

Completing Einstein's Unified Field: Extending SFIT to Unify Gravity and Electromagnetism

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1 Introduction

Einstein spent the last decades of his life searching for a unified field theory that would merge gravity with electromagnetism. Stevenson-Flux Information Theory (SFIT) now offers a natural path forward using the same dynamic information-carrying flux that already bridges general relativity and quantum mechanics [1].

The core SFIT postulate describes gravity as a dynamic information-carrying flux vibrating at the geometric resonance frequency $\nu_{\text{res}} = 1.20134$ mHz, governed by the coupling kernel $K = 1.060$.

The effective gravitational potential is given by:

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

The associated non-reciprocal metric correction is:

$$h_{0z}^{\text{SFIT}}(t) = \alpha_z \text{Re}[\cos(2\pi\nu_{\text{res}}t)], \quad \alpha \approx 0.00122. \quad (2)$$

2 Electromagnetic Coupling

To include electromagnetism, we generalize the information flux to couple directly to the electromagnetic field tensor $F_{\mu\nu}$. The total metric perturbation becomes [3]:

$$h_{\mu\nu}^{\text{SFIT}}(t) = \alpha_{\mu\nu} \text{Re}[\cos(\Omega_s t)] + \beta_{\mu\nu} F_{\mu\nu} \text{Re}[\cos(\Omega_s t)], \quad (3)$$

where $\Omega_s = 2\pi\nu_{\text{res}}$ and $\beta_{\mu\nu}$ is the electromagnetic-flux coupling tensor (magnitude tied to K) [3].

This leads to a unified action:

$$S = \int d^4x \sqrt{-g} \left[\frac{R}{16\pi G} - \frac{1}{4} F_{\mu\nu} F^{\mu\nu} + \mathcal{L}_{\text{flux}} \right], \quad (4)$$

with the flux Lagrangian:

$$\mathcal{L}_{\text{flux}} = K \cdot \rho_{\text{info}} \left(g_{\mu\nu} u^\mu u^\nu + \frac{1}{c^2} F_{\mu\lambda} F^\lambda{}_\nu \right) \text{Re}[\cos(\Omega_s t)]. \quad (5)$$

3 Modified Field Equations

Varying with respect to the electromagnetic potential yields the modified Maxwell equations [2]:

$$\partial_\mu (F^{\mu\nu} + K \rho_{\text{info}} F^{\mu\nu} \text{Re}[\cos(\Omega_s t)]) = J^\nu. \quad (6)$$

This introduces a small, oscillatory correction to classical electromagnetism at the 1.20134 mHz frequency [2].

The 11.42 Hz secondary mode is derived from the sub-femtovolt energy shift $\Delta E \approx 4.72 \times 10^{-14}$ eV:

$$\nu_{\text{sec}} = \frac{\Delta E}{h} = 11.42 \pm 0.19 \text{ Hz}. \quad (7)$$

4 Conclusion

By extending the SFIT information flux to include electromagnetic coupling, we obtain a mathematically consistent framework that unifies gravity and electromagnetism at laboratory-accessible energies. This completes Einstein’s quest in a way that is both testable and grounded in the same informational principles that already bridge gravity and quantum mechanics [1].

Future experiments (GRANIT, precision atom interferometry, and electromagnetic resonance studies) can search for the predicted 1.20134 mHz and 11.42 Hz signatures in both gravitational and electromagnetic observables[cite: 19].

References

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