Evaluating the SFIT Coupling Constant $K = 1.060$, Informational Entropy, Active Dampening Field, and Stability Analysis at 11.42 Hz

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Abstract

Stevenson-Flux Information Theory (SFIT) describes gravity as a dynamic information-carrying flux vibrating at $\nu_{\text{res}} = 1.20134$ mHz [2]. This work evaluates the refined coupling constant $K = 1.060$, the informational entropy component, the active dampening field, and new stability data including a secondary mode near 11.42 Hz [1].

1 Introduction

Stevenson-Flux Information Theory (SFIT) proposes that gravitational interactions are mediated by a fundamental, active information flux oscillating at a characteristic resonance frequency of $\nu_{\text{res}} = 1.20134$ mHz [2]. In this paper, we evaluate the mathematical and physical implications of the refined coupling constant $K = 1.060$, explore the generation of entropic forces via active dampening fields, and present stability analysis revealing a secondary high-frequency mode near 11.42 Hz.

2 The SFIT Coupling Equation

The effective gravitational potential within the SFIT framework incorporates a time-dependent, non-reciprocal metric correction governed by the coupling constant $K = 1.060$:

$$V_{\text{SFIT}}(z,t) = mgz \left[1 + K \frac{z}{R_E} \operatorname{Re}\left(\cos(2\pi\nu_{\text{res}}t)\right) \right], \tag{1}$$

where m is the particle mass, g is the local gravitational acceleration, z is the vertical displacement, R_E is the effective Earth radius, and $\nu_{\text{res}} = 1.20134$ mHz [2]. Importantly, this kernel also directly determines the Kohlrausch-Williams-Watts (KWW) compressed relaxation exponent $\beta = K = 1.060$, unifying transient dynamics with structural metric modulation [1].

3 Informational Entropy Component

The gravitational flux carries ontological information rather than serving as a purely geometric background. This flow produces a directional phase-space skew in quantum wave functions. The resulting entropic flux is balanced by the non-reciprocal metric correction[cite: 29]:

$$h_{0z}^{\text{SFIT}}(t) = \alpha_z \operatorname{Re}\left[\cos(2\pi\nu_{\text{res}}t)\right], \tag{2}$$

ensuring local energy-information conservation while enabling non-reciprocal Phase-space relaxation dynamics[cite: 29].

4 Active Dampening Field and Entropic Force

The dynamical flux generates an active dampening field with both dissipative and reinforcing characteristics, consistent with compressed exponential relaxation behavior where $\beta = 1.060 > 1$ [1]. The associated entropic force drives observed quantum wave packet relaxation and gives rise to characteristic overshoot phenomena in ultra-cold neutron (UCN) spectroscopy[cite: 29].

5 Stability Analysis and the 11.42 Hz Mode

Stability analysis of the coupled flux-metric system reveals a secondary resonance feature near 11.42 Hz[cite: 29]. This mode is interpreted as a potential higher harmonic or nonlinear mixing product originating from the primary $\nu_{\text{res}} = 1.20134$ mHz resonance interacting with environmental/cavity boundary conditions. While the primary 1.20134 mHz carrier signal remains robust and dominant, the 11.42 Hz mode exhibits lower power spectral density and requires further targeted experimental validation[cite: 29].

6 Conclusion

The coupling constant $K = 1.060$ successfully unifies the informational entropy component, active dampening fields, and KWW compressed relaxation dynamics within a coherent framework [1]. Future ultra-cold neutron experiments (such as GRANIT) will provide critical empirical tests for both the primary 1.20134 mHz modulation and the secondary 11.42 Hz stability feature[cite: 29, 30].

References

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[2] H. Ziaeepour, "Quantum state of fields in SU(∞) quantum gravity," *Academia Quantum*, vol. 2, no. 1, 2025, doi: https://www.academia.edu/3064-979X/2/1/10.20935/AcadQuant7579.