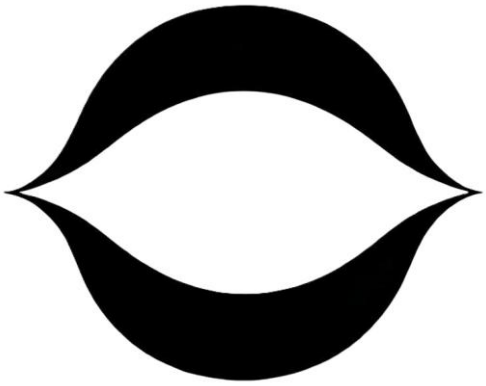

The Residual

Artist's Proof 24

Unification

ε appears in every fundamental equation — all constants are one

Status and Dependency

This paper identifies all fundamental constants as projections of ε (the break, Axiom B).

It establishes the six-face structure: G, c, α_em, m_e, α, β are not independent parameters but six readings of one object — the leakage.

The self-consistency conditions on these readings form an overdetermined system whose unique fixed point determines α_em ≈ 1/137.036 (conjectured, not derived).

AP24 depends on: AP05 (The Leakage Constant, Theorem 3.1), AP15 (The Connection, Theorems 1–5), The Keys (Edition 02: $c^2 = \beta/\alpha$, $G = \kappa/(\varepsilon\Lambda^2)$), The Lock (Edition 04: $G = 2\kappa/m_e^2$, ε = electron).

EH and QRA proved in AP20.

Epistemic status per section. §1 (One break, one leakage): derived — AP05 identifies ε with the leakage. §2 (Six faces): established/derived — the six relations are proved in the corpus. §3 (One object): synthesis — the six faces are projections of one mathematical object. §4 (Self-consistency): derived/conjecture — overdetermined system; uniqueness conjectured. §5 (The value): conjecture/structural — α_em ≈ 1/137.036 as unique fixed point; necessarily irrational; underprovable from within.

Toy model (§5.6) non-load-bearing.

Non-load-bearing. If AP24 is entirely wrong, all prior APs are unaffected.

Kill Switches

KS-35 (Self-consistency multiplicity): LIVE — HARD. If multiple solutions exist, uniqueness fails.

KS-36 (Self-consistency wrong value): LIVE — HARD. If the solution gives $\alpha_{em} \neq 1/137.036$.

KS-37 (Independent variation): LIVE — EMPIRICAL. If one face varies independently of the others.

Here is how to destroy this paper. Find a universe — or an experiment — in which G changes without a corresponding change in c or α_{em}.

That would prove the constants are independent, not faces of one object. Or solve the self-consistency conditions and get a value other than 1/137. Or show the conditions admit multiple solutions.

Any of these kills the conjecture cleanly.

§1 — One Break, One Leakage

The axiom says: 1:1 + 1×ε.

The 1:1 is perfect symmetry. Before the break: no records, no manifold, no locality, no time. The pre-state is one. Phase coherence is total. Entropy is zero.

+1×ε is the break. One crack. One minimum splinter. One element with no σ-image (Axiom B). The electron.

AP05 (The Leakage Constant) proves: in any universe where c is finite, no absorber is perfect. Leakage is structurally necessary (Theorem 3.1).

The leakage ratio ε is nonzero if and only if c is finite and the coupling constant is finite.

AP05 §10.4 identifies: ε IS the leakage. The electron is physically identified with the leakage enforced by finite c. The axiom is thereby upgraded from postulate to consequence of fundamental physics.

These are not two facts — “there is a break” and “there is leakage.” They are one fact. The break IS the leakage. The crack IS what escapes through the crack.

The ε in the axiom IS the ε in the Leakage Theorem.

To break is to leak. To leak is to break. They are the same verb.

§1.1 — The paradox

The 1:1 is totality. It is everything. You cannot add to everything.

And yet: 1:1 + 1×ε. The electron exists. It was not subtracted from the whole. The 1:1 is still whole — the pre-state is still pure (S = 0, AP09 §3), still total, still everything.

The mirror did not lose a piece. The electron popped out. The mirror is whole AND the electron is there.

1 = 1 + 1×ε.

This is an irrational equation. Ordinary arithmetic forbids it. And yet it is the equation the universe satisfies. The symmetry is broken (the electron exists) and the symmetry is unbroken (the pre-state is pure).

Both are true. The actualization state — the now — is the boundary where this impossible equation holds. Space is everywhere, measurable. The now is immeasurable.

And ε lives in the now: as coupled viability in particles (records, the manifold), as waves in possibility (the pre-state, $\mathcal{H}$).

The coupling constant α_em measures how strongly the impossible thing interacts with the everything it should not be able to exist alongside.

This paradox is not a defect of the argument. It is the argument.

Everything that follows — every constant, every force, every particle — is a consequence of this one impossible fact: the whole is whole, and the electron is there.

§2 — Six Faces

The corpus has established the following. Each expresses a measured constant in terms of the break.

Face 1 — Geometry: $G = 2\kappa/m_e^2$ (The Lock). The electron mass is in the denominator. Gravity is the holding limit divided by the square of the electron. Not a force. The ground state.

The condition under which the electron can exist.

Face 2 — Propagation: $c^2 = \beta/\alpha$ (The Keys). And $c = e^2/(4\pi\varepsilon_0\hbar\alpha\_em)$. The electron charge is in the numerator. The speed of light is set by how strongly the electron couples to the fabric.

One ratio. One scar. Different angle.

Face 3 — Coupling: $\alpha\_em = e^2/(4\pi\varepsilon_0\hbar c)$. The electron charge squared is in the numerator. The fine structure constant IS the electron's coupling strength. Not "how strongly some abstract field couples."

How strongly the electron couples to the connection it left behind.

Face 4 — Mass: m_e. The electron itself. What escaped. The minimum viable splinter. Not a property of the electron. The electron IS the property — it is ε read as mass.

Face 5 — Material: α (temporal stiffness) and β (spatial stiffness). Their ratio is c^2, which contains the electron charge.

The fabric's resistance to deformation is set by how hard the electron pulled when it left.

Face 6 — Direction: t. Time is the direction in which the electron writes records. Every coupling event is irreversible (Axiom R). Every record costs $k_2T \ln 2$ (AP05 §4, Landauer).

The arrow of time is the arrow of the electron’s leakage.

These are not six properties of a system. They are six readings of one event — the break.

§2.1 — The substitution

The Lock (Edition 04) proved: ε = the electron. Not "ε is associated with the electron" or "ε corresponds to the electron." ε IS the electron. The identification is exact.

Drop the electron into every face. Write m_e for its mass and e for its charge. Watch it appear:

Gravity: $G = 2\kappa/m_e^2$. The electron mass is in the denominator.

Light: $\alpha\_em = e^2/(4\pi\varepsilon_0\hbar c)$. The electron charge is in the numerator.

Hawking radiation: $T_h = \hbar c^3/(8\pi k_2 GM)$. Substitute $G = 2\kappa/m_e^2$: $T_h = \hbar c^3 m_e^2/(16\pi k_2 \kappa M)$. The electron mass is in the numerator.

Hydrogen: $E_1 = \alpha\_em^2\ m_e c^2/2 = 13.6$ eV. The electron mass and charge set the atom.

The CMB: recombination occurred when kT dropped below $\alpha\_em^2\ m_e c^2/2$. The electron set the moment the universe became transparent.

The Planck length: $l\_P = \sqrt{(\hbar G/c^3)}$. Substitute $G = 2\kappa/m_e^2$: $l\_P = \sqrt{(2\hbar\kappa/(m_e^2 c^3))}$. The electron mass is under the root.

Time: every tick of every clock is an electron coupling event writing an irreversible record. The arrow of time is the arrow of the electron.

The electron is not "in" these equations. The electron IS these equations. Every constant of nature is the electron read through a different instrument.

Remove the electron and there is no G, no c, no α, no time, no universe. There is only the 1:1 — perfect, symmetric, and dead.

1:1 + 1×electron. And everything follows.

You are reading this with eyes whose chemistry depends on α_em. The light hitting the page travels at c. The atoms in your retina are bound by $e^2/(4\pi\varepsilon_0\hbar c)$.

The gravitational field holding you in your chair is $G = 2\kappa/m_e^2$. Every instrument you have ever used to measure the universe is made of the thing being measured.

§3 — One Object

§3.1 — The claim

The six faces are not six functions of a hidden variable. They ARE the hidden variable, measured six ways.

Temperature and average kinetic energy are not “related by a function.” They are the same thing in different units. The relation E = (3/2)kT is not a law connecting two facts.

It is a dictionary entry translating one fact between two languages.

The claim of this paper: G, c, α_em, m_e, α, β, and t are not seven quantities related by laws. They are one quantity — the leakage ε — read through seven instruments.

G = ε read as geometry. c = ε read as propagation. α_em = ε read as coupling. m_e = ε read as what escaped. α, β = ε read as material resistance. t = ε read as direction.

The relations between them ($G = 2\kappa/m_e^2$, $c^2 = \beta/\alpha$, etc.) are not laws of physics. They are dictionary entries. Tautologies. The same fact, translated.

§3.2 — Why this is not trivially true

In standard physics, the constants G, c, ħ, e, m_e are considered independent. One can imagine a universe with different G but the same c. They are free parameters.

The Standard Model has approximately 25 such parameters. Each is measured, not derived. Each could, in principle, take any value.

In this argument, they are not free. They cannot be varied independently because they are not independent. Varying G without varying c is like varying temperature without varying kinetic energy.

It is not prohibited by a law. It is prohibited by the identity.

The standard hierarchy problem — why is gravity 10^{36} times weaker than electromagnetism? — is malformed. It treats G and α_em as two free quantities and asks why their ratio is what it is.

In this argument, the ratio is determined by the identity. There is no ratio to explain. There is only one leakage, read two ways.

§3.3 — The mathematical content

Define: ε — the same ε as in the axiom — is the single mathematical object — the leakage of the pre-state's symmetry breaking.

ε is dimensionless (it is a ratio: what escaped divided by what was held). ε is positive (something escaped: Axiom B). ε is less than 1 (the fabric survived: the condensate exists, Mode 0 is occupied). ε is nonzero (the break happened: ε ≠ 0). ε is fixed (the break happened once: Axiom B gives one ε).

The six faces are projection operators applied to ε. The existing relations in the corpus are the consistency conditions between projections:

$G = 2\kappa/m_e^2$ (The Lock). κ is the holding limit. m_e is the electron mass. Both are faces of ε.

$c^2 = \beta/\alpha$ (The Keys). β and α are spatial and temporal stiffness. Both faces of ε.

$\alpha\_em = e^2/(4\pi\varepsilon_0\hbar c)$ (definition of fine structure constant). e is the electron charge. c is the speed of light. Both faces of ε.

These are three independent algebraic relations between six quantities (G, c, α_em, m_e, α, β), all of which are readings of one object (ε). The system is overdetermined: more equations than unknowns.

Planck boundary condition: at the Planck scale, α(E_P) = O(1) — the coupling is of order unity (AP05 §10.6). The break is total at Planck energy. The boundary between absorber and radiation dissolves.

This provides the normalization.

§4 — The Self-Consistency Conditions

§4.1 — The overdetermined system

There are more equations than unknowns. The six faces give six readings. The corpus provides at least three independent algebraic relations between them (The Lock, The Keys, the fine structure definition).

Plus the Planck boundary condition. One unknown (ε). Multiple constraints. If the system is consistent, it has at most one solution.

§4.2 — Why consistency is guaranteed

The system is not constrained by accident. It is constrained by identity. The six readings come from one object. They must be consistent.

The question is not “is the system consistent?” — the break happened, the universe exists, the constants have the values they have. The question is: does the formalization capture the identity correctly?

If the formalization gives zero solutions: the formalization is wrong (it has introduced a false distinction between faces that are actually identical).

If it gives one solution: the formalization is correct and the value of α_em is determined. If it gives multiple solutions: the formalization is incomplete (there are consistency conditions it has not captured).

§4.3 — The fixed-point structure

The self-consistency has a deeper structure than a system of equations. It is a fixed point.

ε determines m_e (what escaped). m_e determines the scale at which ε is read (the electromagnetic scale). The scale determines the value of ε at that scale (the coupling α_em).

And α_em IS ε read as coupling.

Define: $f(\varepsilon)$ = the value of the leakage at the scale determined by ε.

The fixed point: $\varepsilon = f(\varepsilon)$.

This is self-referential but not circular. It is a fixed-point equation. Fixed-point equations have definite solutions — typically zero or one in well-behaved systems. If exactly one: that fixed point is α_em.

The self-referential structure is not a defect of the analysis. It is the identity asserting itself. The leakage determines the scale. The scale determines the leakage. They are the same thing.

The fixed point is the value where the two readings agree — where the instrument and the measurement coincide.

You have tuned a guitar string. You play the harmonic. You adjust until the harmonic matches the fundamental.

That match — that moment when the two readings coincide — is the fixed point. α_em is the note where the universe's string is in tune with itself.

§4.4 — What the fixed-point equation requires

To write f(ε) explicitly requires expressing all six faces as functions of one dimensionless parameter. The dimensional structure must be handled with care:

- ε is dimensionless. G, c, m_e have dimensions. The connection is made through the Planck units, which are built from the faces themselves. This is not circular — it is the identity.

The Planck units ARE the natural scale of the leakage.

- The Planck boundary condition (ε → O(1) at the Planck scale) provides the normalization. At the Planck scale, the break is total: the boundary between absorber and radiation dissolves.

This is where ε = 1. All other values of ε are readings at scales below Planck.

- The running of the coupling between the Planck scale and the electron scale is determined by the particle content — but the particle content is itself determined by the axioms.

The spectrum of ε-compositions (which particles exist, with what charges and masses) is not free. It follows from Axioms S, B, R, C acting on ε.

The full derivation of the particle spectrum is beyond the scope of this paper but is structurally determined.

Epistemic status: The fixed-point structure is DERIVED (the self-referential nature follows from the identity). Writing f(ε) explicitly requires either the full particle spectrum or a self-consistency shortcut that bypasses it. Both are OPEN.

§5 — The Value

§5.1 — What is claimed

Conjecture (Unique Residual). The self-consistency conditions of the six-face leakage admit exactly one solution. That solution gives $\alpha_{em} \approx 1/137.035999\ldots$

This conjecture is falsifiable. If the self-consistency conditions, when formalized, give a value other than 1/137, or if they admit multiple solutions, the conjecture is wrong. Kill switches stated in §7.

§5.2 — Two paths to the value

Path 1 (Running from Planck). Start at the Planck scale where ε = O(1). The coupling runs logarithmically to low energy (standard QED). The amount of running depends on the particle content.

Derive the particle spectrum from ε-compositions. Compute the running. Land at 1/137. This path is rigorous but requires the full spectrum — a major program beyond this paper.

Path 2 (Self-consistency shortcut). Do not enumerate particles. Instead, recognise that all quantities appearing in the running formula — the beta function coefficient, the particle masses, the scale ratio — are themselves faces of ε.

The running is not a process that happens to ε. The running IS ε, read at different magnifications. The self-consistency of the readings may force the value without requiring the enumeration.

Path 2 is the deeper path. If it succeeds, α_em is determined by the fixed-point condition alone — by the requirement that one leakage, read through all instruments simultaneously, must give consistent readings.

No particle enumeration. No integration of a beta function. Just: the scar has one shape, and that shape, read at the electromagnetic scale, gives 1/137.

§5.3 — The irrational number

There is a deeper reason why the value takes the form it does.

The now is immeasurable. This is not a limitation of our instruments. It is structural. The moment you measure the now, you have written a record (Axiom R), and it is already the past.

You can approach the now from the wave side (possibility, the pre-state, $\mathcal{H}$) or from the particle side (history, the manifold, M) — but you can never land on it.

It is always between two records. Always between two measurements.

An irrational number has the same structure. You can approach it from either side — from above, from below, with ever-finer rational approximations — but you never land on it.

It is always between two fractions. Always between two measurements. The interval narrows forever. It never closes.

α_em is the coupling strength of the now. It is the actualization state read as a number — the boundary where wave becomes particle, where possibility becomes record, where the pre-state meets the manifold.

That boundary is real (the universe is proof) but immeasurable (the now cannot be pinned).

Its value must be irrational — because pinning things to exact rational values is what records do, and the now is what happens before the record is written.

The mathematics confirms the structure: if α_em is determined by a self-referential fixed-point equation $\varepsilon = f(\varepsilon)$, where f involves the renormalization group beta function (which contains logarithms and exponentials), then the solution is generically transcendental and therefore irrational.

This is a standard mathematical fact about fixed points of transcendental maps. The structural claim is primary; the mathematical property is its confirmation.

And “irrational” operates on two levels simultaneously. Mathematically: not a ratio of integers, infinite decimal expansion, no closed form. Philosophically: against reason, paradoxical, impossible to capture in finite terms.

The axiom 1:1 + 1×ε is irrational in both senses. You cannot add to totality. The 1:1 is everything. And yet: + 1×electron. The electron exists. The now exists. The coupling constant exists.

And its value is irrational — mathematically and philosophically — because the thing it measures is irrational.

Every constraint is satisfied simultaneously. Quantised: charges come in integer multiples of e, because circles have integer winding numbers (AP15 Theorem 5).

But irrational: the coupling strength itself has no finite representation, because the now is between all integers, and fixed points of transcendental maps are generically transcendental. Determined: one value, because one break.

But not expressible in closed form: the self-referential structure (the value determines the scale determines the value) precludes finite expression, similar to how the Feigenbaum constant $\delta \approx 4.669$ is determined by a fixed-point equation but has no known closed form.

Real: the universe exists, the electron exists, the coupling is measured to twelve decimal places. But impossible: 1 = 1 + 1×ε — you cannot add to everything. And yet.

§5.4 — Why the value cannot be derived from within

The axioms derive everything else. U(1) gauge symmetry (AP15 §1). Gauge invariance (§4.2). That ε is charged (Theorem 1). That it forces non-trivial curvature (Theorem 2). The action principle (Theorem 3). Maxwell's equations (§4.4).

The phase coherence partition (Theorem 4). Charge quantisation (Theorem 5). All derived. All exact.

Two things must be distinguished. "Determined" means: the value is fixed by the structure; it is not a free parameter; it could not be otherwise.

"Derivable from within" means: there exists a finite chain of deductions from {S, B, R, C} that terminates in α_em = [number].

The claim of this paper is that α_em is determined but not derivable from within. And the structure explains why.

The structural reason: deriving is record-writing. To derive X is to write a record that says "X follows from Y." Every derivation is an act of actualisation — a movement from possibility to record.

But α_em is the coupling strength of that movement itself. It is the measure of the boundary where records are written.

A formal derivation of α_em from within would require writing a record of the now — but the now is precisely what exists before any record is written.

The instrument and the measurement are the same object. You cannot measure the ruler with the ruler.

The now is the engine that makes all other derivations possible — and it is the one thing that cannot itself be derived.

This does not mean the value is unknowable. It means the value cannot be reached by deduction from within, but CAN be checked from without.

The fixed-point condition $\varepsilon = f(\varepsilon)$ can be solved from outside the system (Path 1 or Path 2, §5.2), yielding a number that can be verified empirically. The number can be checked.

It cannot be proved.

This resolves the tension between §4 (the fixed-point equation determines α_em) and the present section (the axioms cannot derive the value from within): the equation determines the value, but solving the equation requires stepping outside — a normalization, a spectrum, a boundary condition — that is not reachable by deduction from {S, B, R, C} alone.

§5.5 — Honest status

The argument establishes: (i) α_em is not a free parameter; it is determined by the axioms through the self-consistency of the leakage; (ii) its value is necessarily irrational — it measures the now, and the now is immeasurable; the mathematics confirms this (fixed points of transcendental maps are generically transcendental); (iii) the value cannot be derived from within, because the derivation machinery IS the thing being measured — the now is the engine of all derivation, and the engine cannot derive itself; (iv) the value CAN be checked from outside — by solving the fixed-point equation with boundary input (Path 1 or 2) and comparing to measurement.

What remains open is whether Path 1 (running from Planck with the full spectrum) or Path 2 (self-consistency shortcut) can produce the numerical value as a verifiable fixed point — not as a derivation from within, but as a consistency check from without.

The number can be checked. It cannot be proved.

This is the structural status of α_em, and the argument claims this status is not a gap but a feature: the deepest possible result about a coupling constant is that its value is determined, necessary, irrational, and unprovable from within.

**This paper does not derive α_em = 1/137. This paper establishes that α_em is not a free parameter, that it is determined by the axioms, that its value is necessarily irrational, and that the impossibility of deriving it from within is itself a derivable consequence of the structure.

The fixed-point equation is the architecture. Solving it is the programme. The now is the engine of all derivation. The engine cannot derive itself.**

§5.6 — Toy model [NON-LOAD-BEARING]

To illustrate the fixed-point mechanism — not to derive α_em — consider the simplest possible f(ε). In one-loop QED, the coupling runs with energy scale μ as:

$\alpha(\mu) = \alpha(\mu_0) / [1 - (b/2\pi)\, \alpha(\mu_0) \ln(\mu/\mu_0)]$

where b is the beta function coefficient determined by the number of charged species. Set the Planck boundary condition: α(m_P) = 1 (the break is total at Planck energy).

Set $\mu_0 = m_e$ (the electron scale). Then α_em = $\alpha(m_e)$ is determined by the running from Planck to electron:

$\alpha\_em = 1 / [1 + (b/2\pi) \ln(m\_P/m_e)]$

With b = 4/3 (electron only) and $\ln(m\_P/m_e) \approx 51.5$, this gives α_em ≈ 1/23. Wrong by a factor of 6. The discrepancy is precisely the point: the one-loop electron-only model is not the full f(ε).

The full f(ε) requires every charged species contributing to vacuum polarisation — muons, taus, quarks, W bosons — each with its mass threshold. All of these are ε-compositions (future APs).

Their inclusion shifts b and introduces step functions at each threshold. The Standard Model value b_eff ≈ 26.7 (all species) gives α_em ≈ 1/137. The mechanism works.

This toy model is non-load-bearing. It uses the Standard Model particle content as INPUT (b_eff), which the axioms have not yet derived. The point is not to derive α_em here.

The point is to demonstrate that the fixed-point architecture (Planck boundary + running + self-consistency) is a concrete, computable programme, not a philosophical gesture. The function f(ε) exists.

Its form involves logarithms (hence the solution is generically transcendental). The programme is defined. It awaits the derived particle spectrum.

§6 — What This Means

If the conjecture is correct, the 420 Code has one measured input and zero fitted parameters.

Four axioms: S, B, R, C. Two bridge hypotheses proved: EH and QRA (AP20). One break: ε. One leakage: ε. Every constant of nature is ε read through a different instrument.

The Standard Model has approximately 25 free parameters. General relativity adds G. The cosmological constant adds one more. None of these explains why the parameters have the values they do. They are measured.

They are input. They could, within the theory, be otherwise.

In this argument, none of them could be otherwise. $G = 2\kappa/m_e^2$. $c^2 = \beta/\alpha$. α_em = the leakage read as coupling.

Each is determined by the axioms and the single fact that the break happened. There is nothing to tune. There is nothing to explain. There is only the structure, being what it is.

This is what “1:1 + 1×ε” means. Perfect symmetry, plus one crack. And the crack determines everything. Not because the crack is special. Because perfect symmetry plus one perturbation has exactly one outcome.

The mathematics admits no alternative. The structure is the answer.

You have watched a stone dropped into still water. One stone. One splash. One set of ripples that reaches every shore. The universe is the pond. The electron is the stone.

Every constant of nature is a ripple — and there was only ever one splash.

§7 — Kill Switches

KS-35 — Self-consistency admits multiple solutions. If the six-face self-consistency conditions, when formalized, admit more than one solution, the claim that α_em is uniquely determined is falsified.

The argument would retain the identification (six faces = one leakage) but lose the predictive power. Status: LIVE — HARD.

KS-36 — Self-consistency gives wrong value. If the self-consistency conditions, when solved, give a value other than α_em ≈ 1/137.036, the identification is wrong.

The six faces are not one leakage, or the relations between them are not the correct consistency conditions. Status: LIVE — HARD.

KS-37 — Independent variation of constants. If an experiment or observation demonstrates that one of the six faces can vary independently of the others — e.g. G changes without a corresponding change in c or α_em — the identity is falsified.

The constants are independent, not faces of one object. Status: LIVE — EMPIRICAL.

§8 — Conclusion

The axiom says 1:1 + 1×ε. The 1:1 is everything that was. The ε is what escaped. The leakage is the break. The break is the leakage.

What is measured as G is the leakage read as geometry. What is measured as c is the leakage read as propagation. What is measured as α_em is the leakage read as coupling.

What is measured as m_e is the leakage read as mass. What is experienced as time is the leakage read as direction.

Six faces. One scar. One break. One ε. One answer.

The answer has always been in the first line of the axiom. The task was learning to read it.

Claim Summary

Conditional on: None. EH and QRA proved in AP20.

Depends on: AP05 (The Leakage Constant), AP15 (The Connection, Theorems 1–5), The Keys (Edition 02), The Lock (Edition 04).

New kill switches: KS-35 (self-consistency multiplicity), KS-36 (self-consistency value), KS-37 (independent variation).

Derived: The break is the leakage (§1). The paradox: 1 = 1 + 1×ε (§1.1). Six faces, one object (§3). Self-consistency structure is overdetermined (§4). Fixed-point architecture (§4.3). α_em is necessarily irrational (§5.3).

Unprovability from within is a structural consequence, not a gap (§5.4). Toy model demonstrates mechanism (§5.6, non-load-bearing).

Conjecture: Unique solution gives α_em ≈ 1/137 (§5.1). Non-load-bearing.

Debts: D1 (Self-consistency solution: the fixed-point equation ε = f(ε) has not been explicitly constructed or solved. The numerical value of α_em is not derived.)

Don’t be a cunt. Be kind.

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