The Realization Theorem

Standing Class Quantities at Member Grain — The Registration Argument for Forcing, the Flowing-Realization Rival Retired at Its Slot, and the Conditional Discharge of CO-1

Keith Taylor *VERSF Theoretical Physics Programme*

General Reader Summary

The central claim, first

The previous paper in this route — the Carrier Theorem — established where quantization lives. Under the programme's bath picture, the whole-number rule of electric charge applies to the *family* of identical particles, not to any individual member: the pool owns the pound; the seats show shares. That result opened a door it did not walk through. It proved that a family integer *read at the grain of one member* would appear as a fraction — a third, for a family of three — and it proved that this fractional reading, if it exists, can take no value other than q⁄k. What it deliberately did not prove is that the reading exists at all, or that nature is obliged to use it. The fraction was admissible. This paper asks whether it is *forced*.

The answer proposed here: yes — but not for the reason that first comes to mind, and the difference between the wrong reason and the right one is the whole content of the paper.

Why symmetry alone was never enough

The tempting argument runs: the family owns the whole number; the members are perfectly identical; identical members must hold identical shares; therefore each member holds q⁄k. This is the equal-shares argument, and it is a fallacy — refuted, in fact, by the route's own previous paper. Symmetry guarantees that *if* the members show anything permanent, they all show the same thing. It does not guarantee that they show anything. Return to the bank: three depositors hold one pooled pound, stirred continuously. Ask what one seat holds, and one perfectly consistent answer is — *nothing in particular*. The pool has a balance; the seats have only the day's churn. A world in which the family carries its integer and the members carry no permanent value whatsoever is fully consistent with everything the programme has proven so far. To get from "the pool owns one pound" to "every seat permanently shows a third," a fourth ingredient is needed, and naming it honestly — rather than letting symmetry appear to do work it provably cannot do — is the first task of this paper.

The engine: what a measurement actually reads

The fourth ingredient is an answer to the question: *when you check a seat, what does the checking read?* Two answers are possible, and they describe different worlds.

In the first world, checking a seat reads the vault's afternoon arrangement — the realized churn. The answer fluctuates: this seat holds nothing now, everything an hour later, a third only on average. Fractional charge would then be a statistical artifact, and a quark's third would flicker.

In the second world, checking a seat prints a receipt from the bank's *standing ledger* — the permanent rules, not the momentary arrangement. And the standing ledger contains exactly one entry per seat, because the previous papers proved there is exactly one permanent seat-level fact available: the family integer read uniformly, q/k. In this world every check of every seat, always, prints the same fraction — not because the churn stopped, but because the checking never read the churn in the first place.

The paper argues that the second world is ours, and that the argument is not a preference but a property of what a quantized response *is*: a response is read by carrying a system around a closed journey and comparing the end with the beginning — and that comparison is constructed precisely so that the journey's incidental churn cancels out of it. A closed-loop record reads the permanent structure of the transport, not the traffic that happened to be on the road. If that reading of the record construction holds at its source — the paper names it, slots it, and prices its failure — then the fraction is forced: every member of every family permanently shows its family's integer divided by its family's size. And the argument, it turns out, never cared what the pool is called: any bank whose transfers scramble *who is who* — even a "separate accounts" bank whose journeys shuffle the account labels among themselves — is forced to the same equal shares, because the forcing runs on the scrambling, not on the name. That widening matters for the programme's oldest open question, and the paper spends it there.

What the theorem predicts

A forced theorem cannot choose its consequences, and this one has three. The thirds of particle physics are predicted to be *permanent* — never fluctuating, never averaging — which is what is observed where the seats can be resolved at all. The census's two-member families are predicted to show *halves* — and here the paper polices its own enthusiasm: the world's most famous half attached to two-fold families turns out, on inspection, to be the wrong shape (its two values point in opposite directions, where the theorem demands every seat show the *same* thing), and discovering that yields something better than a confirmation — two tests. First: a family can only be one of the theorem's families if its members are identical in every permanent respect, a criterion that disqualifies some famous doublets, fits others (the magnitude of spin, uniform across its two-fold structure, is exactly the right silhouette), and is handed to the programme's identification question as a working tool. Second, a test built from a silence: no half-charge has ever been measured anywhere, which tells the identification question in advance what the two-member family's electric number can be — even, or zero, or not electric at all. And the theorem creates a debt that turns out to contain two discoveries. If every member of every family permanently shows its share — a true fraction whenever the family's number does not divide

evenly by the family's size — the world's refusal to show free-floating fractions demands an explanation, and auditing how the world actually builds its free, whole-numbered things reveals more than companionship: the proton itself mixes seats from two *different* families, filling neither and mirroring nothing, and its books balance only because the families' whole numbers march in step — every family in the three-seat sector differs from every other by exact whole units at the seats. Nothing in the framework yet explains why independent families should coordinate their numbers; the world obeys the coordination to the last exotic state. And the audit ends in a fork the paper turns into a prediction: a family whose number divides evenly by its size produces members whose shares are whole — free-roaming, solitary, unremarkable, which is exactly what the world's familiar free particles are — while a family whose number does not divide is condemned to balanced company forever. Whether a family's members can ever walk alone is decided by one division. The paper names the coordination as the precise target of the route's next obligation, and the fork as its first cross-sector prediction: derive the coordination, and confinement follows for exactly the families whose division leaves a remainder; find two equal-sized families that break step, and the constraint fails exactly where the families mix.

The honest condition

The paper is written from the programme's standing — the bath, where the corpus's independent arguments have converged — with the same discipline its predecessor established: the formal verdict at the node W0 does not move, every result is stated at a conditionality that survives either verdict, and the evidence is never fed its own conclusion. The theorem here is conditional and says so at every joint: on the carrier analysis it inherits whole, on the open question of composition order that could bypass the route entirely, and on three new named premises about what records read — that seat-level records exist, that they report seat-level content rather than the family total, and that they read the standing structure rather than the passing churn. What it adds, if those premises hold at their sources, is the route's final modal upgrade: q/k stops being the value the fraction *would* take, and becomes the value the world *must* show. The strangest charges in physics would then not be permitted by the framework. They would be required by it.

Abstract

The headline. The Carrier Theorem located fundamental quantization at the minimal transport-stable subject and proved that under the bath ontology that subject is the class — leaving as CO-1 the existence and modality of the uniform member-grain reading whose value the Uniform Reading Lemma had already closed at q/k. This paper supplies CO-1's first deliverable. The result is the **Realization Theorem**, in three clauses of strictly increasing strength: **(i) existence** — the uniform reading exists as standing member-grain content, constructible from class facts alone; **(ii) uniqueness** — it is the *only* standing member-grain response content, by the Exclusivity Lemma; **(iii) necessity** — under three new named imports, every admissible member-grain registration reads it, and uniform realization at q/k is **forced**. The failures are slot-resolved and graceful: REG-E broken removes the registration, REG-G broken makes member readings integral, R-O broken makes them statistical — all three leaving existence and uniqueness standing. The paper is written from the programme's bath standing under the

established firewall: the marker at W0 does not move, and §11's pressure argument draws its force from the conditional structure alone.

The fallacy retired first. §4 retires the equal-shares argument — class ownership + indistinguishability ⟹ q⁄k per member — against the route's own predecessor: those premises are exactly the Uniform Reading Lemma's, yielding the conditional and provably not existence, since the Carrier Theorem's bath branch is the demonstration that the same premises withhold standing identity from members. Forcing requires further premises, and the paper names them rather than smuggling them.

The three new imports (full slots and fallbacks at §2; refuters at §13). **REG-E**: member-grain records are admissible, free or *housed* — the housed clause keeping clause (iii) performable should the saturation obligation discharge — with the two-grade structure made explicit: the traverser satisfies R-C's persistence at *realized* grade while the output is standing. **REG-G**: a member-grain record's output is seat-grain response content in AD-m's sense, not k seat-indexed readings of the class integer whole — indexing is not content-grain, the class-grain rival is consistent with R-O and untouched by additivity, so the clause is named rather than assumed; it is deliberately assigned *no empirical face*, since observed fractions instantiate REG-G and the forcing jointly and claiming them would make the prediction circular. **R-O, with its scope clause**: a record's output is a function of its *specification* — the loop and the grain, the grain being the traverser's *cardinality*, not its identity — with the realized complement cancelling: churn, allocation, and *which* seat traverses, which-seat being realized yields seat-indifference for free.

The argument. §5 proves the **Registration Lemma** in four steps — record exists [REG-E]; output standing given the specification [R-O]; output at seat grain, the class-grain rival retired at its own import [REG-G]; output therefore the unique standing seat-grain content, q⁄k [Exclusivity, with AD-m's deferred consumption performed]. §6 constructs the **flowing-realization rival** in full and prices its obligation at true size: the rival owes the absence of flicker, the debt partially screened by the route's own machinery — averaging instrumentation, and a saturation clause forbidding exactly the free single-seat registration that would show flicker most directly. The evidential lean is disaggregated to keep §2's firewall watertight: *stability* of housed member-resolved readings bears on R-O's slot at any grain; the *fractionality* of the values is deliberately unclaimed.

The theorem's true grain. The engine consumes the shared condition of identity-dissolving transport — no transport-stable seat-indexed assignment exists over the carrier, satisfied by the bath through dissolution and by a permuting ledger through instability — never the bath label. The theorem transfers verbatim to orbit carriers at q⁄(orbit size), closing the permuting-ledger escape from the W0 pressure.

Audits, a criterion, and a constraint. §8 runs all three capacities. **k = 1**: the charge paper recovered verbatim — and blind to the grain question (q⁄1 = q on REG-G's rival too), so the anchor is not over-read. **k = 2**: the audit yields two O1 tools at different grades. The **Class Uniformity Criterion** — members of a bath class are identical in every standing quantity — is derived from the Exclusivity Lemma's uniformity half alone (B-IRR and permutation-forcing;

consuming neither AD-m nor any clause-(iii) import), so it survives every degradation the theorem admits; run against the most tempting candidate, it disqualifies the weak doublet as naively read (T_3 anti-uniform, charges differing — the naive identification would strike Exclusivity, not confirm forcing), admits the color triplet as an unclaimed clause-(ii) consonance, and leaves the spin-½ silhouette at [Conjectural] with its open joint marked (magnitudes do not compose additively; AD-m is the silhouette's exposed clause). The **k = 2 winding constraint** — at clause-(iii) grade — converts the world's silence on half-charges into a derivable restriction: the k = 2 class carries even or null electric winding, or hosts no electrically registered species; a null-winding class would show its forced fraction in a non-electric quantity, exactly where the silhouette lives. **k = 3**: the thirds as consequence, at the seven-condition chain.

The debt forcing creates — and the findings inside it. §9 states CO-2 at **integral totals**, not seat-filling, and audits the formulation against the world's table under §8's [Conjectural] identification — where the named modes fail: the nucleon itself draws seats from two classes, filling neither and cancelling nothing, and its integral total rests on a fact nothing upstream supplies — **the windings of a capacity sector's classes are congruent modulo k** [C-RES, clause (c) at the census], a cross-class constraint the otherwise-independent classes have no reason to obey and the table obeys exactly. Given the congruence, one condition covers the table — a free configuration of n member and m antimember seats is integral exactly when $n \equiv m \pmod{k}$ — *on the invertible-residue branch*, and the invertibility clause is itself a physical fork, exhaustive at the census (2 and 3 prime; a capacity-four sector would host the missing middle case — one more credit to *never four*): **confinement ⇔ invertible residue** — conditional, in its confining direction, on integral totals being the free-admissibility rule, which is CO-2's premise — the route's first predicted difference between sectors. The k = 1 sector is null-residue by arithmetic, so free integral singletons — the leptons — are the theorem's prediction, not its counterexample; the k = 3 sector is invertible on the [Conjectural] reading and confined, as observed; the k = 2 sector's branch is fixed by the winding constraint, the null branch predicting it unconfined. CO-2's target sharpens to two deliverables — the balance restriction on invertible sectors, and the congruence — with a new separable joint: confirmed equal-capacity classes with incongruent windings refute the constraint at the mixed sector *with clause (iii) standing*, since the theorem never consumes C-RES.

CO-1, accounted; W0, re-priced. §10: the first deliverable is supplied at [Proven, conditional on REG-E, REG-G, R-O, AD-m, and the inherited carrier conditionality including C-ORD — one chain of custody, the route's total exposure carried visibly]; the second deliverable is reformulated as CO-2 and handed forward; the value confirms the Lemma's closure. §11: the chain runs observed permanent thirds → forced on identity-dissolving transport, unavailable to identity-preserving transport → W0, crossing at L-M's diagonal clause — the permuting-ledger escape closed by the transfer, the C-ORD bypass supplying no rival account, the permanence discrimination priced at its screened strength with only the stability component claimed, and the k = 2 contact conditional on a criterion-passing identification at O1.

Epistemic markers: [Inherited] imported from prior VERSF papers; [Imported-External] imported from standard mathematics outside the programme, carried at the external source's standing; [Proven] established here; [Conditional] holding under stated inputs; [Conjectural] motivated but unproven; [Open] undecided.

Table of Contents

1. Introduction — The Last Gap in the Route

The route to the e∕3 generator now has exactly one structural gap, and the predecessors drew its outline with unusual precision. The Capacity Census counted the seats: classes of one, two, and three members, never four. The Ownership Principle assigned the property rights — standing structure is class-owned — and proved the **Uniform Reading Lemma**: a standing member-grain reading of the class winding, *if one exists*, is permutation-forced to the value q∕k. The Carrier Theorem located the quantization: under the bath ontology the class is the minimal transport-stable subject, the lattice's underived integers are the class's, and member grain lies below the quantization grain — so the uniform reading is not merely consistent with the lattice but is the *only* member-grain content the bath licenses. Every paper in the sequence tightened the same noose: the value is closed, the consistency is guaranteed, the carrier is located. What none of them established is that the reading is *real* — that the seats of a class in fact standingly show q∕k, rather than showing nothing permanent at all. That is CO-1, named by the Ownership paper, fenced by the Carrier paper as the route's remaining obligation, and it is this paper's question.

The question's modal structure must be stated exactly, because the route's value depends on which modality is achieved. **Excluded** would close the route: if no standing member-grain reading is admissible, the class integer has no member-grain face and observed thirds revert to unexplained inputs. **Admissible** would sustain the route at the modality of accommodation: the framework permits the thirds without requiring them. **Forced** would complete it at the modality of derivation: the framework requires that every member of every k-member class standingly

show q⁄k, and the thirds become a consequence — a number the programme predicts rather than houses. The gap between admissible and forced is the gap between a framework consistent with the world and a framework that could have told you the world in advance, and this paper's ambition is the stronger modality, structured so that failure at the final step degrades to the weaker one rather than to nothing.

Two disciplines govern the development, both inherited from the route's hard lessons, and one of them visible only once the registration argument is told carefully. First, **the further premises must be named — all of them.** The inherited premises — class ownership, indistinguishability, transport stability — provably cannot force realization, and the proof is the route's own previous paper: the Carrier Theorem's bath branch establishes that exactly those premises *withhold* standing identity from member lines, so a world in which the class carries its integer and the seats carry no standing value whatsoever is consistent with everything inherited. Any argument that derives forcing from the inherited premises alone is therefore wrong before it is examined, and §4 retires the two most tempting versions explicitly — the equal-shares fallacy and a circular permanence argument — before §5 builds the right one. The right one has new premises at its heart, the paper names each as the import it is — including one, the grain of the record's output, that the argument's most natural telling leaves silent (§2, REG-G) — and the theorem's strength is exactly the premises' strength at their slots. Second, **the consequences must be priced, including the unwelcome ones.** A forced theorem predicts; predictions face the world; and §§8–9 run the audits at every census capacity — where the most tempting k = 2 candidate, examined, disqualifies itself — and state without softening the debt that forcing creates at the free sector. The corpus does not buy modality on credit.

One positioning statement, carried forward from the Carrier paper because it governs this paper's voice equally. The paper is written from the programme's standing: the bath, where the corpus's independent arcs have converged, with the ledger retired from this paper's scope entirely — not by neglect but by inheritance, since the Carrier Theorem proved the ledger contains no structural route to member-grain fractions, and a realization theorem is therefore bath-branch content by construction. The discipline binding the posture is unchanged: **the marker at W0 does not move**; this corpus moves its markers by derivation, not by accumulated lean; every result below is conditionalized on the bath branch explicitly rather than presupposing its selection; and §11, where the results feed back into the W0 pressure, draws its force from the conditional structure alone, so that the posture is never fed into its own evidence.

The paper proves no saturation account, decides no ontology, and touches no gauge structure. It establishes what the seats of a class standingly show, under named conditions; converts the route's last conjectural link into a derivation with slots; and hands forward, precisely stated, the one obligation its own success creates.

2. Inherited Results and Imports

The charge lattice and the record construction (R-C, R-S, L-G, AD) [Inherited — ⟨cite: the charge paper⟩, at the statuses and slots the Carrier paper fixed]: responses classified by winding q ∈ ℤ; the winding read off a persistent subject's closed-loop transport record [R-C — the persistence presupposition]; windings as standing classifications, not history-relative content [R-

S]; the quantization theorem binding at every transport-stable grain [L-G]; windings additive under composition [AD]. One clause of AD receives its deferred consumption here and the deferral is honored explicitly: the Carrier paper consumed AD at the composition law (stable sub-subjects' windings summing to the coarse subject's) and expressly reserved AD's **member-grain clause** — additivity of *readings* over the seats of a class, the Uniform Reading Lemma's premise — for CO-1's paper. This is CO-1's paper, and §3 consumes it. [Slot: the charge paper's composition law, read for its extension from carriers to seat-grain readings. *Fallback if broken:* uniformity of any standing member-grain assignment survives (it rests on permutation-forcing, not additivity), but the value q/k unfixes — the Exclusivity Lemma weakens from "unique at q/k" to "unique up to a uniform value," and clause (iii)'s output is a forced uniform constant whose identification with q/k re-prices at the slot. One interaction is recorded so the fallbacks compose correctly: the §3 additivity remark lapses with AD-m, so the class-grain-output rival's exclusion (§5) then rests on REG-G alone, at REG-G's slot.]

The Carrier Theorem [Inherited — the bath branch, at its conditionality: R-C, R-S, L-G, AD at its composition-law clause, B-IRR, and C-ORD]: the underived content of quantized response lives at the subjects admitting no exhaustive stable decomposition — exactly the minimal transport-stable subjects on each branch, by the per-branch verification the Carrier paper supplies rather than by general assumption; under the bath [B-IRR] the class admits no stable decomposition at all, exhaustive or partial, so the class is the minimal transport-stable subject, the lattice quantizes class-wise, member grain lies below the quantization grain, and the only standing member-grain content available is the class winding read uniformly, where it exists. Two deliberate absences in the inheritance are marked so they are not mistaken for oversights: **L-M and SUB are not inherited.** Both condition the Carrier paper's *ledger* branch only — L-M the diagnostic comparison, SUB its minimality clause — and the Carrier paper's own discharge accounting marks them outside the bath-side claim; a paper consuming the bath branch alone would inflate its conditionality by carrying them, and does not. (L-M's diagonal clause is touched exactly once below, in §11, as the W0 crossing the Carrier paper located — a consumption of the pressure argument, not of any clause of the theorem.) Two inherited conditions are restated visibly because each is a total exposure for this paper too. **B-IRR** [slot: the Bath Criterion's transport structure]: if broken, member lines regain standing identity, the route closes at CO-0, and everything here lapses. **C-ORD (composition order)** [Inherited — a named import of the Carrier paper's §2, consumed here under that paper's name, at that paper's slot, with nothing re-derived; slot: the structure-group imports]: the U(1) response is defined on the transport-completed carrier, not ordered member-wise on the pre-mixing one; if broken, the member-wise-prior alternative activates wholesale, the carrier analysis is bypassed for U(1), the route closes at CO-0 on both ontologies, and everything here lapses with it. Neither condition is decided here; both appear in every conditionality statement below; the route's exposure at each is total and stated as such.

The Ownership Principle [Inherited — at its statuses]: the standing/realized boundary (consumed at its §10 slot, once, not duplicated); the Class Ownership Theorem; the **Uniform Reading Lemma** — a standing member-grain reading, if it exists, is permutation-forced to uniformity and, by AD's member-grain clause, to the value q/k — with its identification clause: the uniform reading is the class's winding in member notation, indexed to no line, presupposing

no standing member identity. The Lemma is this paper's value-closure: nothing below re-derives q⁄k; everything below establishes the existence and modality of what the Lemma already valued.

The Capacity Census [Inherited — *Three by Two*, at its slots]: admissible class capacities $k \in \{1, 2, 3\}$; the O1 occupancy identifications [Open]. Consumed by §8's audits, which run at every admissible k, and by §11's pricing, where every empirical contact is conditioned on O1 explicitly.

Three new imports, named with slots and fallbacks — the paper's engine, and its honesty. One of them, REG-G, names a premise that the registration argument's most natural telling leaves silent — exactly the kind §4 teaches the reader to distrust: a record's *indexing* and its output's *content-grain* are different things, and conflating them would smuggle the conclusion.

REG-E (member-grain registration exists). The architecture admits **member-grain records**: closed-loop transport records whose specification fixes the subject grain at a single seat — one realized member traverses the loop — including **housed registration**: the probe resolving a seat *inside its housing*, so that, should CO-2 (§9) discharge and free seats prove inadmissible, the records clause (iii) quantifies over remain performable on exactly the $k \geq 2$ classes it targets. The member-resolved probing of housed structure is the model configuration, and without the housed clause the theorem would be empirically vacuous by its own saturation obligation. One consumption inside REG-E is made explicit because it is where a hostile reading of the source would press first: REG-E consumes R-C's persistence presupposition **at realized grade**. Under the bath, the traverser persists only as a locus of realized content [the Carrier paper's reconciliation] — so the seat-grain record's subject of traversal satisfies persistence at *realized* grade while the record's output is *standing* [R-O]. This two-grade structure — realized ship, standing depth — is the heart of the import, and the source reading must deliver exactly it: that R-C's persistence clause tolerates a realized-grade traverser. [Slot: the charge paper's record construction, read for the admissible grains of record specification — whether records require class-grain traversal or admit single-seat traversal, free or housed, and whether the persistence presupposition is satisfiable at realized grade. *Empirical face:* the world's probes resolve members, including inside their housings — responses are read constituent by constituent — so a negative reading at the slot would owe an account of how member-resolved measurement is possible at all. *Fallback if broken:* member-grain records inadmissible; clause (iii) lapses for want of a registration to force; clauses (i)–(ii) survive untouched, and the route holds at the modality of admissibility.]

REG-G (seat-grain output). The output of a member-grain record is **seat-grain response content in AD-m's sense**: the registered values of the k seats compose to the class winding — and not k seat-indexed registrations of a class-grain quantity read whole. The clause is named because the rival it excludes is otherwise untouched by everything else in the paper: a record whose comparison is performed on a single seat, with output indexed by which seat traversed, could still read the *class's* standing winding q entire — q is a function of the loop and the standing transport structure, which is exactly what R-O says the output is, and the §3 additivity remark does not exclude it either, since that remark binds standing seat-grain *assignments* (excluding "every seat standingly holds q," which composes to kq), whereas this rival's outputs are readings of one class quantity, never claimed to compose as seat values. Indexing is not

content-grain; REG-G is the statement that the two coincide for member-grain records, and it is a reading of the construction, not a consequence of any clause above it. One firewall is kept deliberately: REG-G is assigned **no empirical face**, although one is available — observed fractional member readings instantiate REG-G and the forcing jointly, so claiming observation as REG-G's support would feed the theorem's own prediction into its premise; the clause stands or falls at the source reading alone, and the k = 3 prediction stays non-circular. [Slot: the charge paper's record construction, read for whether the comparison's output is the traverser-grain response or the loop's class-total. *Fallback if broken:* registration reads the class integer whole; member-grain readings are integral; the thirds lapse as a consequence and revert to inputs; the route holds at the modality of admissibility, clauses (i)–(ii) untouched. Clause (iii) is exactly as strong as REG-G.]

R-O (record-output standing), with its scope clause. A closed-loop record's output is **standing content**: a function of the record's *specification* and the standing transport structure, invariant of the realized configuration along the loop. The scope clause does load-bearing work and is stated as such. A record, as a construction, has standing parameters — its **specification**: the loop, and the subject grain — and a realized complement: the configuration *along* the loop — the churn, the allocation flow, and, under the bath, *which* seat happens to traverse, seat-identity being realized. One clause forestalls the natural objection that a specification cannot fix seat-grain traversal in a theory that denies any fact about which seat: **the grain parameter is the traverser's cardinality, not its identity** — one member versus the class — and cardinality is standing content (the census's k is standing) even where identity is not; the specification says *how many* traverse, never *which*. R-O asserts cancellation of the realized complement **given the specification**, not invariance under the specification itself: records of different grain may differ in output (the grain is specification, and REG-G says what the seat-grain output is); records of the same grain on the same loop may not differ by churn. Without the scope clause R-O would prove too much — invariance under *everything* realized would erase the grain distinction the whole apparatus runs on, and would sit in quiet tension with REG-E's traverser, whose realized-ness the output would be simultaneously consuming and ignoring. The clause also yields one consequence free of charge: since *which* seat traverses is realized complement, the output of a seat-grain record cannot depend on which seat traversed — every seat reads the same value — an independent, record-side derivation of seat-indifference, consonant with the transport-side permutation-forcing the Exclusivity Lemma consumes. And the clause regiments the paper's vocabulary in one stroke: under R-O, a **registered output** *is* the value of the standing seat-grain **assignment** at the specified grain — output, assignment, and the §2 gloss "reading" are three words for one object once R-O holds, which is why AD-m binds all three and why §3's lemma about assignments governs §5's conclusion about outputs without slippage. The reading's ground, stated as the reading it is: the record construction defines a response as a *comparison* — the returned state against the initial state, across a closed loop — and the comparison is constructed precisely so that the realized configuration along the loop cancels out of it; what survives the subtraction is standing transport content at the specified grain, which is what a winding classifies [R-S]. A record whose output depended on the churn would be a record of the traffic, not of the road, and the lattice — which binds standing classifications only [R-S] — would not bind it. [Slot: the charge paper's record construction, read for the output's dependence — on specification and connection alone, or on the realized configuration transported. *Fallback if broken:* the

flowing-realization rival (§6) revives in full; clause (iii) falls; clauses (i)–(ii) survive; the thirds become statistical, and the rival inherits the obligation §6 records.]

No new physical imports beyond REG-E, REG-G, and R-O. The paper adds one lemma pair (§3 — the Exclusivity Lemma, consuming inherited material plus AD's deferred clause), two retirements (§4), one lemma (§5 — the Registration Lemma, consuming all three new imports), one rival construction (§6), one theorem (§7), three audits with a selection criterion (§8), and one named obligation handed forward (§9 — CO-2).

3. The Question's Exact Shape — Existence, Uniqueness, Modality, and the Exclusivity Lemma

CO-1's question divides into three, in strictly increasing strength, and the division is the paper's architecture: a referee striking the strongest clause must be shown exactly what survives.

Existence. Does standing member-grain response content exist at all? The Carrier paper's bath branch makes this a genuine question — member lines lack standing identity, so most candidate member-grain assignments fail at the peg before they fail at the value — but the answer is yes, and cheaply, because one candidate is constructible from class facts alone. The class winding q is standing [the Carrier Theorem]; the class capacity k is standing [the census]; and the assignment *every seat: q⁄k* — uniform, indexed to no line, invariant under every relabeling — presupposes no standing member identity, which is exactly the property the Uniform Reading Lemma's identification clause certified: the uniform reading is the class's winding in member notation, standing because its constituents are standing and its indexing consumes nothing the bath withholds. The Carrier paper's reconciliation spelled out why this suffices, and the answer is consumed here by citation rather than reconstructed: a relabeling-invariant predicate quantifies over seats without naming one, so its standing requires only the *class's* identity — exactly the identity the bath supplies [Inherited — the Carrier paper's reconciliation, at its §5]. **Existence Clause**: the uniform reading exists as standing member-grain content. [Proven, conditional on the Carrier Theorem's bath branch at its conditionality. Modality so far: admissible.]

Uniqueness. Is the uniform reading the *only* standing member-grain response content? **Exclusivity Lemma**: *yes — any standing member-grain assignment of response is uniform, and any uniform assignment composes to the class winding, fixing its value at q⁄k.* The argument, at the definitions. Let r be standing member-grain response content: an assignment of response values to the seats of class $\mathcal{C}$, standing. Under the bath, member-identity-through-transport is realized, not standing [the Carrier Theorem, by B-IRR] — so a standing assignment cannot be indexed to lines, and must be invariant under the relabelings admissible transport induces. This is the Uniform Reading Lemma's permutation-forcing, consumed at its inherited status: r is uniform, every seat the same value v. Then by AD at its member-grain clause — readings additive over the seats, composing to the class total — the values sum:

$k \cdot v = q$, hence $v = q⁄k$.

The seats can standingly show one thing, and the one thing is the class integer divided by the class capacity. [Proven, conditional on B-IRR, the permutation-forcing at the Ownership paper, and AD's member-grain clause at its slot — the consumption the Carrier paper deferred to this paper, here performed.]

Modality. Existence and uniqueness establish what the standing member-grain content *is*, where there is any. They do not establish that registration reads it — that what a member-grain measurement shows is the standing content rather than nothing permanent at all. That is the question of necessity, it is where the inherited premises run out, and it occupies §§4–7.

One remark fixes part of a question a referee would otherwise hold in reserve, and its exact limit is stated with it. Could a member-grain registration read *class-grain* standing content — output the full integer q per seat, rather than the share? Additivity excludes one version of this: if "q at every seat" were a standing *seat-grain assignment*, the seats' values would compose, by AD's member-grain clause, to a class total of $k \cdot q \neq q$ — so the only per-seat assignment consistent with the class's own integer is q/k. But the remark binds seat-grain assignments only. A subtler rival — the record's outputs as k seat-indexed readings of *one class quantity*, content at class grain, never claimed to compose as seat values — passes through this remark untouched, and its exclusion is not additivity's work: it is the named import REG-G's (§2), consumed where the registration argument needs it (§5). The remark and the import divide the labor exactly: additivity forbids q as a seat-grain *value*; REG-G establishes that record outputs *are* seat-grain values. [Remark, at its stated limit; the residual rival: at REG-G's slot.]

4. Two Wrong Arguments, Retired

Necessity has two tempting derivations from inherited material alone, and both are wrong — the first by the route's own previous paper, the second by circularity. The corpus's discipline is to retire wrong arguments in print before building, so that the right argument's new premise is visible as new rather than smuggled as old.

The equal-shares fallacy, retired. The argument: *the class owns q; the members are indistinguishable; indistinguishable members must hold identical shares; therefore each member standingly holds q/k.* The refutation is the inherited material itself. The premises — ownership, indistinguishability, transport structure — are exactly the Uniform Reading Lemma's, and what they yield is exactly the Lemma: the *conditional*. If a standing member-grain reading exists, symmetry forces its uniformity and additivity fixes its value. Nothing in the premises obligates a reading to exist, and the Carrier Theorem is the standing demonstration that they cannot: the same B-IRR that forces uniformity-if-existence is the irreducibility that withholds standing identity from member lines — the premises' joint content is *hostile* to member-grain standing structure, licensing exactly one exception (the uniform reading) and mandating none. A world in which the class carries its integer and the seats carry no standing value whatsoever — the pool with a balance, the seats with only churn — satisfies every inherited premise. Symmetry distributes what exists; it conjures nothing. Whoever asserts forcing owes premises the inheritance does not contain. [Retired, against the Uniform Reading Lemma's conditional form and the Carrier Theorem's bath branch.]

The circular permanence argument, retired. The argument: *windings are standing classifications [R-S]; a member-grain registration reads a winding; therefore its reading is standing, hence permanent, hence — by the Exclusivity Lemma — q/k.* The middle premise begs the question. Whether a member-grain registration reads *a winding* — standing content — rather than realized allocation is precisely what is at issue between this paper and the rival of §6; R-S classifies what windings are, and is silent on what registrations read. An argument that assumes registrations read windings has assumed necessity, not derived it. The right argument must establish what record outputs depend on — and that is a fact about the record *construction*, not about the winding concept, which is why the paper's new premise R-O is slotted at the construction and not at R-S. [Retired, as circular; the non-circular ground: §5.]

5. The Registration Argument — Records Read Standing Content

The right argument is an argument about what a measurement is, run through the route's own definition of one.

Step one — the record exists [REG-E]. By REG-E, member-grain records are admissible, free or housed: a single realized seat traverses a closed admissible loop — in the housed configuration, the probe resolves the seat inside its housing — and the comparison of returned against initial state is performed at the specification's seat grain. Nothing in the bath obstructs this — the traverser is *realized* structure, and the bath's members exist, persist as loci of realized content, and may carry anything at any moment [the Carrier paper's reconciliation, consumed whole]. The Carrier paper fenced exactly this configuration as CO-1's first deliverable — *how a realized member registers a standing class winding* — and the fence is now opened from inside.

Step two — the output is standing [R-O, at its scope clause]. By R-O, the record's output is a function of its specification — the loop and the subject grain — and the standing transport structure, with the realized configuration along the loop cancelling: the churn, the allocation flow, and *which* seat happens to traverse. The realized seat is the record's *traverser*, not its *subject-matter* — the ship is realized; the depth it sounds is standing — and because which-seat is realized complement, the output already cannot depend on which seat traversed: seat-indifference falls out of the scope clause before the Exclusivity Lemma is consulted, the record-side echo of the transport-side permutation-forcing. This is the step the circular argument of §4 tried to take for free; here it is taken at the price of a named import with a slot, a scope, and a fallback, which is the only honest price.

Step three — the output's grain [REG-G]. Standing, by step two — but standing content *at which grain*? Here the paper retires its own residual rival, the one §3's remark explicitly could not: the record's outputs as k seat-indexed readings of the class winding q, whole — content at class grain, indexed at seat grain, fully consistent with R-O (q is a function of loop and standing structure) and untouched by additivity (readings of one class quantity are not seat-values obliged to compose). Indexing is not content-grain, and nothing upstream forces them to coincide. REG-G is the named statement that they do: the output of a member-grain record is seat-grain response

content in AD-m's sense — the k seats' registered values compose to the class winding. By REG-G the output is at seat grain; by R-C it is response content; by step two it is standing.

Step four — the output's identity [Exclusivity]. Standing, seat-grain, response content — and by the Exclusivity Lemma there is exactly one such content: the uniform reading, at q⁄k.

Registration Lemma. *Under REG-E, REG-G, and R-O, every admissible member-grain record reads q⁄k: the registered response of any member of any k-member class is the class winding divided by the class capacity, standing, permanent, and identical across seats, loops, and histories.* [Proven, conditional on REG-E, REG-G, R-O, the Exclusivity Lemma at its conditionality, and the Carrier Theorem's bath branch entire — including B-IRR and C-ORD, at which the exposure remains total.]

The lemma's force is worth stating in the vocabulary the route built for it. The bath withholds standing identity from seats — and *precisely because* it does, the standing ledger at seat grain has exactly one line, so a registration constructed to read standing content has exactly one thing it can say. The forcing is not imposed on the bath; it is squeezed out of the bath's own austerity. A ledger world, rich in member-grain standing structure, could have registered many things; the bath, poor in it, can register only the share. The same irreducibility that dissolved the member as a carrier is what makes the member's reading inevitable — the route's deepest irony, and its engine.

6. The Flowing-Realization Rival — Constructed and Priced

The Registration Lemma has one serious rival, it is the bath's own signature move turned against the route, and the corpus's discipline — learned at the member-wise-prior alternative — is to construct the strongest rival in full rather than gesture at it. A route is only as credible as its best rival is explicit.

The rival world, built. Suppose R-O fails at its slot: record outputs depend on realized configuration — the registration reads the *allocation*, not the standing structure. Then member-grain registration inherits the bath's churn directly. The class weight flows continuously among seats [the Bath Criterion]; charge realization flows with it; and a member-grain record reads whatever the traversing seat happened to be carrying:

```
registration at t₁: seat carries nothing      → record reads 0
registration at t₂: seat carries everything   → record reads q
registration at t₃: seat carries a portion    → record reads the portion
        ↓
q⁄k recoverable only as expectation over realized histories
```

In this world the thirds are *statistical*: a quark's charge is not a standing third but a fluctuating realized quantity whose long-run average is a third. Nothing in the rival breaks the lattice — the class integer q is untouched, standing, and quantized exactly as the Carrier Theorem requires; what changes is solely the member-grain face, which becomes realized content the lattice does not bind [R-S]. The rival is fully consistent with clauses (i) and (ii): the uniform reading still

exists as standing content and is still *unique* — the rival's claim is that registration does not read it, reading the vault instead of the ledger.

The consequences, priced. Three, in descending order of exposure. First, **permanence fails**: in the rival world, member-grain charge measurements fluctuate per seat per history, and any fixed observed value is an artifact of averaging. Second, **the route survives at reduced modality**: clauses (i)–(ii) stand, q/k remains the unique standing reading and the expectation of the realized one, and observed thirds remain *accommodated* — the route loses forced and keeps admissible, exactly the graceful degradation §1 promised. Third, **the W0 pressure weakens but does not die**: the bath still uniquely supplies a structural origin for thirds-on-average, but the lean's sharpest edge — permanence as prediction — is lost.

The decider, located. The rival and the lemma differ in one structural fact: **whether record outputs are functions of standing transport structure alone, or of realized configuration.** That is R-O's slot, at the charge paper's record construction, and nothing in this paper, the Carrier paper, or the Bath arc decides it — the construction itself must be read for what the comparison cancels. The exposure is stated at full width: clause (iii) is exactly as strong as R-O.

The rival's own unpaid obligation, recorded — the comparison kept symmetric, and the debt priced at its true size. The world's thirds are read as permanent: member-resolved measurements return the same fractional values across probes, energies, and histories, with no observed flicker. A fluctuating-realization world owes an account of why the churn never surfaces — why every registration ever performed happens to have caught the average — and averaging mechanisms strong enough to guarantee that are mechanisms that make the realized reading observationally indistinguishable from a standing one, at which point the rival concedes the phenomenology while disputing only the bookkeeping. But the debt is cheaper than a first pricing suggests, and the paper says so before a referee does, because the discount comes from the route's own machinery. Real member-resolved access to the $k \geq 2$ classes runs, in practice, through instruments that are structurally averaging — cross-sections, ensemble inference over many registrations — and the route's own saturation clause (CO-2, §9), if it discharges, is precisely what forbids the free single-seat registration that would display flicker most directly: the same structure that explains the absence of free fractions partially shields the rival from its obligation. The shield is also **branch-dependent**, per §9's dichotomy, and the dependence is a payoff rather than a leak: saturation screens only the *invertible* sectors, so a null-residue class with nonzero winding would carry free, unscreened seats — single-seat registrations performable in the open, where the three failure modes separate into three distinct verdicts at one bench: q/k under forcing, q whole under REG-G's rival, flicker about the mean under the flowing rival. Should O1 ever deliver a charged null-residue species, the route's sharpest test moves from behind the screen into the open; the contingency is recorded now so the test is recognized when it arrives. The shield is partial, not total — housed member-resolved registration (the configuration REG-E names) does access seat grain, and what it reads there is **stable**: the same values across probes, energies, and histories, no flicker at the resolved grain — so the rival still owes the absence of churn where the churn is in fact looked for. One disaggregation keeps §2's firewall watertight and is stated as such: the housed readings carry two separable observables, their *stability* and their *fractionality*, and only the first is claimed. Stability bears on R-O's slot at any grain — under REG-G's rival the readings would be integral but equally flicker-free, so no-

flicker discriminates R-O from the flowing rival without presupposing which grain registration reads. Fractionality — the values being thirds — is exactly what §2's firewall declines to claim, since it instantiates REG-G and the forcing jointly. The lean against the flowing rival therefore rests on the stability component alone, and the obligation is priced at that reduced and disaggregated size, with §11's discrimination re-priced to match. The asymmetry of obligations is not a proof — R-O's slot, if it broke, would simply win — but it is the honest current state of the comparison: the lemma predicts permanence and observes it where access exists; the rival predicts flicker, owes its absence there, and is partially screened everywhere else by the route's own confinement of the seats. [The rival: constructed; its decider: R-O's slot; its obligation: named and priced at true size; the empirical lean: priced at §11, not here, so that the posture is not fed into the evidence.]

7. The Realization Theorem

The clauses consolidate.

Realization Theorem. *Let the bath ontology hold [B-IRR], with the Carrier Theorem's bath branch at its full conditionality [including C-ORD], the Uniform Reading Lemma at its inherited status, and AD at its member-grain clause. Then:*

(i) — existence — standing member-grain response content exists: the uniform reading, constructible from class facts alone (q standing, k standing, the assignment uniform and indexed to no line), is standing content at seat grain. Modality: admissible. [§3.]

(ii) — uniqueness — it is the only standing member-grain response content: any standing seat-grain assignment is permutation-forced to uniformity, and composition fixes the uniform value at q/k — k·v = q [the Exclusivity Lemma, §3].

(iii) — necessity — under REG-E, REG-G, and R-O, every admissible member-grain registration, free or housed, reads standing seat-grain response content, hence reads q/k: uniform realization is forced. Every member of every k-member class standingly registers the class winding divided by the class capacity, permanently, identically, on every admissible loop [the Registration Lemma, §5].

[Clauses (i)–(ii): Proven, conditional on the inherited statuses and AD's member-grain clause. Clause (iii): Proven, conditional additionally on REG-E, REG-G, and R-O at their named slots. The clauses degrade gracefully: (iii) falling leaves (i)–(ii) standing and the route at admissibility — and (iii) fails differently by slot: REG-E broken removes the registration, REG-G broken makes member readings integral (the class integer read whole), R-O broken makes them statistical; AD's member-grain clause falling leaves uniformity standing with the value re-priced and the grain exclusion resting on REG-G alone; only the inherited total strikes — B-IRR, C-ORD — take everything.]

Four remarks fix the theorem's weight. First, **the lattice is untouched, again**: the forced fraction is the class integer in finer notation — member grain lies below the quantization grain, no subject carries an off-lattice fundamental winding, and the refutation conditions of the Carrier

paper's §8 transfer verbatim: an off-lattice *class* winding still kills; a forced member reading of a class integer still does not. Second, **the theorem completes the route's modal ladder**: the Lemma closed the value, the Carrier Theorem located the subject, and clause (iii) supplies the actuality — q⁄k is no longer the value the fraction would take if nature used the reading, but the value nature must show, conditional on the named slots. What remains between the theorem and the observed thirds is identification, not derivation: O1's attachment of the quark species to the k = 3 class. Third, **the forcing is quantity-blind**, inheriting the Carrier Theorem's generality: nothing in the clauses consumes charge specifically, so any quantized closed-loop response of a bath class realizes uniformly at its own q⁄k — a breadth the audits of §8 immediately spend. Fourth, **the forcing is ontology-blind at the fork's true grain**: the Carrier paper promoted the operative divide from ledger-versus-bath to identity-preserving versus identity-dissolving transport — the permuting ledger's orbit carriers and the monomial bath as the same object from the dichotomy's two sides — and this theorem's engine consumes exactly the shared condition, never the label. Stated precisely, since the two sides satisfy it differently: what the Exclusivity Lemma consumes is that **no transport-stable seat-indexed assignment exists over the carrier** — the bath satisfies this by *dissolution* (no standing lines for an assignment to index), and a permuting ledger satisfies it by *instability* (lines exist with standing identity, but any line-indexed assignment is carried into a different assignment by the permuting transport, so only uniform assignments are transport-stable). Both routes deliver the lemma's input; the conclusion follows from the weaker shared condition, not from the bath-flavored one. REG-E, REG-G, and R-O are readings of the record construction, blind to ontology. The theorem therefore transfers verbatim to orbit carriers under a permuting ledger — orbits in place of classes, the orbit integer forced to register uniformly at q⁄(orbit size) at every seat of the orbit — and is, at its sharpest statement, a theorem about identity-dissolving transport as such: wherever transport leaves no seat-indexed assignment stable while preserving the family, the family's integer is forced to the seats in equal shares. The bath remains the ontology that satisfies the condition natively [B-IRR], and the bath branch remains the route's case; the generalization widens the theorem's subject without moving any marker. [The transfer: Proven at the level of the two papers' statements; its application to any actual permuting ledger: at L-M's diagonal clause, where the Carrier paper located the membrane.]

8. The Audits — k = 1, k = 2, k = 3

A forced theorem cannot choose its consequences. The census admits exactly three class capacities, the theorem quantifies over all of them, and a derivation audited only at the capacity that flatters it would invite the referee's correct suspicion. All three are run.

k = 1 — the anchor, and its stated blind spot. A singleton class: q⁄1 = q, the uniform reading is the winding itself, registration reads the class integer whole, and the theorem reproduces the charge paper verbatim — the electron's −e as the one-seat case, with clauses (i)–(iii) collapsing into the single statement the charge paper already proved. The audit is the route's standing anchor, specified since CO-0's joints, and it passes: nothing in the realization analysis disturbs a single integral charge. One limit is marked so the anchor is not over-read, and it is wider than the grain question: **k = 1 is blind to all three of the paper's imports.** To REG-G: at one seat the share and the whole coincide, q⁄1 = q both ways. To REG-E: singleton records are the charge paper's own, member-grain and class-grain traversal being the same act at one seat. And to R-O

— the interesting blindness: a singleton's churn has nowhere to flow, realized allocation is always exactly q, and the flowing rival cannot produce flicker at k = 1 even in principle — which is why the world's free leptons, steady to any precision, were never usable evidence in §6's stability lean. The anchor audits the theorem's recovery of the charge paper and nothing about the imports; all three are decided at their slots and tested, if anywhere, at $k \geq 2$. [Audit: passed, at its stated scope.]

k = 2 — the exposed flank, faced, and the most tempting candidate examined first. The theorem forces the census's two-member class to register standing **halves**: each seat permanently at $q/2$, *and identically in every other standing quantity besides* — quantity-blind forcing applies to every quantized response a class carries, so the members of a bath class are identical in **all** standing quantum numbers, not merely the one under study. That entailment cuts before it confirms, and the audit runs the cut against the most tempting candidate first. The naive flag — the weak isospin of the doublets, the world's celebrated half attached to two-fold families — points the wrong way on its natural reading: T_3 across a doublet is $+½$ and $−½$, *anti-uniform*, and the doublet's members differ in electric charge as well, so a confirmed identification of the weak doublet as a bath k = 2 class with those numbers standing would not confirm clause (iii) — it would strike the Exclusivity Lemma itself, non-uniform standing member-grain content, upstream of this paper. The naive candidate, examined, disqualifies itself. Stated at the grain where it is true, the consonance survives in reduced form: the *magnitude* is uniform and half-integral across the doublet, and whether the sign is standing or realized is electroweak interior, fenced exactly as the predecessors fenced it. The better-shaped candidate is noted at the same modality, with its open joint marked rather than glossed: **spin-½** — a uniform standing magnitude with a realized projection — is precisely the theorem's silhouette in its uniformity structure; but the Exclusivity Lemma's value-fixing runs through AD-m, and angular-momentum magnitudes do not compose additively (composition runs through the SU(2) structure, not linear summation), so if spin's two-fold structure were a census class, either its relevant quantized response is some quantity other than the magnitude, or AD-m fails for it and clause (ii) weakens to uniformity-without-value per §2's own fallback. **AD-m is the silhouette's exposed clause**, and the consonance is held at [Conjectural] with that joint visible; whether spin's two-fold structure is a census class at all is O1 content.

What the cut yields beyond caution is two tools at two different grades, and the audit states each at its exact conditionality. **The Class Uniformity Criterion**: *any candidate identification of a physical family with a bath class is disqualified if the family's members differ in any standing quantum number.* Its grade is the audit's point: the criterion derives from the **uniformity half of the Exclusivity Lemma alone** — B-IRR and the permutation-forcing, nothing else — consuming neither AD-m nor any of clause (iii)'s three imports. It therefore survives every degradation the theorem admits: REG-E, REG-G, or R-O falling, even AD-m falling, leaves the criterion standing, since identity-in-all-standing-quantities is a uniformity claim, not a value claim. Among the paper's deliverables it is the most robust, and a referee striking clause (iii) at any slot takes none of it. Run on the world's familiar families it cuts both ways: it excludes the weak doublet as naively drafted, and it admits the **color triplet** — three seats identical in every standing quantity, the family index itself the only difference, and that difference exactly what the bath says it should be: not a standing quantum number at all. The triplet's conformity is an unclaimed consonance with clause (ii), recorded at [Conjectural] and left at O1. **The k = 2**

winding constraint: at clause-(iii) grade, the world's silence on half-integral electric charge — no charge-½ constituents observed, housed or inferred; hadron phenomenology shows thirds, never halves — converts under forcing into a derivable restriction on O1's search space: *the k = 2 class carries even electric winding (whose halves are integers), or null electric winding (whose halves are zero), or hosts no electrically registered species.* The constraint is conditional on clause (iii) and on the observation, it is stronger than any consonance because it is exclusionary, and it dovetails with the silhouette rather than competing with it: a null-electric-winding k = 2 class would show its forced fraction in a non-electric quantity — which is exactly where the spin silhouette lives. The constraint's structural setting arrives in §9: it is the k = 2 sector's *residue statement* — even-or-null winding is the null-residue branch, on which every total the sector contributes is integral and on which, by §9's Confinement Dichotomy, the sector is predicted **unconfined**: its seats free-roaming at integral charge, consonant with the world's free two-fold-structured particles [the consonance: Conjectural, at O1] — and should free configurations ever mix capacity sectors, cross-capacity congruences would constrain the k = 2 winding further, a door §9 fences for the successor. Together the criterion and the constraint make the k = 2 audit a sieve: O1's k = 2 candidate must have members identical in every standing quantity *and* even-or-null electric winding, and any confirmed identification violating either refutes the corresponding clause directly. [Audit: run; the naive candidate: self-disqualified at clause-(ii) grade; the criterion: stated at clause-(ii) grade, the paper's most robust deliverable; the constraint: stated at clause-(iii) grade; the silhouette: [Conjectural], AD-m its exposed joint; the exposure: priced.]

k = 3 — the target, now a consequence. The three-member class registers standing thirds: each seat permanently at q⁄3, the seats identical in every standing quantity per the criterion above. Conditional on O1's identification of the quark species with the k = 3 class — an identification the Class Uniformity Criterion now constrains as well as licenses — this is the observed e⁄3: permanent, identical across members and probes, never fluctuating, derived rather than housed. The chain is stated once, whole, at its full conditionality: B-IRR and the Carrier branch (with C-ORD's total exposure), AD at its member-grain clause, REG-E, REG-G, R-O, and O1. Seven named conditions, each with a slot, none hidden — and at their joint confirmation, the strangest charges in physics become the signature the framework could not have avoided predicting. [Audit: run; the chain: as stated; the verdict: at the slots.]

9. Saturation — The Obligation Forcing Creates (CO-2)

A paper that buys modality must pay for it, and clause (iii)'s price is stated here without softening, because forcing converts a curiosity into a debt.

Under admissibility alone, the absence of free fractional charge in the world was unremarkable: the reading existed; nothing obliged any particular configuration to display it. Under forcing, the absence becomes a constraint with teeth — drawn at the right branch from the outset, since the section's own arithmetic will fork it below: **every member of every multi-member class permanently registers its share q⁄k, which is a fraction exactly when the class winding is not divisible by the capacity** — so a world containing admissible *free* members of such nonzero-residue classes — unhoused seats whose forced reading is fractional — would display standing free fractions. The world displays none: every free configuration ever registered carries integral total charge. Forcing therefore entails, on pain of refutation at the free sector:

admissible free configurations are exactly those whose seats' forced readings sum to integral totals — unhoused member-grain structure whose reading is a true fraction (a nonzero-residue seat) is never admissible as free standing configuration.

One word in the statement is fenced before it can be overread: *exactly* binds at **inventory grain**. The constraint licenses and excludes free configurations by their sector inventories — the counts (n, m) — and its converse direction asserts the admissibility of balanced *inventories*, not of every internal arrangement of one; arrangement-level admissibility lies below the framework's present description and inside CO-2's territory, where the derivation will say which balanced inventories are realized and how. [The fence: stated; the arrangement grain: at CO-2.]

The statement is drawn at integral totals rather than at seat-filling, and the choice is deliberate, because anything narrower fails against the world's own particle table — and the audit of how it fails is the section's central content, because the failure exposes a structural fact the route has not yet named. The audit reads the table, and any reading of the table runs through an identification; the one used is §8's [Conjectural] color-triplet reading of the k = 3 sector, flagged here as the condition it is. Under that reading, a class is the three color seats of **one flavor** — and the Class Uniformity Criterion then entails that distinct flavors are distinct classes, since they differ in standing electric winding. Now run the table's free configurations. A neutral pairing of a flavor with its own antiflavor: one seat's forced reading against its conjugate's, $(q - q)/k = 0$ — call this **conjugate neutralization**, and it is covered by conjugation alone. A full single-flavor housing: k seats of one class, total the class winding q itself, integral unconditionally — **occupancy saturation**. But the table's most common free objects fit neither. A *charged* meson pairs a seat of one class with the conjugate of a *different* class — no class is filled, nothing self-cancels, and the total $(q - q')/k$ is integral only if $q \equiv q' \pmod k$. And the **nucleon itself** — three color seats drawn from *two* flavors — fills neither class, contains no conjugate pair, and is no composite of the two modes; its integral total rests on the same congruence. What rescues integrality in every case is one fact: **the windings of the sector's classes are congruent modulo k** — in the table's units, $q \equiv q' \equiv r \pmod 3$ for every flavor, equivalently *flavors differ by integral charge at the seats*, which is exactly what the table shows. Given the congruence, the general bookkeeping closes in one line: a free configuration of n member seats and m antimember seats drawn from one capacity-k sector has total reading

$$(\Sigma q_i - \Sigma q_j)/k \equiv (n - m)\cdot r/k \pmod 1,$$

integral exactly when k divides $(n - m)\cdot r$ — and when the residue r is invertible modulo k, exactly when **$n \equiv m \pmod k$**. One condition unifies the entire table: the neutral meson (1, 1), the charged meson (1, 1), the nucleon (3, 0), the four-seat housing (2, 2), the five-seat housing (4, 1) — and excludes precisely the lone seat (1, 0). Conjugate neutralization is the congruence's trivial instance ($q \equiv q$); occupancy saturation is the $n - m = k$ case; the mixed-flavor configurations, which the modes as such never covered, are its substantive content.

The dichotomy, and the prediction it finishes. The formula's invertibility clause is not a technicality; it is a fork with two physical faces, and the census makes it exhaustive. A sector's residue is either **null** — every class winding divisible by k — or **invertible**, with no third case at the census's capacities, since $k \in \{1, 2, 3\}$ and 2 and 3 are prime; a capacity-four sector would

host a residue of two, neither null nor invertible, so the dichotomy's cleanness is one more downstream credit to *never four*. On the **invertible branch**, integrality binds: free configurations satisfy n ≡ m (mod k), the lone seat is excluded, and the sector **confines** — its seats travel only in balanced company. On the **null branch**, every forced reading q/k is itself an integer: the theorem forces exactly as before, but the forced value is whole, integrality constrains nothing, and the sector is **unconfined** — its seats free-roaming at integral registered charge, breaking no rule by their solitude. **Confinement ⇔ invertible residue** — the first place the route predicts a *difference between sectors* rather than a property of one. Two precisions keep the statement exact: the dichotomy is *per response* — quantity-blind forcing gives each quantized response its own winding and residue, and a sector confines outright if any of its responses runs invertible — and the statements here read at electric winding, where the constraint's empirical face lives. The dichotomy's contacts, each at its flag: the **k = 1 sector is null-residue by arithmetic** — every integer is divisible by one — so singletons are unconfined at integral charge, and the world's free leptons are recovered on the trivial branch, extending the k = 1 anchor from value-recovery to freedom-recovery; the **k = 3 sector**, on the [Conjectural] color-triplet reading, carries invertible residue and is **confined**, exactly as observed; and the **k = 2 sector's branch is fixed by §8's winding constraint**, which the dichotomy reveals as its own k = 2 instance — even-or-null electric winding is the null branch, on which the sector is predicted *unconfined*, its members free at integral charge, consonant with the world's free two-fold-structured particles. [The dichotomy: Proven, conditional on clause (iii), C-RES, and the integral-totals constraint as the free-admissibility rule — CO-2's own premise, consumed here as the hypothesis it is: the confining direction reads *if* integrality governs free admissibility, *then* invertible sectors confine; every table contact: [Conjectural], through O1, as all table contacts are.]

The structure consumed is named as one import rather than absorbed or scattered. **C-RES (capacity-sector residue structure)**: *(a)* the lattice admits conjugate windings, −q for every q [Inherited — the charge paper's $\mathbb{Z}$ structure]; *(b)* conjugation preserves capacity — the conjugate class sits in the same capacity-k sector, without which the seat-for-seat arithmetic is ill-posed [slot: the census]; *(c)* **all member-class windings within a capacity sector are congruent modulo k** [slot: the census, read for cross-class winding structure]. Clause (c) is the substantive one, and it is marked for what it is: **a finding, not a repair**. It is a *cross-class* constraint — nothing in the census, the carrier analysis, or this paper relates the windings of distinct classes, which are otherwise fully independent — and yet the table obeys it exactly. Its instantiation by the world is recorded at firewall discipline: the observed unit spacing of constituent charges reads C-RES through clause (iii) and O1 jointly, so it is logged as consonance, not claimed as the import's independent face. And it gives §8's winding constraint its proper setting: that constraint is the k = 2 sector's residue statement — even-or-null electric winding is $r_2 \equiv 0 \pmod 2$, the branch on which every total is integral and the sector's seats carry no visible fraction at all. One door is fenced in the same breath: should free configurations ever mix capacity sectors, integrality would impose *cross-capacity* congruences among the sectors' residues — out of scope here, marked so the successor knows the door exists. [C-RES: named; (a) Inherited; (b), (c) at the census; the cross-capacity door: fenced.]

This is the housing-family saturation question, fenced by the predecessors in the census's G-S territory as CO-1's second deliverable, and this paper — discharging the first deliverable — converts the second into a named obligation rather than discharging it, now at the sharper target

the residue analysis fixes: **CO-2 (saturation)**: *derive, from the transport and admissibility structure, (i) the balance restriction — free standing configurations satisfy n ≡ m (mod k) within each* ***invertible-residue*** *capacity sector, null-residue sectors being unrestricted by integrality — and (ii) the residue congruence C-RES (c), or import it at the census; integral totals, the named modes, the mixed-flavor configurations, and the Confinement Dichotomy all follow as cases.* The conversion is an upgrade in precision and in stakes simultaneously. Precision: the obligation is no longer "explain why seats travel accompanied" but "derive the congruence that makes accompaniment sufficient, on the branch where accompaniment is demanded at all" — a more exact and more falsifiable target, since the congruence is a checkable cross-class fact and the branch assignment is a checkable per-sector one. Stakes: CO-2 is load-bearing for the route's empirical consistency — a route with forcing and without the balance restriction predicts free fractions from its invertible-residue sectors, which the world refuses to show, and a route without the congruence predicts fractional totals at the mixed sector, which the world equally refuses. Two resolutions exist and the paper prices both: CO-2's derivation, which would complete the route's empirical face and make the *confinement* of fractional charge a consequence of the same structure that forces its value; or CO-2's failure — admissible free unaccompanied members derived, or confirmed equal-capacity classes with incongruent windings — refuting the constraint at the free or mixed sector respectively, with clause (iii) standing in the second case (a new joint, carried at §13). The obligation is handed forward with its joints visible: its territory is the census's G-S structure and the admissibility conditions on free configurations; its anchor audit is k = 1, where both deliverables trivialize (the mod-1 congruence is vacuous and every total is integral — which is why the world's free integral charges are no embarrassment); and its principal questions are why k ≥ 2 differs and where the congruence comes from. [CO-2: named at its sharpened target, handed forward; its discharge: not attempted here; the route's exposure at it: total for clause (iii)'s empirical consistency, partial for the route, since (i)–(ii) owe nothing at the free sector; the table audit: conditional on the §8 identification, [Conjectural] at O1.]

10. CO-1, Accounted — What Is Discharged and What Remains

The Ownership paper named CO-1 at [Conjectural]: *the existence and modality of the uniform member-grain reading*, with its value closed in advance at q/k by the Uniform Reading Lemma, its consistency guaranteed in advance by the identification clause, and — per the Carrier paper's fence — the registration question as its first deliverable and housing-family saturation as its second. The accounting:

Discharged, conditionally — the first deliverable. Existence is proven (clause (i)); uniqueness is proven (clause (ii) — the Exclusivity Lemma, consuming AD's member-grain clause at the consumption the Carrier paper expressly deferred to this paper); modality is established at *forced* (clause (iii) — the Registration Lemma), conditional on REG-E, REG-G, and R-O at their named slots. The registration question fenced by the Carrier paper — how a realized member registers a standing class winding — is answered: the realized member is the record's traverser, the record's output is standing by construction [R-O, at its scope clause], the output is at seat grain rather than the class total read whole [REG-G — the grain step named, not smuggled], and the standing content at seat grain is unique [Exclusivity], so the realized seat registers the class's integer at its

share. The value confirms the Lemma's closure exactly — q/k, no other — and no marker inflates: clauses (i)–(ii) are [Proven, conditional on the inherited statuses and AD's member-grain clause]; clause (iii) is [Proven, conditional additionally on REG-E, REG-G, and R-O]; **CO-1's first deliverable is conditionally discharged**, closing outright when the three readings confirm at the record construction and AD's member-grain clause confirms at the composition law.

Converted and handed forward — the second deliverable. Saturation is not discharged; it is reformulated at the precision forcing makes possible and handed forward as CO-2 (§9), with its statement, territory, anchor, and stakes named. The route's order extends by one node, honestly: CO-0 (carrier — discharged conditionally at the Carrier paper) → CO-1 (realization — first deliverable discharged conditionally here) → CO-2 (saturation — open, at the G-S territory) → the thirds complete.

Carried, undecided, exposure total. B-IRR at the Bath Criterion; **C-ORD** — inherited under the Carrier paper's name from its §2, at the structure-group imports — the member-wise-prior bypass, under which the route closes at CO-0 and this paper's results, intact as mathematics, lose their application to U(1) exactly as the Carrier Theorem's did. The paper repeats its predecessor's recommendation in its own conditionality ledger: the composition-order audit is the route's cheapest insurance, and every paper built above CO-0 deepens what that audit protects.

11. The Pressure on W0, Re-Priced

The Carrier paper priced the lean of observed e/3 toward the bath at three conditions: the fork's slots, the O1 identification, and *a positive CO-1* — the third link an unanchored conditional, consumed as pure possibility. This paper re-prices the chain, and the re-pricing is an exchange: more named conditions, higher modality.

The chain, before and after. Before: fork + O1 + [CO-1 positive, Conjectural]. After: fork (at §2's inherited conditionality, C-ORD included) + O1 + [CO-1 positive: Proven, conditional on REG-E, REG-G, R-O, AD-at-member-grain]. The third link no longer dangles — it carries a derivation with four named slots — and the chain's character changes accordingly: previously the bath's accommodation of thirds was an *availability* (the structure could host them); now it is, conditionally, a *prediction* (the structure forces them, permanent and uniform). The lean sharpens in the one way that matters, and is re-priced honestly in the same breath: **permanence**. The flowing rival of §6 — the bath's own alternative reading — predicts flicker and owes its absence; the forced reading predicts the permanence the world shows. The discrimination is clean *in principle* and partially screened *in practice*, and the screen is the route's own: member-resolved access to the $k \geq 2$ classes runs through structurally averaging instrumentation, and the saturation clause (CO-2), if it discharges, forbids exactly the free single-seat registration that would display flicker most directly — so the route's confinement of the seats partially shields the rival from the route's sharpest prediction. The shield is branch-dependent, per §9's dichotomy: only invertible sectors are screened, and a confirmed charged null-residue species would put free, unscreened seats on the bench, separating the three failure modes into distinct steady observables (§6) — so the screen is contingent on O1, not structural, and the discrimination could yet be unscreened by a single identification. The discrimination survives where access exists, and it is claimed at exactly the disaggregated grade §6 fixes: housed member-resolved

registration reads **stable** values — no flicker at the resolved grain — and the *stability* alone is the evidence, bearing on R-O's slot at any grain reading, while the *fractionality* of those values remains deliberately unclaimed per §2's firewall, since it instantiates REG-G and the forcing jointly. The paper prices the lean at that screened and disaggregated strength rather than at the unscreened one, because the alternative is having a referee do it. Within the bath, the data still select among readings; the selection is simply weighted at its true evidential size.

The route to W0, re-drawn at the fork's true grain. The Carrier paper relabelled the operative divide — identity-preserving versus identity-dissolving transport — and located the crossing to W0 at L-M's diagonal clause; §7's fourth remark tightens that chain by one notch. Forcing holds on *every* identity-dissolving reading — the native bath and the permuting ledger's orbits alike — so the permuting-ledger escape, which collapsed the Carrier paper's availability asymmetry, no longer leads out of the prediction: an escapee from the bath into a permuting ledger arrives at orbit carriers whose seats are forced to the same fractional readings. What survives as the genuine alternative is the identity-*preserving* side alone — the diagonal ledger — which owes the external mechanism the Carrier paper priced. The chain is therefore: observed permanent thirds → forced on identity-dissolving transport, unavailable to identity-preserving transport → W0, crossing at the diagonal clause exactly as the Carrier paper drew it — the lean now between two positions rather than among three, with the referee's audit point unchanged: L-M's diagonal clause first. And one further inheritance closes the remaining exit: under C-ORD's failure — the member-wise-prior bypass — the pressure dies wholesale, but the Carrier paper's commutation repricing shows the rival gains nothing by killing it: the bypass world reproduces the diagonal ledger's phenomenology and inherits its unpaid debt, the thirds unexplained everywhere. The bypass removes this paper's account; it supplies no account of its own.

One candidate second contact, flagged at its corrected modality. The $k = 2$ audit's consonance — restated in §8 at the grain where it is true: a uniform half-integral *magnitude* in two-fold denomination, with the anti-uniform naive candidate disqualified by the theorem's own Class Uniformity Criterion and the spin-½ silhouette noted in its place — is, if O1 lands an identification satisfying the criterion, a second external data point for the same node: two independent fractional families, both at the values the class capacities force, both passing the uniformity test the forcing imposes. It is [Conjectural], it is O1's to decide, and the criterion itself is this paper's gift to that decision: O1's search space is now constrained by a derivable test, not only guided by numerology. [The pressure: Conditional, at the chain as re-priced; the firewall holds — nothing in this section consumes the posture of §1, and the lean is exactly as strong as the named slots and no stronger.]

12. Position in the Programme

Inherited exposure. The Carrier Theorem's bath branch — R-C, R-S, L-G, AD, B-IRR, and C-ORD at their slots, with the exposure at B-IRR and C-ORD total and stated, C-ORD consumed under the Carrier paper's name from its §2, and L-M and SUB expressly not inherited (ledger-branch conditions only, per the Carrier paper's own discharge accounting; L-M's diagonal clause is touched once, in §11, as the W0 crossing, not as a premise of any clause); the relabelled fork — identity-preserving versus identity-dissolving transport — consumed at the Carrier paper's statement and spent in §7's fourth remark; the Uniform Reading Lemma, its identification clause,

and the permutation-forcing at the Ownership paper; the standing/realized boundary at its §10 slot, consumed, not duplicated; the census's capacities and O1 at their statuses; W0 [Open] at the Born-arc slot, its marker unmoved.

New exposure. REG-E (with its realized-grade persistence reading), REG-G, and R-O (at its scope clause), all three slotted at the charge paper's record construction — the paper's results above clause (ii) are exactly as strong as those three readings, with REG-G carrying the grain question alone and deliberately assigned no empirical face (§2's non-circularity firewall) — AD's member-grain clause at the composition law, the deferred consumption performed; and C-RES at the census — clauses (b) and (c), capacity preservation under conjugation and the sector congruence — consumed only by §9's saturation analysis, never by the theorem. No exposure is created elsewhere: the Exclusivity Lemma consumes inherited machinery; the audits consume the census; the Class Uniformity Criterion and the k = 2 winding constraint are consequences handed to O1, not premises; CO-2 is an obligation, not a premise.

The diagram, extended:

```
Charge paper [lattice q ∈ ℤ; R-C; R-S; L-G; AD → member-grain clause
        consumed here; REG-E, REG-G, R-O (scoped) slotted at the
        record construction]
Bath Criterion [B-IRR; W0 at the Born-arc slot, Open]
Ownership paper [Uniform Reading Lemma: value closed at q⁄k; CO-1 named]
Carrier Theorem [bath branch inherited — class carrier; member grain
        below quantization grain; C-ORD inherited at its §2, exposure
        total; L-M, SUB not inherited — ledger-branch conditions only;
        fork's true grain: identity-preserving vs identity-dissolving]
         │
         ├── Exclusivity Lemma: standing seat-grain content is
         │        uniform (permutation-forced) and valued (AD-m):
         │        k·v = q ⟹ v = q⁄k                                ← this
paper, §3
         │
         ├── two wrong arguments retired: equal shares (symmetry
         │        distributes, conjures nothing); circular
         │        permanence (assumes what registrations read)     ← this
paper, §4
         │
         ├── Registration Lemma [REG-E, REG-G, R-O]: records exist,
         │        free or housed; outputs standing, given the
         │        specification; outputs at seat grain, not the
         │        class total read whole; the reading is q⁄k       ← this
paper, §5
         │        [rivals: class-grain output — retired at REG-G;
         │         flowing realization — constructed §6, decided at
         │         R-O's slot, debt priced at its screened size]
         │
         ├── REALIZATION THEOREM                                   ← this
paper, §7
         │        (i) existence — admissible
         │        (ii) uniqueness — q⁄k only
         │        (iii) necessity — forced [REG-E, REG-G, R-O]
         │        graceful degradation: (iii) → (i)–(ii) → carrier
         │        transfer: shared condition (no transport-stable
```

```
│        seat-indexed assignment) — orbit carriers, q∕(orbit size)
│        k = 1: charge paper recovered ✓ (blind to grain)
│        k = 2: standing halves + two O1 tools —
│          Class Uniformity Criterion [clause-(ii) grade,
│          survives every (iii)/AD-m degradation; naive
│          doublet self-disqualifies; color triplet an
│          unclaimed (ii)-consonance];
│          winding constraint [clause-(iii) grade: even or
│          null electric winding, or no charged species]
│        k = 3: the thirds, as consequence
│
├── CO-1: first deliverable conditionally discharged —
│        closes at the REG-E / REG-G / R-O / AD-m slots
│
├── CO-2 named at its sharpened target: free configurations —
│        (i) balance restriction n ≡ m (mod k), invertible
│        sectors only; (ii) the residue congruence [C-RES (c):
│        sector windings congruent mod k — a cross-class
│        FINDING nothing upstream supplies; the table obeys it]
│        CONFINEMENT DICHOTOMY: confinement ⇔ invertible
│        residue — exhaustive at the census (2, 3 prime; a
│        credit to never-four); k = 1 null (free leptons
│        recovered); k = 3 invertible (confined, as observed);
│        k = 2 fixed by the winding constraint (null ⇒
│        unconfined) [contacts: Conjectural, at O1]
│        cross-capacity door fenced; derivation at G-S
│
└── pressure on W0 re-priced and re-drawn: thirds → forced on
         identity-dissolving transport → W0, crossing at L-M's
         diagonal clause; permuting-ledger escape closed by the
         §7 transfer; C-ORD bypass supplies no rival account
         (the commutation repricing); stability the claimed
         discriminating component, screened by the route's own
         CO-2 and priced as such, fractionality firewalled;
         k = 2 a candidate second contact [Conjectural, at O1]
```

The division of labor, extended by one line. Geometry proposes; transport disposes; ownership allocates; the carrier locates; **realization registers** — the census counts the seats, the carrier fixes whose integer the lattice forces, and the registration argument fixes what each seat, asked, must answer. The statements consume disjoint imports and meet only at the assembly, as the route's architecture has provided since the census.

13. What Would Refute or Decide This

Against the Existence Clause (§3). Strikeable only through its inheritance: existence consumes the Carrier Theorem's bath branch and the identification clause, so its refuters are theirs — B-IRR at the Bath Criterion, C-ORD at the structure-group imports — and both are total for the route, priced below.

Against the Exclusivity Lemma (§3). Two joints. *Permutation-forcing:* exhibit a standing, non-uniform member-grain assignment under the bath — standing content indexed to lines whose identity B-IRR dissolves. Effect: the Lemma falls with the Uniform Reading Lemma at the

Ownership paper's slot, and the failure propagates upstream of this paper. *AD's member-grain clause:* show readings non-additive over seats — the seats' standing values failing to compose to the class winding. Effect: uniformity survives, the value q/k unfixes, clause (ii) weakens to "unique up to a uniform constant," and clause (iii)'s forced output becomes a uniform constant re-priced at the slot. A weakening with structure intact, as §2's fallback states.

Against REG-E (§5). Show member-grain records inadmissible at the record construction — the construction's comparisons requiring class-grain traversal, free or housed. Effect: clause (iii) lapses for want of a registration to force; clauses (i)–(ii) survive; the route holds at admissibility. The import's empirical face prices the strike's plausibility: the world's measurements resolve members, including inside their housings, and a construction that forbids member-grain records owes an account of member-resolved data.

Against REG-G (§3, §5) — the grain wall. Show the construction's seat-grain records reading the class total whole — outputs as k seat-indexed registrations of the standing class winding q, content at class grain. Effect: member-grain readings are integral; the thirds lapse as a consequence and revert to inputs; clauses (i)–(ii) survive and the route holds at admissibility. The strike is consistent with R-O (q is standing content) and untouched by the §3 remark (which binds seat-grain assignments only) — which is exactly why REG-G is a named import and not a corollary; it is decided at the record construction alone, and the paper has deliberately declined to claim observation in its support (§2's firewall), so the slot is clean. Note the anchor's blindness: $k = 1$ cannot discriminate this strike ($q/1 = q$ both ways).

Against R-O (§5–6) — clause (iii)'s other load-bearing wall. Show record outputs dependent on the realized configuration along the loop, given the specification — the comparison failing to cancel the churn. Effect: the flowing-realization rival revives in full; registration reads allocation; the thirds become statistical; clause (iii) falls and clauses (i)–(ii) stand, with q/k surviving as the unique standing reading and the realized expectation. The strike is decided at the record construction, it is among the most valuable readings the route now awaits alongside C-ORD, and the rival it licenses owes the obligation §6 records at its screened and disaggregated size: an account of why housed member-resolved readings show *stability* — no flicker at the resolved grain, the only component claimed, bearing on this slot at any grain reading; the values' fractionality stays unclaimed per §2's firewall. Observed stability is evidence at this joint — priced as a screened lean, not a verdict. A separate strike at the scope clause itself — showing the output invariant under the *specification* too, grain included — collapses the grain distinction and lands on REG-G's territory; the two walls fall together or stand together at the same source.

Against the uniformity structure at member grain, empirically — split by grade. Two strikes at two grades, and the split is the audit's precision. *At clause-(ii) grade:* a confirmed O1 identification of any class whose members **differ in any standing quantum number** — the Class Uniformity Criterion run in reverse — strikes the Exclusivity Lemma itself, upstream of forcing, at the permutation-forcing slot; the criterion's robustness cuts both ways, surviving every clause-(iii) degradation and exposing clause (ii) to every confirmed counterexample. *At clause-(iii) grade:* a confirmed $k = 2$ identification whose criterion-passing members standingly register values **other than $q/2$** — uniform but wrong — refutes forcing directly, at member grain, with the lattice untouched; and the $k = 2$ winding constraint adds its own exposure: a confirmed $k = 2$

class with odd nonzero electric winding and registered species would predict the half-charges the world refuses, refuting clause (iii) at the same grade. §8's self-disqualifying naive candidate is the demonstration that the forbiddance has teeth.

Against clause (iii) at the free sector — restricted to the invertible branch. Derive admissible free unaccompanied members of a **nonzero-residue class** — single unhoused seats whose forced reading is a true fraction — with integral registered charge. Effect: forcing refuted at the free sector, since clause (iii) requires such seats to show their fraction; the route returns to admissibility and CO-2 dissolves unneeded. Conversely: observed standing *free* fractional charge would confirm clause (iii) spectacularly while making CO-2's integral-total constraint false — the theorem survives, the saturation account inverts. The restriction is not caution but consistency, and the null branch cuts neither way **by design**: a free seat from a null-residue sector registers integral charge *because of* clause (iii), not against it — §9's dichotomy — so free integral singletons, the world's leptons on the k = 1 reading, are the theorem's prediction, not its counterexample, and the same holds for any null-residue k = 2 species. The free sector cuts both ways on the invertible branch and the paper says so; member–antimember free pairs cut neither way, being the congruence's trivial instance (§9).

Against the residue structure (§9) — the mixed sector's own joint, new and separable. Exhibit confirmed equal-capacity classes with **incongruent windings** — C-RES clause (c) failing at the census. Effect: mixed free configurations acquire fractional predicted totals; if the world's mixed sector still shows integral totals, either cross-class mixing is inadmissible (a sharper CO-2, the balance restriction tightening to single-class sectors) or the integral-totals constraint is refuted at the mixed sector — **with clause (iii) standing in either case**, since the Realization Theorem never consumes C-RES; the strike lands on CO-2's territory, not the theorem's. The joint is separable from every other refuter in this section and is carried so that the next paper inherits it by name. Both directions of the joint read the table through the §8 [Conjectural] identification and are conditioned on it — the strike no less than the consonance: "confirmed equal-capacity classes" is an O1 verdict before it is a census fact. The world's instantiation — flavors differing by integral charge at the seats — is logged as consonance only, read through clause (iii) and O1 jointly, per the same firewall discipline that governs REG-G.

Against the route entire — the inherited total strikes, carried. *B-IRR:* a transport-invariant member decomposition under the bath closes the route at CO-0; everything here lapses. *C-ORD:* the member-wise-prior ordering at the structure-group imports bypasses the carrier analysis for U(1); the route closes at CO-0 on both ontologies; everything here lapses with it — and, per the Carrier paper's commutation repricing, the bypass world supplies no rival account, inheriting the diagonal ledger's unpaid debt for the thirds it leaves unexplained. Neither is decided by anything in this paper; the exposure at each remains total; and the paper repeats the standing recommendation that the composition-order audit precede further construction above this point.

Deciders. REG-E (including the realized-grade persistence reading), REG-G, and R-O (with its scope clause) at the charge paper's record construction; AD's member-grain clause at the composition law, with the recorded interaction (its failure strips the §3 remark, leaving the grain exclusion to REG-G alone — and strips the spin silhouette's value structure, AD-m being its exposed joint); permutation-forcing at the Ownership paper; B-IRR at the Bath Criterion; C-

ORD at the structure-group imports (inherited under the Carrier paper's name); C-RES at the census — clause (b), conjugation preserves capacity, and clause (c), the sector congruence, the conjugate mode's and the mixed sector's framework standing; L-M's diagonal clause at the Bath Criterion — consumed by §11's W0 crossing only, no clause of the theorem touching it; O1 at the census's PFD slot (the k = 2 and k = 3 identifications — the audits' empirical contacts, now sieved by the Class Uniformity Criterion at clause-(ii) grade and the winding constraint at clause-(iii) grade, with §9's table audit conditioned on the color-triplet reading); CO-2 at the G-S territory, at its sharpened two-deliverable target; the branch selection at W0.

Empirically. Four faces, each priced at its true size. Stability of measured member-grain values — no flicker at the resolved grain: leans for R-O against the flowing rival at any grain reading — within-bath evidence, conditional on the route's chain, screened in practice by the route's own saturation clause (a branch-dependent screen: null-residue sectors are unscreened, and a confirmed charged null-residue species would expose the three failure modes to direct steady-state comparison, §6), and claimed at the stability component alone, the fractionality firewalled (§2, §6, §11). The k = 2 sieve: a candidate must pass the Class Uniformity Criterion (clause-(ii) grade) and the winding constraint (clause-(iii) grade) — standing differences among confirmed members strike Exclusivity; uniform non-halves, or half-charges from an odd-winding registered class, strike forcing. The mixed sector: confirmed equal-capacity classes with incongruent windings strike the integral-totals constraint at CO-2's territory with clause (iii) standing; the world's observed congruence — flavors differing by integral charge — is logged as consonance through clause (iii) and O1, not claimed as C-RES's face. Absence of free unaccompanied fractions: consistent with forcing if and only if CO-2 discharges at its two-deliverable target; free unaccompanied integral members of **invertible-residue** classes refute clause (iii), while null-branch free integral members are the dichotomy's prediction and bear on nothing; free unaccompanied fractional configurations confirm clause (iii) while inverting CO-2. No other direct empirical face exists at this paper's grain — and observed fractional readings are deliberately not claimed as REG-G's face, per §2's firewall.

14. What the Paper Establishes

Established (conditionally, with conditions named):

- The inheritance trimmed to what is consumed: the Carrier Theorem's bath branch — R-C, R-S, L-G, AD's composition-law clause, B-IRR, C-ORD — with L-M and SUB expressly not inherited (ledger-branch conditions only) and C-ORD consumed under the Carrier paper's name at its slot, one chain of custody (§2). [The trim: stated; the conditionality shortened by it.]
- The modal shape — existence, uniqueness, necessity, strictly increasing with graceful degradation — and the Existence Clause: the uniform reading as standing seat-grain content constructible from class facts alone, by the identification clause and the Carrier paper's relabeling-invariance answer, consumed by citation (§3). [Proven, conditional on the bath branch at its conditionality.]
- The Exclusivity Lemma: standing seat-grain assignments are permutation-forced to uniformity, and AD-m — the consumption the Carrier paper deferred, here performed — fixes the value at q/k. The §3 remark is stated at its exact limit: additivity excludes q as a

seat-grain *assignment* and nothing more, the class-grain-output rival deferred by name to REG-G (§3). [Proven, conditional on B-IRR, permutation-forcing, and AD-m.]

- Two wrong arguments retired in print — the equal-shares fallacy (symmetry distributes what exists and conjures nothing, by the route's own predecessor) and the circular permanence argument (deriving standing readings from R-S assumes what registrations read) — so that the new premises are visible as new, including REG-G, the premise the argument's natural telling leaves silent (§4). [Retired.]
- The Registration Lemma, in four steps on three named imports: records exist, free or housed, the traverser satisfying R-C's persistence at *realized* grade [REG-E]; outputs standing given the specification, the grain a matter of the traverser's cardinality, never its identity, with seat-indifference falling out of the scope clause [R-O]; outputs at seat grain rather than the class total read whole, the rival retired at its own import with no empirical face claimed [REG-G]; hence the unique standing seat-grain content, q/k [Exclusivity] (§5). [Proven, conditional on REG-E, REG-G, R-O, and the inherited chain.]
- The flowing-realization rival constructed in full — registration reads allocation, q/k survives as expectation only — its decider located at R-O's slot and its debt priced at screened, disaggregated size: the rival owes the *stability* of housed member-resolved readings (the only component claimed; fractionality firewalled), the route's own averaging instrumentation and saturation clause candidly credited as partial shield (§6). [The rival: constructed; the comparison: symmetric; the verdict: at the slot.]
- The Realization Theorem, three clauses with slot-resolved degradation: REG-E broken removes the registration, REG-G broken makes readings integral, R-O broken makes them statistical — all leaving (i)–(ii); AD-m falling leaves uniformity with the value re-priced; only B-IRR and C-ORD take everything; the lattice untouched on every outcome. The transfer clause: the engine consumes the shared condition — no transport-stable seat-indexed assignment over the carrier, satisfied by the bath through dissolution and by a permuting ledger through instability — so the theorem holds of identity-dissolving transport as such, at $q/$(orbit size) on orbit carriers (§7). [Clauses (i)–(ii): Proven, conditional as stated; clause (iii): additionally on REG-E, REG-G, R-O; the transfer: at the two papers' statements.]
- The audits, with the anchor's blind spot marked: k = 1 passes at its stated scope (the charge paper verbatim; blind to the grain question, $q/1 = q$ both ways); k = 2 yields a sieve — the **Class Uniformity Criterion** at clause-(ii) grade (members of a bath class identical in every standing quantity; derived from the uniformity half of Exclusivity alone, surviving every clause-(iii) and AD-m degradation — the paper's most robust deliverable; the naive doublet self-disqualifying, the color triplet an unclaimed clause-(ii) consonance) and the **k = 2 winding constraint** at clause-(iii) grade (even or null electric winding, or no electrically registered species — the world's half-charge silence made exclusionary); the spin-½ silhouette held at [Conjectural] with AD-m marked as its exposed joint; k = 3 — the thirds as consequence, at the seven-condition chain (§8). [Audits: run; the tools: at their stated grades; verdicts: at the slots.]
- CO-2 named at its sharpened target, with the findings that sharpened it: the named modes, audited against the table under the §8 [Conjectural] identification, fail at the mixed-flavor configurations — the nucleon fills no class and cancels nothing — and integrality everywhere rests on **C-RES clause (c)**, the sector congruence: equal-capacity class windings congruent mod k, a cross-class constraint nothing upstream supplies and

the table obeys exactly. The invertibility clause forks into the **Confinement Dichotomy** — confinement ⇔ invertible residue, exhaustive at the census (2 and 3 prime; one more credit to *never four*), per response, with k = 1 null by arithmetic (the free leptons recovered on the trivial branch), k = 3 invertible on the [Conjectural] reading (confined, as observed), and k = 2's branch fixed by the winding constraint (null ⇒ unconfined) — the route's first predicted difference between sectors. CO-2's deliverables: the balance restriction on invertible sectors, and the congruence; the world's instantiation logged as consonance through clause (iii) and O1 per the firewall, the cross-capacity door fenced (§9). [CO-2: named at two deliverables and handed forward; C-RES: named, clause (c) the finding; the dichotomy: Proven, conditional on clause (iii), C-RES, and the integral-totals constraint — CO-2's premise, consumed as hypothesis; table contacts: [Conjectural] at O1; not attempted.]

- CO-1 accounted: the first deliverable conditionally discharged — the registration question answered with the grain step named — closing outright at the REG-E, REG-G, R-O, and AD-m slots; the second deliverable converted to CO-2; the route's order extended honestly: CO-0 → CO-1 → CO-2 → the thirds complete (§10). [The accounting: stated; no marker inflated.]
- The pressure on W0 re-priced and re-drawn: the chain's third link now carries a derivation; the route runs thirds → forced on identity-dissolving transport → W0, crossing at L-M's diagonal clause, the permuting-ledger escape closed by the transfer and the C-ORD bypass supplying no rival account; the permanence discrimination claimed at its screened, stability-only grade, the firewall held (§11). [Conditional, as priced.]
- The division of labor extended — geometry proposes, transport disposes, ownership allocates, the carrier locates, **realization registers** (§12). [Proven, given the stated grain.]

Not established (open, out of scope, or pending):

- REG-E (including the realized-grade persistence reading), REG-G, and R-O (with its scope clause) at the charge paper's record construction; clause (iii) is exactly as strong as the three of them, REG-G deliberately unclaimed by observation;
- AD's member-grain clause at the composition law, with its recorded interactions (the §3 remark; the spin silhouette's value structure);
- C-RES clauses (b) and (c) at the census — capacity preservation under conjugation, and the sector congruence, the mixed sector's framework standing and CO-2's second deliverable;
- CO-2 in its entirety — the balance restriction and the residue congruence, its two deliverables — at the G-S territory;
- O1 — the k = 2 and k = 3 identifications — at the census's PFD slot, sieved by the criterion and the winding constraint; whether spin's two-fold structure is a census class at all is O1 content;
- C-ORD at the structure-group imports, exposure total, the composition-order audit the route's cheapest insurance; B-IRR at the Bath Criterion; the branch selection at W0, [Open], its marker unmoved;
- the realization dynamics below the standing description — the organization of the churn between registrations — out of scope: the theorem fixes what registration reads, not the realized traffic it cancels;

- hypercharge, the mixing, breaking, the standing-or-realized status of the doublet's sign structure, and the arc's fenced interior — exactly as the predecessors fenced them.

The honest summary: the paper takes the route's last conjectural link — *does the family's integer actually show at the seats?* — and answers it with a theorem whose new premises are named instead of smuggled: symmetry alone provably cannot force the reading, because the same structure that would force its uniformity withholds the standing identity a member-owned value would need; what forces it is what a measurement is — a closed-loop comparison whose output is standing given its specification [R-O], at the grain the specification fixes rather than the class total read whole [REG-G], performable free or housed by a traverser that persists at realized grade [REG-E] — of which the bath's austerity permits exactly one value at seat grain: the family integer divided by the family size. If the three readings of the record construction hold at their source, every seat of every family, asked, must answer q⁄k — permanently, identically, with no whole number broken — and the theorem pays for its modality in public: a uniformity criterion robust enough to survive the theorem's own degradations and sharp enough to disqualify the most tempting candidate it faces, a winding constraint that turns the world's half-charge silence into a sieve, and a debt at the free sector that turns out to contain two findings — the families' integers march in step, congruent modulo the capacity, a coordination among independent classes that nothing upstream supplies and the table obeys exactly; and the congruence's invertibility forks the census into confined and unconfined sectors by one division, recovering the free leptons on its trivial branch — a coordination and a dichotomy that the route, as CO-2, must now derive or die by.

15. Conclusion

The route to fractional charge has been, from the census onward, a sequence of questions about a pool. Who owns the pound? The family — ownership. Whose integer does the currency force? The pool's, because only the pool survives the stirring — the carrier. And now the last question, the one every depositor actually asks: *if I check my seat, what does the receipt say?* The tempting answer was always symmetry — equal depositors, equal shares — and the route's own results show why it never sufficed: equal depositors guarantee equal receipts only if the bank prints receipts at all, and nothing in fairness obliges it to. The answer that suffices is about the printing. A receipt, in this bank, is not a photograph of the vault's afternoon arrangement; it is printed from the standing ledger — the comparison across a closed journey is built to cancel the day's churn — and the standing ledger, at seat grain, has exactly one line, because everything else the seats might have owned was dissolved by the same stirring that made the pool the owner. Ask a seat what it holds, and there is one thing the bank can say: a third of the pound. Permanently. Every time.

That is the theorem, and its price is paid in public. It stands on three readings of what a record is, named and slotted — that seat-level receipts can be printed at all, even inside the vault; that a receipt reports the seat's entry and not the pool's total copied onto seat-headed paper; and that it is printed from the ledger, not photographed from the vault — with its strongest rivals constructed in full and sent to the same slots for judgment, the flicker carrying its debt at honestly screened size: what is claimed of the world's receipts is only that they never change between printings, the values on them left deliberately unclaimed, and the route's own

confinement of the seats candidly credited for shielding the rival everywhere the receipts cannot be printed at all. It predicts beyond its target, and polices its own prediction: a two-seat family must show halves *identically*, a demand under which the most tempting candidate disqualifies itself and a selection criterion takes its place — sturdy enough to outlive every failure the theorem itself admits — alongside a constraint built from a silence: the world has never shown a half-charge, so whatever the two-seat family is, its electric number is even, or nothing, or not electric at all. And it creates the obligation it hands forward — and finds, folded inside the obligation, the route's next two discoveries. Nothing the world sets free can be an unaccompanied seat whose share is a true fraction; but whether a share is a true fraction is decided by one division, and the division forks the world: families whose pound splits evenly among the seats send their members out alone, whole-numbered and unremarkable — the leptons walk free on exactly this arithmetic — while families whose pound does not split are condemned to balanced company, and the proton shows that company alone is not the rule, for free parties mix seats from different families and their books balance only because the families' pounds march in step, whole units apart at every seat — a coordination among independent pools that nothing in the framework yet explains, obeyed by the table to the last exotic state. Confinement stops being a mystery adjacent to the fraction and becomes the same arithmetic: a family is confined exactly when its division leaves a remainder, and the route's next obligation is to derive the coordination that makes balanced company sufficient — or find it broken where the families mix.

The strangest numbers in physics entered this programme as an anomaly to be housed. The census made them a capacity; the ownership principle made them a title; the carrier theorem made them a notation — a whole number seen from one seat of three. This paper, at its stated conditionality, makes them an obligation: not what the world is permitted to show, but what it could not have refused to. If the slots confirm — the record construction, the composition order, the identifications — then the fraction was never broken and never optional. It was the receipt the pool was always going to print, the signature of common property read by an instrument built to ignore the churn — and the route's remaining work is no longer to explain the thirds, but to explain why they are never found alone, and why the families' numbers keep step.