



The Leakage Constant

Artist's Proof 06

Fine Structure

$\varepsilon = \alpha_{em}$ — the one measured input

§0. Status and Dependency

AP06 is logically independent of every other Artist's Proof. §§1–5 use only established physics. §6 makes an interpretive identification ($\varepsilon = \eta$). §7 contains non-load-bearing conjectures. If §6 is rejected, §§1–5 stand unchanged.

Structural relationships. AP06 extends the physics spine of AP01. The leakage identification connects to AP03 (c and G as conjugate) and AP05 (ε as the break).

AP08 (EFEs contain G, whose relationship to c AP06 §7 conjectures about). AP09 (leakage at every boundary is the quantum sector's contribution to the record economy).

AP18 (tension field floor $a_0 \approx cH_0$ constrains G independently). AP20 (forcing proof: Axiom B \rightarrow one parameter, structurally constraining KS-L.6).

AP24 (all constants as projections of ε — AP06's multidimensional residual conjecture is the precursor). All structural bonuses, not dependencies.

Epistemic status key. [ESTABLISHED] Published, peer-reviewed physics — not our claim. [DERIVED] Follows necessarily from established results. [SYNTHESIS] Combines established results in a new way — combination new, components not. [INTERPRETATION] Connects physics to the 420 Code architecture — valid reading, not forced by physics alone. [CONJECTURE] Hypothesis not yet confirmed — kill switch stated.

Axiom mapping. Axiom S \rightarrow the two-sector structure (absorber and radiation) whose boundary leakage is measured; η measures how imperfectly the boundary separates them.

Axiom B \rightarrow ε identified with η (Identification 6.1); the break is not abstract but physically measured at every boundary.

Axiom R \rightarrow every leakage event is irreversible; the Landauer cost (§4) is the thermodynamic expression of record persistence.

Axiom $C \rightarrow c$ is the universal absorption limiter, appearing in the denominator of every leakage calculation; finite c prevents $\eta = \emptyset$.

Outstanding debts. D1 (Broader class): Theorem 3.1 proven for two channels — hypothesis that it extends to all physical near-perfect absorbers is advanced but not proven.

D2 (Numerical factor): the eye's leakage ratio ($\sim 10^{-5}$) and CMB anisotropy ($\sim 10^{-5}$) are numerically similar — likely coincidental (§5.4), open question.

D3 (Poisson derivation): Poisson equation derivation with G depending on c through leakage (KS-L.7) not completed.

Kill switches. KS-L.1 (Perfect absorber): LIVE — EMPIRICAL, targets Theorem 3.1.

KS-L.2 (Sufficiency failure): LIVE — EMPIRICAL, targets Theorem 3.1 (scoped).

KS-L.3 (Dependent): LIVE — DEPENDENT, falls if KS-L.1 or KS-L.2 fires, targets Identification 6.1. KS-L.4 (Landauer violation): LIVE — EMPIRICAL, targets §4 synthesis. KS-L.5 (No shared parameterisation): LIVE — HARD, non-load-bearing.

KS-L.6 (G independent of c): LIVE — HARD, structurally constrained by AP20 forcing proof. KS-L.7 (Poisson derivation): LIVE — HARD, targets §7.1.

Seven kill switches. Two target the load-bearing theorem. The rest target interpretations and conjectures. You know which ones matter.

§1 Gravitational Leakage: The Hawking Channel

[ESTABLISHED]

Nothing escapes a black hole. You were taught this. It is almost true. The word “almost” is the entire content of AP06.

§1.1 Setup

Consider a Schwarzschild black hole of mass M . The event horizon is at the Schwarzschild radius:

$$r_s = 2GM/c^2 \quad (1.1)$$

Classical analysis: nothing escapes. Leakage ratio $\eta = 0$ (perfect absorption in the classical limit). Hawking (1975) demonstrated that quantum field theory on curved spacetime produces a correction.

The black hole emits thermal radiation at temperature:

$$T_h = \hbar c^3 / (8\pi k_2 GM) \quad (1.2)$$

§1.2 Where c appears

The surface gravity of a Schwarzschild black hole is $\kappa = c^4/(4GM)$. The Hawking temperature is derived from the surface gravity: $T_h = \hbar\kappa/(2\pi ck_2)$. c^3 appears in the numerator.

The temperature is nonzero for any finite M precisely because c is finite and nonzero.

You are looking at the speed of light preventing perfect absorption. c is in the numerator. If c were zero, no photons would exist. If c were infinite, coupling would vanish.

For any finite c , the black hole leaks. You have been told black holes swallow everything. They do not. They cannot. The constant forbids it.

§1.3 Luminosity

Total Hawking luminosity:

$$L = \hbar c^6 / (15360\pi G^2 M^2) \quad (1.5)$$

For a solar-mass black hole: $T_h \approx 6 \times 10^{-8}$ K, $L \approx 9 \times 10^{-29}$ W. The net leakage ratio is approximately 10^{-17} relative to CMB irradiance.

§1.4 Structural features

Claim C1 (Established). Gravitational absorbers exhibit six structural features: (S1) absorption is near-perfect but not perfect, $\eta < 1$; (S2) leakage is thermal (Planck spectrum at T_h); (S3) leakage carries boundary information (greybody factors), not input information; (S4) leakage is wavelength-dependent; (S5) spherical geometry enhances absorption; (S6) c is the constraining constant that makes $T_h > 0$. [Hawking 1975; Bekenstein 1973] ■

§2 Electromagnetic Leakage: The Retinal Channel [ESTABLISHED]

Now look at something completely different. Your own eye.

§2.1 Setup and measurements

The human eye functions as an electromagnetic absorber.

Published measurements [Hammer et al. 2022; Mordant et al. 2011] report internal reflectance of the eyewall at 4.24–34.77% (wavelength-dependent, varying with pigmentation) and a Sphere Multiplier of 1.13–1.59 (enhancement of effective irradiance due to spherical geometry and multiple internal reflections).

§2.2 Escape fraction

Combining internal reflectance with the geometric factor (pupil subtends a small solid angle relative to interior surface):

$$\eta_{\text{escape}} \approx 10^{-6} \text{ to } 10^{-5} \quad (2.1)$$

The escaped photons carry information about the boundary (fundus tissue properties: melanin, haemoglobin, RPE), not the input image. Coherent image in, thermal/diffuse reflectance out.

§2.3 Where c appears

The coupling strength between light and matter is governed by the fine structure constant:

$$\alpha = e^2/(4\pi\epsilon_0\hbar c) \approx 1/137 \quad (2.2)$$

c appears in the denominator. α determines the absorption cross-section of every atom. The absorption cross-section of rhodopsin is bounded by:

$$\sigma_{\text{abs}} \sim \alpha \times \lambda^2/(2\pi) \quad (2.3)$$

Because $\alpha < 1$, the cross-section is always less than the geometric area. Perfect absorption requires $\alpha \geq 1$, which requires $c \leq e^2/(4\pi\epsilon_0\hbar)$. For our universe, c far exceeds this bound.

Your eye cannot absorb every photon that enters it. Not because your eye is imperfect. Because c is finite.

The same constant that prevents the black hole from absorbing everything prevents your retina from absorbing everything. The mechanism is different. The structure is identical.

§2.4 Structural features

Claim C2 (Established). Electromagnetic absorbers (biological tissue) exhibit the same six structural features as gravitational absorbers: (S1) $\eta < 1$; (S2) leakage is diffuse/thermal; (S3) leakage carries boundary information, not input; (S4) wavelength-dependent; (S5) spherical geometry enhances absorption; (S6) c constrains η via α . [Hammer et al. 2022; Mordant et al. 2011] ■

§3 The Common Structure: The Leakage Theorem [DERIVED]

§3.1 Structural isomorphism

§§1-2 establish that two physically distinct systems — gravitational (black hole) and electromagnetic (retina) — share six identical structural features. Not analogy.

Structural isomorphism: both are instances of the class of near-perfect absorbers whose leakage is constrained by the finitude of c .

§3.2 Universal form (dimensionless structural form)

The common structure is not a single dimensionally exact equation across domains. It is a dimensionless structural dependence: leakage is a function of a finite propagation limit, a finite coupling, and system-specific state variables. Write

$$\eta = F(\hat{c}, \hat{\gamma}, \hat{V}) \quad (3.1)$$

where $\hat{c} = c/c^*$, $\hat{\gamma} = \gamma/\gamma^*$, and $\hat{V} = V/V^*$ are dimensionless variables defined relative to domain-appropriate reference scales.

In specific systems, asymptotic or phenomenological scalings may take power-law form, but the cross-domain claim is structural, not a universal dimensionally exact monomial.

§3.3 The theorem

Theorem 3.1 (Leakage Theorem – scoped). In the analysed near-perfect-absorber channels of §§1–2 (gravitational Hawking leakage and electromagnetic retinal leakage), the leakage ratio η is strictly positive whenever c is finite and the relevant coupling constant is finite (G finite for the Hawking channel; α finite for the retinal channel).

More generally, AP06 advances the hypothesis that finite propagation limit + finite coupling forbids perfect absorption in the broader class of physical absorbers.

Proof. Forward: If $c = 0$, no photons exist ($E = \hbar c/\lambda = 0$). η is undefined.

If $c \rightarrow \infty$, then $\alpha = e^2/(4\pi\epsilon_0\hbar c) \rightarrow 0$; light does not interact with matter. η is undefined.

If γ is infinite, absorption is perfect by definition: $\eta = 0$. For any finite $c > 0$ and any finite $\gamma > 0$ in the analysed channels: in the gravitational channel, Hawking radiation ensures nonzero thermal emission (§1); in the electromagnetic channel, finite α bounds absorption cross-sections below the geometric limit (§2).

In both cases $\eta > 0$. Reverse: If $\eta > 0$, absorption is imperfect, requiring finite coupling ($\gamma < \infty$) and finite $c > 0$. QED. ■

§3.4 Precise statement

The eye and the black hole are governed by different equations, different coupling constants, and different mechanisms. The claim is not identity.

The claim is that both are members of the class of near-perfect absorbers whose leakage is constrained by the finitude of c and the finitude of the relevant coupling constant.

Result C3 (Derived – scoped). In the two analysed channels, perfect absorption ($\eta = 0$) is not achieved for finite c and finite coupling. Leakage is structurally necessary.

It is a consequence of the constants, not an imperfection. ■

Leakage is not a flaw. It is a law. You cannot build a perfect absorber in a universe where c is finite. The mathematics forbids it.

The Leakage Theorem says: every boundary leaks, and c is why. You have now seen the proof.

§4 The Observation Boundary: Landauer at Every Measurement [SYNTHESIS]

§4.1 The Landauer principle

Landauer (1961) proved: erasing one bit of information requires minimum energy dissipation:

$$E_{\min} = k_2T \ln 2 \quad (4.1)$$

A theorem of statistical mechanics, experimentally verified [Bérut et al. 2012].

§4.2 Measurement as observation

Every quantum measurement extracts information. Between measurements, unitary evolution preserves information.

At the measurement event, three things happen simultaneously: (a) decoherence relative to the measurement basis; (b) information extraction (a definite outcome is recorded); (c) any logically irreversible erasure or reset of the recorded outcome dissipates at minimum $k_2T \ln 2$ per erased bit.

The leakage is therefore the thermodynamic cost of maintaining an observation record over time, not a mandatory dissipation at the instant of measurement.

§4.3 Three channels, one form

Claim C4 (Synthesis). The leakage cost per bit has the same form in all three domains: $E_{\text{leak}}/\text{bit} = k_2 \times T \times O(1)$, where T is set by the boundary physics and $O(1)$ is a constant of order unity.

Gravitational: $k_2 T_h$. Electromagnetic: $k_2 T_{\text{body}} \ln 2$. Cosmological: $k_2 T_{\text{CMB}}$. ■

§4.4 Honest qualification

The form of the leakage cost per bit (k_2T) is constant across domains.

The ratio of leakage to total incoming energy is not constant — it depends on specific temperatures and coupling constants differing by many orders of magnitude.

The structural isomorphism is in the form, not the magnitude.

§5 The Cosmological Channel: CMB as Boundary Radiation [ESTABLISHED]

§5.1 The last scattering surface

Before recombination (~380,000 years post-expansion), the universe was opaque: photons trapped by Thomson scattering off free electrons. At recombination, electrons combined with protons to form neutral hydrogen.

The photon mean free path exceeded the Hubble length. The CMB is the leakage from that transition — thermal radiation at 2.72548 ± 0.00057 K, the most perfect blackbody spectrum ever measured.

You have seen this radiation. Every television that ever showed static between channels was showing you the leakage from the last scattering surface. The universe's first boundary, still radiating.

§5.2 Structural match

Claim C5 (Established). The CMB exhibits all six structural features: (S1) near-perfect absorption before recombination; (S2) thermal leakage (perfect blackbody); (S3) boundary information (temperature anisotropies $\sim 10^{-5}$ encode conditions at the last scattering surface); (S4) wavelength-dependent (acoustic peaks); (S5) spherical geometry; (S6) c governs escape. [Penzias & Wilson 1965; Planck 2020] ■

§5.3 Three scales, one architecture

Stellar scale: black hole, Hawking radiation, leakage $\sim 10^{-17}$, boundary = event horizon.

Biological scale: human eye, fundus reflectance, leakage $\sim 10^{-6}$ to 10^{-5} , boundary = retina.

Cosmological scale: early universe, CMB, anisotropy $\sim 10^{-5}$, boundary = last scattering surface.

Three systems. Three scales. Three boundaries. One structure. Six identical features. And at the heart of every one of them: c , preventing perfect absorption. You have now seen it at every scale the universe offers.

§5.4 Honest qualification

The numerical coincidence of the eye's leakage ratio ($\sim 10^{-5}$) and the CMB anisotropy ($\sim 10^{-5}$) is likely coincidental. Different physics governs the two systems.

The structural parallel is genuine; the numerical match is not claimed as significant.

§6 The Epsilon Identification

[INTERPRETATION]

§6.1 The axiom as originally stated

The 420 Code's foundational axiom (1:1 + 1× ε) asserts that fundamental reality is a 1:1 symmetry broken by a structurally necessary asymmetry ε . Prior to this paper, ε was a postulate.

§6.2 The identification

§§1–5 establish two claims at distinct epistemic levels. Weak claim (derived): In the analysed channels, finite c and finite coupling ensure $\eta > 0$ at every boundary.

Therefore $\varepsilon > 0$ is not a postulate but a consequence of finite c . The topological claim: the distinction between connected ($\eta > 0$) and disconnected ($\eta = 0$) is binary.

Strong claim (interpretation): The specific value of ε in the architecture is identified with the leakage ratio η , which is domain-dependent. Offered as a reading, not a derivation.

Identification C6. $\varepsilon \equiv \eta$ (the leakage ratio).

The ε of the 420 Code is the leakage enforced by finite c . A measured physical quantity with domain-dependent values: $\varepsilon_{\text{gravity}} \approx 10^{-17}$, $\varepsilon_{\text{eye}} \approx 10^{-6}$ to 10^{-5} , $\varepsilon_{\text{cosmo}} \approx 10^{-5}$. [INTERPRETATION] ■

§6.3 The topological argument

The distinction between $\eta > 0$ and $\eta = 0$ is qualitative, not quantitative. A system with $\eta = 10^{-17}$ is connected to its exterior; a system with $\eta = 0$ is causally disconnected.

A discrete binary property — no continuous interpolation between connected and disconnected that passes through intermediate states. The magnitude of η determines the bandwidth of the connection, not whether connection exists.

§6.4 The theorem

Identification 6.1 (The Epsilon Identification) [INTERPRETATION]. $\varepsilon \equiv \eta$.

The ε of the 420 Code is the leakage enforced by finite c . Not a mathematical consequence of Theorem 3.1. A philosophical interpretation: the physical fact of universal leakage in the analysed channels is read as the symmetry-breaking parameter of the axiom.

Motivated by the structural role ε plays in the architecture (AP05), but not forced by the physics.

What this identification means: The physics guarantees $\eta > 0$ in the analysed channels. The architecture chooses to call that ε . Previously: “I assert ε exists.” (Postulate.)

Now: “I identify ε with η , a measured physical quantity.” (Interpretation.)

Falsifiable only through the kill switches on Theorem 3.1. If KS-L.1 or KS-L.2 fires, η is not universally nonzero, and the identification loses its physical grounding.

You have just watched a postulate become a measurement. ε was abstract. Now it has a number.

The number changes depending on which boundary you measure — 10^{-17} at the event horizon, 10^{-5} at your retina, 10^{-5} at the last scattering surface — but the structural fact is the same everywhere: the boundary leaks, because c is finite.

You do not need to believe the interpretation. The leakage is there whether you name it ε or not.

§7 Forward Direction: The Planck Constraint

[CONJECTURE]

Non-load-bearing. If every claim in §7 is wrong, §§1–6 are unaffected.

§7.1 G depends on c through ε

AP03 established the scaling $G = \kappa/(\varepsilon\Lambda^2)$, where κ is the backreaction coupling.

Theorem 3.1 establishes (in the analysed channels) that $\eta > 0$ whenever c and coupling are finite: $\varepsilon = \eta(c, \gamma)$. Substituting:

$$G = \kappa / (\eta(c, \gamma) \times \Lambda^2) \quad (7.1)$$

G is a function of c through ε . They are not independent.

The conjugacy conjectured in AP03 — c and G as two expressions of one symmetry-breaking event — now has a proposed physical mechanism: the leakage mediates the relationship.

§7.2 Consequences for the Planck scale

If G is not independent of c , the Planck units are built from two independent constants (c and \hbar), not three. The ratio $G/c^3 = \kappa/(\epsilon\Lambda^2c^3)$ sets the Planck length.

In the leakage reading: the Planck scale is where $\epsilon \sim O(1)$ — where the leakage becomes total and the boundary between absorber and radiation dissolves.

§7.3 The constraint path

Increase $c \rightarrow \alpha$ decreases \rightarrow coupling loosens $\rightarrow \varepsilon$ increases (more leakage) $\rightarrow G$ decreases. Decrease $c \rightarrow \alpha$ increases \rightarrow coupling tightens $\rightarrow \varepsilon$ decreases (less leakage) $\rightarrow G$ increases.

§7.4 The multidimensional residual

Conjecture C7 (Multidimensional residual). G , c , α (temporal stiffness), β (spatial stiffness), α_{em} ($\approx 1/137$), and m_e are not independent constants.

They are readings of a single multidimensional residual — the structure the substrate acquired after the symmetry break.

G is the geometry face (how tightly the condensate holds). c is the propagation face ($c^2 = \beta/\alpha$). α_{em} is the coupling face (how strongly the electron interacts with the substrate). m_e is what escaped (the minimum viable excitation).

The Planck scale marks where $\varepsilon \sim O(1)$. [CONJECTURE, non-load-bearing] ■

§8 Falsification Conditions

Seven kill switches targeting claims at different levels.

Leakage Theorem (Theorem 3.1)

Kill Switch KS-L.1 [LIVE — EMPIRICAL] (Perfect absorber). Demonstration of a physical absorber achieving $\eta = \emptyset$ with finite c and finite coupling constant. Targets: Theorem 3.1, Result C3.

Kill Switch KS-L.2 [LIVE — EMPIRICAL] (Sufficiency failure within AP06 class). Identification of an AP06-class near-perfect absorber (finite c , finite relevant coupling, valid leakage-ratio definition) that nonetheless achieves $\eta = \emptyset$. Targets: Theorem 3.1 (scoped form), Result C3.

You want to kill the Leakage Theorem? Build a perfect absorber. If you can absorb every photon with finite c and finite coupling, Theorem 3.1 is dead. The argument gives you the target.

You know what it takes.

Epsilon Identification (Identification 6.1)

Kill Switch KS-L.3 [LIVE — DEPENDENT] (Dependent). If KS-L.1 or KS-L.2 is triggered, the Epsilon Identification falls automatically since it depends on Theorem 3.1. Targets: Identification 6.1.

Kill Switch KS-L.4 [LIVE — EMPIRICAL] (Landauer violation). Demonstration of information erasure at zero energy cost. §4 falls. Would not invalidate §3 but removes the observation-boundary synthesis. Targets: Claim C4.

Conjectures (§7, non-load-bearing)

Kill Switch KS-L.5 [LIVE — HARD] (No shared structural parameterisation; non-load-bearing). If no dimensionless parameterisation can be constructed that places gravitational greybody leakage and electromagnetic boundary leakage within a

shared near-perfect-absorber family even at the level of structural variables, then AP06's cross-domain structural-family heuristic fails.

Non-load-bearing. Targets: §3.2 structural-family hypothesis (heuristic), §7 bridge heuristics.

Kill Switch KS-L.6 [LIVE — HARD] (G independent of c). If G and c are shown to be independently variable — an observation demonstrating G can change without any corresponding change in c or the leakage structure.

Targets: §7.1. Does not affect §§1–6.

Kill Switch KS-L.7 [LIVE — HARD] (Poisson derivation). If the Poisson derivation, when completed, produces a G coefficient that does not depend on c through the leakage.

The specific mechanism is wrong; conjugacy may hold via different means. Targets: §7.1. Does not affect §§1–6.

What does not kill this paper. The numerical coincidence of leakage ratios across domains is not a claim. If the eye's leakage ratio is unrelated to the CMB anisotropy ratio, nothing breaks.

The structural isomorphism does not depend on numerical equality.

§9 Summary of Claims

C1 (Established): Gravitational absorbers: $\eta < 1$, six structural features, c constraining.

C2 (Established): Electromagnetic absorbers: $\eta < 1$, same six features, c via α .

C3 (Derived – scoped): In the two analysed channels, perfect absorption is not achieved for finite c and finite coupling.

Theorem 3.1 (Derived – scoped): $\eta > 0$ in the analysed channels when c finite and γ finite. Hypothesis: extends to broader class. The Leakage Theorem.

C4 (Synthesis): $E_{\text{leak/bit}} = k_2 T \times O(1)$ at all scales. Landauer at every measurement.

C5 (Established): CMB exhibits all six structural features.

C6 (Interpretation): $\varepsilon \equiv \eta$. The axiom's ε is identified with the leakage enforced by finite c . Domain-dependent values.

Identification 6.1 (Interpretation): $\varepsilon \equiv \eta$. The architecture identifies the leakage enforced by finite c as its symmetry-breaking parameter. Not a derivation; a reading.

C7 (Conjecture, non-load-bearing): $G, c, \alpha, \beta, \alpha_{\text{em}}, m_e$ are faces of one residual.

KS-L.1 through KS-L.7: Seven kill switches. KS-L.1/KS-L.2 target load-bearing theorems. KS-L.5–KS-L.7 target non-load-bearing conjectures.

§10 Notation Reference

c: Speed of light. 299,792,458 m/s. Universal absorption limiter.

η : Leakage ratio. Fraction of incident energy that escapes an absorber.

ε : Symmetry-breaking parameter. Identified with η in §6.

T_h : Hawking temperature. $T_h = \hbar c^3 / (8\pi k_2 GM)$.

α : Fine structure constant. $e^2 / (4\pi\epsilon_0 \hbar c) \approx 1/137$.

γ : Domain coupling constant. G for gravity, α for electromagnetism.

G: Newton's gravitational constant.

r_g : Schwarzschild radius. $2GM/c^2$.

κ : Surface gravity (in §1). Backreaction coupling (in §7).

σ_{abs} : Absorption cross-section.

k_2 : Boltzmann constant.

E_{min} : Landauer minimum erasure energy. $k_2 T \ln 2$.

Λ : UV scale (in §7).

n_s : Spectral tilt. ≈ 0.965 .

m_e : Electron mass. $0.511 \text{ MeV}/c^2$.

§11 References

- [1] J. D. Bekenstein, *Phys. Rev. D* 7, 2333 (1973).
- [2] A. Béрут et al., *Nature* 483, 187 (2012).
- [3] M. Hammer et al., *Phys. Med. Biol.* (2022).
- [4] S. W. Hawking, *Commun. Math. Phys.* 43, 199 (1975).
- [5] R. Landauer, *IBM J. Res. Dev.* 5, 183 (1961).
- [6] D. J. Mordant et al., *Phys. Med. Biol.* 56, 8069 (2011).
- [7] A. A. Penzias & R. W. Wilson, *Astrophys. J.* 142, 419 (1965).
- [8] Planck Collaboration, *Astron. Astrophys.* 641, A6 (2020).
- [9] G. F. Smoot et al., *Astrophys. J.* 396, L1 (1992).
- [10] R. C. Tolman, *Relativity, Thermodynamics and Cosmology* (Clarendon, 1934).

Conditionality Footer

Document: AP06 — The Leakage Constant.

Edition: 06.3.

Conditional on: Nothing. §§1–5 use only established physics and standard mathematical steps. §6 makes an interpretive identification ($\varepsilon = \eta$) that connects to the 420 Code architecture. §7 contains non-load-bearing conjectures.

Structural relationship to other APs: The leakage identification connects to AP03 (c/G conjugacy: the leakage mediates the relationship), AP05 (ε as the break: now derived rather than postulated), and AP01 (actualization: every record-writing event pays the Landauer cost).

Structural bonuses, not dependencies.

Central open problem: Whether the Poisson equation can be derived from the record algebra with G depending on c through the leakage (Kill Switch KS-L.7).

Until achieved, §7's claims about G's dependence on c remain conjectural.

Foundational limitation: The identification $\varepsilon = \eta$ (§6) is an interpretive step, not a derivation. The physics of §§1–5 does not force this reading.

A philosophically motivated identification that connects measured leakage to the architecture's axiom.

Kill switches: KS-L.1, KS-L.2 (load-bearing, target Theorem 3.1). KS-L.3, KS-L.4 (target Identification 6.1 and Landauer synthesis). KS-L.5–KS-L.7 (non-load-bearing, target conjectures).

Dependencies: None.

Dependents: Downstream APs referencing ε as physically grounded (rather than postulated) inherit the interpretive identification of §6.

Publication-ready. Edition 06.3.

Series: The 420 Code

Title: The Leakage Constant

Medium: Theoretical Physics / Natural Philosophy

Artist's Proof 06 — Voice 5: Formal

Artist G

This work is published for free, forever.

the420code.org