

Causal Mechanical Cosmology (v2.2)

Subtitle: *The Fluid-Dynamic Engine: Mechanical Necessity and Observational Anchors*

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Abstract

This paper presents the mechanical "Proof of Concept" for a fluid-dynamic universe. It defines the topological necessity of primordial whirlpools as regulators of gravitational sea pressure and bridges the gap between General Relativity and Quantum Mechanics through scale-invariant fluid turbulence.

I. The Mechanical Necessity of Whirlpool Birth

In a compressible gravitational medium ("the Sea"), structure is initiated not by mass, but by **Omnidirectional Wave Interference**. This interference creates high-pressure nodes that must resolve into vortices to conserve angular momentum.

- **The Vortex First:** The whirlpool (Singularity) acts as a mechanical harvester, pulling gas into a central sink before stars can form.
- **Observational Confirmation:** January 2026 data from the James Webb Space Telescope (JWST) continues to identify "overmassive" black holes that predated the stabilization of their host galaxies.

II. Fractal Scaling: The Universal Hydrodynamic Limit

The "Sea" is a scale-invariant medium. Galaxies and atoms are governed by the same hydrodynamic laws, differing only in frequency and pressure.

- **The Scaling Limit:** Quantum mechanics describes the regime where Sea turbulence is too high-frequency for stable, macroscopic whirlpools to form.

III. Irreversible Wave Deflection: The Mechanical Arrow of Time

Time is not a dimension but a measurement of the Sea transitioning from smooth (laminar) flow to messy (turbulent) chaos.

- **The Scattering Wall:** Once mass is established, it permanently deflects and shatters incoming waves, preventing the return of large-scale primordial "Master Wave" patterns.

IV. Methodology: The Fluid Equations

$$[\mathbf{a} = -(1/\rho) * \text{Grad}(\mathbf{P}) + \nu * \text{Grad}^2(\mathbf{u})]$$

Logic: Acceleration is driven by pressure gradients (Grad P) and viscous drag (nu).

$$[d(\omega)/dt + (\mathbf{u} * \text{Grad})\omega = (\omega * \text{Grad})\mathbf{u}]$$

Logic: In a stagnant sea, interference must resolve into vorticity (omega), creating the first gravitational sinks.

V. Personal Conclusion

We must confront the fact that every single thing in existence resides within a literal sea of gravity. It touches all, affects all, and can be stopped by nothing. We have overlooked the profound simplicity of its nature by ignoring the most perfect analogue available to us: our own oceans. This model was reached not through complex equations, but through a deliberate step back to basic observable facts. We must return to the fundamentals of cause and effect if we are to truly understand the engine of reality.

Author's Note

The author used Large Language Model (LLM) assistance for structural organization, linguistic refinement, and translation of concepts into scholarly terminology. All core theoretical ideas, mechanical analogies, and observational interpretations presented in this paper are entirely the author's original work.