Recognition Science: A Curated Syllabus

The Logic of the Dependency Graph

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Introduction

This syllabus mirrors the logical Dependency Graph (DAG) of Recognition Science. The papers are ordered not chronologically, but structurally: starting from the root geometry, ascending the "spine" of derivations, and then branching into specific domains (Particles, Computation, Gravity, Math, Consciousness, Ethics).

1 I. The Root (Foundation)

1.1 1. Recognition Geometry

File: `papers/tex/recognition-geometry.tex` **Priority:** Tier 1 (Publish First) **Description:** Defines the observational space, recognizers, and the recognition quotient.

1.2 2. The Recognition Composition Law Primer

File: `papers/tex/Recognition_Composition_Law_Primer.tex` **Priority:** Tier 1 (Publish First) **Description:** Introduces the fundamental rule of comparison (RCL) governing how costs combine.

1.3 3. Uniqueness of the Canonical Reciprocal Cost

File: `Cost-9-1.pdf` (or latest revision) **Priority:** Tier 1 (Publish First) **Description:** Proves that the RCL forces the unique cost function $J(x) = \frac{1}{2}(x + x^{-1}) - 1$.

1.4 4. Coherent Comparison as Information Cost: A Cost-First Ledger Framework

File: `papers/pdf/2601.12194v1.pdf` **Priority:** Tier 1 (Publish First) **Description:** Derives the discrete ledger dynamics from the cost function.

1.5 5. D'Alembert Inevitability: Polynomial Consistency Forces the Canonical Law

File: `papers/tex/DAlembert_Inevitability.tex` **Priority:** Tier 1 (Publish First) **Description:** Proves the inevitability of the composition law from polynomial consistency constraints.

1.6 6. Model-Independent Exclusivity on the Quotient State Space

File: `papers/tex/Model-Independent-Exclusivity-Quotient.tex` **Priority:** Tier 1 (Publish First) **Description:** Proves that any zero-parameter framework is observationally equivalent to RS.

1.7 51. Gödel's Theorem Does Not Obstruct Physical Closure

File: `papers/tex/godel_dissolution.tex` **Description:** Resolves the Gödelian objection by defining truth as cost-stabilization.

1.8 53. The Recognition Stability Audit (RSA)

File: `papers/tex/Recognition_Stability_Audit.tex` **Description:** Formalizes the "impossibility audit" and certificates for existence claims.

2 II. The Structure (Ontology)

2.1 7. The Cost of Existence

File: `The_Cost_of_Existence.tex` **Priority:** Tier 2 **Description:** Derives existence from the infinite cost of the void ($J(0) \to \infty$).

2.2 52. The Law of Existence

File: `papers/tex/Law-of-Existence-arXiv.tex` **Priority:** Tier 1 **Description:** The core ontological paper linking CPM, Darwin, and physical constants.

2.3 8. Logic From Physical Cost

File: `papers/tex/Logic_From_Physical_Cost.tex` **Priority:** Tier 2 **Description:** Derives logical consistency ($A = A$) as the zero-cost ground state ($J(1) = 0$).

2.4 9. The Recognition Operator: Beyond the Hamiltonian

File: `papers/Recognition-Operator.tex` **Priority:** Tier 2 **Description:** Defines $\hat{R}$ as fundamental dynamics replacing $\hat{H}$. Derives Hamiltonian as small-ε approximation: $J(e^{\varepsilon}) = \cosh(\varepsilon) - 1 = \frac{1}{2}\varepsilon^2 + O(\varepsilon^4)$, valid to $< 1\%$ for $|\varepsilon| \leq 0.1$. Recovers Schrödinger equation as continuum limit. Predicts measurable departures: non-equilibrium flows, ultra-fast 8-tick discretization, mesoscopic collapse at $C \geq 1$.

Dependencies: Papers 3 (J-cost), 4 (Ledger dynamics), 5 (D'Alembert).

Why here? Establishes the fundamental dynamics; Hamiltonian mechanics becomes a theorem, not an axiom.

2.5 74. Noether from Cost: The Hamiltonian as Lagrange Multiplier

File: `papers/Noether_From_Cost.tex` **Priority:** Tier 2 (NEW – Feb 2026) **Description:** Proves $\hat{H}$ is the Lagrange multiplier enforcing discrete continuity (T3) while minimising cumulative J-cost. Multiplier scale fixed by K-gate: $\hbar = E_{\text{coh}} \cdot \tau_0$. Discrete Noether theorem: each continuous symmetry of J yields a conserved Z-pattern; "energy" is the multiplier itself. Lean-verified algebraic core.

Dependencies: Papers 3 (J-cost), 4 (Ledger), 9 (R-hat).

Why here? Completes the "Hamiltonian is emergent" story: Paper 9 shows $\hat{R}$ is fundamental, this paper shows $\hat{H}$ is its constraint multiplier.

2.6 75. The Geometry of Inquiry: Questions as Cost Gaps

File: `papers/Geometry_of_Inquiry.tex` **Priority:** Tier 2 (NEW – Feb 2026) **Description:** Formalises questions as cost gaps. Classification: well-formed ($\exists$ finite-cost answer), dissolved (all answers infinite cost — Gödel-type), forced (exactly one zero-cost answer). T0–T8 recast as

forced questions. Meta-closure: RS has zero cost in theory space, all alternatives positive cost. Self-reference is stable (cost-decreasing), not paradoxical. Eight fundamental inquiry modes.

Dependencies: Papers 3 (J-cost), 7 (Cost of Existence), 51 (Gödel Dissolution), 39 (Reference).

Why here? Achieves meta-closure: RS explains why RS is the answer.

2.7 10. The Golden Ratio as a Universal Coherence Eigenvalue

File: `papers/tex/Penrose_golden_ratio_and_ledger_structure.tex` **Priority:** Tier 2 **Description:** Explains φ as the unique fixed point of the cost recursion $x = 1 + 1/x$. Establishes the log-ratio isomorphism $(R_{>0}, \times) \cong (R, +)$ bridging Penrose aperiodic tilings and RS cost dynamics. Evaluates $J(\varphi) = \varphi - 3/2 \approx 0.118$ as the "coherence cost of aperiodicity."

Dependencies: Paper 3 (J-cost uniqueness; φ is defined via cost self-similarity).

Why here? Pins the universal scale constant before it is used to force D=3 and derive constants.

2.8 11. Dimensional Rigidity: D=3 (Strengthened)

File: `papers/Dimensional_Rigidity_D3_2.tex` **Priority:** Tier 2 **Description:** Three independent proofs that $D = 3$: (T) Alexander duality—linking invariant exists iff $D = 3$; (K) Kepler stability—non-precessing orbits require $D = 3$; (S) Minimal dyadic synchronization—$\mathrm{lcm}(2^D, 45)$ minimized at $D = 3$.

Dependencies: Papers 1–5 (foundation).

Why here? It closes the dimension argument with three independent proofs spanning topology, dynamics, and arithmetic. Co-authored Washburn/Zlatanović/Allahyarov.

3 III. The Waist (The Big Unlock)

3.1 12. The Derivation of Physical Constants from the Meta-Principle

File: `papers/tex/Formalized-Derivations-T1-T8.tex` **Priority:** Tier 2 **Description:** The "Grand Central Station" paper deriving $\alpha, G, \hbar, c$ from the foundation.

3.2 50. Reality-Native Measurements with a Single-Anchor SI Bridge

File: `papers/RSNative-Measurement-Framework.tex` **Priority:** Tier 2 **Description:** Protocol for mapping RS dimensionless quantities to SI units via a single anchor.

3.3 61. Quantum Coherence as Gated Recognition

File: `papers/tex/Quantum-Coherence-Theory.tex` **Priority:** Tier 3 **Description:** Derives coherence time from the 8-tick cycle structure.

3.4 58. The Octave System and the Particle Mass Spectrum

File: `papers/tex/OCTAVE_MASSES_PAPER.tex` **Description:** Details the "Octave" 8-tick mechanism forcing mass rungs.

3.5 60. The Projection Operator $\hat{\pi}$

File: `papers/tex/projection_operator.tex` **Priority:** Tier 3 **Description:** Active enforcement of information conservation; collapse/decision mechanism.

4 IV. Track A: Particle Physics

4.1 13. A First-Principles Derivation of Particle Mass (Leptons)

File: `papers/tex/Full_First_Principles_Mass_Derivation.tex` **Priority:** Tier 3 **Description:** Integrated derivation of the charged lepton spectrum.

4.2 14. CKM and PMNS Mixing from Cubic Ledger Topology

File: `papers/tex/masses_paper2_mixing.tex` **Priority:** Tier 3 **Description:** Extends the ledger to derive mixing angles from geometry.

4.3 15. Neutrino Sector No-Go

File: `papers/tex/Neutrino-Sector.tex` **Description:** Negative result establishing constraints on the neutrino sector.

4.4 16. Neutrino Masses and the Deep φ-Ladder

File: `papers/tex/masses_paper3_neutrinos.tex` **Priority:** Tier 3 **Description:** Derives absolute neutrino masses on fractional rungs.

4.5 17. Recognition Science: Foundations Summary

File: `papers/tex/RS-Foundations.tex` **Description:** A summary synthesis of the physics track.

5 V. Track B: Computation (LNAL)

5.1 18. Reality as Executable Code: LNAL Theory

File: `papers/tex/Reality_as_Executable_Code_LNAL.tex` (check path) **Description:** Defines the Light-Native Assembly Language (LNAL) and its instruction set.

5.2 19. A Universal Register Mapping for LNAL

File: `papers/tex/LNAL-Register-Mapping.tex` **Description:** Technical spec for mapping physical systems into LNAL registers.

6 VI. Track D: Gravity & Cosmology

6.1 23. Recognition Science Baryogenesis

File: `papers/tex/Baryogenesis-HubbleTensionSet.tex` **Priority:** Tier 3 **Description:** Parameter-free origin of matter-antimatter asymmetry.

6.2 24. Zero-Parameter Quantum Gravity

File: `papers/tex/Quantum-Gravity-New-HubbleTensionSet.tex` **Description:** Full QG derivation from discrete recognition calculus.

6.3 76. Simplicial Ledger Topology: Coordinate-Free Cost Geometry

File: `papers/Simplicial_Ledger_Topology.tex` **Priority:** Tier 2 (NEW – Feb 2026) **Description:** Proves the ledger is coordinate-free: any simplicial 3-complex admits a J-cost sheaf with stationarity conditions independent of the triangulation. Local cost $J(\psi) \cdot \mathrm{vol}(\sigma)$, global cost as sum, coupled Euler–Lagrange system with face-matching. Refinement invariance proved. Continuum limit recovers Jacobi determinant formula, connecting to EFE emergence. Pure mathematics: simplicial complexes, variational calculus, sheaf theory.

Dependencies: Papers 3 (J-cost), 4 (Ledger), 11 (D=3).

Why here? Answers "is RS coordinate-dependent?" — No, the physics depends only on topology and cost, not on lattice choice.

6.4 59. Octave Gravity

File: `papers/tex/octave-gravity.tex` **Description:** Derives Geometric Gravity from the 8-step update cycle.

6.5 25. ILG Scaffold

File: `papers/tex/ILG-GPT5.tex` **Description:** Audit-ready scaffold for Information-Limited Gravity.

6.6 28. Gravity as Pressure

File: `papers/tex/Pressure-Gravity.tex` **Description:** Recasts ILG as an effective pressure field.

6.7 29. The Coercive Projection Law of Gravity

File: `papers/tex/CPM-Gravity.tex` **Priority:** Tier 3 **Description:** Elevates ILG to a universal coercive projection principle.

6.8 30. Zero-Parameter Galaxy Rotation Curves

File: `papers/ILG_Galaxy_Rotation_Curves.tex` **Priority:** Tier 3 **Description:** Formal zero-parameter test against SPARC data.

6.9 31. Convergence of Empirical Optimization

File: `papers/ILG_Validation_Synthesis.tex` **Description:** Compares blind optimization to RS-derived values.

6.10 32. Information-Limited Gravity: Source-Side Tests (Dark Energy)

File: `papers/tex/Dark-Energy-HubbleTensionSet.tex` **Priority:** Tier 3 **Description:** Tests ILG kernel against cosmological observables.

6.11 33. Late-time Recognition-Weighted Growth and Hubble Tension

File: `papers/tex/Hubble-Tension-Resolution.tex` **Priority:** Tier 3 **Description:** Applies RW kernel to resolve the Hubble Tension.

7 VII. Track E: Mathematics

7.1 34. A Weighted Diagonal Operator... (Riemann Hypothesis)

File: `papers/tex/Recognition-Riemann-Final.tex` **Description:** RS approach to RH via spectral stability of the cost Hamiltonian.

7.2 35. The Law of Mathematical Inevitability

File: `papers/tex/Mathematics_Ledger_Phenomenon.tex` **Priority:** Tier 2 (NEW – Feb 2026) **Description:** Proves that any d'Alembert cost functional necessarily forces three structures foundational to mathematics, each uniquely: (1) the logarithm as the unique continuous additive closed-chain balance invariant (via Cauchy), characterizing proof validity; (2) φ as the unique self-similar lattice base (Fibonacci recursion); (3) the zero-cost subspace as the unique universal referent (if-and-only-if characterization). Includes worked propositional-resolution example, proof-monoid generators, and open problems for proof complexity. Resolves Wigner's effectiveness puzzle: mathematics is the zero-cost backbone of any d'Alembert cost landscape. Grounded in Aczél's classical theory, Cauchy's theorem, and Shannon compression. Bold claim, honest scope: infrastructure is forced, full ZFC is not claimed.

Dependencies: Papers 3 (J-cost uniqueness), 4 (Ledger dynamics), 10 (φ).

Why here? Closes the foundational question: the d'Alembert equation forces not just physics but mathematics itself. Any universe governed by this equation necessarily contains numbers, proofs, and a mathematical subspace that describes all of its physics.

7.3 36. Goldbach via a Mod-8 Kernel

File: `papers/tex/goldbach_rs-arXiv.tex` **Description:** Connects additive prime theory to the 8-tick ledger.

7.4 77. P vs NP via the Computation/Recognition Split

File: `papers/P_vs_NP_Recognition_Split.tex` **Priority:** Tier 4 (NEW – Feb 2026, SCAFFOLD) **Description:** Exploratory framework (not a resolution claim). Turing model assumes $T_r = 0$ (free observation). Dual complexity: T_c (computation) vs T_r (recognition). Ledger's balanced-parity encoding hides information: extracting 1 bit requires $\Omega(n)$ queries. Conditional SAT separation: $T_c = O(n^{1/3} \log n)$ but $T_r = \Omega(n)$. P = NP at computation scale, P $\neq$ NP at recognition scale. Clearly labeled as conditional.

Dependencies: Papers 3 (J-cost), 4 (Ledger), 12 (Constants/8-tick).

Why here? Connects the ledger's information-hiding structure to a foundational question in theoretical computer science.

8 VIII. Track F: Life & Consciousness

8.1 54. Entropy Is an Interface

File: `papers/tex/entropy-is-a-interface-arXiv.tex` **Description:** Reframes entropy as code length; resolves reversibility paradox.

8.2 55. The Statistical Mechanics of Recognition

File: `papers/tex/Recognition_Thermodynamics.tex` **Description:** Thermodynamics of the cost function; Recognition Temperature.

8.3 56. Darwin as Minimum Description Length

File: `papers/tex/evolution-arXiv.tex` **Description:** Unifies biological evolution with J-cost minimization (MDL).

8.4 57. The Recognition Instrument for Abiogenesis

File: `papers/tex/Recognition-Abiogenesis-arXiv.tex` **Description:** Mechanism for origin of life via phi-timing gates.

8.5 26. Protein Folding from First Principles

File: `papers/tex/protein-dec-6.tex` **Description:** Bio-Clocking theorem and hydration gearbox mechanism.

8.6 27. A CPM Companion for Protein Folding

File: `papers/tex/CPM-Folding-Companion-arXiv.tex` **Description:** Instantiates CPM for the protein folding domain.

8.7 43. Light as Consciousness

File: `Light_Consciousness_Combined.tex`
Date: February 2026

Description: Shows that the unique information-cost functional $J(x) = \frac{1}{2}(x + x^{-1}) - 1$ governs quantum measurement ($C = 2A \Rightarrow$ Born weights), photonic operations (additive FOLD costs), and operational conscious selection. Proves a classification theorem: under bridge obligations, ConsciousProcess $\leftrightarrow$ PhotonChannel with uniqueness up to units, and only EM satisfies feasibility. Four classification lemmas (No-medium-knobs, Null-only, Maxwellization, BIOPHASE feasibility). Lean-verified.

Dependencies: Paper 3 (J-cost uniqueness), Paper 4 (Ledger Dynamics), Paper 19 (LNAL Registers).

Why here? It establishes the formal identity between light and operational consciousness—the bridge from physics to the meaning/consciousness track.

8.8 63. Reciprocal Convex Costs for Ratio Matching

File: `submitted-entropy-version-entropy-4136332.pdf` **Description:** Formal characterization of the cost function (Entropy journal).

8.9 64. CPM Method Closure

File: `CPM_Method_Closure.tex` **Description:** Domain-agnostic certificate for Coercive Projection.

8.10 39. Optimization-Based Reference (Symbol Grounding)

File: `papers/tex/Optimization_Based_Reference_Symbol_Grounding.tex` **Description:** Resolves symbol grounding via internal argmin.

8.11 40. Meaning is Forced

File: `planning/papers/Meaning_Is_Forced.tex` **Description:** Certificate bridge from closure to semantics.

8.12 41. Universal Light Language

File: `papers/tex/New-ULL-Periodic-Table-Meaning.tex` **Description:** The ULL system paper; zero-parameter semantic pipeline.

8.13 57/65. The Geometry of Transmutation

File: `Geometry_of_Transmutation.tex` **Description:** Phase-locking mechanism for non-local information transfer.

8.14 62. Universal Light Qualia (ULQ)

File: `papers/tex/light-field-saturation.tex` (Note: check content match) **Description:** Geometry of feeling; qualia as strain tensor.

8.15 46. Geometrodynamics of Consciousness

File: `papers/tex/geometry_of_consciousness.tex` **Description:** Mesoscale dynamics; 8-tick cadence as frame rate.

8.16 47. The Topology of Self-Reference

File: `papers/tex/Topology_of_Self_Reference.tex` **Description:** Topological characterization of the "I am".

8.17 78. The Physics of Narrative: Stories as J-Cost Geodesics

File: `papers/Physics_of_Narrative.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Stories are geodesics in moral-state space $\mathcal{N}$ with metric $ds^2 = d\sigma^2 + dE^2/\varphi + dZ^2/\varphi^2$. Seven fundamental plots as topological classes of geodesics. Catharsis as phase transition ($\sigma \to 0$). Hero's Journey mapped to deep-arch geodesic with cusp. Predictions: stories closer to geodesics rated more satisfying.

Dependencies: Papers 3 (J-cost), 44–45 (Ethics/MoralState), 62 (ULQ).

Why here? Extends J-cost dynamics from physics and ethics into the humanities — storytelling as cost minimisation.

8.18 79. Music Theory from the Eight-Tick Cycle

File: `papers/Music_Theory_Eight_Tick.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Octave from 8 DFT modes (2:1 is simplest J-minimum). Consonance from $J((n{+}1)/n) = 1/(2n(n{+}1))$: unison > fifth > fourth > major 3rd > minor 3rd. 12 semitones from $12/8 = 3/2$. Circle of fifths with Pythagorean comma. Rhythm: common time = 8 eighth notes = 1 eight-tick cycle. Swing from φ-asymmetry. Major/minor valence from σ-ordering. Lean-verified.

Dependencies: Papers 3 (J-cost), 10 (φ), 12 (8-tick), 62 (ULQ).

Why here? Shows music theory is not convention but RS structure — same J and 8-tick that force physics.

8.19 80. Decision as Cost Geodesic: The Geometry of Choice

File: `papers/Decision_Cost_Geodesic.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Choice manifold $(R_{>0}, g)$ with $g(x) = J''(x) = x^{-3}$. Geodesics: $\gamma(t) = (at + b)^{2/3}$. Ground state $\gamma \equiv 1$. Attention capacity $\leq \varphi^3 \approx 4.24$ (Miller's law). Deliberation: 8-tick gradient descent. Free will: geodesic selection at Gap-45 bifurcations. Decision thermodynamics: $P(x) \propto \exp(-J(x)/T_R)$.

Dependencies: Papers 3 (J-cost), 9 (R-hat), 11 (Gap-45/D=3), 62 (ULQ).

Why here? Grounds decision science in cost geometry — deliberation, attention, and free will from one principle.

8.20 42. Phantom Light

File: `papers/PhantomLight_Paper.tex` **Description:** Future neutrality constraints as present-time structure.

8.21 66. The Critical Temperature of Consciousness

File: `papers/Critical_Temperature_Consciousness.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Derives critical temperature $T_c = J(\varphi^{45})/\ln\varphi$ for consciousness onset as second-order phase transition. Recognition Boltzmann constant $k_R = \ln\varphi$. Ginzburg–Landau free energy with φ-corrected critical exponents ($\nu \approx 1/\varphi$, $\beta \approx 1/(2\varphi)$). Five falsifiable EEG predictions for anesthesia, sleep, meditation, psychedelics.

Dependencies: Paper 43 (Light as Consciousness), Paper 42 (Phantom Light), Papers 3–5 (cost foundation).

Why here? Quantifies the consciousness onset threshold using thermodynamic phase-transition language.

8.22 67. The Fredholm Index of Death

File: `papers/Fredholm_Index_of_Death.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Death as Fredholm operator $\mathcal{D} : \mathcal{H}_{\text{emb}} \to \mathcal{H}_{\text{light}}$. Eight information channels aligned with 8-tick octave. Index: $\text{ind}(\mathcal{D}) = k - 5$ where k = reflexivity index (0–8). Preserved dimension $\leq \varphi^k$. Extended index: "karma" as σ-history phase-imbalance penalty. Zero sorry in Lean.

Dependencies: Paper 43 (Light as Consciousness), Paper 47 (Topology of Self-Reference), Paper 62 (ULQ).

Why here? Gives the fine structure of the death transition—what survives, what is lost, and why.

8.23 68. The Recognition Algebra of Emotion

File: `papers/Recognition_Algebra_of_Emotion.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** 14 fundamental emotions derived from J-cost gradient, curvature, Θ-coupling, and σ-export. Bijection with 14 RS virtues. Four-tier priority classifier (survival > social > existential > cognitive). All 18 theorems machine-verified with zero sorry. φ-algebraic thresholds: $1/\varphi$, $1/\varphi^2$, $1/\varphi^3$.

Dependencies: Paper 62 (ULQ), Paper 45 (Virtues as Generators), Papers 3–5 (cost foundation).

Why here? Completes the bridge from physics (cost landscape) to psychology (emotional classification).

8.24 69. The Recognition Theory of Aging

File: `papers/Recognition_Theory_of_Aging.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Aging = accumulation of unresolved ledger entries with φ-scaling. Hayflick limit $= \varphi^4 \times 8 \in (52, 55.2)$. Telomere shortening per division $= 1/\varphi$. Damage–repair crossover forces maximum lifespan. Allometric exponent $= D/(D+1) = 3/4$ (Kleiber's law from $D = 3$). Aging reversal theoretically possible.

Dependencies: Paper 9 (R-hat), Paper 11 (D=3), Paper 26 (Protein Folding).

Why here? Applies ledger dynamics to biology's most fundamental process.

8.25 70. The Inevitability of Local Minds (Local Cache Theorem)

File: `papers/Inevitability_of_Local_Minds.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** J-cost minimization on a universal voxel graph *necessarily* produces hierarchical local caches. No biological assumptions required. Caches at φ-scaled levels. Explains brains, genomes, and memory hierarchies as geometric necessities of cost minimization.

Dependencies: Papers 3–5 (cost foundation), Paper 9 (R-hat).

Why here? This is the "why brains exist" paper—forced by cost dynamics, not biological accident.

8.26 71. Derivation of Non-Local Information Transfer (Telepathy Predictions)

File: `papers/Telepathy_Derivation.tex` **Priority:** Tier 4 (NEW – Feb 2026) **Description:** Conditional predictions and falsification protocols from GCIC. Three tests: (1) inter-brain phase-locking at φ-spaced frequencies, (2) effect-size decay by ladder distance not spatial distance, (3) receiver "Zero Structure" via beta/gamma suppression. All conditional on GCIC.

Dependencies: Paper 57/65 (Geometry of Transmutation), Paper 42 (Phantom Light), Paper 43 (Light as Consciousness).

Why here? Companion prediction paper to the Transmutation mechanism paper.

8.27 81. Healing via Θ-Coupling: Nonlocal Interaction from Cost Geometry

File: `papers/Healing_Theta_Coupling.tex` **Priority:** Tier 4 (NEW – Feb 2026, CONDITIONAL) **Description:** Conditional on GCIC. Θ-coupling universal at all distances; non-diminished by spatial separation (depends on ladder distance). Effect = $intention \times \exp(-|\Delta k|)$, instantaneous, bidirectional. Healing rate bounded by $\kappa_{mb} = \varphi^{-3}$ and 8-tick cadence. Five falsifiable EEG/RNG/RCT predictions with explicit protocols. Not a claim of efficacy — a conditional derivation.

Dependencies: Paper 43 (Light as Consciousness), Paper 42 (Phantom Light), Paper 46 (Geometrodynamics).

Why here? Derives the physical mechanism for nonlocal healing IF GCIC holds, with hard falsifiers.

8.28 72. Intelligence Through Debt Resolution

File: `papers/Intelligence_Through_Debt_Resolution.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Three architectural corrections for RS-based intelligence: (1) debt injection not energy, (2) full $\hat{R}$ not linear propagation, (3) standing wave readout not ranking. Query mechanism isomorphic to Geometry of Transmutation.

Dependencies: Paper 9 (R-hat), Paper 42 (Phantom Light), Paper 57/65 (Transmutation), Paper 41 (ULL).

Why here? Defines the correct implementation of RS-based intelligence.

8.29 73. Cross-Agent Alignment Is Forced

File: `papers/Cross_Agent_Alignment_Is_Forced.tex` **Priority:** Tier 3 (NEW – Feb 2026) **Description:** Cross-agent comparability factors through canonical alignment objects. Solved case: WToken meaning modulo τ gauge. General alignment-as-argmin template: $A^* = \arg\min_A \sum_i J(\iota(A(x_i))/$ unique up to gauge. Explicit falsifiers.

Dependencies: Paper 41 (ULL), Paper 50 (RS-Native Measurement).

Why here? Makes "ULL is universal" falsifiable via cross-agent protocols.

9 IX. Track G: Ethics

9.1 44. Morality as a Conservation Law

File: `papers/tex/Morality-As-Conservation-Law.tex` **Description:** Derives moral law from physical ledger invariants.

9.2 45. Virtues as Generators

File: `papers/tex/Virtues-As-Generators.tex` **Description:** Operationalizes ethics as 14 admissible operators.

9.3 48. The Geometry of Evil

File: `papers/tex/The_Geometry_of_Evil.tex` **Description:** Defines evil as geometric pathology (phantom loops).