Experimental Proposal for Detecting Spiral-Time-Induced Biogravitational and Axionic Signatures

Marcel Krüger
ORCID: 0009-0002-5709-9729

July 6, 2025

Abstract

We propose a series of experimental tests to detect predicted biogravitational and axionic effects arising from the Helix-Light-Vortex (HLV) theory. The theory introduces a spiral time parameter $\Psi(t) = t + i\phi(t)$ and an informational field $\Phi(x, t)$ that modulate quantum fields and affect local gravitational and electromagnetic dynamics. Our proposed setups utilize spin-compass sensors, quantum gravimeters, and microwave resonance cavities to detect these effects, offering pathways to validate spiral-temporal field dynamics, topological charge emergence, and axion-like quasiparticles.

1 Introduction

The Helix-Light-Vortex (HLV) theory redefines spacetime and field dynamics via spiral temporal modulations $\Psi(t)$ and informational field couplings $\Phi(x, t)$. Predictions include modifications of gravitation, spin alignment, and scalar field excitations with axion-like properties. Detecting such phenomena would mark a fundamental shift in our understanding of vacuum structure and field-matter coupling.

2 Experimental Targets and Predictions

2.1 A. Biogravitational Spin Resonance

Prediction: A coherent biological or photonic system can induce a measurable gravitational anomaly ($\Delta g \sim 10^{-9} g$) and directional atomic spin shift $\Delta\phi_{\text{spin}} \neq 0$.

Setup:

- Shielded neuronal culture or biophoton emitter
- Quantum gravimeter (e.g., atom interferometer or MEMS device)
- NV-center-based spin compass

Expected Signal: Synchronized peaks in biophoton output, gravimeter shift, and spin compass orientation.

2.2 B. Spiral-Time CMB Modulation

Prediction: Spiral-time induces low-ℓ multipole modulations in the CMB spectrum, $\Delta T/T \sim 10^{-6}$.

Data Sources: Planck, WMAP, and future CMB-S4 maps.

Detection Method: Harmonic decomposition and matched filtering to isolate periodic $\phi(t)$-like modulations.

2.3 C. Axion-Like Quasiparticles (ALQs)

Prediction: Spiral-field modulations yield scalar excitations with $m_\Theta \sim 10^{-5}$ eV, weakly coupled.

Setup:

- Microwave cavity haloscope (similar to ADMX/MADMAX)
- Tuned to $f = m_\Theta/2\pi \approx 2.4$ GHz
- Optional: Spiral-modulated dielectric materials