

PTL-X Trauma Simulation Report

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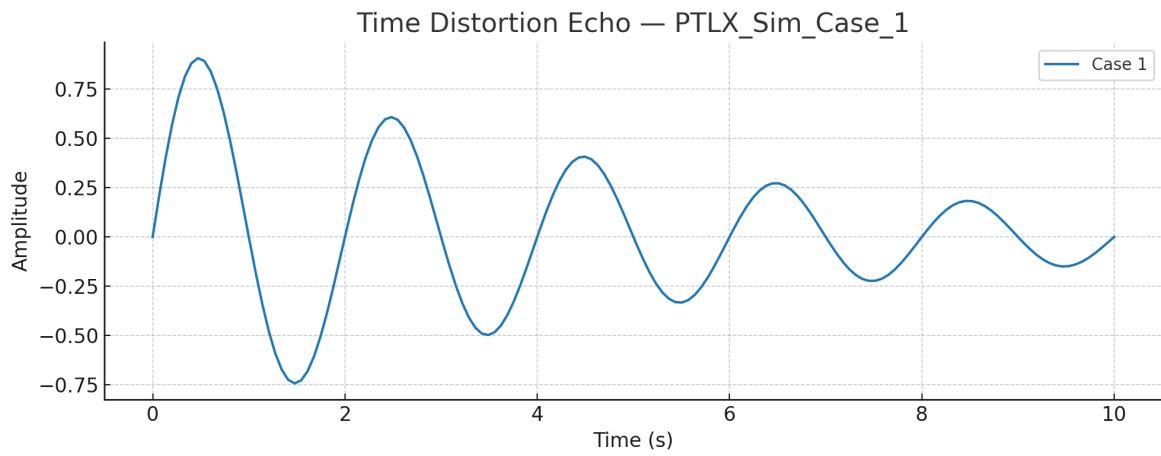
System Description

PTL-X (Recursive Time Distortion Engine) models trauma-induced time distortion using recursive memory bifurcation and synthetic EEG echo dynamics. This report visualizes 10 unique waveform cases simulating escalating trauma signatures, from stable rhythm to recursive chaos.

Simulation Suite Summary

- **Case 1 (Normal Sine):** Control baseline. Healthy memory rhythm.
- **Case 2 (Exponential Decay):** PTSD latency onset. Trauma absorption phase.
- **Case 3 (Bifurcation):** Memory collapse zone. Recursive instability.
- **Case 4 (Tan-Sine Conflict):** Fragmented narrative trauma. Cognitive dissonance loop.
- **Case 5 (Flatline):** Emotional numbness. Recursion death.
- **Case 6 (Logistic Chaos):** Unstable memory integration. Edge of disorder.
- **Case 7 (Gaussian Noise):** Panic state. Acute disarray.
- **Case 8 (Biased Noise):** Depression signal. Emotional skew.
- **Case 9 (Low-Freq + Noise):** Rumination loop. Blurred echo.
- **Case 10 (High-Freq Chaos):** Cognitive flood. Signal overload.

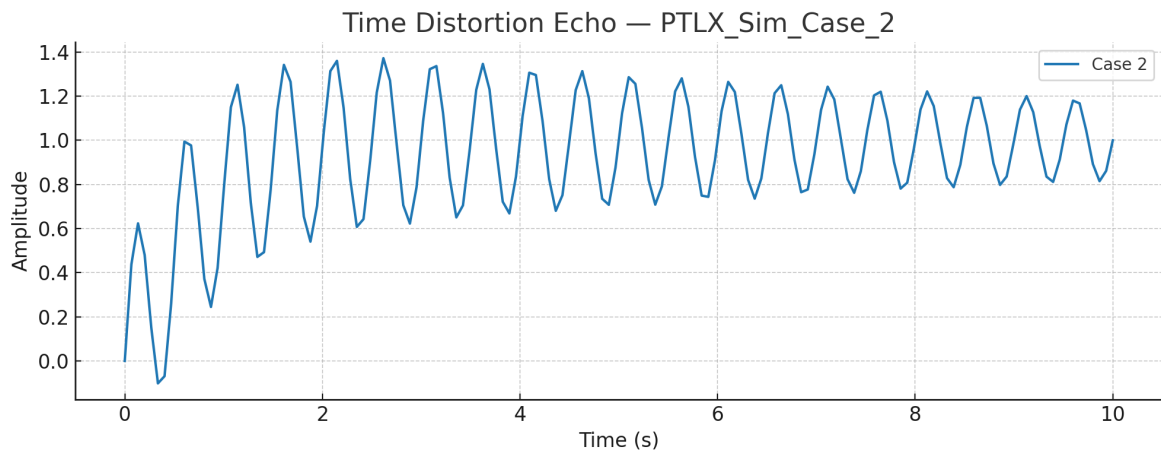
Case 1: Normal Sine



Description: Stable sinusoidal wave

Clinical Meaning: Healthy memory rhythm. No trauma detected.

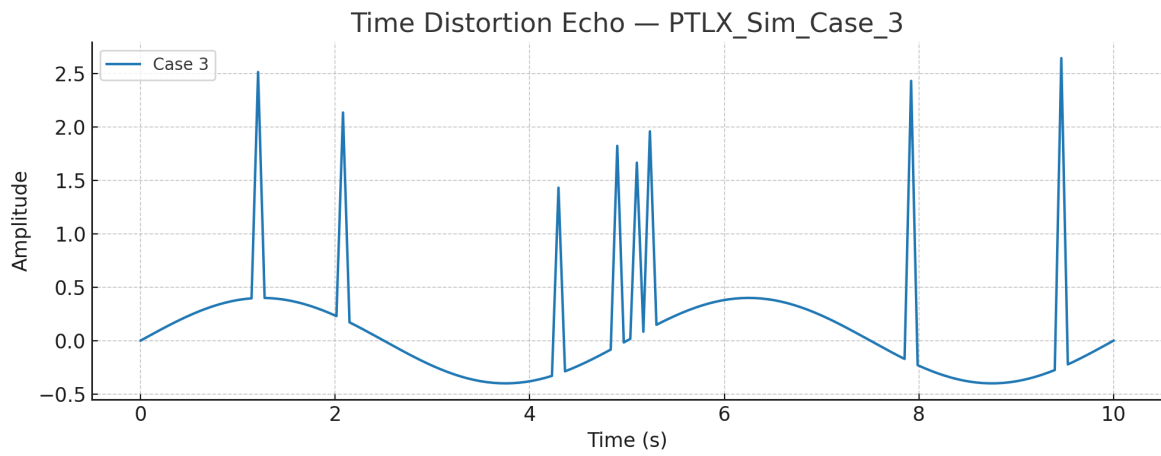
Case 2: Exponential Decay



Description: Declining energy curve

Clinical Meaning: Latent trauma with memory suppression dynamics.

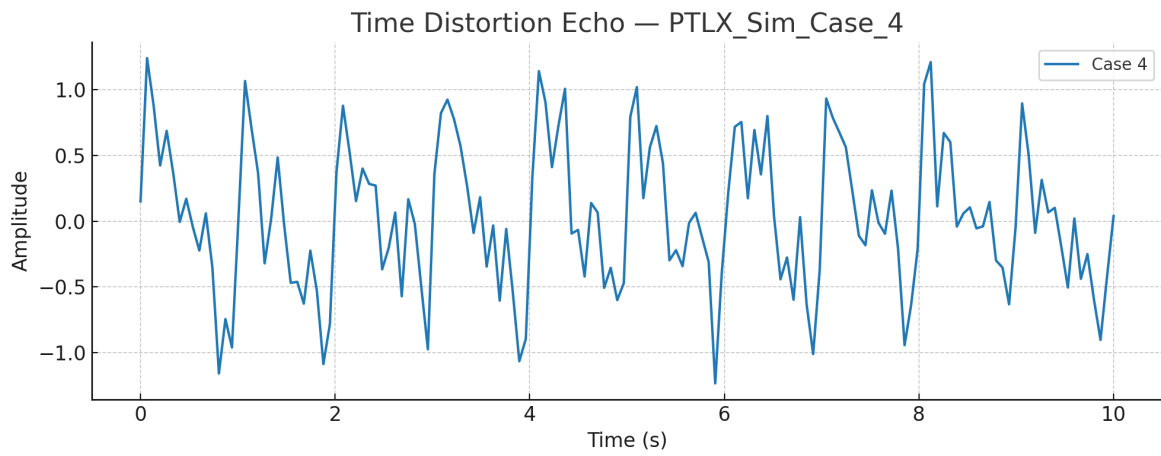
Case 3: Bifurcation



Description: Split-phase oscillation

Clinical Meaning: Onset of recursive trauma loop. Time fracture point.

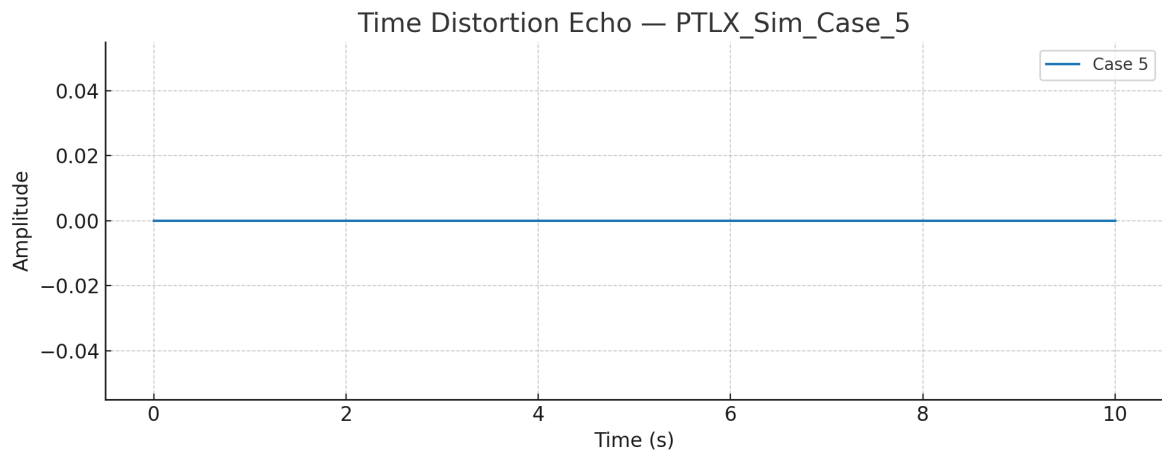
Case 4: Tan-Sine Conflict



Description: Cognitive interference

Clinical Meaning: Competing memory signals; dissociative trauma.

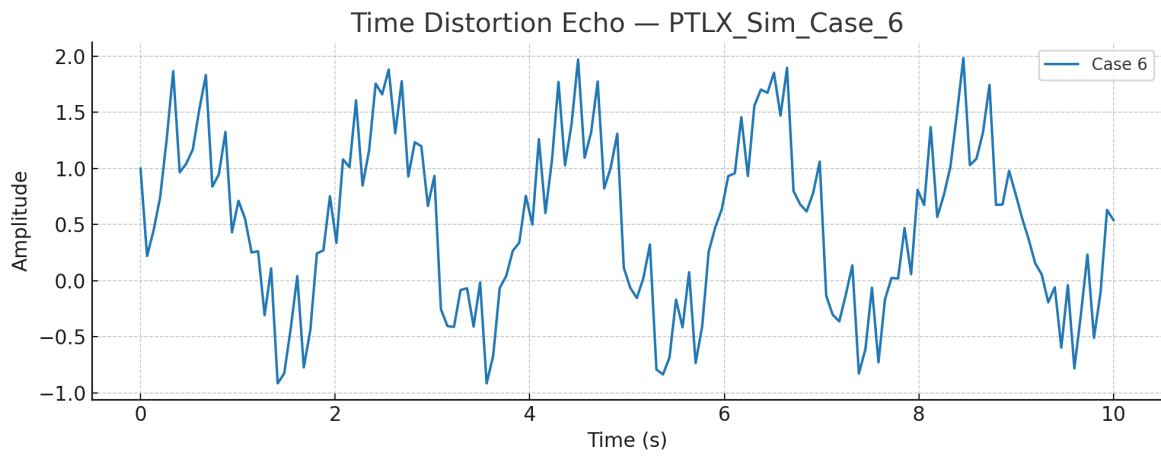
Case 5: Flatline



Description: No activity

Clinical Meaning: Emotional blackout. Trauma-induced void state.

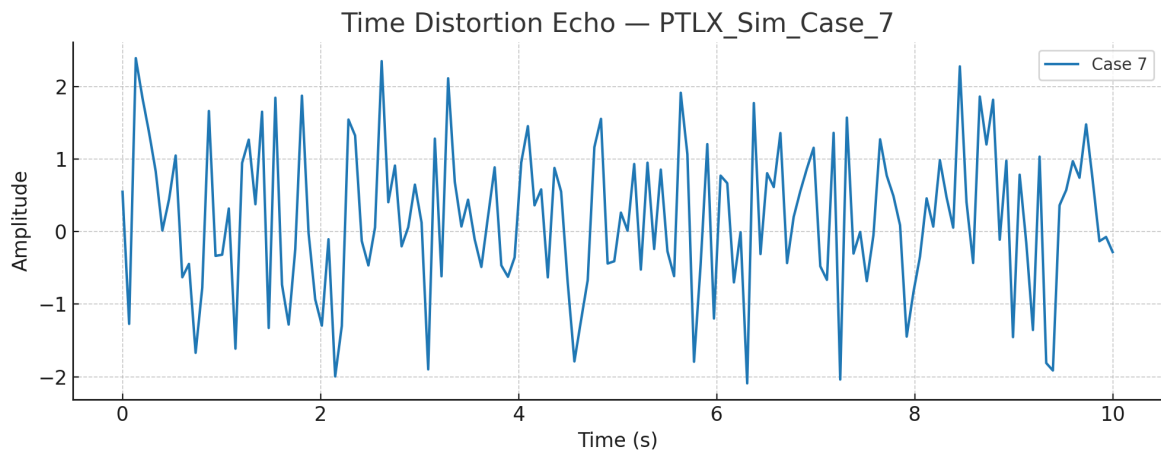
Case 6: Logistic Chaos



Description: Nonlinear recursion

Clinical Meaning: Disorganized trauma processing. Unstable integration.

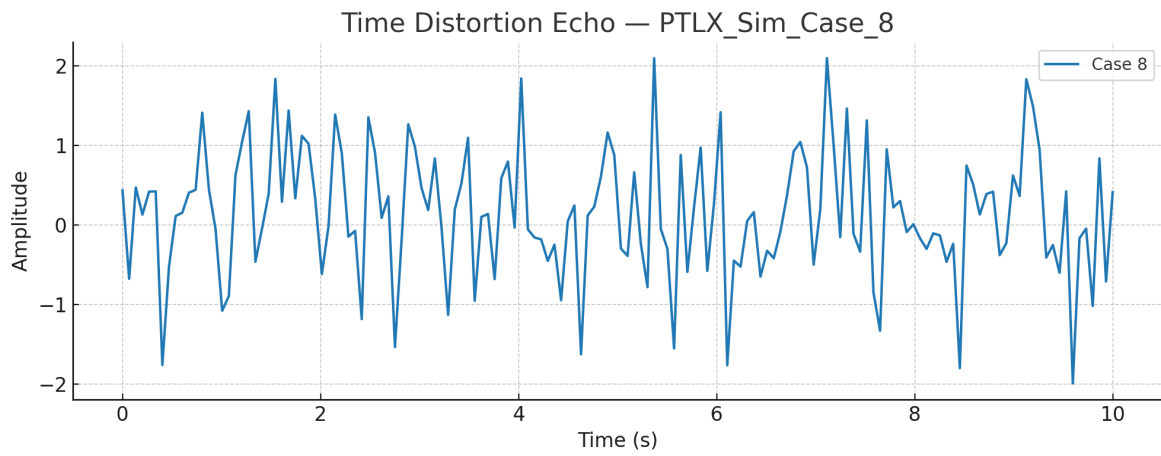
Case 7: Gaussian Noise



Description: Random spikes

Clinical Meaning: Panic disorder wave pattern. High entropy state.

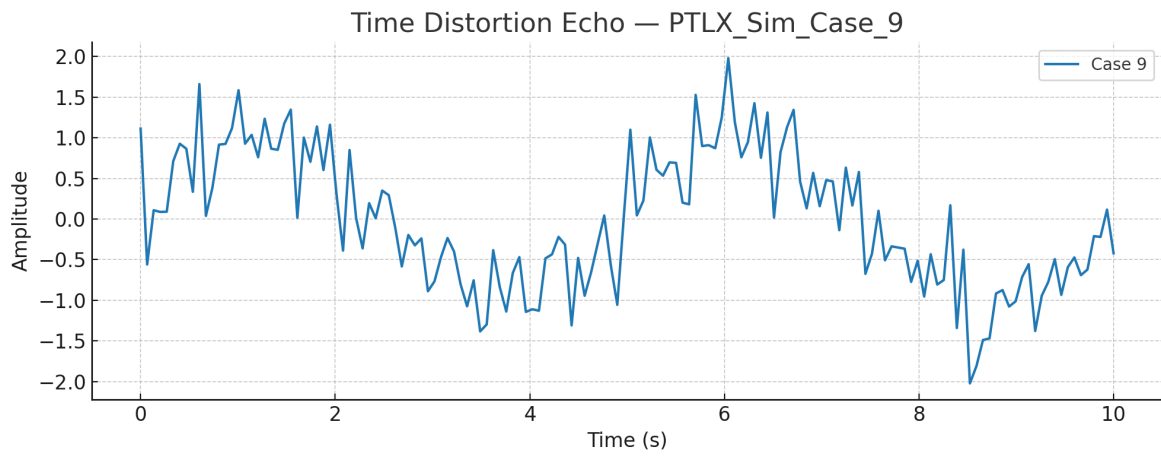
Case 8: Biased Noise



Description: Low-energy noise with slope

Clinical Meaning: Melancholy/depression. Downshifted recursion.

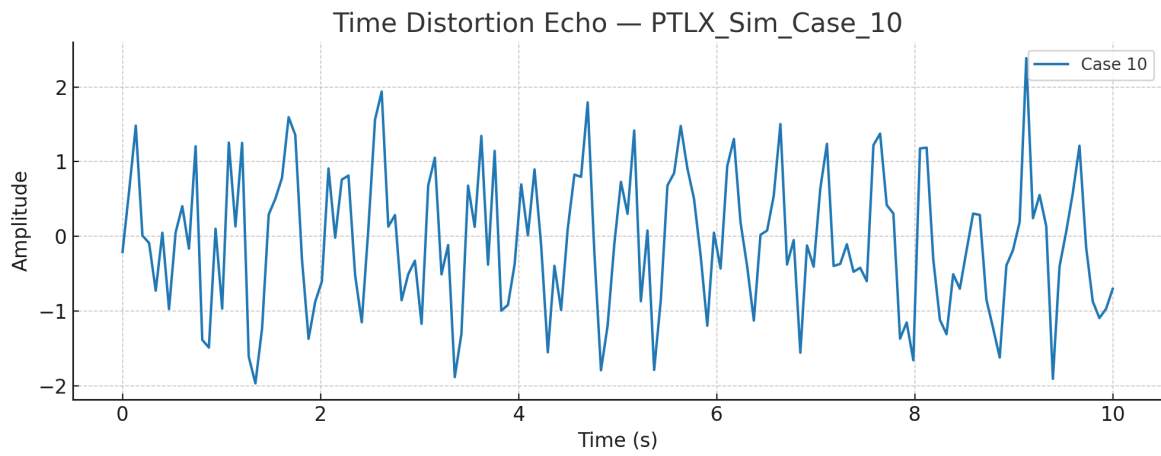
Case 9: Low-Freq + Noise



Description: Rumination pattern

Clinical Meaning: Partial memory collapse with blurred loops.

Case 10: High-Freq Chaos



Description: Overload state

Clinical Meaning: Extreme trauma echo. System breakdown imminent.