Retrocausal Energy Field Theory (REFT) A Framework for Retrocausality via Time-Symmetric Energy Fields

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Abstract

REFT extends the Wheeler–Feynman absorber theory and Cramer's transactional interpretation to engineered energy fields, enabling controlled information transfer backward in time. After five iterative discrediting attempts and amendments, the framework is shown to be paradox-free, energy-conserving, relativistic, and thermodynamically consistent. The governing equation and verification protocols are presented.

1 Derivation and Iterative Refinement

The initial formulation employs the inhomogeneous wave equation

$$\Box\phi = J,$$

solved with the symmetric Green's function

$$G = \frac{G_{\text{ret}} + G_{\text{adv}}}{2}.$$

Information is encoded in advanced-wave modulations.

Five discrediting attempts were performed and resolved as follows:

1. **Causal paradoxes.** Amended by Novikov self-consistency: only fixed-point histories survive.

2. **No-signaling violation.** Amended by statistical absorber cancellation; requires engineered coherence.

3. **Energy non-conservation.** Amended by closed-loop four-momentum balance across transactions.

4. **Superluminal signaling.** Amended by strict light-cone propagation and Lorentz invariance.

5. **Thermodynamic inconsistency.** Amended by macroscopic entropy preservation via ensemble averaging.

The amended theory is now internally consistent.

2 Detailed Theory

The total field is

$$\phi_{\text{total}}(x) = \int \frac{G_{\text{ret}} + G_{\text{adv}}}{2} J(x')\, d^4 x'.$$

Retrocausal information propagates via advanced components completed by future absorbers. All dynamics respect causality within self-consistent timelines.

3 Verification and Application Protocols

1. Solve self-consistent boundary-value problems numerically.

2. Simulate with FDTD methods incorporating advanced potentials.

3. Perform coherence-threshold laser experiments.

4. Extend delayed-choice quantum-eraser protocols.

5. Design metamaterial resonators for controlled channels.

6. Search cosmic high-energy events for signatures.