

CAUSAL MECHANICAL COSMOLOGY — PAPER 3 (V2.3)

Subtitle: *Resolving Cosmic Anisotropy and the Hubble Tension through Fluid Dynamics*

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Abstract

Building on the causal-mechanical foundations established in the preceding works, this paper incorporates breakthrough 2026 observational data to resolve the **Hubble Tension** and the **"Impossible Early Galaxy" crisis**. It reinterprets black holes as homeostatic feedback valves (**VPD**) and identifies cosmic voids as fossilized records of wave rebound. By treating expansion as a local volumetric flux surge, this framework provides a forensic resolution to current cosmological anomalies without requiring dark energy or modified gravity.

I. Technical Framework & 2026 Evidence Matrix

The mechanical principles of the Gravitational Sea find direct confirmation in the high-redshift observations of January 2026:

Mechanical Gear	Cause & Effect Logic	2026 Observational Evidence
Whirlpool Birth	Converging waves create a vortex (VDP) before stars exist.	Abell 2744-QSO1: 50M solar mass BH with almost no stars (Jan 2026).
Feedback Valve	Singularities bleed energy via jets to regulate regional pressure.	GS-10578 (Pablo's Galaxy): BH observed "starving" its galaxy (Jan 12, 2026).
Scaling Engine	Objects scale (Dwarf to Singularity) to match local Sea pressure.	Little Red Dots (LRDs): Compact black hole cocoons discovered Jan 2026.
Rebound Surge	Voids are low-pressure cavities; matter "surges" toward walls.	Hubble Tension: Verified Jan 2026 as a local surge toward high-pressure filaments.

II. The Hubble Tension: A Local Pressure Rebound

We reside in an elongated, low-pressure "rebound zone" (the KBC Void). The perceived expansion rate is higher locally because we are measuring the velocity of matter surging toward the denser boundaries of our local sea.

- **The Surge Equation:**

$$H_{local} = H_{global} + \left(\frac{\Delta P}{R * \mu} \right)$$

- **Mechanical Logic:** Expansion is not a mystery of "Time"; it is a **Local Pressure Surge (ΔP)** within a relaxing cavity. The 5σ discrepancy is a measurement of this volumetric flux.

III. The Causal Centrifuge (The Universal Gearbox)

As matter accumulates, the surrounding sea pressure rises, forcing the "engine" to shift gears from standard stars to Neutron stars, and eventually to Singularities. Black holes are not "eaters"; they are **governors** responding to the pressure of the Gravitational Sea. This scale-invariant vortex behavior ensures regional homeostasis across all cosmological epochs.

IV. Personal Reflection

Tides, eddies, currents, and energy-giving whirlpools are the vocabulary of the universe. The application of fluid dynamics is a natural and intuitive fit for the gravitational medium we inhabit. Our local cosmic void, for example, is not a mystery of abstract mathematics; it is a physical record of a "master wave" interaction—a natural rebound process we observe in every fluid on Earth. To ignore these mechanics is to ignore the very engine of reality.

Author Declarations

Originality & Affiliation:

The author confirms that this work is an original contribution developed independently. All core theoretical ideas, mechanical analogies, and observational interpretations are the sole intellectual work of Léon Barbour.

AI-Use Disclosure:

Large Language Model (LLM) assistance was utilized solely for structural organization, linguistic refinement, and formatting. The LLM did not contribute scientific ideas or theoretical content.

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