (transcription only; C^2-smooth quintic ramps, τ_acc = 0.5 s; [RIG] N9)
0 (van Hove vs quantized linear gravity, mass-side)	§1, §6	[W] v1.1 van Hove scoping; [VH] (the polaron identity)	record
v_DI = 1/√(1 + $\sin^2(\Delta/2)$) = 0.98799697 (unfiltered two-setting CHSH at perfect detection)	§1, §4, §5 (R16), §6, §9	doc 29 §4.2 (iii) (Scout B probe R1, interval-certified); [PIL-rows] battery I6 (0.98799696958764)	near-corollary (registered)
α_Gδx²/ħ = 211/4860 s^{-1}; $E_1 + E_2 \geq 211/972$; max E ≥ 211/1944; E = 211/3888	§7	[PIL-rows] cell N-1 (`aG_rate`, `E_sum_min`, `E_max_min`, `E_worst`); [GATE-state] `n1.d`	exact
N-1 minimal forced deficit 0.0528232369 (0.0528)	§1, §5 (R12), §7	[PIL-rows] cell N-1 `deficit_worst` (0.05282323687311799); [GATE-state] `n1.d`	pilot / gate
N-1 ratio ×5.358	§0, §1, §4, §5 (R13), §7, §9, §13, §14	[PIL-rows] cell N-1 `ratio_worst` (5.357949866…); [GATE-state] `n1.d`	pilot / gate
exact-phase deficit 0.075495 (×7.66); symmetric CQ-form V_s deficit 0.102856	§7	[PIL-rows] cell N-1 (`deficit_worst_exact_phase`, `deficit_sym_universal`); [GATE-state] `n1.d` (7.6576)	data
211/972 = (56/81)·(211/672); δx/d = 5/9	§7	[GATE] §7 (b); arithmetic on the committed geometry	exact
F* = 1/(1 + 4|sin Δ|) = 0.447343871026845 (0.4473)	§0, §1, §8, §13	[PIL-rows] cell M-1 `F_star_interval`; [GATE-state] `m1.Fstar` (closed form; float 0.447343871026845)	pilot / gate (certified)
certified widths < 10^{-40} (pilot) and 3.3 × 10^{-117} (gate)	§8	[PIL] §7; [GATE] §8.2	pilot / gate
11520; 720 × 16; 192; 220 in classes 1, 192, 3, 24; 256 entries	§8	[PIL-rows] cell M-1 (`census`, `G`, `support_multiplicities`); [GATE-state] `m1.census`	pilot / gate
facet entries {0, ±1/3, −1} (pilot) and {−1, 0, 1}, 29 nonzero, 6858 tight (gate); 185-element decomposition, rank 185	§8	[PIL-rows] cell M-1 `W_denominators`; [GATE-state] `m1.facet`, `m1.decomp_summary`	pilot / gate
F*_CSP = 0.447343871 over 36720 stabilizer states (float, not certified)	§8	[GATE-state] `csp_data` (0.4473438710268354; 36720); [GATE] §8.3	data
W_NSB = 0.100298105048 (0.10030)	§5 (R04)	[REPRO-state] `W_data.W_NSB` (0.100298105047672); [GATE-state] `n1.NSB.W_row47`	repro
NSB forced deficit 1 − cos(Δ/2) = 0.0122982745690	§5 (R04)	[REPRO-state] `D.deficit_float` (0.012298274569043978; certified width 4 × 10^{-105})	repro (certified)
NSB ratio ×1.2474	§0, §1, §4, §5, §9, §13, §14	[REPRO-state] `D.ratio` (1.2474346989…)	repro
$\Delta^2/8 - \Delta^4/384 \geq \Delta^2/10$ iff $\Delta^2 \leq 48/5$; the limit 5/4; the coefficients 1/8 vs 1/10	§5 (R04)	[REPRO] §4 (`D.certificate` = 955128023467/391541969387520 at the committed Δ)	exact
W_NS reproduced 0.07775, printed 0.28683	§0, §5 (R04)	[REPRO-state] `W_data` (0.0777535115…; 0.2868316118…)	repro
Fig. 1 W_NS peak: printed 6.949 s, reproduced 13.90 s (at CODATA constants, the figure's own); printed 6.948 s at the 63.3 pin	§5 (R04)	[REPRO-state] `C_fig` (6.94942; 13.8988); [RIG] §2 (N6); C10	repro (float) / finalize
×2 on all four mean-field phase terms of eq. (31)	§0, §5 (R04)	[REPRO-state] `C.ratio31`	exact
exact Gaussian deficit at c = 0.1: 0.0098104	§14	[REPRO] §4 (data)	repro data
λ ≤ 52 μm	§5 (R21)	the row's own text, via [PIL] R21	source
$K_g = 2Gm^2/d^3$	§5 (R14)	the row's own text; [GATE] §5, §7 (b)	source / gate
P tally 9 / 3 / 11; types 22 + 1; agreement 23/23 (P) and 22/23 (type)	§1, §3, §4, §13	[GATE-state] `typing`, `type_agree`, `P_agree`, `gate_tally`	gate
90 deciding sentences, 87/90 found by the gate's first extractor; 32 texts; 9 sub-entries	§0, §3	[PIL] §4; [GATE] §4	pilot / gate
12 flagged accounts; K1–K4; seven theories in Di Biagio's Table II; 13 full-text + 19 claim-depth readings	§10, §14	[LANES] §0, §3.7, §4, §6	lanes
SAT-1 at the committed point: (25/63)·$Gm^2/(\hbar c)$ = 8.38 × 10^{-14} rad (8.378812 × 10^{-14}) at t = (d − Δx)/c = 0.667 ps; exactly 0 from t = (d + Δx)/c = 2.33 ps	§0, §1, §4, §5 (R17, R19), §6, §9, §14	[RIG] §2; [STL] §3 (`ck_s5`: 25/63, 8.378812391 × 10^{-14}); C1	finalize (exact)
u_s ≤ 1 − e^{−211/1944}/(1 − REACH) = 0.0939233 (printed 0.0939, below it); V_s = e^{−211/1944} = 0.897144; the cornering condition −ln(1 − r_R) − ln(1 − u_s) ≤ 211/1944	§0, §1, §2.5, §7, §9, §14	[STL] §4 item 2 (`ck_s3`); C2	finalize (exact)
filtered two-setting CHSH above 0.956106 (root 0.9561059782); unfiltered above 0.98799697	§1, §4, §5 (R16), §6, §9	[STL] §3 (`ck_s6`; A1 float for general complex filters); C3 (own closed form for symmetric diagonal filters)	finalize (certified root) / data (general filters)
λ_ent = (√(C^2 + 4) − C)/2 = 0.924876; λ_PPT = 0.855799; the L1-ball bound 1/(1 + |sin Δ|) = 0.764027; white-noise PPT 1/(1 + 2C) = 0.761789; λ* = 1 − √(|sin Δ|/(1 + |sin Δ|)) = 0.5142	§5 (R14), §8, §9, §14	[STL] §5 (`ck_s7`, A5); C4	finalize (exact; λ* LP-located, data)
the position-readout completion of R04's NSB member: W = 1 + C − C^2 = 1.1319 (1.131905); ⟨Y_A Y_B⟩ = $\cos^2(\Delta/2)$ = 0.9756; gap C^2 = 0.0244	§0, §5 (R04), §9, §13	[STL] §2.1 (`ck_s8`, A3); C5 (own quantile model)	finalize (exact formula; data, no verdict)

numbers	used in	source of record	grade
R21: −5.3 % (−5.34 %) and −7.1 % (−7.13 %); 200 μm = 3.85 λ at λ = 52 μm	§4, §5 (R21)	the row's eq. (17) and p9; [STL] (`ck_s9`); C6	finalize (data)
phase basis: NSB ×1.2435–×1.2290; N-1 ×3.31–×1.78; F* 0.343–0.242; F_ent 0.802–0.697; v_DI 0.971–0.917; 1.52 rad; the design point's 0.5–0.9 rad	§2.1, §5 (R04), §7, §14	[E1] §2, §5; [STL] §4 item 4 (`ck_s4`); C7	finalize (exact) / record (0.5–0.9 rad)
0.88σ per contour point; about 2.5σ at the scan level; σ(R) ≈ 1.4 % at 10^4 shots	§0, §1, §5 (R04), §9	[E1] §7; [STL] §4 item 5; C8	finalize (derived)
56/81 and 25/81 = 30.9 %	§5 (R01), §7, §14	exact; C9	exact
the rigor leg's M-1 route: group order 128; 31 nonzero entries; 3634 tight; 16 + 1 + 16 + 16 + 1 = 50; minimum weight 0.0244453; width 5.7×10^{-71}; 576 + 5184 + 5184 + 576; overlaps 17 and 19	§8	[RIG] §3; `analysis/adj_note_rigor_m1_certificate.json` , `analysis/adj_note_rigor_state.json` ; C12	rigor (certified)

Appendix B, Texts of record

Every quotation in §5 and §7 is from the file below, at the stated 1-based PDF page. The assembly leg re-found each quotation on its page by its own extraction (CK-C); the rigor leg re-found all 72 by a second route (pdfminer, then pypdf), checked every sha256 prefix and page-1 stamp (32/32) and the currency of every version (32/32 latest); this finalization added four quotations from files already listed (R04 pp. 5 and 10, R08 p. 1, R13 p. 2) and re-ran CK-C on the final text (§15).

row	arXiv id	version quoted	file (relative to the research root)	sha256 (f
R01	2605.20330	v1	`papers/24_anchor_margin/2605.20330.pdf`	`ddab167e1`
R02	2512.14834	v2	`papers/24_anchor_margin/2512.14834.pdf`	`3b026d345`
R03	2510.19714	v3	`papers/06_witness_program/AzizHowl_2025_classical_gravity_produces_entanglement.pdf`	`a26fcb9f2`
R03 sub	2511.07348	v1	`papers/06_witness_program/MOVW_2025_classical_gravity_cannot_mediate_entanglement_2511.07348.pdf`	`7015329ee`
R03 sub	2511.20717	v1	`papers/06_witness_program/Sienicki_2025_comment_on_AzizHowl_2511.20717.pdf`	`14a43bf5f`
R03 sub	2511.00852	v3	`papers/06_witness_program/2025_no_classical_gravity_does_not_entangle.pdf`	`a7c993758`
R03 sub	2511.19242	v3	`papers/06_witness_program/schneider_2025_demonstration_classical_gravity_no_entanglement_2511.19242.pdf`	`5f6a161d3`

row	arXiv id	version quoted	file (relative to the research root)	sha256 (f
R03 sub	2512.13675	v4	papers/26_adjudicator/2512.13675v4.pdf	94a62ebc3
R03 sub	2604.19696	v3	papers/26_adjudicator/2604.19696v3.pdf	be52d0173
R03 sub	2604.16276	v1	papers/06_witness_program/2026_AzizHowl_channel_classical_mechanics.pdf	752806e67
R04	2510.20991	v2	papers/06_witness_program/2025_semiclassical_no_entanglement.pdf	926dd7ef7
R05	2511.02683	v5	papers/26_adjudicator/2511.02683v5.pdf	367b545fd
R06	2607.03429	v1	papers/06_witness_program/2607.03429_TibauVidal_Iyer_matter_field_exchange_not_classical_gravity.pdf	2d90d1101
R07	2605.06577	v1	papers/26_adjudicator/2605.06577v1.pdf	25ed17509
R08	2508.03052	v4	papers/26_adjudicator/2508.03052v4.pdf	7b7f1a658
R09	2507.11713	v1	papers/26_adjudicator/2507.11713v1.pdf	9035a9d48
R09 sub	2608.17688	v1	papers/26_adjudicator/2608.17688v1.pdf	115b7736c

row	arXiv id	version quoted	file (relative to the research root)	sha256 (f
R10	2601.21555	v1	papers/06_witness_program/ulbricht_reginatto_2026_van_hove_hybrid_classical_mediator_entangles_2601.21555.pdf	4150fc3d8
R11	2507.13201	v2	papers/06_witness_program/ludescher_2025_gme_infinite_dimensional_classical_mediators_2507.13201.pdf	6a3e67183
R12	1811.03116	v3	papers/06_witness_program/Oppenheim_2018_postquantum_classical_gravity.pdf	5619c97d3
R12 sub	2605.05375	v2	papers/26_adjudicator/2605.05375v2.pdf	8627a3ec4
R13	2603.26075	v2	papers/26_adjudicator/2603.26075v2.pdf	076193112
R14	2605.26215	v1	papers/26_adjudicator/2605.26215v1.pdf	c07c1deb1
R15	2604.06891	v1	papers/26_adjudicator/2604.06891v1.pdf	1f49d7474
R16	2109.02616	v3	papers/26_adjudicator/2109.02616v3.pdf	ddc2727bb
R17	2608.08778	v1	papers/22_species_conservation/2608.08778.pdf	94cdfb328
R18	2607.19141	v1	papers/26_adjudicator/2607.19141v1.pdf	43b8cf41f

row	arXiv id	version quoted	file (relative to the research root)	sha256 (f
R19	2606.31678	v1	`papers/26_adjudicator/2606.31678v1.pdf`	`679c93f77`
R20	2602.19306	v1	`papers/26_adjudicator/2602.19306v1.pdf`	`b8e536baa`
R21	2609.22501	v1	`papers/26_adjudicator/2609.22501v1.pdf`	`c1565e764`
R22	2609.04104	v6	`papers/26_adjudicator/2609.04104v6.pdf`	`d0e57e716`
R23	2609.09931	v1	`papers/24_anchor_margin/2609.09931.pdf`	`9b7d970d6`

15. Verification record and provenance

Two independent adversarial legs verified draft v0 (sha256 `3edeab695d0df581…`) on 2026-09-24; this Final v1.0 folds every repair from both. Full repair ledger: [FIN] `analysis/adj_note_finalize.md`.

Leg 1: certificate-rigor ([RIG], `analysis/adj_note_rigor.md`; 22:49–23:48 CEST; tokens 9,100,067 / 9,100,079 as mod-p regression pins only). Every number re-derived by its own routes with exact enclosures (31/31, plus the R04 reproduction 7/7). M-1 certified a third time: own census by two routes, own 128-element symmetry reduction, own facet and own decomposition, width 5.7×10^{-71}. 13 of the 23 rows re-typed from their deciding texts by a selection rule registered before any PDF was opened: all 13 P classes equal, no value class different. 72/72 quotations re-found by pdfminer and pypdf; Appendix A 38/38 found in its sources; 13/13 verbatim blocks at the strict tier; the ceiling riders character-identical; 0 banned strings. Triggers none fired at start and end; pins 396/396 byte-identical. Verdict PASS-WITH-REPAIRS: D1 (G3, SAT-1's scope label), D2 and D3 (G4: the one-line summary; R08's linearity premise), and the G5 notes N1–N13. Refuted in its own registrations: its R1 description of the pilot's census route (corrected by its R1-A before any M-1 computation) and FC-2.

Leg 2: experimentalist steelman ([STL], `analysis/adj_note_steelman.md`; 23:03–23:37 CEST; tokens 9,200,017 / 9,200,021). A BMV/SGI experimentalist's attack on every row's reading, the saturation map's sizes and the conventions of N-1 and M-1. Every verdict quantity regressed by own exact arithmetic (14/14); N-1's exponent convention confirmed by an own derivation of the row's eq. (34); M-1's branch-1 reading robust under the optimal entanglement test, the campaign's branch-diagonal noise class and the total-phase range. Triggers none fired at start and end; pins 399/399. Verdict PASS-WITH-REPAIRS: D1 and D5 (MED, blocking export), D2 and D3 (MED), D4, D6 and D7 (LOW-MED), D8–D11 (LOW), D12–D14 (INFO); a letter gap in KA-2 reported first. Refuted forecasts: the $1/c^2$ residual (it is $1/c^4$), λ^* equal to the L1-ball bound (it is 0.514230), λ_ent's sixth decimal, and the completion's exact frame maximum (1.131908).

What the verifiers changed (every item folded as registered; dispositions in [FIN] §1–§2):

item	repair	where
[STL] D1 (blocking); [RIG] D2, N8	a null with full visibility = R flat **and** a clean single-mass scan on both masses; two reaches, N-1 cornered iff $-\ln(1 - r_R) - \ln(1 - u_s) \le 211/1944$; the member with R ≡ 1 printed	header, §0, §1, §2.5, §3, §4, §5 (R12, R13), §7, §9, §12, §13, §14, summary
[STL] D5 (blocking)	Theorem W′'s branch needs $\hat{\Delta}$ consistent with 0; a witness null with $\hat{\Delta} \neq 0$ is diagnostic only; sufficient sensitivity quantified in V_s	header, §0, §1, §2.4, §3, §9, §12, §14, summary
[STL] D2; [RIG] N12	R04's NSB cells need a non-positional spin readout; the position-readout completion (1.1319) is a W6 (ii) failure; W6 (ii)'s certificate is necessary, not sufficient; KA-2's letter flagged	§0, §1, §2.2, §5 (R04), §9, §13, §14
[STL] D3 = [RIG] D1; [RIG] N10	SAT-1's size labelled with doc 27's parametrization; 8.38×10^{-14} rad at the committed point; 0 from 2.33 ps on	header, §0, §1, §4, §5 (R17, R19, R22), §6, §9, §12, §13, §14, summary, App. A
[STL] D4; [RIG] N3	device-independent price: unfiltered CHSH above 0.98799697; filtered above 0.956106; the minimum over all Bell tests not committed	§1, §4, §5 (R16), §6, §9
[STL] D6	V_s from single-interferometer runs (left-only, right-only); V_c from the pair shots	§2.5, §7, §14

item	repair	where
[STL] D7	phase basis: every margin hold-only; the total-phase margins; "hold-only" beside every ×5.358	§2.1, §5 (R04, R13), §7, §13, §14
[RIG] D3	R08's contrapositive regains "linear" (with the row's p1 sentence)	§5 (R08)
[STL] D8, D9, D10, D11, D12, D14	R21's Yukawa shift at 200 μm; R01's condition (2) by geometry; SAT-3's ramp qualifier; F_E1; M-1 under branch-diagonal dephasing (data); NSB 0.88σ per point	§1, §4, §5, §6, §8, §14
[RIG] N1, N2, N4, N5, N6, N7, N9, N13	W′'s unconditional clause named; "outside the convex hull of Clifford unitary channels"; R15 moved in §9's null row; R05's untyped DP floor; Fig. 1 at CODATA; R13's position-only dissipator; SAT-3 transcription-only; Γ_a's definition	§1, §3, §5, §6, §7, §9, App. A
[RIG] M-1 route	the third certificate column	§8
record-side ([RIG] N10, N11; [STL] §10)	doc 27 §3.9's size label, doc 06 §1.2's W6 (ii) row, the gate's V_s wording, KA-2's letter, doc 29 P-A7's parenthetical, the assembly manifest's paths: drafted in [FIN], not entered	none

What did not move. Every row's type and P / N / S value class (the §4 table's first four columns are byte-identical to v0); N-1 = INSTANCE (×5.358 at the registered equal-reach rule); M-1 = 1/(1 + 4|sin Δ|) = 0.447343871026845 and its branch; SATURATED; the typed outcomes and the kill-criteria rulings of §13; Theorem W, W′, M and every licensed sentence; every verbatim block and row quotation of v0 (byte-identical in v1.0).

This finalization (2026-09-24 23:59:41 to 2026-09-25 00:34 CEST, python3.12). In order:

- **Pins before**, 23:59:41: 466 files (the union of the two M-A6 legs' lists, their records, the 21a precedent and the earlier legs' trigger states).
- **v0 preserved** byte-identical as `analysis/adj_note_finalize_v0_snapshot.md` (23:59:54).
- **Registration R0** (sha256 `fdffee2b9a319434…`), frozen 00:00:36, before the first network query.
- **Triggers at the start**, 00:01:45–00:03:39 (a first attempt at 00:01:22 stopped in this leg's own net-string check before any query; logged): **none fired**; 0 differences from the rigor, steelman and assembly end states.
- **Registration R1** (sha256 `4c382c603a980261…`), frozen 00:12:00, before any certification and before any change to the note: the fold rules, the disposition of every item of both legs, the HELD rule, the certifications C1–C12, the checks and their forecasts.
- **Certifications** (`analysis/adj_note_finalize_certify.py`), run of record run5 at 00:16:29: **15/15 PASS**; every new number reproduced at its printed digits and regressed against the leg that first printed it; no leg number needed correcting. Runs 1–4 failed on this leg's own check code only (three type artefacts of the steelman state's string storage, and one symbolic-identity step whose numerical content already matched); each is logged with a dated correction.
- **The patch** (`analysis/adj_note_finalize_patch.py`): every replacement asserted against the v0 text (100 registered replacements and the section-15 rewrite, 107 asserted edits in all); the patcher is re-runnable and is the record of what changed. Text defects of this leg's own patch output, found by its checks and by the manual read (a missing phase label on one ×5.358; three stale §0 cross-references after the renumbering; the KA-3 row's "this leg"; three precision edits: a frame-maximum phrase printed as the calibrated-frame value, the R04 (N-a) readout qualifier, F_E1 in §9), were repaired in the patcher before the final write, each with a dated log entry.
- **Checks** (`analysis/adj_note_finalize_checks.py`) on the final text: the check of record is the last CHECK run in the log, on this final text: CK-A 41/41; CK-B 14/14; CK-C 76/76 (69 exact and 6 at the alphanumeric tier by poppler, 1 dehyphenated by PyMuPDF); CK-D 0 banned strings, and the 21 sentences that pair "null" with "classical" were read by hand (each states the ban, describes a model or a diagnostic, or lists what is never claimed; the twenty-first is this one); CK-E 23/23; CK-F 8/8; CK-G 26/26 fold items at their sites, 0 stale v0 strings, every ×5.358 labelled; CK-H 6/6 (the 13 v0 verbatim blocks and 72 v0 quotations byte-identical, the §4 table's first four columns and §13's verdict words unchanged). Runs 1–3 tolerated the end-of-leg placeholders; run1 found one unlabelled ×5.358 and a comparison defect in this leg's own CK-H, both repaired and logged.
- **Triggers at the end**, 00:31:43–00:33:33: **none fired**; 0 differences from this finalization's start and from the rigor, steelman and assembly end states; 2511.07348 still v1; controls 609 / 184 / 142.
- **Pins after**: 465/466 byte-identical; the one change is this note, the assigned object (v0 preserved as the snapshot). The final re-hash after the last write is logged.

Forecasts of this finalization (registered in R0 and R1 before the computations they predict):

forecast	prior	outcome
CK-G: every fold present on the first run	~65%	**REFUTED**: run1 found one ×5.358 without its phase label (repaired in the patcher, logged)
F0.1 no trigger fires at the start	~95%	TRUE
F0.2 2511.07348 still v1	~98%	TRUE
F0.3 arXiv window controls 609 / 184 unchanged	~85%	TRUE
F0.4 INSPIRE control ≥ 142; = 142	~99%; ~65%	TRUE; TRUE
F0.5 0 differences from the rigor leg's end state	~85%	TRUE
F0.6 KA-3 ledger-shape nets 0	~95%	TRUE
F0.7 T1 title nets {2511.07348, 2510.19969}; 2510.19969 v1	~92%	TRUE
F0.8 recent citers identical	~85%	TRUE
F0.9 net strings identical to the assembly leg's by AST	~99%	TRUE (the first attempt's comparison code missed that the assembly script adds its two title nets inline; corrected before any query)
F0.10 the rigor, steelman and assembly end states agree	~90%	TRUE
C1–C12 reproduce their legs at the printed digits	~85%	TRUE (15/15 at run5; runs 1–4 failed on this leg's check code only)
C3 the filtered-CHSH root is 0.956106	~85%	TRUE
C4 $\lambda_{PPT} = 0.855799$	~85%	TRUE (the determinant factors; $\lambda^2 = (2 - \cos\Delta) - \sqrt{((2 - \cos\Delta)^2 - 1)}$)
C5 the completion reads $1 + C - C^2$ for every packet convention	~80%	TRUE (4/4 conventions)
CK-A clean on its first run	~50%	TRUE (41/41)
CK-B / CK-C 76/76 / CK-D 0 / CK-E / CK-F	~80% / ~85% / ~75% / ~97% / ~90%	TRUE / TRUE / TRUE / TRUE / TRUE
CK-H	~85%	TRUE from run2 (run1's FAIL was this leg's comparison reading KA-6's reworded gloss as a verdict change; the verdict words were identical)
all clean within three runs	~90%	TRUE (run2)

forecast	prior	outcome
Final v1.0, not HELD	~90%	TRUE
end-of-leg triggers: none fired; 0 differences from the start	~93%; ~70%	TRUE; TRUE
pins after 465/466, only this note changed	~95%	TRUE

Records of this finalization (all new files, `analysis/`): `adj_note_finalize_registration_{R0,R1}.{txt,sha256,stamp}`; `adj_note_finalize_{pins,freeze,triggers,certify,patch,checks}.py`; `adj_note_finalize_pinlist.txt` and `adj_note_finalize_pins_{before,after,final}.{txt,stamp}`; `adj_note_finalize_trig_{start,end}.json`; `adj_note_finalize_certify.json` and `adj_note_finalize_checks.json`; `adj_note_finalize_v0_snapshot.md`; `adj_note_finalize.log` (append-only, with the dated corrections); the ledger `adj_note_finalize.md`; `adj_note_finalize_MANIFEST.sha256`. The one pre-existing file changed is this note, the object of the assignment. No committed document, pilot, gate, lane, reproduction, assembly or M-A6 record was edited; no engine was imported or run; no prime was drawn; no background process was launched.

15.1 The assembly leg (M-A3, 2026-09-24, 22:19:24–22:49 CEST), retained as history

Handed by the assembly leg to the two M-A6 legs (from the gate §11, the reproduction §7 and the lanes §7), **and how each was answered:**

1. the NSB margin ×1.2474, its Born-rule conditionality and its eq. (30) scope: regressed by both legs; the steelman added the readout-pointer condition (D2) and the per-point statistics (D14);
2. the both-masses rider of E1's clause and of N-1: kept, with V_s as E1 defines it (D6) and the single-mass reach made explicit (D1);
3. M-1's conventions (white noise; the Clifford-unitary hull) and the completely-stabilizer-preserving float datum: the rigor leg certified M-1 a third time; the steelman found branch 1 robust under the optimal entanglement test and under branch-diagonal dephasing (D12, data);
4. the contested Aziz–Howl computation (Tibau Vidal–Iyer §IV and Di Biagio v5, against Gundhi–Infantino–Bassi v3), from which R03's reading is kept independent: the steelman confirmed R03's reading untouched;
5. the spin-assignment invariance of Struyve's witness: confirmed by the rigor leg (W_NSB invariant under a spin-label swap);
6. the 19 entries the lanes read at claim-sentence depth: 13 of the 23 rows re-typed by the rigor leg from full text by its registered selection rule, no value class moved; the residual risk of §14 item 6 stands for the rest.

The assembly leg's steps, in order:

- **Pins before.** 376 canon and record files at 22:19:24: the lanes' 282, the reproduction's record, the lanes' record and PDFs, and the committed rows this note traces numbers to.
- **Registration R0** (sha256 `a7530eec0b0737df…`), frozen at 22:19:57, before the first network query.
- **Triggers at the start**, 22:20:46–22:23:05: 52 like-for-like nets plus the two T1 title nets and the 2510.19969 version check. **None fired**, with 0 differences from the lanes' end state. A comparison-code key artefact (a full arXiv URL against a bare id) was logged and corrected at 22:23:22; it was not a version change.
- **Registration R1** (sha256 `82a9049231953674…`), frozen at 22:24:37, before any line of this note was written and before any check. It holds the assembly rules (the typed outcome by letter, KA-0, the column values, the riders, the must-cite composition, the numbers policy), the checks CK-A..CK-F and their forecasts.
- **The note**, written 22:25–22:41.
- **Checks** (`analysis/adj_note_checks.py`):
  - run1, 22:42:27: crashed on a type error in the check code before any result was logged;
  - run2: one CK-A failure, again a type artefact of the check code (strings compared with integers), while its numeric sub-checks passed;
  - run3: all clean.

  The two repairs were code-only, and no note text changed across runs 1–3. After run3, three wording edits followed: the M-1 sentence of §1, the case of R14's title, and the τ_π row of §2.1. The final run on the final text is the last CHECK line in the log. At run3:
  - **CK-A 28/28.** Every checked number regresses to its source, and the verdict quantities regress by that leg's own exact arithmetic, with every inequality unchanged: F* < F_ent and F* ≤ F_magic; the N-1 deficit ≥ REACH; the NSB deficit ≥ REACH.
  - **CK-B 13/13** verbatim blocks are found in their sources.
  - **CK-C 72/72** quotations are re-found on their stated pages by that leg's own extraction: 65 exact and 6 at alphanumeric level by poppler (hyphenation, two-column or math artefacts), and 1 by PyMuPDF. That one is R01 p6, where poppler inserts the page number inside a word, the artefact the gate recorded.
  - **CK-D:** 0 banned strings outside the verbatim quotations and the ban list. At run3, eleven sentences pair "null" with "classical" (on the v0 final text there were twelve; the twelfth was this sentence). Each was read by hand, and each states the ban or quotes a row.
  - **CK-E:** 23/23 P classes and types equal the gate state; the 23 row sections are in order.
  - **CK-F 5/5.**
- **Triggers at the end**, 22:43:55–22:46:11: **none fired**; 0 differences from the start and from the lanes' end state.
- **Pins after**, 22:46:29: **376/376 byte-identical**. A final re-hash after the last write is logged.

Forecasts of the assembly leg, registered in its R0 and R1 before the computations they predict:

forecast	prior	outcome
F0.1 no trigger fires at the start	~95%	TRUE
F0.2 2511.07348 still v1	~98%	TRUE
F0.3 arXiv controls 609 / 184 unchanged	~95%	TRUE
F0.4 INSPIRE control ≥ 142; = 142	~99%; ~60%	TRUE; TRUE
F0.5 0 differences from the lanes' end state	~80%	TRUE
F0.6 KA-3 nets 0	~95%	TRUE

forecast	prior	outcome
F0.7 T1 title nets = {2511.07348, 2510.19969}; 2510.19969 still v1	~92%	TRUE
F0.8 recent citers identical	~85%	TRUE
F1.1 CK-A clean on the first run	~55%	**REFUTED**: run1 crashed and run2 had one failure, both defects of the check code, not of the note
F1.2 the exact re-evaluation agrees with the record; every branch and inequality unchanged	~99%	TRUE
F1.3 CK-B clean on the first run	~75%	TRUE (its first execution, run2)
F1.4 ≥ 95% of quotations found by poppler; every miss confirmed by PyMuPDF as an artefact	~85%; ~90%	TRUE (71/72); TRUE (1/1)
F1.5 CK-D clean on the first run	~70%	TRUE
F1.6 CK-E clean	~95%	TRUE
F1.7 all clean after at most two repair runs	~95%	TRUE (run3)
F1.8 end-of-leg triggers identical to the start	~85%	TRUE
F1.9 pins after byte-identical	~95%	TRUE (376/376)

Records of the assembly leg (all new files; `analysis/`):

- `adj_note_registration_R0.{txt,sha256,stamp}` and `adj_note_registration_R1.{txt,sha256,stamp}`;
- `adj_note_freeze.py`, `adj_note_triggers.py`, `adj_note_checks.py` and `adj_note_pins.py`;
- `adj_note_pinlist.txt` and `adj_note_pins_{before,after,final}.{txt,stamp}`;
- `adj_note_state.json` (every check run) and `adj_note.log` (append-only, including the two dated corrections);
- `adj_note_MANIFEST.sha256`.

The trigger states are in the session scratch directory (`…/scratchpad/adj_note/trig/state_{start,end}.json`). No committed document, pilot, gate, lane or reproduction file was edited. No engine was imported or run, no prime was drawn, and no background process was launched.

Next under the binding order (doc 29 §5):

- doc 30, the program report (the owner rules its headline among the typed outcomes of §13);
- the record-side candidates drafted in [FIN] are the owner's to apply or decline;
- MOVW ref. [7] enters first the day it posts (KA-6);
- a quotation event, if one is ever wanted, owes the closing audit at the untouched reserve (≥ 9,300,001) and a fresh re-sweep.

End of the living exclusion table, Final v1.0.

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