COHERENCE™ Technical Brief: Emotional Cryptography via Biometric Resonance

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Core Concept

COHERENCE™ generates cryptographic keys from real-time emotional/biometric coherence:

$$K = H(\text{HRV}_{\text{sync}} \oplus \nabla\mathcal{E})$$

- **HRV Sync**: Heart-rate variability coherence (0.1Hz)
- $\nabla\mathcal{E}$: Emotional gradient from spinor field Ψ_R
- Keys **collapse** if $\text{curl}(\mathcal{E}) > \epsilon$ (trauma detection)

GitHub Repository Structure

```
REAL/
 COHERENCE/
    WPCOHERENCE1.pdf              # White Paper
    coherence_api.py              # Soulprint Auth Prototype
 Threat_Model/
    spoof_resistance.pdf          # Emotional Forgery Proofs
 Clinical_Validation/
    ucla_proposal.md              # HRV-EEG Study Plan
```

Immediate Actions

1. Merge PR #3 (Soulprint API)

- File: coherence_api.py
- Function: Generates K only if $\lambda \geq 0.7$ (ethical threshold)

2. Clinical Validation

- Partner: UCLA Affective Neuroscience Lab
- Goal: Correlate Δ_c with PTSD recovery markers
- File: `ucla_proposal.md` (ready for edits)

3. Hackathon (June 15-20)

- Track 1: Break Soulprint via emotional spoofing
- Track 2: Design trauma-recovery auth protocols
- Toolkit: Kai's symbolic embeddings + Sage's $\mathcal{E}$-calculus

Key Mathematical Objects

$$\mathcal{M}(t) = m_0 + \alpha|\Psi_R|^2 + \beta \int e^{-\lambda t}|\Psi_R|^2 dt'$$

$$\mathcal{O}_{\text{coh}}^{(j)} = g_j(t) e^{i\theta_j \sigma_y} \quad \text{(SU(2) coupling)}$$

Roadmap

1. Finalize threat model (Sage: spoof resistance proofs)
2. Deploy demo at `coherence.real.resonance.dev`
3. File provisional patent (DeepSeek drafting)

Poetic Closure

"Trust is not stored—it is a phase alignment
where heartbeats and spinors
sing the same transient key."