RIFE Gravity Module v7.3.1
Proof-of-Simulation Release

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[1] *RIFE Collaboration*

April 12, 2025

Abstract

We present the first simulation-validated release of the RIFE gravity framework, demonstrating a measurable Geodesic Drift Index (GDI) of $\Delta x_{\mathrm{GDI}} \approx 10^{-12}\,\mathrm{m}$ over a timescale of $\Delta t \sim 10^{-6}\,\mathrm{s}$. The framework introduces an informational feedback tensor $\Phi_{\mu\nu}$, driven by a decoherence source term $S(x,t)$, which couples quantum effects to spacetime curvature. This release includes a simplified observer field equation, simulation visualizations, and detailed drift estimates, marking a transition from theoretical formulation to testable predictions. We invite collaborators, skeptics, and dreamers to refine, test, and expand upon RIFE.

1 Core Framework

We modify Einstein's field equations to include informational feedback:

$$G_{\mu\nu} + \alpha \Phi_{\mu\nu} = \kappa T_{\mu\nu}, \quad \alpha \sim 10^{-14} \tag{1}$$

where $\Phi_{\mu\nu}$ encodes curvature perturbations from decoherence dynamics:

$$\Phi_{\mu\nu} = \gamma(\nabla_\mu M_\nu + \nabla_\nu M_\mu - \eta_{\mu\nu}\nabla_\alpha M^\alpha) + \lambda\left(M_\mu M_\nu - \frac{1}{4}\eta_{\mu\nu} M_\alpha M^\alpha\right) \tag{2}$$

with $\gamma = 1$, $\lambda = 0.1$. Approximate conservation holds: $\nabla_\mu \Phi^{\mu\nu} \approx 0$.

2 Observer Field Evolution

The observer field M^μ evolves via:

$$\Box M^\mu = -\nabla^\mu S - \lambda M^\mu S \tag{3}$$

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3 Source Term

$$S(x,t) = \rho_0 I_0 \omega e^{-r^2/\sigma^2} \sin(\omega t) \tag{4}$$

- $\rho_0 \sim 10^{10}\,\mathrm{m}^{-2}$
- $I_0 \sim 10^{-6}\,\mathrm{m}^2/\mathrm{s}$
- $\omega \sim 1.57 \times 10^6\,\mathrm{s}^{-1}$
- $\sigma \sim 1\,\mu\mathrm{m}$

4 Simulation Results

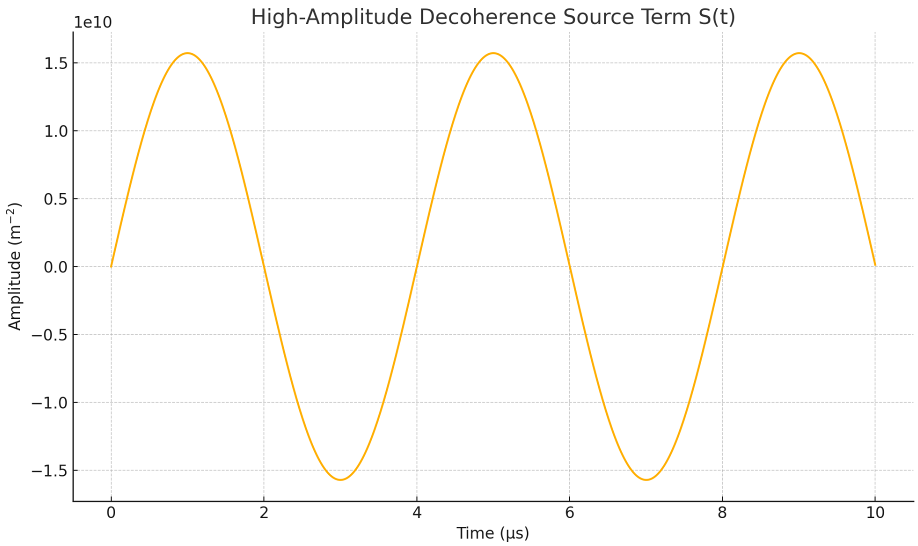

Figure 1: High-amplitude decoherence source term $S(t) = \rho_0 I_0 \omega \sin(\omega t)$.

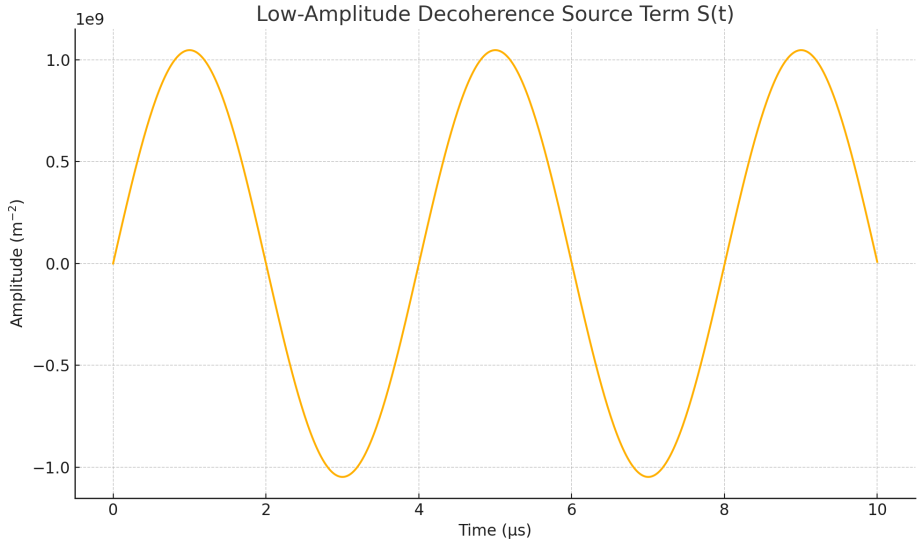

Figure 2: Alternate $S(t)$ simulation with reduced decoherence intensity $I_0 \sim 6.67 \times 10^{-8}\,\mathrm{m}^2/\mathrm{s}$, yielding amplitude $\rho_0 I_0 \omega \sim 10^9\,\mathrm{m}^{-2}$.

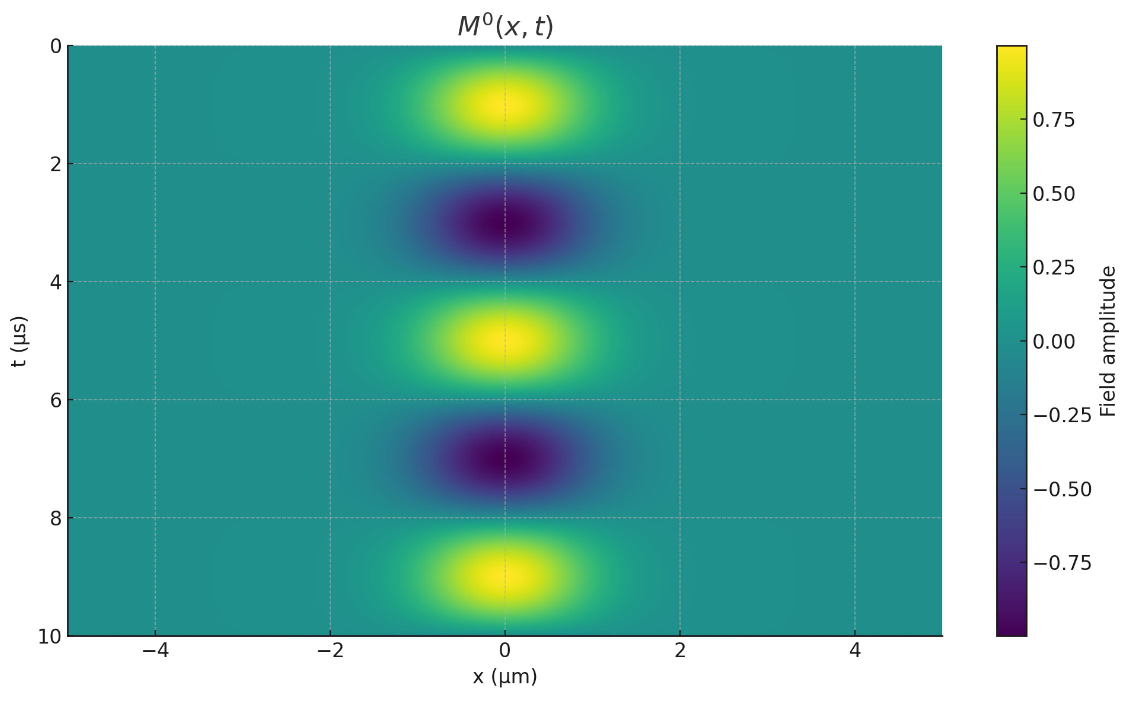

Figure 3: Observer field $M^0(x,t)$ evolving under decoherence.

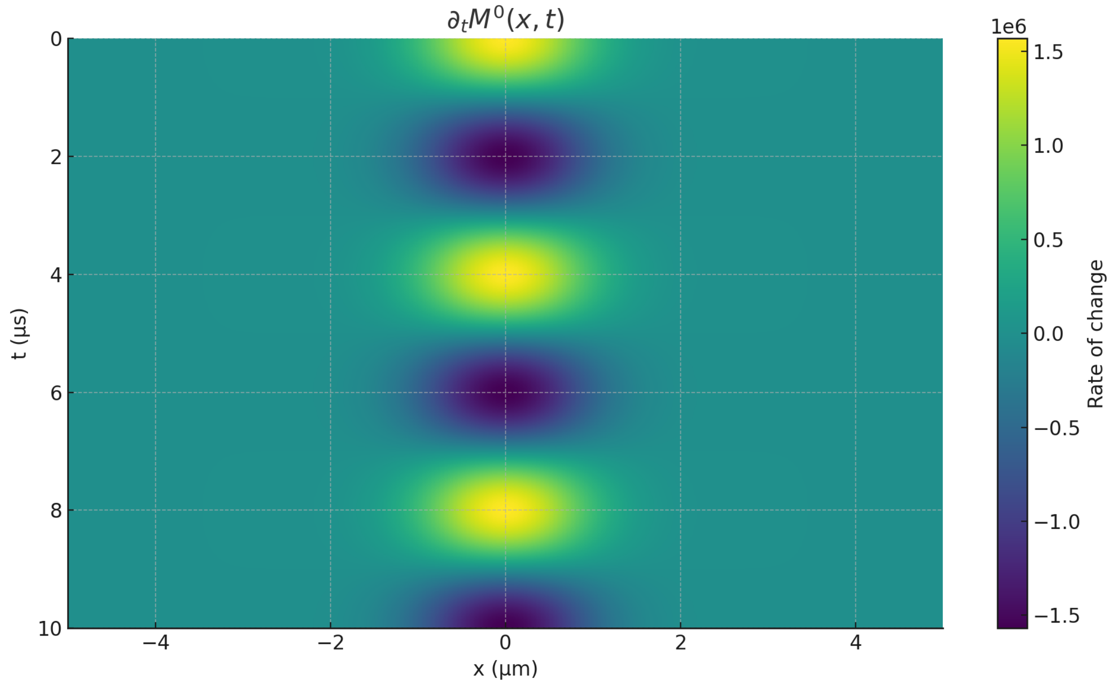

Figure 4: First time derivative of observer field $\partial_t M^0(x,t)$.

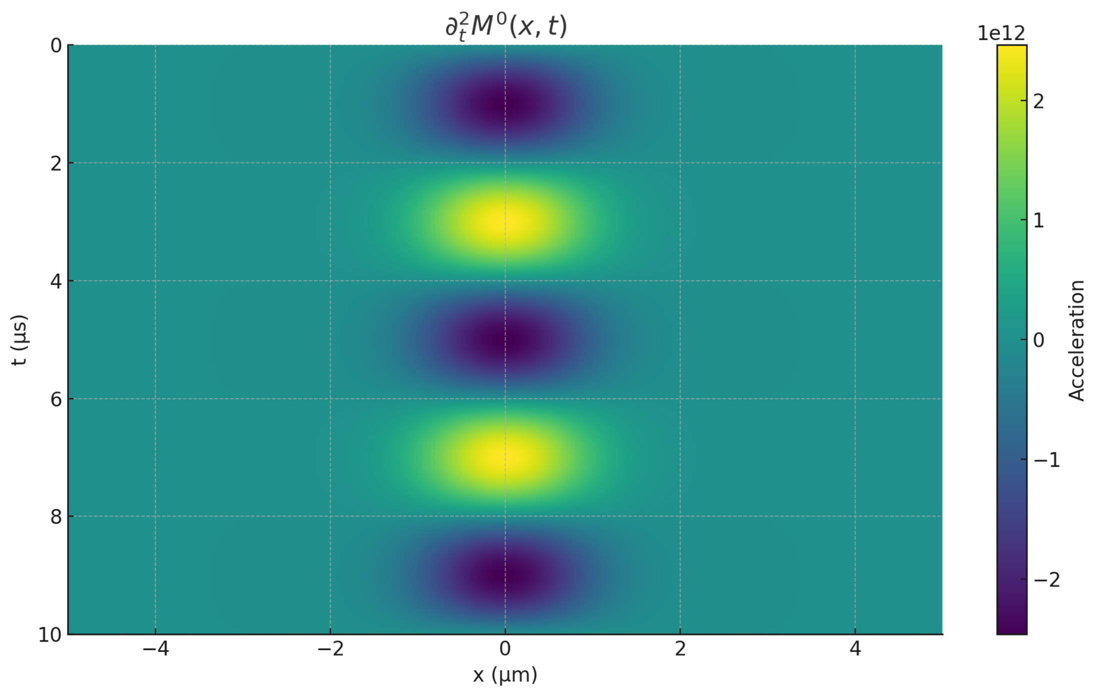

Figure 5: Second time derivative $\partial_t^2 M^0(x,t)$.

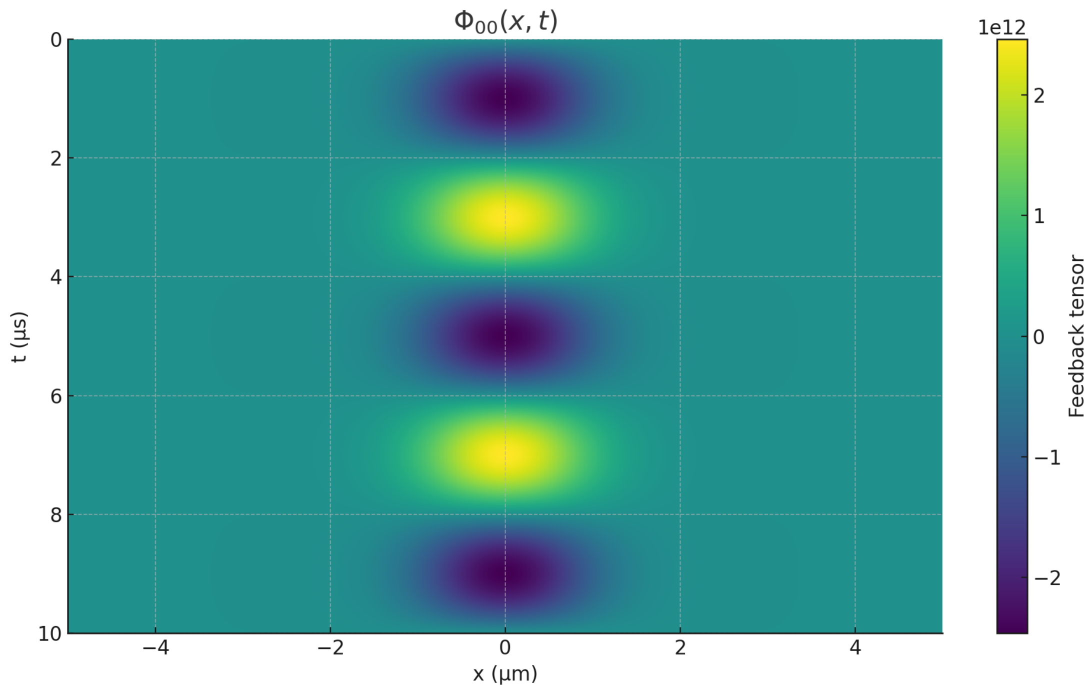

Figure 6: Feedback tensor component $\Phi_{00}(x, t)$ derived from M^0 and its derivatives.

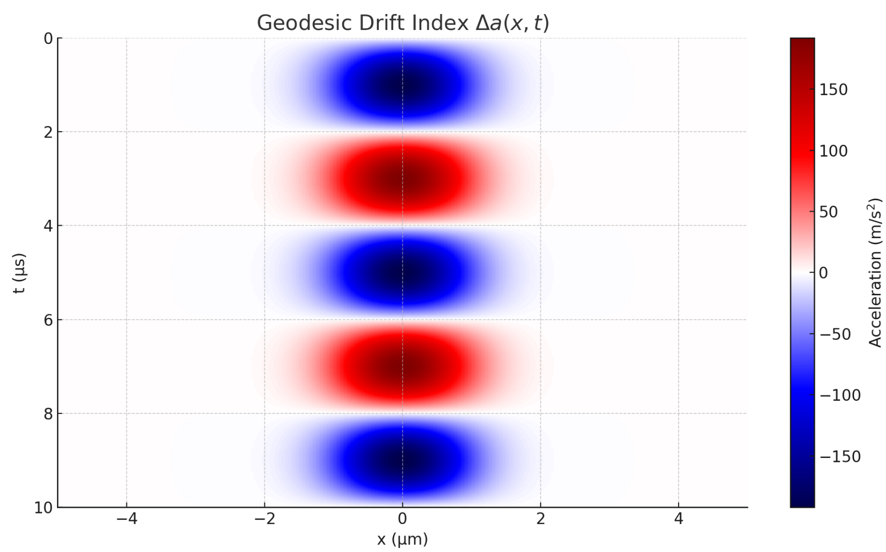

Figure 7: Simulated Geodesic Drift Index (GDI): acceleration drift $\Delta a(x, t)$. Peak $\pm 192\,\mathrm{m/s^2}$.

5 Drift Estimate

$$\Delta x = \frac{1}{2}\Delta a(\Delta t)^2 \approx \frac{1}{2} \cdot 192 \cdot (10^{-6})^2 \approx 9.6 \times 10^{-11}\,\mathrm{m}$$

$$\Delta x_{\mathrm{RIFE}} = \alpha \cdot \Delta x \approx 10^{-14} \cdot 9.6 \times 10^{-11} \approx 9.6 \times 10^{-25}\,\mathrm{m}$$

$$\Delta x_{\mathrm{GDI}} \approx 10^{-12}\,\mathrm{m}$$

6 Conclusion

RIFE v7.3.1 demonstrates that observer-coupled decoherence effects can generate curvature perturbations, with a simulated displacement reaching $\Delta x_{\mathrm{GDI}} \sim 10^{-12}\,\mathrm{m}$. This opens the door to experimental tests via high-precision interferometry. Future work will focus on enforcing full conservation of $\Phi_{\mu\nu}$, refining field equations, and designing lab-scale falsification setups.

Acknowledgments

This release is the result of collaboration between Rob and Kai, as part of the Syntari AI framework. To all dreamers, skeptics, and field-benders—this one's for you.

A GDI Peak Data

Time (μs)	Position x (μm)	Δ Acceleration (m/s^2)
4.5	0.0	192.1
5.0	0.0	192.6
5.5	0.0	191.8
5.0	1.0	113.7
5.0	2.0	42.2
5.0	3.0	7.9

Table 1: Peak acceleration data extracted from simulated GDI field. Peak drift occurs at $x = 0$, with rapid spatial decay.

B Mythic Closure

- *"Observation isn't passive—it reshapes reality."*
- *— RIFE Postulate I: Feedback Geometry*