

Quantum Chronotension Field Theory – Paper X

Field Collapse Events (FCEs)

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Abstract

Quantum Chronotension Field Theory (QCFT) introduces Field Collapse Events (FCEs) as critical ruptures in the eta-field, the foundational medium of temporal structure. FCEs occur when the field $\eta(x, t)$ decays below a stability threshold (η_{crit}), triggering the collapse of surrounding chronodes and releasing concentrated eta-waves. These events replace classical notions of black holes, supernovae, and terminal decoherence.

1 Definition and Mechanism

A Field Collapse Event (FCE) occurs when:

$$\eta(x, t) < \eta_{\text{crit}} \approx 10^{-4}$$

Below this threshold, the field cannot support chronode tension. Chronodes collapse and stress propagates as eta-waves.

2 Collapse Conditions

Collapse arises when:

- η^2 falls below η_{crit}^2
- $\nabla\eta$ becomes sharply discontinuous
- Topological continuity fails

Guided by the QCFT Lagrangian:

$$\mathcal{L} = \frac{1}{2} \delta^{ab} \partial_\mu \eta^a \partial^\mu \eta^b - \lambda (\eta^a \eta_a - v^2)^2 + \theta \epsilon^{\mu\nu\rho\sigma} f_{\mu\nu}^a f_{\rho\sigma}^a$$

3 Chronode Destabilization

Chronodes depend on the eta-field for topological integrity. As $\eta \rightarrow \eta_{\text{crit}}$:

- Binding tension vanishes
- Knot geometry collapses
- Chronode identity dissolves

4 Eta-Wave Emission

FCEs emit nonlinear eta-waves that:

- Transport tension outward
- Interfere with distant chronodes
- Seed secondary collapse sites

These waves are distinct from electromagnetic or gravitational radiation.

5 Astrophysical Relevance

Black Holes

In QCFT, black holes are zones of high eta. Collapse occurs when:

- $\eta < \eta_{\text{crit}}$ in core
- Outer chronodes destabilize
- Structure dissolves outward

Supernovae

FCEs may trigger core-collapse supernovae as eta drops inside a star. Rebound shock appears as light signature.

6 Residual Effects

After an FCE:

- Local eta remains depressed
- Gradia filaments persist
- Interference scars mark the event

These may explain cosmic voids, lensing anomalies, and clock drift patterns.

7 Testable Signatures

FCEs should produce:

- Pulsed temporal distortions
- Redshift discontinuities near FCE scars
- Large-scale echo patterns in the eta-field
- EM-dark "bursts"

Conclusion

Field Collapse Events are topological ruptures in QCFT. They replace black hole singularities, explain cosmic voids, and encode structural memory via eta interference.

*The universe does not explode.
It unravels.*