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	1.20134 mHz ($\pm$ 0.00005 mHz)
Geometric period	833.3 seconds
Phase of maximum overshoot	416.65 seconds after mirror-step trigger
Contrast modulation	0.122% $\pm$ 0.01%
Sideband power ratio	$J_1^2/J_0^2 \approx 0.0152$
Relaxation tail	832.6 s KWW decay, phase-locked to 1.2 mHz
Aggregate significance (15-day stack)	14.28σ
Information mass	$M_{\text{inf}} \approx 8.8 \times 10^{-51}$ kg

3 Wigner Skew Mechanism

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

$$\alpha \cdot v_g \cdot \partial_z |\psi|^2$$

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:

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

yielding 14.28σ when phase-locking is included.

5 Falsification Criteria

SFIT would be tightly constrained or falsified if, in a high-quality long-duration run ($\geq$ 15 days):

- No statistically significant peak is found at 1.20134 mHz ($\pm$ 0.00005 mHz)
- The phase of any detected signal deviates significantly from 416.65 s after mirror steps
- The sideband ratio deviates strongly from $J_1^2/J_0^2 \approx 0.0152$
- The contrast modulation is inconsistent with $0.122\% \pm 0.01\%$
- The relaxation tail is inconsistent with a 832.6 s KWW form phase-locked to 1.2 mHz

A clear null result at the predicted frequency and phase in multiple independent runs would constitute strong evidence against the current formulation of SFIT.

6 Recommended Facilities for Testing

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

7 Contact & Resources

Full preprint, Python code supplement, and data analysis toolkit are available at:
`https://www.stevensonfluxinformationtheory.com`
Questions and collaboration welcome.