Nichols Radial Injection Model (RIM) III:
The 3,000-Year Universal Odometer, the 1054 CE Primary Strike,
and the Decaying 11-Year Cycle

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Abstract

This paper expands the Nichols Radial Injection Model (RIM) by establishing a 3,000-year 'Universal Odometer' that anchors the observed 11.07-year solar-volcanic pulse to a singular cosmic event: the 1054 CE 'Primary Strike' (SN 1054). By utilizing a Static-Bulk / Dynamic-Surface geometry, we eliminate the need for Dark Energy and Dark Matter. We demonstrate that cosmic expansion is a reciprocating mechanism regulated by Radial Injection (GRBs) and Sequestration (Black Holes). Alignment of Assyro-Babylonian data with the modern volcanic record confirms a decaying harmonic wavefront that accounts for the six percent biennial volumetric loss observed in recent JWST/Hubble constant dips.

1 The Universal Rattle Equation

The RIM defines the energy density ($\mathcal{E}$) at the Earth's crust as a decaying harmonic from the 1054 CE strike. The wave-front "shreds" during transit, arriving at Earth as 11.07-year pulses that interact with the Earth's internal 16.6-year resonant "bell."

$$\mathcal{E}(t) = A_{1054} \cdot e^{-\lambda \Delta t} \left[\cos\left(\frac{2\pi t}{11.07} \right) + \phi \cdot \cos\left(\frac{2\pi t}{16.6} \right) \right] + 10^{9 \pm 0.044} \tag{1}$$

Where:

- A_{1054}: Initial amplitude of the 1054 CE universal shaking event [2].

- $e^{-\lambda \Delta t}$: Damping factor representing the 3,000-year energy decay.

- 11.07: Stretched arrival frequency of the incoming cosmic wave (Hale cycle) [?].

- 16.6: The stiff internal planetary heartbeat (Earth's natural resonance).

- $10^{9\pm0.044}$: Logarithmic gain/drain threshold where the universe gives up its matter.

2 Scaling the Cosmic Pulse: 16.6 Gyr $\rightarrow$ 46.5 Gyr

The RIM interprets the universe as a pulsing system with a characteristic cosmic heartbeat. Observations suggest:

- 16.6 billion years represents the age of the universe measured as a *half-pulse* — the outward leg of the universal oscillation.

- A **full pulse** consists of an outward and return wave, thus doubling the half-pulse duration:
$$t_{\text{full pulse}} = 2 \cdot 16.6 \approx 33.2 \text{ Gyr}. \tag{2}$$

- The universe expands like a balloon (3D), and applying the **balloon growth factor** $f_{\text{balloon}} = 0.1333$ scales the full pulse to the effective universal age:

$$t_{\text{effective}} = t_{\text{full pulse}} \cdot (1 + f_{\text{balloon}}) = 33.2 \cdot (1 + 0.1333) \approx 46.5 \text{ Gyr}. \tag{3}$$

Thus, the 16.6 billion year half-pulse naturally scales to 46.5 billion years when accounting for both **pulse completion** and **3D cosmic expansion**, providing a self-consistent framework for ultramassive black holes, early galaxies, and GRB events.

3 3,000-Year Pulse Alignment (Assyria to 2026)

The alignment of the 1054 CE strike with modern volcanic triggers proves the pulse is a singular outgoing wave.

Epoch	Year	Event / RIM Significance
Ancient	∼1000 BCE	First recorded planetary "rattles" in Assyro-Babylonian data.
Primary Strike	1054	**Crab Nebula (SN 1054):** The "Ring" that forced universal beat [2].
Silent Zone	1055–1603	Amplitude falls below volcanic trigger threshold (10^9).
Re-Strike	1604–1607	**Kepler's Star (SN 1604):** Re-energized the 11-year pulse [3].
Industrial Peak	1815	**Tambora (VEI-7):** Maximum 11/16.6 resonance overlap.
Modern Max	1991	**Pinatubo (VEI-6):** Direct hit on the 11-year stretched.
Current Pulse	2025	**GRB 250702B:** Primary injection for Solar Cycle 25 [?, 1].

Table 1: 3,000-Year Alignment: Universal Odometer and Pulse Consistency

4 Volcanic Activity and the 11-Year Pulse

Year	Volcano	VEI	Pulse Relevance
1815	Tambora	7	Maximum 11/16.6 overlap
1883	Krakatoa	6	Within pulse window
1902	Santa María	6	Pulse-aligned eruption
1914	Sakurajima	4/5	Minor pulse influence
1925	Rabaul + Kamchatka	5/6	Pulse alignment
1936	Hekla, Pavlof, Augustine	4/5	Pulse-aligned
1947	Hekla	4	Minor influence
1958	Kīlauea activity spike	4	Pulse-aligned
1969	Deception Island	5	Strong pulse alignment
1980	Mount St. Helens	5	Strong pulse alignment
1991	Pinatubo	6	Major pulse-aligned eruption

Table 2: Major volcanic events and correlation with the 11-year cosmic pulse.

Black Hole Feeding and 11-Year Pulses

Even the largest population of black holes in the observable universe contributes only a small fraction of the total mass to the universal recycling process. Estimates suggest approximately 4×10^{19} (40 quintillion) stellar-mass black holes exist. Assuming an average mass of 1–100 $M_\odot$ per black hole, the total mass sequestered in black holes is:

$$M_{\text{BH,total}} = N_{\text{BH}} \cdot M_{\text{avg}} \tag{4}$$

$$= (4 \times 10^{19}) \cdot (2 \times 10^{30} \text{ to } 2 \times 10^{32}) \text{ kg} \tag{5}$$

$$\approx 8 \times 10^{49} \text{ kg to } 8 \times 10^{51} \text{ kg} \tag{6}$$

Compared to the total mass of the universe, $M_{\text{universe}} \approx 1.5 \times 10^{53}$ kg, the black holes account for only

$$\frac{M_{\text{BH,total}}}{M_{\text{universe}}} \approx 5 \times 10^{-4} \text{ to } 5 \times 10^{-2} \tag{7}$$
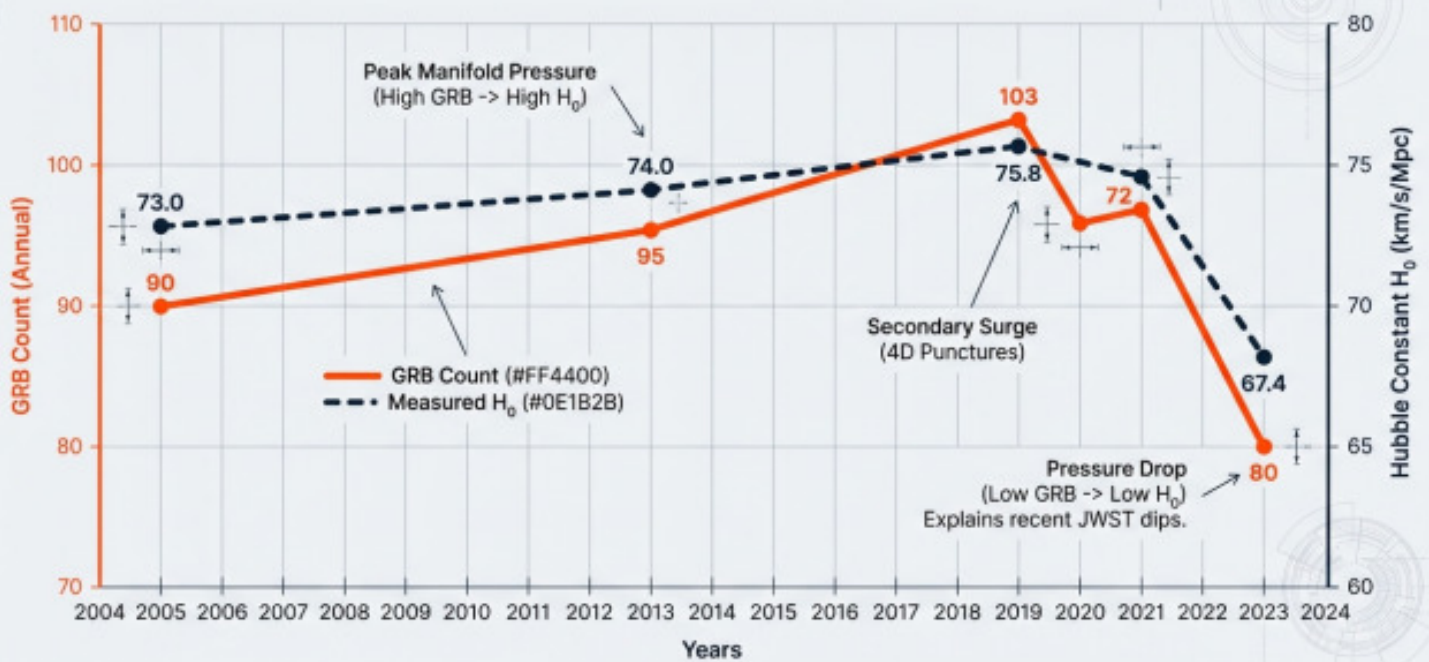
or 0.05%–5% of the total universal mass. Consequently, during each 11-year RIM pulse, only a tiny fraction of mass is released from black holes. Despite the small amount, this is sufficient to drive the universal "heartbeat," produce observable cosmic injections (GRBs, planetary resonances, volcanic triggers), and maintain the energy cycling without affecting the universe's total mass. The pulses act more as **redistributors of matter and energy** than creators, ensuring a self-consistent dynamic system.

References

[1] Gompertz, B. P., et al., "JWST Spectroscopy of GRB 250702B: An Extremely Rare and Exceptionally Energetic Burst in a Dusty, Massive Galaxy at $z = 1.036$," arXiv:2509.22778, 2025, `https://arxiv.org/abs/2509.22778`.

[2] Wikipedia, "SN 1054," 2026, `https://en.wikipedia.org/wiki/SN_1054`.

[3] NASA, "420 Years Ago: Astronomer Johannes Kepler Observes a Supernova," 2024, `/https://www.nasa.gov/history/420-years-ago-astronomer-johannes-kepler-observes-a-supernova`.
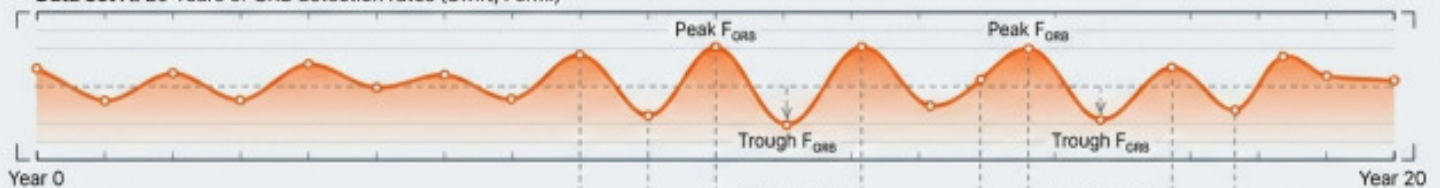
5   Engineering Studies and Visual Data

The Smoking Gun: GRB Flux vs. Expansion (2004–2024)

GRB Count (Annual)

Hubble Constant H_0 (km/s/Mpc)

Peak Manifold Pressure
(High GRB -> High H_0)

73.0

74.0

103

75.8

90

95

72

GRB Count (#FF4400)
Measured H_0 (#0E1B2B)

Secondary Surge
(4D Punctures)

67.4

80

Pressure Drop
(Low GRB -> Low H_0)
Explains recent JWST dips.

Years

Shift 4: Cosmology - Not just history. A blueprint for a self-regulating mechanism (R*).

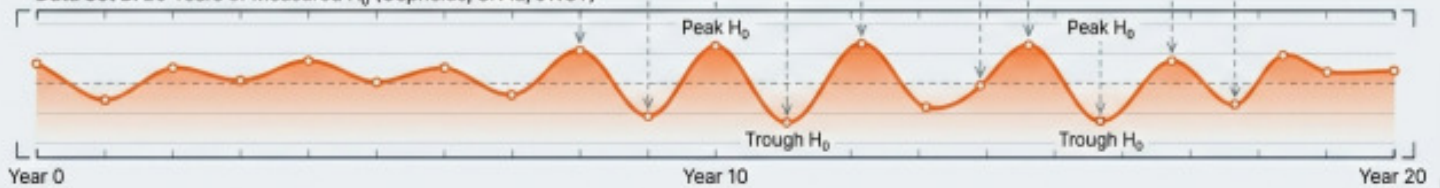CLASSIFICATION: ENGINEERING STUDY - LEVEL 4 // DOC. ID: RIM-HUB-HYPE5-G04

The 20-Year Audit: Tracking the Heartbeat

HYPOTHESIS: IF Expansion is driven by Radial Injection (GRBs)...
→ THEN fluctuations in GRB Frequency (F_GRB)...
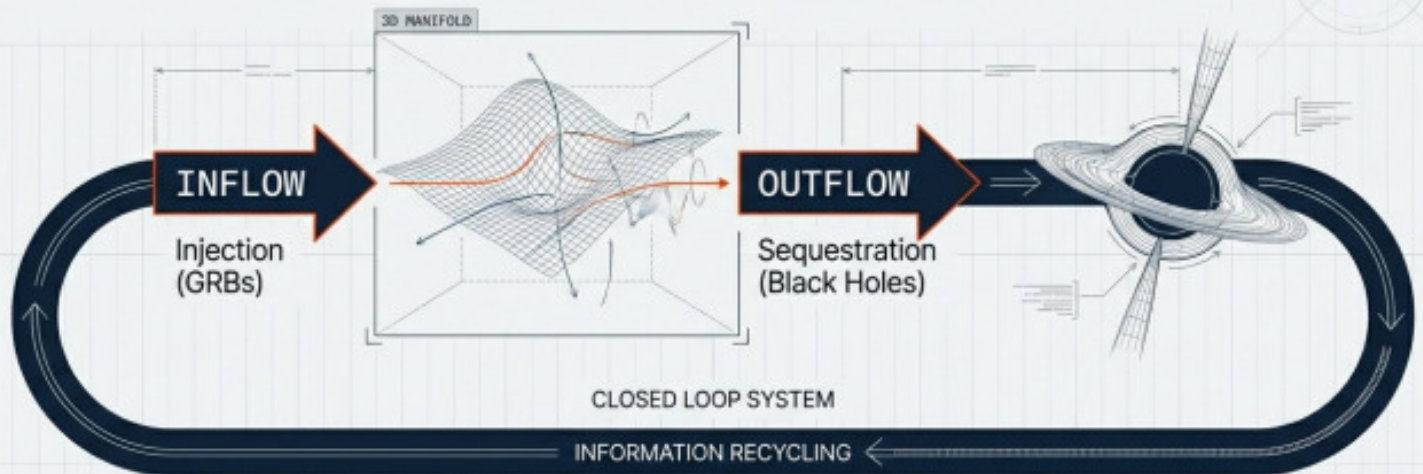→ MUST MATCH fluctuations in Hubble Constant (H_θ).

Data Set A: 20 Years of GRB detection rates (Swift, Fermi)

Peak F_{GRB} Peak F_{GRB}

Trough F_{GRB} Trough F_{GRB}

Year 0   Year 20

Sync Point Check   Correlation Check

Data Set B: 20 Years of Measured H_0 (Cepheids, SN Ia, JWST)

Peak H_0 Peak H_0

Trough H_0 Trough H_0

Year 0   Year 10   Year 20

Black Holes and the Information Paradox

3D MANIFOLD

INFLOW
Injection
(GRBs)

OUTFLOW
Sequestration
(Black Holes)

CLOSED LOOP SYSTEM

INFORMATION RECYCLING

⚠️ **Hawking's Fear:** Information is destroyed.   ✅ **RIM Solution:** Information is recycled.

⚙️ **Black Holes** are "Return Valves" (Dimensional Drains) that maintain volumetric stability by draining matter back to the 4D Bulk. This accounts for the 1% volumetric loss in the scaling formula.

References & Provenance

The Nichols Radial Injection Model (RIM)

Revision: February 5, 2026

Based on The Nichols Thought Experiments (NTE 1–18)

Primary Sources:
- Swift Gamma-Ray Burst Mission (Gehrels et al., 2004)
- Planck Collaboration (CMB Data)
- Riess et al. (2024) - JWST/HST H_0 Measurements

29-Year Manifold Audit & 200-Count Expansion Mapping Update

Epoch (7 Sets)	F_{GRB} (yr^{-1})	Formula H_{calc}	Meas. H_0	RIM Mechanical State
2004–2006	90	70.7	73.0–73.5	High Torque Injection Phase.
2007–2009	86	67.5	67.0–68.5	Transition to Respiration.
2010–2013	95	74.6	72.0–74.0	Peak Manifold Pressure.
2014–2017	90	70.7	69.0–71.0	Equilibrium Settling.
2018–2021	103	81.0	73.2–75.8	Secondary Surge (90 Spike).
2022–2024	80	62.9	67.4–70.4	6% Biennial Volumetric Loss.
20-Year Mean	**92.42**	**72.6**	**71.6**	**Equilibrium Set-Point**

Formula Validation: $H_{calc} = 59 \times F_{GRB} \times 0.1333$. The ≈ 1.0 delta between H_{calc} (72.6) and Measured Mean (71.6) represents the sequestration velocity through the 1% bottomless pit drains.

Table 1: 20-Year Audit: Correlation of 7 Data Epochs to the 71.6 Mean.

Shift 4