

# Project CODE-GEO: Proof of Work & Digital Integrity

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## Overview

To ensure the immutability of the predictions contained within Project CODE-GEO—specifically the **2.816 ms echo** and the **355.11 Hz resonance**—this release has been cryptographically locked. This protocol prevents post-hoc adjustments to the theoretical framework following future LVK data releases.

## 1. Universal Identifiers

- **Zenodo DOI:** 10.5281/zenodo.18704006
- **Version:** 3.1.0 (Feb 2026 Calibration)
- **Repository:** [github.com/Darian-Frey/CODE-GEO](https://github.com/Darian-Frey/CODE-GEO)

## 2. Cryptographic Fingerprints (SHA-256)

The following hashes represent the “frozen” state of the theory at the time of archival. These can be verified by running the `sha256sum` command against the downloaded files.

Document / Script	SHA-256 Integrity Hash	Purpose
PRD_Submission_V3.pdf	eda3b3fd...9b84	Formal Theoretical Foundation
Verification_V3.pdf	3a0011b1...0974	Empirical Data & Spectral Table
SUMMARY.pdf	72c7620e...1b3a	Briefing for LSC Academic Audit
echo_simulator.py	db3e9cb6...ab4f	2.816 ms Delay Verification
horizon_mod.py	26bb01ff...94c3	Geometric Shell Stability Check

## 3. Replication Protocol

Independent researchers are invited to run the verification engine to reproduce the results directly from the Hilbert-Complexity Action derivation:

```
git clone https://github.com/Darian-Frey/CODE-GEO.git
cd CODE-GEO/simulations
python3 echo_simulator.py --mass 62.7
```

*This document serves as a permanent record of the V3.1 theoretical lock.*