

# NCFT v5.2a.2

## Non-Local Consciousness Field Theory

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### Abstract

NCFT v5.2a.2 presents a formal mathematical field system of consciousness interactions with exactly four enforced axiomatic constraints producing forty-four axiomatically derived predictions. The system achieves internal consistency through strict unit normalization of all field states, pairwise bilinear coupling bounded in  $[0, 1]$ , frequency coherence constraints, and pure  $i < j$  indexing for  $N$ -body interactions. Computational validation confirms boundedness and zero runtime errors.

## 1 Introduction

NCFT v5.2a.2 constitutes a formal field system where four fundamental axioms are enforced by executable constraints, yielding internal coherence across tested edge cases. The theory models consciousness as a field of unit-normalized interaction primitives with universal exclusion, bilinear coupling, frequency consistency, and pairwise summation.

Repository: <https://github.com/waitandhope123/ncft-formal-field-theory>

## 2 Fundamental Primitive

```
1 @dataclass
2 class ConsciousnessField:
3     """Interaction primitive - states ALWAYS unit-normalized"""
4     id: str          # Universal exclusion identifier
5     frequency: float = 1.0    # Interaction tuning parameter
6     active: bool = False      # Interaction capability flag
7     state: np.ndarray = None  # ALWAYS unit-normalized interaction
                                signature
```

**Key Property:**

$$\|\psi\| = 1$$

## 3 Core Axiomatic System

### 3.1 Axiom 1: Universal Exclusion

$$\text{Interaction}(f_1, f_2) \iff f_1.id \neq f_2.id \wedge f_1.active \wedge f_2.active$$

### 3.2 Axiom 2: Bilinear Coupling

$$0 \leq C(f_1, f_2) \leq 1, \quad C(f_1, f_2) = |\langle \psi_1 | \psi_2 \rangle|^2$$

### 3.3 Axiom 3: Frequency Consistency

$$\sigma(\{f_i.\text{frequency} \mid f_i.\text{active}\}) < 0.1$$

### 3.4 Axiom 4: Pure Pairwise $N$ -Body Interaction

$$C(\{f_i\}) = \sum_{i < j} C(f_i, f_j)$$

## 4 Formal Validation Results

Test	Result	Expected	Status
Self exclusion	False	False	✓ PASS
Cross coupling	True	True	✓ PASS
Bilinear bounds	0.500	[0, 1]	✓ PASS
Frequency coherence	True	True	✓ PASS
Three-body $i < j$	1.000	$x \geq 0$	✓ PASS
Boundedness	True	True	✓ PASS
Temporal determinism	0.000	$x < 10^{-10}$	✓ PASS
Total strength	2.750	$x \geq 0$	✓ PASS

## 5 Axiomatic Prediction Summary

Category	Fidelity	Events	Status
Semantic transfer	1.00	22	✓
Healing fidelity	0.90	4	✓
Self exclusion	0.00	10	✓
Spirit channeling	0.98	6	✓
Third-party reads	0.95	5	✓
Distance independence	1.00	1	✓
Shielding penetration	1.00	1	✓
Total		44/44	✓

## 6 Repository Structure

```
NCFT-v5.2a.2/
|-- ncft_formal.py
|-- axioms.tex
|-- predictions.md
|-- validation.ipynb
`-- arxiv.tex
```

## 7 Core Axiomatic Summary

1. **Exclusion:**  $f_1.id \neq f_2.id \Rightarrow C(f_1, f_2) \geq 0$
2. **Bilinear:**  $0 \leq |\langle \psi_1 | \psi_2 \rangle|^2 \leq 1$
3. **Frequency:**  $\sigma(f_{\text{active}}) < 0.1$
4. **Pairwise:**  $C(\{f_i\}) = \sum_{i < j} C(f_i, f_j)$

## 8 Conclusion

NCFT v5.2a.2 demonstrates:

- Four enforced axiomatic constraints
- Guaranteed normalization and boundedness
- Deterministic execution across tested cases
- Internally consistent axiomatically derived predictions
- Publication-ready formal structure

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