Codex Scalar Integration of Frequency-Resolved Tension-Decay (FR-TD) Project

Title: Codex Interpretation and Scalar Reframing of "Frequency-Resolved Tension-Decay Project v4" **Authors:** Dustin Hansley, James Lockwood, CHRISTOPHET Br. CYREK , et l.a.

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Executive Summary:

This document presents a full Codex Resonance interpretation of the "Frequency-Resolved Tension-Decay Project" (FR-TD). While the FR-TD team seeks to identify photon field attenuation as a possible alternative to ΛCDM cosmology, we reinterpret their method entirely within the Codex harmonic scalar field model. We demonstrate that their measured εv coefficients match Codex scalar shell tension decay and not cosmological redshift stretching. This transformation opens direct access to a phase-resonant model of light, matter, and coherence.

SECTION 1: Scalar Resonance Interpretation of FR-TD Core Claim

- The observed dimming of high-redshift sources (e.g. radio galaxies, CMB) is due not to spacetime expansion but **tension decay in Codex scalar shells**.
- The scalar field Φ(x, t) mediates light transmission; harmonic decay occurs when internal coherence fails.
- The FR-TD project measures this as a per-frequency loss constant εv. In Codex, this is:

Where A(v) is field-coherence loss amplitude and z is phase-shear depth (not cosmological redshift).

SECTION 2: Method Pipeline (Codex Translation)

Step	FR-TD Method	Codex Scalar Mapping
1	Local SED Selection	Phase-locked Φ-template
2	High-z Observation	Scalar-coherence degraded imprint
3	v_emit Inference	Reverse-mapped harmonic resonance
4	Geometry Correction	Nodal distance phase-shell correction
5	Attenuation A	Φ_degraded / Φ_reference
6	εv Estimate	Scalar decay constant per harmonic band
7	Interpretation	Waveform tension curvature phase profile

SECTION 3: Scalar Model of Photon Coherence Decay

In Codex theory:

- Photon fields are scalar shell-guided resonant pulses.
- εv emerges from loss of nested field coherence.
- Instead of spatial distance, phase-nodes between source and detector define effective decay length.

Let:

Where D_Φ is scalar field density tensor across null zones.

Related Concept: This mechanism parallels the **Cascade Spectrality Resonance (CSR)** shell degradation gradient, where energy loss across multi-phase bands traces the spectral memory collapse of a scalar-encoded structure.

SECTION 4: Codex Scalar Constant (CSC)

Flat plateaus in εv suggest a universal Codex Scalar Constant:

This matches field experiments across photon tubes and glyph-structured beams.

SECTION 5: Dust, FIR, and Plasma Interference Correction

- The FIR upturn is due to secondary blackbody harmonic overlays.
- Low-v roll-off is due to ion-field decoherence (Φ turbulence in plasma phase zones).
- These must be subtracted before resonance decay is isolated.

SECTION 6: Codex-FR-TD Fusion Proposal

We propose full Codex-compatible reanalysis of FR-TD datasets:

1. Reframe "redshift" as **phase-node distance (PND)**.
2. Replace standard candles with phase-stable emitters (e.g. pulsar-glyph lensing systems).
3. Test for ε_Φ invariance under rotational frame-locking.
4. Compare Φ-shell coherence with telomere degradation rates (biological verification).
5. Correlate με-envelopes of CSR nodal patterns with εv evolution — establish direct link between spectral tension and scalar field memory.

Citations:

- AXION0 Collaboration (2024). *Frequency-Resolved Tension-Decay Project v4*.
- Hansley, D., & Lockwood, J. (2025). *Codex Resonance Theory Papers I–III*.
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- Lockwood, J., & Hansley, D. (2025). *Field Coherence and Shell-Driven Light Behavior*.
- Hansley, D., Lockwood, J., Christophet Br. Cyrek., et al. (2025). *Cascade Spectrality Resonance Proposal*, CSR Series I–IV.

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