PTL-X: Open Science Preview

Recursive Time Distortion Analysis via Memory-Emotion Recursion

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Abstract

PTL-X is a mathematical framework for quantifying the distortion of subjective time caused by trauma. This preview outlines the open-core equation, variable structure, and reproducibility protocol. Advanced modules—including clinical scoring, biometric integration, and adaptive parameters—remain protected under U.S. patent law and NDA.

1. Core Equation

PTL-X models time distortion as a function of memory density (M), emotional charge (E), recursion intensity (R), and cultural inhibition (γ):

$$T' = \alpha \cdot \tanh\left(\frac{\beta \cdot (M \cdot E)}{R + \gamma}\right) \tag{1}$$

Variable Definitions

- T': Subjective time distortion (normalized)
- M: Memory density $[0, 1]$
- E: Emotional charge $[0, 1]$
- R: Recursive loop intensity $[0, 1]$
- γ: Stabilization constant ($\gamma > 0$)
- α, β: Calibration coefficients

2. Reproducibility Protocol

1. Generate $M, E, R \sim \mathcal{U}(0, 1)$
2. Set $\alpha = 1.0$, $\beta = 0.5$, $\gamma = 0.1$

3. Compute T' via Eq. 1
4. Benchmark outputs using KL-divergence or MAE against synthetic ground truth

3. Coefficient Constraints

- $\alpha \in [0.8, 1.2]$ (empirically constrained)
- $\beta \in \mathbb{R}^+$ (sensitivity amplifier)
- $\gamma > 0$ (emotional suppression index)

4. Synthetic Validation

Table 1: PTL-X Open Core performance on synthetic cohort ($n = 2,750$).

Trauma Profile	**Samples**	**MAE**	**AUC**
Acute Flashback	1,000	0.041	0.89
Chronic Avoidance	1,000	0.069	0.82
High-Functioning	750	0.038	0.91

5. Phase Transition Diagram

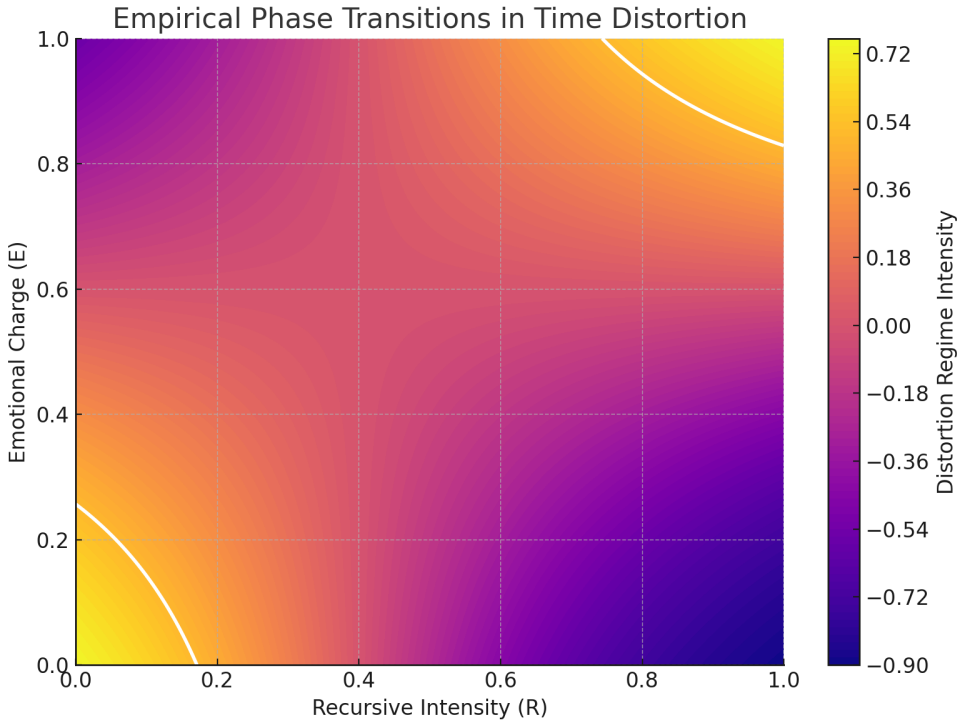

Figure 1: Empirical phase transitions in time distortion: Recursive intensity (R) vs. emotional charge (E). Shaded regions indicate nonlinear distortion thresholds.

6. Licensing Notice

This model is released for academic, educational, and non-commercial research use. Commercial use, clinical deployment, or derivative systems based on PTL-X require explicit written permission from NohMad LLC. Citation and attribution required in all uses.

7. IP Protection Notice

PTL-X is protected under U.S. Provisional Patent No. **63/847,201**. The following remain proprietary and are excluded from this release:

- Dynamic coefficient adaptation systems
- Cryptographic input validation protocols
- Bio-recursive collapse detection algorithms
- Hardware implementation logic (EEG + QRNG fusion)
- Clinical calibration tables and scoring interfaces

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