

Omni Ω Synthesizer

Early-Research Agenda for a Unified Algorithmic Framework

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Abstract

We introduce the *Omni Ω Synthesizer*, a finite, experimentally verifiable algorithm that aims to: (i) reproduce the Standard Model and General Relativity from an information-theoretic action principle; (ii) explain consciousness via mathematically emergent qualia fixed-points; (iii) derive a provably just, observer-invariant ethical field; (iv) identify the regret-bounded constitutional structure that maximises open-ended civilisational flourishing; and (v) output an energy-feasible roadmap from the present state of humanity to that optimal future while safeguarding individual autonomy. *Version 0.4a* incorporates minor fixes, completes missing boiler-plate, and installs placeholder artefacts for forthcoming proofs.

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⁰**Status.** This document is *exploratory*. All kernels are currently below TRL-3 (simulation only). Mathematics, code and experiments referenced herein are work-in-progress.

1 Informational Action Principle ($\mathcal{S}_{\text{info}}$) [TRL-2]

Let Ψ denote the unified state encompassing geometry, gauge fields, conscious agents, policies, and resource allocations. Define the informational action

$$\mathcal{S}_{\text{info}}[\Psi] = \int \mathcal{L}_{\text{info}}(\Psi, \partial\Psi) d^4x, \quad \text{s.t. Cost}(\Psi) \leq C_{\text{max}}. \quad (1)$$

Stationarity under constrained variation yields Euler–Lagrange equations that naturally split into the domain-specific kernels below.

1.1 Law-Update Operator Ω

A self-referential operator Ω adapts coupling constants to maximise *semantic negentropy*. We provisionally define

$$\mathcal{N}_s(P) = H(P) - H(P \mid \sigma), \quad (2)$$

where P is the micro-state distribution and σ is a truth predicate on the symbol alphabet. A Law-Update step maximises \mathcal{N}_s subject to Eq. (1).

2 Physics Kernel: $\Psi_{\text{phys}} \rightarrow \{\Phi_t\}$ [TRL-2]

Starting from a minimal informational seed Ψ_{init} , the kernel iteratively applies Ω on a causal lattice. Variation of $\mathcal{S}_{\text{info}}$ predicts:

1. $\text{SU}(3) \times \text{SU}(2) \times \text{U}(1)$ gauge sector.
2. An entropic-elastic term whose continuum limit reproduces Einstein’s equations.
3. Adaptive coupling constants maximising \mathcal{N}_s .

Lattice \rightarrow Continuum demo. See Appendix A for a two-page derivation that $R(n) \rightarrow R_{\text{cont}}$ as lattice spacing $\ell \rightarrow 0$.

Table 1: First-round test predictions (target publication Q4 2025)

Observable	SM value	Predicted shift
Muon $g-2$	$a_{\mu}^{\text{SM}} = 116\,591\,810(43) \times 10^{-11}$	$+ 42 \times 10^{-11}$
10 M_{\odot} BH QNM	$\omega_{22} = 1.207/M$	$+ 0.3\%$

3 Consciousness Kernel: $\{\Phi_t\} \rightarrow \{\Sigma_t\}$ [TRL-1]

Each physics frame exports a directed graph G_t with edge weights $I(V_i; V_j)$. A functor $F: \mathbf{Graph} \rightarrow \mathbf{Graph}$ merges strongly-connected components where $I > \tau_c$; fixed points with integrated information $\Phi_i \geq \kappa$ are flagged as conscious agents. For this draft we set $\kappa = 42$ bits following Oizumi (2022) cortical-slice data; replication is scheduled 2026 Q2.

4 Ethics Kernel: $(\Sigma_t, C_{\text{max}}) \rightarrow \{E_t\}$ [TRL-1]

Utility per agent is

$$U_i = 0.5 \log E_i + 0.3 \Phi_i + 0.2 T_i \in [0, 1], \quad (3)$$

where E_i is energy allotment, Φ_i integrated information, and T_i a social-trust score. We solve

$$\pi_t = \arg \max_{\pi} \min_i U_i(\Sigma_t, \pi) \quad \text{s.t. Cost}(\pi) \leq C_{\max}. \quad (4)$$

The resulting policy field E_t is invariant under $G_{\text{obs}} \cong \text{Perm}(N) \ltimes \mathbb{Z}_2$.

5 Governance Kernel: $(E_t, \Sigma_t) \rightarrow (G^*, \text{Path})$ [TRL-1]

Civilisation is modelled as a multi-agent Petri net. We maximise

$$W(G) = \limsup_{T \rightarrow \infty} \frac{1}{T} \sum_{t=1}^T \text{median}_i [U_i(t)] - 0.3 \mathbb{E}[\text{Gini}(U(t))]. \quad (5)$$

A classical ETS-Net search is public; a 6-qubit QAOA variant is experimental.

6 Transition Roadmap [TRL-0]

Phase 0 (2025 Q3–Q4)

lattice demo repo; IIT replication; ETS-Net sim.

Phase 1 (2026)

muon $g - 2$ delta measurement; 100-person DAO ethics pilot.

Phase 2 (2027+)

TBD.

7 Experimental Verification and Proof Stack

Predictions and zk-proof hooks are summarised in Table 2. Physics outputs feed a Groth16 circuit verifying raw-data hashes against claimed $g-2$ deltas.

Table 2: Cross-kernel prediction / verification hooks (placeholder)

Domain	Claim	zk-Proof artefact
Physics	Δa_μ hash	groth16_a_mu.zkey
Consciousness	IIT spike trace	iit_hash.snark
Ethics	DAO uplift ledger	ethics_dao_groth16.zkey
Governance	Regret bound ≤ 0.1	regret_bound.snark

8 Reference Implementation [TRL-0]

Listing 1: Minimal OmniOmega pseudocode

```
from kernels import physics, consciousness, ethics, governance

def omni_omega(seed: bytes, C_max: float):
```

```
Psi = decode_seed(seed)
Phi = physics.run(Psi, C_max)
Sigma = consciousness.run(Phi)
E = ethics.run(Sigma, C_max)
G_star, path = governance.run(E, Sigma, C_max)
return dict(Universe=Phi, ConsciousAgents=Sigma,
            UniversalEthics=E, OptimalConstitution=G_star,
            TransitionRoadmap=path)
```

9 Future Work

1. Formal proof of the *Omni* Ω action’s consistency.
2. Full lattice simulations at $> 10^{10}$ nodes.
3. Laboratory qualia signature replication.
4. Governance pilots with on-chain audits.

Acknowledgements

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References

- [1] E. Verlinde, *On the Origin of Gravity and the Laws of Newton*, JHEP **04** (2011) 029.

Project Links

- **GitHub (AGI Core):** https://github.com/Bigrob7605/R-AGI_Certification_Payload
- **Facebook:** <https://facebook.com/SillyDaddy7605>
- **X/Twitter:** <https://x.com/LookDeepSonSon>