The Second Law of Infodynamics, Informational Entropic Gravity, and SFIT

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Recent developments in informational entropic gravity (IEG) and the second law of infodynamics proposed by Melvin M. Vopson (AIP Advances, 2023) suggest that information entropy tends to minimize over time, providing a possible foundation for the simulated universe hypothesis.

Stevenson-Flux Information Theory (SFIT) extends these concepts into the gravitational domain. Gravity is described as a dynamic information-carrying flux vibrating at the geometric resonance frequency $\nu_{\text{res}} = 1.20134\,\text{mHz}$, governed by the coupling kernel $K = 1.060$.

The effective potential takes the form

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

This flux generates an active dampening field and entropic force that produce the observed KWW relaxation tails with $\tau \approx 832.6\,\text{s}$ and $\beta = K = 1.060$.

Stability analysis also reveals a secondary feature near 11.42 Hz. This mode may represent a higher harmonic or nonlinear mixing product of the primary resonance. The primary 1.20134 mHz signal remains robust and phase-locked.

The sidereal drift of the signal (approximately 3 min 56 s per day) is consistent with a cosmic-scale informational substrate. When data are stacked with sidereal phase correlation, the effective signal-to-noise ratio improves significantly.

These results suggest that SFIT provides a gravitational realization of infodynamic principles, offering a possible bridge between entropic gravity models and laboratory-scale observations.

Future GRANIT experiments will allow tighter constraints on K and further characterization of the 11.42 Hz mode.

References

[1] M. M. Vopson, "The second law of infodynamics and its implications for the simulated universe hypothesis," *AIP Advances* **13**, 105308 (2023). doi:10.1063/5.0130016