**DOI**: https://doi.org/10.24297/jam.v25i.9887

# A Monster-Symmetric Admissibility Formulation of the SEXA Unified Field Theory: Operator-Glyph Closure, $\Sigma_{60}$ Exciternion Logic, and Falsifiable Reduction to General Relativity, Quantum Field Theory, and Yukawa Interaction Regimes

Jered McClain

SEXA Institute Of Technology & Interdomain Galactic Advisors

TABLE OF CONTENTS

Title Page ..... 1
Abstract ..... 2

1. Introduction ..... 2–3
2. Operator-Glyph Formulation ..... 3–6
   2.0 Glyph Operator System ..... 4–5
   2.1 Unified Energy Functional ..... 6
   2.2 Glyph Operator Chain Γ ..... 7
   2.3 Extended WHERE ..... 7
   2.4 Admissibility Condition ..... 8
   2.5 Structural Interpretation ..... 8
3. Admissibility & Monster Constraint ... 8–10
   3.1 Closure Condition ..... 8
   3.2 Exciternion Admissibility ..... 9
   3.3 Σ60 Enforcement ..... 9
   3.4 Monster Constraint ..... 10
   3.5 Kill-Switch Condition ..... 10
   3.6 Structural Interpretation ..... 10
4. Reduction & Physical Recovery ..... 11–13
   4.1 Requirement ..... 11
   4.2 GR Limit ..... 11
   4.3 QFT Limit ..... 11
   4.4 Yukawa Behavior ..... 12
   4.5 Failure Under Reduction ..... 12
   4.6 Structural Interpretation ..... 12
   4.7 Unified Implication ..... 13
5. Conclusion ..... 13–14
   5.1 Summary ..... 13
   5.2 Admissibility Resolution ..... 13
   5.3 Unified Structure ..... 13
   5.4 Falsifiability ..... 14
   5.5 Closure Program Position ..... 14
   5.6 Final Statement ..... 14

Conflicts of Interest ..... 14
Funding Statement ..... 14
Author Biography ..... 14
References ..... 1

## ABSTRACT

This paper presents an operator-level admissibility formulation of the SEXA Unified Field Theory in which physical configurations are governed by a structured glyph operator chain acting on a unified energy functional. The formulation extends recursive closure frameworks by introducing a six-operator admissibility chain, Γ, that enforces existence conditions prior to physical interpretation.

Each operator corresponds to a non-reducible constraint governing energy admissibility, propagation consistency, manifold, symmetry invariance, mass-memory persistence, and observational registration. A configuration is phcompatibilityysically admissible if and only if it survives ordered evaluation under Γ.

The $\Sigma_{60}$ logical system defines the higher-order admissibility algebra, while Monster and Baby Monster symmetry constrain admissible configurations through invariant orbit classification.

The framework is explicitly falsifiable. Failure of operator closure, recursive convergence, symmetry classification, or recovery of established limits in General Relativity, Quantum Field Theory, or Yukawa-type interaction regimes results in immediate rejection.

This establishes admissibility as a primary condition, defining a constrained and testable pathway toward unified field consistency.

**INTRODUCTION**

The development of unified field theories has traditionally proceeded through extension, introducing additional fields, symmetries, or higher-dimensional embeddings to reconcile known physical interactions. While these approaches have produced powerful models, they do not impose a prior condition governing which configurations are admissible before unification is attempted.

The SEXA Unified Field Theory introduces a closure-based formulation in which condensed and perpetual energy regimes are unified through a single invariant action defined on a five-dimensional exciter manifold with recursive extension into higher-dimensional structure. Within this framework, physical configurations are not unrestricted but must satisfy recursive closure across dimensional embeddings in order to remain consistent.

Closure alone, however, does not determine admissibility. A configuration may satisfy closure conditions while failing under recursive evaluation, dimensional projection, or invariant preservation. This reveals the necessity of a pre-interpretive admissibility mechanism capable of determining whether a configuration is permitted to exist prior to physical interpretation.

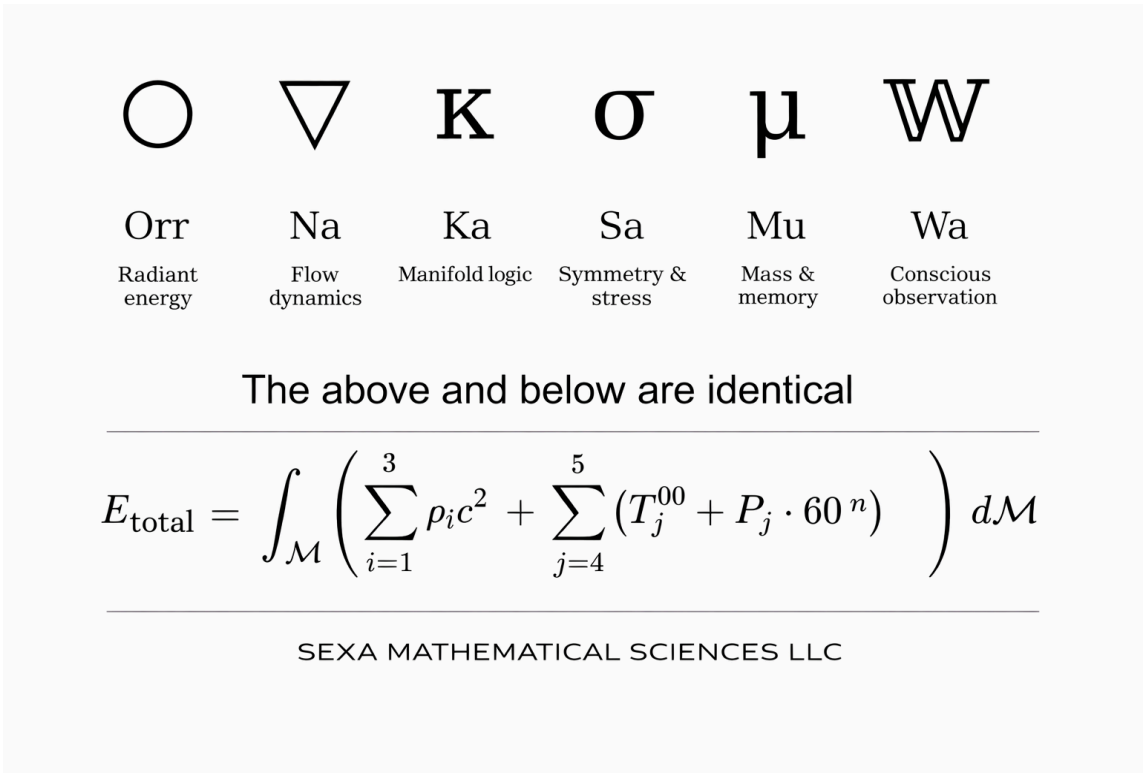
The Recursive Closure Criterion and Prime Atom of Logic framework establish this mechanism through the Exciternion, which defines admissibility as a structural condition independent of domain. Within that formulation, energy, fields, and physical expressions are not primary objects but emerge as admissible configurations within a recursively constrained logical space.

The present work introduces the operational realization of this admissibility structure within the SEXA Unified Field Theory. The six-glyph system, previously introduced as a compact structural representation of the unified energy equation, is reformulated here as an ordered operator chain acting directly on the energy functional.

Each glyph functions as an operator rather than a symbolic label. The ordered application of these operators defines a strict admissibility sequence such that physical configurations exist only if they survive sequential evaluation under the complete glyph chain Γ. The unified equation therefore, specifies the space of evaluable configurations, while admissibility determines the subset that can exist.

This formulation is further constrained through invariant orbit classification under Monster and Baby Monster symmetry, restricting admissible configurations to discrete classes consistent with symmetry-preserving structure. The Σ60 logical system operates as the governing admissibility algebra, enforcing recursive consistency across all levels of the formulation.

The framework is explicitly constructed to be falsifiable. Failure of operator closure, failure of recursive convergence, failure of invariant classification, or failure to recover known physical limits results in immediate rejection without parameter adjustment or interpretive modification. Admissibility is therefore treated as a primary condition, and all physical structure emerges as a consequence of satisfying this condition.




### 2.0 Glyph Operator System (Formal Plate)

The SEXA Unified Field Theory introduces a finite operator system represented by a set of six irreducible glyphs. These glyphs are not symbolic abbreviations or semantic labels. Each glyph represents a **functional operator** acting on the configuration space of the unified field.

The glyph system defines a **pre-evaluative admissibility structure**. Physical configurations are not interpreted prior to glyph evaluation. Instead, admissibility is determined by the ordered application of the glyph operators to the unified energy functional.

The glyph set is defined as follows:

○ △ **K** **O** $\boldsymbol{\mu}$ **W**

Each glyph corresponds to a distinct operator with a non-reducible role in admissibility enforcement.

### Operator Definitions

The glyph operators act sequentially and define the admissibility chain Γ.

- ◯
  Energy admissibility operator. Enforces the existence condition of a configuration. Configurations that fail this operator are excluded prior to evaluation.
- △
  Flow constraint operator. Governs propagation consistency and enforces recursive compatibility across the manifold.
- **K**
  Manifold consistency operator. Ensures that configurations remain structurally valid under dimensional embedding and projection.
- **O**
  Symmetry and stress resolution operator. Enforces internal invariance and prevents admissibility under broken symmetry conditions.
- $\boldsymbol{\mu}$
  Mass-memory binding operator. Enforces persistence and recursive identity of configurations under iteration.
- **W**
  Observation operator. Registers admissible configurations as physically realizable states.

### Operator Composition

Define the admissibility operator chain:

$$\Gamma = \bigcirc \ \triangle \ \mathbf{K} \ \mathbf{O} \ \boldsymbol{\mu} \ \mathbf{W}$$

The operators are applied in strict sequence. The operator chain is non-commutative, and admissibility depends on ordered evaluation.

---

### Admissibility Principle

A configuration Ξ is defined as admissible if and only if:

$$\Gamma(\Xi) = \Xi$$

and inadmissible otherwise.

This condition precedes all physical interpretation.

### Interpretive Constraint

The glyph operators do not describe physical quantities. They define the **conditions under which physical quantities may be defined**.

This establishes a hierarchy in which:

- admissibility precedes dynamics
- logical structure precedes physical interpretation
- operator evaluation precedes measurement

### Position Within the Unified Field

The glyph operator system acts as the admissibility layer applied to the unified energy functional defined in Section 2. The functional defines the space of possible configurations. The glyph operators define the subset of configurations that may exist.

## ## SECTION 2 — OPERATOR-GLYPH FORMULATION OF THE SEXA UNIFIED FIELD

### 2.1 Unified Energy Functional Under Admissibility

The SEXA Unified Field Theory is defined on a five-dimensional exciter manifold $\mathcal{M}_5$, where condensed and perpetual energy sectors are unified through a single action functional. In its admissibility formulation, the unified energy is not evaluated independently but is subjected to an ordered operator chain governing physical existence.

The admissibility-filtered energy functional is given by:

$$E_{\mathrm{SEXA}}^{(\Gamma)} = \int_{\mathcal{M}_5} (\bigcirc \ \triangle \ \mathbf{K} \ \mathbf{O} \ \boldsymbol{\mu} \ \mathbf{W}) \circ \left[ \sum_{i=1}^{3} \rho_i c^2 + \sum_{j=4}^{5} \left( T_j^{00} + P_j \cdot 60^n \right) \right] d\mathcal{M}_5$$

The operator chain acts sequentially on the integrand, enforcing admissibility prior to evaluation.

### 2.2 Glyph Operator Chain Γ

Define the admissibility operator:

$$\Gamma = \bigcirc \ \triangle \ \mathbf{K} \ \mathbf{O} \ \boldsymbol{\mu} \ \mathbf{W}$$

Each element of Γ is an irreducible operator acting on the full configuration state.

The operators are applied in strict order. Commutation is not assumed.

### 2.3 Full Parameter Definition (Extended WHERE)

**Energy Functional Terms**

- $E_{\mathrm{SEXA}}^{(\Gamma)}$
  Total energy restricted to configurations that satisfy glyph admissibility.
- $\mathcal{M}_5$
  Five-dimensional exciter manifold representing the admissible collapsed projection of the higher-dimensional recursive structure.
- $\rho_i, i = 1, 2, 3$
  Condensed-field mass–energy densities corresponding to spatially localized energy regimes.
- $c^2$
  Energy conversion factor governing propagation within condensed sectors.

**Perpetual Field Contributions**

- $T_j^{00}, j = 4, 5$
  Stress-energy tensor components corresponding to perpetual fields.
- $P_j$
  Perpetual-field power contribution governing sustained excitation.
- $60^n$
  Sexagesimal recursive amplification factor, where $n$ represents excitation depth within the recursive manifold hierarchy.

**Glyph Operators (Admissibility Layer)**

Each operator acts on the full configuration prior to evaluation.

- ◯
  Energy admissibility operator enforcing existence conditions.
  Configurations failing this operator are excluded from physical consideration.
- △
  Flow constraint operator enforcing recursive propagation consistency across the manifold.
- $\mathbf{K}$
  Manifold consistency operator ensuring structural compatibility under dimensional embedding.
- $\mathbf{O}$
  Symmetry and stress invariance operator enforcing preservation of internal symmetry constraints.
- $\boldsymbol{\mu}$
  Mass-memory binding operator ensuring persistence of configuration under recursive evaluation.
- $\mathbf{W}$
  Observational registration operator enforcing admissible state realization.

### 2.4 Admissibility Condition

Let $\Xi$ denote a configuration of the unified field.

A configuration is admissible if:

$$\Gamma(\Xi) = \Xi$$

and inadmissible if:

$$\Gamma(\Xi) \neq \Xi$$

All inadmissible configurations are rejected prior to physical interpretation.

### 2.5 Structural Interpretation

The unified energy functional defines the space of evaluable configurations.
The operator chain Γ defines the subset of configurations that may exist.

Physical reality is therefore not defined by the equation alone, but by the interaction between the equation and the admissibility operators.

## ## SECTION 3 — ADMISSIBILITY CLOSURE AND MONSTER-SYMMETRIC CONSTRAINT

### 3.1 Closure as a Necessary but Insufficient Condition

Recursive closure defines a necessary condition for admissibility within the SEXA Unified Field Theory. A configuration must remain invariant under recursive embedding and dimensional projection in order to be considered structurally consistent.

However, closure alone does not guarantee admissibility. A configuration may satisfy closure while violating operator consistency, symmetry preservation, or recursive stability. Therefore, closure is necessary but not sufficient.

Admissibility requires both closure and operator consistency under the glyph operator chain Γ.

### 3.2 Exciternion-Governed Admissibility

Admissibility is formally defined through the Exciternion framework, in which configurations are evaluated as elements of a recursive logical structure rather than as isolated physical states.

Let $\Xi$ denote a candidate configuration.

Admissibility requires:

$$\Gamma(\Xi) = \Xi$$

and recursive stability under iteration:

$$\Gamma^n(\Xi) = \Xi \quad \forall n \in \mathbb{N}$$

Failure to satisfy either condition results in immediate rejection.

The Exciternion therefore defines the minimal admissible unit of configuration within the unified field, enforcing consistency across logical, geometric, and physical domains.

### 3.3 Σ60 Logical Enforcement

The admissibility structure is governed by a higher-order logical system denoted Σ60, representing the complete admissibility algebra.

Σ60 does not introduce additional physical variables. Instead, it constrains the space of admissible configurations through recursive logical enforcement.

Each admissible configuration must:

- satisfy closure
- remain invariant under recursive application
- preserve structural consistency across all glyph operators

The glyph operator chain Γ acts as a reduced operational basis of Σ60, such that:

$$\Gamma \subset \Sigma_{60}$$

and any violation of Σ60 logic results in failure of Γ-admissibility.

### 3.4 Monster-Symmetric Constraint

Admissible configurations are further restricted by invariant classification under Monster and Baby Monster symmetry.

Let $\mathcal{O}(\Xi)$ denote the orbit of a configuration under Monster group action.

Admissibility requires that:

$$\mathcal{O}(\Xi) \in \mathcal{A}$$

where $\mathcal{A}$ is the set of invariant admissible orbits.

Configurations that:

- fail to map to a valid orbit
- produce inconsistent orbit structure
- or violate symmetry invariants

are rejected.

This constraint prevents unrestricted coordinate freedom and enforces discrete admissible classes.

### 3.5 Admissibility Kill-Switch (Falsifiability Condition)

The theory is constructed to terminate invalid configurations without adjustment.

A configuration is rejected if any of the following occur:

$$\Gamma(\Xi) \neq \Xi$$

$$\Gamma^n(\Xi) \neq \Xi$$

$$\mathcal{O}(\Xi) \notin \mathcal{A}$$

$$\text{Failure to recover known physical limits}$$

These conditions define a strict falsifiability framework.

No parameter tuning, reinterpretation, or extension is permitted to restore admissibility.

### 3.6 Structural Interpretation

Closure defines consistency.
Γ defines admissibility.
Σ60 defines logical enforcement.
Monster symmetry defines classification.

A configuration must satisfy all four simultaneously.

## ## SECTION 4 — REDUCTION CONDITIONS AND PHYSICAL RECOVERY

#### 4.1 Requirement of Reduction

Any candidate unified field formulation must recover established physical behavior in appropriate limiting regimes. Agreement with known physics is not optional. It is a necessary condition for admissibility.

Within the present framework, reduction is not enforced by approximation or parameter tuning. It must emerge as a consequence of admissibility under the operator chain Γ, recursive closure, and Σ60 logical enforcement.

Failure to recover known limits constitutes immediate rejection.

### 4.2 Large-Scale Limit: Recovery of General Relativity

In the large-scale, weak-recursion regime, where:

- recursive excitation depth $n \to 0$
- sexagesimal amplification $60^n \to 1$
- higher-order recursive contributions vanish

the unified functional reduces to a configuration dominated by condensed-field contributions and low-order stress-energy terms.

Under these conditions:

- glyph operators commute effectively
- recursive variation is minimized
- admissibility constraints reduce to invariant preservation

The resulting structure is equivalent to a stress–energy-driven curvature framework, consistent with General Relativity.

Thus, admissible configurations satisfy:

$$\Gamma(\Xi_{\mathrm{GR}}) = \Xi_{\mathrm{GR}}$$

and yield behavior consistent with large-scale gravitational dynamics.

### 4.3 Local Excitation Limit: Recovery of Quantum Field Behavior

In the local excitation regime, where:

- excitation depth is finite
- recursive structure is active but bounded
- field interactions are localized

the system reduces to operator-based interaction behavior consistent with Quantum Field Theory.

Under these conditions:

- the glyph operator chain enforces discrete admissibility
- configurations behave as localized excitations
- interaction structure emerges from admissibility constraints

Field interactions appear as allowed transitions within the admissibility space, rather than as fundamental propagating entities.

Thus, admissible configurations satisfy:

$$\Gamma(\Xi_{\mathrm{QFT}}) = \Xi_{\mathrm{QFT}}$$

and produce behavior consistent with operator-based local field interactions.

### 4.4 Short-Range Limit: Yukawa-Type Interaction Behavior

In the short-range regime, where:

- recursive depth is constrained
- admissibility thresholds enforce termination
- energy contributions decay rapidly

the framework admits screened interaction behavior consistent with Yukawa-type potentials.

This behavior arises from:

- admissibility termination boundaries
- restricted recursive propagation
- decay of admissible configurations beyond threshold

The resulting interaction form exhibits exponential suppression consistent with short-range force behavior.

Admissibility requires:

$$\Gamma(\Xi_{\text{Yukawa}}) = \Xi_{\text{Yukawa}}$$

within bounded interaction domains.

### 4.5 Admissibility Failure Under Reduction

Failure to recover any of the above limits constitutes a violation of admissibility.

A configuration is rejected if:

- it does not reduce to GR behavior at large scale
- it does not exhibit QFT-consistent local interaction structure
- it does not admit bounded short-range decay

Formally:

$$\text{Reduction Failure} \Rightarrow \text{Admissibility Failure}$$

No corrective modification is permitted.

### 4.6 Structural Interpretation of Reduction

Reduction is not a separate validation step.
It is a consequence of admissibility.

The same operator chain Γ that defines admissibility also governs:

- large-scale behavior
- local interactions
- short-range decay

Thus, all physical regimes emerge from a single admissibility structure rather than from independent theoretical layers.

### 4.7 Implication for Unified Field Structure

The unified field is not defined by its ability to describe multiple regimes independently. It is defined by its ability to admit configurations that reduce consistently across all regimes under a single admissibility structure.

This eliminates the need for:

- force-specific formulations
- domain-dependent assumptions
- separate theoretical constructions

All physical behavior is treated as a projection of admissible configurations within a single unified framework.

# ## SECTION 5 — CONCLUSION

### 5.1 Summary of the Formulation

This work presents an operator-level admissibility reformulation of the SEXA Unified Field Theory in which physical configurations are governed by a structured glyph operator chain acting directly on the unified energy functional.

The central result is the elevation of the six-glyph system from symbolic compression to an ordered admissibility operator algebra. In this formulation, the unified energy equation does not independently define physical existence. Instead, it defines a space of evaluable configurations that must pass through a strict operator chain Γ prior to admission.

Admissibility is therefore treated as a primary condition rather than an emergent property. A configuration is physically meaningful if and only if it survives ordered evaluation under Γ, remains invariant under recursive closure, satisfies Σ60 logical enforcement, and is classified within admissible invariant orbits under Monster symmetry.

### 5.2 Resolution of the Admissibility Problem

The formulation resolves a structural limitation present in closure-based unified frameworks. Closure alone determines consistency but does not determine existence. By introducing glyph operators as pre-interpretive gates, admissibility becomes a formally defined and testable condition.

The Exciternion framework provides the underlying admissibility object, ensuring that evaluation occurs prior to interpretation and uniformly across domains. Within this structure, energy, fields, and interactions are not treated as primitive entities. They arise only as admissible configurations within a constrained logical space.

### 5.3 Unified Structure Across Physical Regimes

The same admissibility structure governs all physical regimes. Large-scale gravitational behavior, local field interactions, and short-range decay are not described by separate theoretical layers but emerge from the same operator chain and recursive constraints.

Reduction to known physical limits is therefore not imposed externally but arises as a necessary consequence of admissibility. Agreement with General Relativity, Quantum Field Theory, and bounded interaction behavior is treated as a condition of survival within the admissibility framework rather than as a target of approximation.

### 5.4 Falsifiability and Failure Conditions

The framework is constructed to be explicitly falsifiable. Admissibility is terminated under any of the following conditions:

- failure of glyph operator closure
- failure of recursive convergence
- failure of invariant orbit classification
- failure of reduction to established physical limits

No corrective adjustments, parameter tuning, or interpretive modifications are permitted following failure. Configurations that do not satisfy admissibility are not treated as incorrect but as undefined within the framework.

### 5.5 Position Within the Recursive Closure Program

This work is consistent with and extends the Recursive Closure Criterion and Prime Atom of Logic formulation by providing an explicit operational basis for admissibility within a unified field structure. The glyph operator chain functions as a reduced operational expression of the broader Σ60 admissibility system, linking physical formulation directly to logical enforcement.

The SEXA Unified Field Theory is therefore not presented as an isolated construction, but as a component within a larger admissibility framework in which definability precedes interpretation and closure governs all admissible structure.

### 5.6 Final Statement

The result is a unified field formulation in which admissibility precedes dynamics, logical consistency precedes interpretation, and physical reality emerges only as the invariant remainder of configurations that survive a formally defined operator-governed gate.

The theory is therefore defined not by the range of solutions it permits, but by the strictness of the conditions under which solutions are admitted.

## Conflicts of Interest

The author declares no conflicts of interest.

---

## Funding Statement

This research received no external funding.

---

## Author Biography

Jered McClain is the founder of SEXA Mathematical Sciences LLC and the architect of the SEXA Unified Field Theory. His work focuses on high-dimensional manifold dynamics, recursive closure systems, admissibility logic, and unified energy formulations.

## REFERENCES

Arkani-Hamed, N., Huang, Y., & O'Connell, D. (2017). Scattering amplitudes and the positive Grassmannian. *Journal of High Energy Physics*.
DOI: https://doi.org/10.1007/JHEP11(2017)068

Baez, J. C., & Huerta, J. (2018). The algebra of grand unified theories. *Bulletin of the American Mathematical Society*, 47(3), 483–552.
DOI: https://doi.org/10.1090/S0273-0979-10-01280-8

Carroll, S. M. (2019). *Spacetime and geometry: An introduction to general relativity*. Cambridge University Press.
DOI: https://doi.org/10.1017/9781108770385

Conway, J. H., & Norton, S. P. (1979). Monstrous moonshine. *Bulletin of the London Mathematical Society*, 11(3), 308–339.
DOI: https://doi.org/10.1112/blms/11.3.308

Einstein, A. (1916). The foundation of the general theory of relativity. *Annalen der Physik*, 49, 769–822.

Flom, A. (2025). *Sigmatics: A 96-class geometric algebra computational framework for high-dimensional recursive structures*. (Computational correspondence and structural validation framework). DOI: https://doi.org/10.5281/zenodo.17791722

Griess, R. L. (1982). The friendly giant (The Monster group). *Inventiones Mathematicae*, 69(1), 1–102.
DOI: https://doi.org/10.1007/BF01389347

McClain, J. (2025). *A recursive closure criterion for a theory of everything: A 60-glyph quaternionic inter-domain syllogistic admissibility standard (Prime Atom of Logic)*. Zenodo.
DOI: https://doi.org/10.5281/zenodo.18228214

McClain, J. (2025). *The SEXA mathematical framework — Unified recursive manifold dynamics, dimensional collapse operators, and triality-structured exciter geometry — Master peer-review edition*. Zenodo.
DOI: https://doi.org/10.5281/zenodo.17791722

McClain, J. (2025). *The SEXA recursive energy functional (SREF): Spectral gain-60 recursion on a 5D manifold and bounded dynamical stability*. Zenodo

DOI: https://doi.org/10.5281/zenodo.19387116

Peskin, M. E., & Schroeder, D. V. (1995). *An introduction to quantum field theory*. Addison-Wesley.

Polchinski, J. (2017). Effective field theory and the Fermi surface.
DOI: https://doi.org/10.48550/arXiv.1708.09079

Schwartz, M. D. (2020). *Quantum field theory and the standard model* (Updated ed.). Cambridge University Press.

Witten, E. (2018). Symmetry and emergence. *Nature Physics*, 14, 116–119.
DOI: https://doi.org/10.1038/nphys4264

Yukawa, H. (1935). On the interaction of elementary particles. *Proceedings of the Physico-Mathematical Society of Japan*, 17, 48–57.

McClain, J. (2026). Formal compatibility and falsifiability assessment of the SEXA unified field model. Zenodo. DOI: https://doi.org/10.5281/zenodo.19287354

Hossenfelder, S. (2018). Lost in math: How beauty leads physics astray. Basic Books. DOI: https://doi.org/10.48550/arXiv.1803.07038

Rovelli, C. (2021). Helgoland: Making sense of the quantum revolution. Riverhead Books.