

SFIT Prediction Summary & Falsification Criteria

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Abstract

This document summarizes all precise, falsifiable predictions of the Stevenson-Flux Information Theory (SFIT) and defines clear criteria for confirmation or falsification.

1 Core Prediction

SFIT predicts a universal **1.2 mHz geometric resonance** (the “Quantum Heartbeat”) arising from the interaction between Planck-scale information and the Earth’s gravitational field.

2 Precise Numerical Predictions

Observable	SFIT Prediction
Resonance frequency	1.201 34 mHz ($\pm 0.000\,05$ mHz)
Geometric period	833.3 s
Phase of maximum overshoot	416.65 s after mirror-step trigger
Contrast modulation	$0.122\% \pm 0.01\%$
Sideband power ratio	$J_1^2/J_0^2 \approx 0.0152$ [cite: 25]
Relaxation tail	832.6 s KWW decay, phase-locked to 1.2 mHz[cite: 25]
Aggregate significance (15-day stack)	14.280σ [cite: 25]
Information mass	$M_{\text{inf}} \approx 8.8 \times 10^{-51}$ kg[cite: 25]

Table 1: Summary of numerical predictions under SFIT[cite: 25].

3 Wigner Skew Mechanism

The physical origin of the observable effects is the Wigner-function skew term:

$$\alpha \cdot v_g \cdot \partial_z |\psi|^2. \quad (1)$$

This produces a phase jump of ≈ 0.0506 rad and the characteristic 4.42% count-rate overshoot.

4 Statistical Tension

The overall agreement is quantified by[cite: 25]:

$$\Sigma^2 = \sum_{k=1}^{34} \frac{(A_{\text{obs}} - A_{\text{SFIT}})^2}{\sigma_k^2}, \quad (2)$$

yielding 14.280 when phase-locking is included.

5 Falsification Criteria

SFIT would be tightly constrained or falsified if, in a high-quality long-duration run (> 15 days)[cite: 25]:

- No statistically significant peak is found at 1.201 34 mHz ($\pm 0.000\,05$ mHz)[cite: 25].
- The phase of any detected signal deviates significantly from 416.65 s after mirror steps[cite: 25, 26].
- The sideband ratio deviates strongly from $J_1^2/J_0^2 \approx 0.0152$ [cite: 25].
- The contrast modulation is inconsistent with $0.122\% \pm 0.01\%$ [cite: 25].
- The relaxation tail is inconsistent with a 832.6 s KWW form phase-locked to 1.2 mHz[cite: 25, 26].

A clear null result at the predicted frequency and phase in multiple independent runs would constitute strong evidence against the current formulation of SFIT[cite: 25, 26].

6 Recommended Facilities for Testing

- GRANIT (Grenoble)[cite: 25]
- Next-generation qBounce (ILL)[cite: 25]
- MAGIS and cold-atom interferometers[cite: 25]
- Future space-based ultra-cold neutron experiments[cite: 25]

7 Contact & Resources

Full preprint, Python code supplement, and data analysis toolkit are available at:

<https://www.stevensonfluxinformationtheory.com>[cite: 25]

Questions and collaboration welcome[cite: 25].

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