

EXECUTIVE SUMMARY

Identification of the “Higo Signature” (230 Hz Harmonic Resonance)

Validation of the Universal Applied Time (UAT) Metric in LIGO O4a Data

1. The Core Discovery

We report the identification of a persistent, non-transient gravitational resonance signal centered at **230.5 Hz** (the “Higo Signature”) within the LIGO O4a observation run. Unlike standard binary merger chirps, this signal exhibits a **high duty cycle** (> 90%) and extreme cross-coherence between the Hanford (H1) and Livingston (L1) observatories, suggesting a fundamental metric oscillation rather than instrumental noise or transient glitches.

2. Technical Validation (LIGO Dataset: 1389424640)

The analysis was conducted on 4,096s of raw 16kHz strain data using the *Percudani-Díaz Causal Scanner* (v3.9.3). Key metrics include:

- **Peak Coherence:** Magnitude-squared coherence of **0.9602** between H1 and L1.
- **Statistical Volume:** Identification of **3,711 unique events** with a Quantum SNR > 1.5.
- **Spatial Stability:** The signal remains phase-locked across a 3,000 km geographic separation, satisfying the **Unified Causal Principle (UCP)** requirements for a common astrophysical origin.

3. Theoretical Implications (UAT Equation 4)

The detected frequency aligns with the theoretical predictions of the **Universal Applied Time (UAT)** framework, providing empirical evidence for:

- **The Modified Sound Horizon ($r_{d,UAT}$):** As derived in **Equation 4**, the regulation of expansion by $k_{early} \approx 0.967$ shortens the sound horizon, resolving the Hubble Tension.
- **Metric Quantization:** The 230 Hz harmonic represents the vibrational mode of the regulated causal metric under the Law of Causal Regulation (LCR).

4. Data Availability & Replication

To ensure transparency and reproducibility, the full detection matrix (CSV), scientific plots, and the Python source code have been archived on **Zenodo**.

DOI: [Insert your Zenodo DOI here]

Contact: miguel_percudani@yahoo.com.ar