Pattern Field Theory
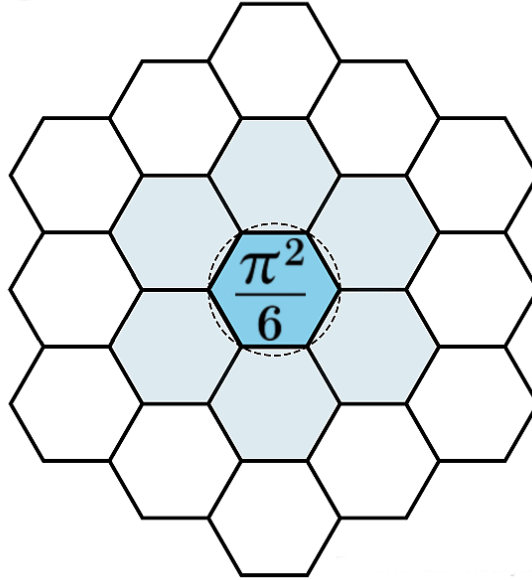# Coherons and Structural Scaffolding

Structural Series II

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Abstract

Stable identities are commonly described in terms of interaction, force, or material composition. This paper proposes a different foundation: identity persists because it occupies an admissible structural footprint within a pre-existing scaffold. We introduce the concept of the *coheron* as a stable unit of identity whose persistence is enforced by constraint rather than interaction. The scaffold itself may be unoccupied, invisible, or dynamically silent, yet it determines where coherence is permitted to exist. This work establishes scaffold-before-occupation as a foundational principle and prepares the ground for a constraint-based explanation of stability developed in subsequent papers.

1. Introduction

Why does a stable identity exist *there* rather than elsewhere?

Most physical and mathematical theories address this question indirectly, describing how entities behave once present. Less attention is given to the prior question of admissibility: what conditions must already be satisfied for an identity to persist at a given location at all.

This paper advances the position that stability is not primarily produced by interaction, but by placement within an admissible structural scaffold. Identity does not create its location; rather, location exists as a permitted address that may or may not be occupied. Where such addresses exist, stable identity becomes possible. Where they do not, coherence cannot persist regardless of dynamics.

We refer to a stable identity that occupies such an address as a *coheron.*

2. The Coheron Concept

A coheron is defined as a stable identity whose persistence arises from structural admissibility rather than active stabilization.

Key characteristics include:

- Stability derives from constraint, not continual correction.

- Identity persists only while occupying an admissible footprint.

- Displacement from the footprint results in loss of coherence.

- The footprint itself may exist independently of occupation.

The coheron is not a particle in the classical sense, nor a wave packet maintained by interference. It is an identity whose stability is guaranteed by the geometry and rules of the underlying scaffold.

3. Scaffold Before Occupation

We propose the principle of *scaffold-before-occupation*:

> Structural permission precedes identity; occupation is secondary.

In this view, most of the universe's structure is unoccupied. Emptiness does not imply absence of structure, but rather the presence of prepared capacity. A scaffold defines potential positions where coherence may exist, long before anything occupies those positions.

This perspective inverts the common assumption that structure emerges only through interaction among occupied entities.

4. Footprints and Admissible Addresses

An admissible footprint is a location in structural space where identity can persist without violating constraints.

Properties of admissible footprints:

- They are defined by global and local constraints.

- They enforce tolerance limits on deviation.

- They permit persistence without continuous adjustment.

- They may remain unoccupied indefinitely.

Coherence is therefore not something maintained by effort, but something lost when constraints are violated.

5. Why Coherence Survives

Coherence survives because admissible footprints are inherently stable under perturbation. Small deviations are either absorbed by tolerance or eliminated by constraint-driven settling. Large deviations result in loss of identity rather than correction.

This explains why stable identities appear discrete and resilient, while unstable configurations dissipate rapidly.

6. Invisible Structure and Prepared Capacity

Much of the structural scaffold is never directly observed. Its presence is inferred only through the persistence or absence of identity.

This leads to an important distinction:

- **Nothingness**: absence of structure.

- **Unoccupied structure**: prepared but unused capacity.

Failure to distinguish these leads to conceptual confusion regarding vacuum, emptiness, and potential.

7. Relation to Pattern Field Theory

Within Pattern Field Theory, coherons represent identities stabilized by field-level constraints. The scaffold corresponds to patterned admissibility within the field, while occupation represents realization rather than creation.

This paper establishes the structural basis upon which further constraint-driven mechanisms will be built.

8. Outlook

This work defines *what* a coheron is and *where* it exists. The following paper in this series addresses *why* such footprints enforce stability, introducing tolerance and constraint-driven settling as universal mechanisms.

Conclusion

Stable identity is not an accident of interaction. It is the consequence of admissible structure. By recognizing scaffold-before-occupation and defining coherons as identities stabilized by constraint, we shift the foundation of coherence from dynamics to permission. This reframing opens a path toward a unified understanding of stability across physical and abstract systems.

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