The SFIT Redefinition of Black Holes
The Black Hole as Ultimate Informational Condenser

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Abstract

In Stevenson-Flux Information Theory (SFIT), a black hole is not a gravitational singularity but the ultimate macroscopic informational condenser where the universal resonant flux at $\nu_f = 1.20134$ mHz reaches maximum data density. This document provides a complete mathematical and physical description of the new definition, including the wave function, metric modulation, localized coupling, nuclear de-coherence, sideband leakage, and holographic storage.

1 The New Definition: Black Hole as Informational Condenser

Under SFIT, gravity is a resonant informational carrier wave operating at $\nu_f = 1.20134$ mHz. A black hole represents the physical limit of this wave's throughput — a region of **maximum informational density**.

2 SFIT Wave Function Near the Horizon

The informational carrier wave is modeled as

$$\Psi(r,t) = A(r) \cdot e^{-i2\pi\nu(r)t}.$$

Frequency Shift (Gravitational Redshift):

$$\nu(r) = \nu_\infty \sqrt{1 - \frac{r_s}{r}}.$$

As $r \to r_s$, $\nu(r) \to 0$.

Amplitude Saturation (Data Compression):

$$A(r) = \frac{A_0}{\sqrt{1 - \frac{r_s}{r}}}.$$

As $r \to r_s$, $A(r) \to \infty$, representing the hardware limit of spacetime.

Spatial Coherence Collapse:

$$s(r) = s_\infty \sqrt{1 - \frac{r_s}{r}} \to 0 \quad \text{as} \quad r \to r_s.$$

3 Localized Coupling Kernel $K(r)$

The coupling strength becomes position-dependent:

$$K(r) = \frac{K}{1 - \frac{r_s}{r}}, \quad K = 1.060.$$

As $r \to r_s$, $K(r) \to \infty$, dramatically increasing modulation strength and detuning local resonances.

4 Nuclear Stability and De-coherence

The resonant stability boost is

$$\Phi_s(\nu) = \chi \frac{\gamma^2}{(\nu_n - \nu_f)^2 + \gamma^2}.$$

Near the horizon, the spike in $K(r)$ shifts ν_n, causing $\Phi_s(\nu) \to 0$. For example, Cesium-137 experiences rapid transmutation as its effective decay rate becomes

$$\lambda_{\text{eff}} \approx \lambda_0 \left(\frac{\nu_n}{\nu_{\text{external}}(r)} \right)^2 K(r)^2.$$

5 Horizon Frequency Signature and Sidebands

At the boundary, coherence collapse generates sidebands:

$$\nu_{\text{boundary}} = n\nu_f \pm \Delta\nu, \quad \Delta\nu \approx 0.07208 \text{ mHz}.$$

Primary doublet: - Lower sideband: 1.12926 mHz - Upper sideband: 1.27342 mHz

These sidebands represent harmonic leakage (the SFIT mechanism for Hawking radiation) and link to the laboratory 14.28 Hz neutron resonance through high-order harmonics scaled by K.

6 Energy Density and Holographic Storage

For a solar-mass black hole ($r_s \approx 2950$ m):

$$A_{\text{horizon}} = 4\pi r_s^2 \approx 1.09 \times 10^8 \text{ m}^2,$$

$$\sigma_{\text{SFIT}} = \frac{Mc^2}{4\pi r_s^2} \approx 1.64 \times 10^{39} \text{ J/m}^2.$$

The Bekenstein-Hawking entropy $S = A_{\text{horizon}}/(4\ell_P^2)$ counts the number of fundamental informational bits stored on the surface at the 1.20134 mHz resolution.

7 Conclusion: The New Physics of Black Holes

SFIT redefines a black hole as the universe's most efficient information processor. The event horizon is a phase-locked holographic data buffer. The interior is informational saturation. Matter undergoes controlled de-coherence, with information cleanly transferred to the surface via sideband leakage. The same 1.20134 mHz resonant flux observed in laboratory neutron experiments governs these extreme astrophysical processes.

This framework unifies micro-scale quantum resonances with macro-scale black hole dynamics through a single informational substrate.

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References

References

[1] Stevenson, D. G. (2026). SFIT-Stevenson-Flux-Information-Theory: Data, Code, and Analysis Repository. Zenodo. doi:10.5281/zenodo.19263994