Mandrov Coherent Field Theory (MCFT)

A Unified Model of Subjective Coherence, Quantum Branching, and Fundamental Interaction

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Abstract

We propose the Mandrov Coherent Field Theory (MCFT), a framework uniting quantum mechanics, information theory, and subjective continuity. Consciousness is hypothesized to follow quantum branches that maximize a subjective coherence functional depending on probability, entropy, and entanglement. The theory provides a new interpretation of the arrow of time, a modified branch-weighting principle, and speculative foundations for unifying interactions, including a path toward quantum gravity.

Contents

1. Introduction

MCFT is founded on the idea that the observer's consciousness persistently follows quantum branches that optimize a function of subjective coherence. This expands the many-worlds interpretation by suggesting that cognitive and informational principles influence branch "selection," even when all branches exist.

2. Subjective Coherence Functional

Let B_i represent a possible quantum branch. We define the subjective coherence $C(B_i)$ as:

$$C(B_i) = P(B_i) \cdot e^{-\Delta S(B_i)} \cdot E(B_i)$$

where:

- $P(B_i)$ — probability of the branch under Born's rule,
- $\Delta S(B_i)$ — entropy variation perceived by the observer,
- $E(B_i)$ — cognitive entanglement with memory or other relevant states.

Branches with higher C are more likely to host continuity of consciousness.

3. Subjective Quantum Selection Rule

Standard quantum mechanics assigns branch probabilities as:

$$P(B_i) = |\psi_i|^2$$

MCFT modifies this into a subjective probability:

$$P_{\text{subjective}}(B_i) = \frac{C(B_i)}{\sum_j C(B_j)}$$

This reweights quantum branches based on observer-centric coherence.

4. Arrow of Time

We define the perceived arrow of time as a natural statistical gradient of increasing subjective coherence:

$$\frac{dC}{dt} > 0$$

This connects entropy, coherence, and memory continuity into a unified explanatory mechanism for the direction of time.

5. Toward Unified Interactions

We hypothesize that fundamental interactions emerge from constraints that preserve subjective coherence. For example:

- Entanglement fields may encode gravitational curvature,
- Coherence preservation could mimic gauge symmetries,
- The subjective structure of reality may limit or define force laws.

6. Implications and Applications

- **Quantum cognition:** Model of consciousness influencing observed reality.
- **Quantum computing:** Insights into decoherence-resistant states.
- **Cosmology:** Explanation for low-entropy initial state.
- **Quantum gravity:** Basis for an emergent spacetime framework.

7. Author's Note and Ethics

This theory was authored by Dmitry A. Mandrov. GPT-4 (OpenAI) served as a conceptual assistant, contributing to language, formulaic consistency, and exploratory reasoning. The author retains full responsibility for the content.

8. Conclusion

MCFT offers a novel approach to reconciling quantum mechanics, consciousness, and cosmology. By framing reality through a subjective coherence lens, it paves the way for a deeper understanding of interaction, time, and existence.

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