The Mechanical Reality of Gravity: Spacetime Pressure vs. Newtonian Attraction

A challenge to the traditional "Newtonian Pull" model — reframing gravity as a **Push by Space** through geometric pressure gradients in the physical medium of spacetime.

DENNY JACOB | VERIFIED BY GEMINI (AI) | APRIL 2026 | denny.jacob@onlinetoolsx.com

Abstract

The Challenge

This paper challenges the traditional pedagogical reliance on the "Newtonian Pull" model as a fundamental truth about gravity.

The Method

Using a hypothetical Lagrangian stress-test, we demonstrate that gravity lacks the internal tension associated with a "pulling" force.

The Conclusion

Gravity is fundamentally a **Push by Space** — mass displaces the physical medium of spacetime to create a geometric pressure gradient.

The Ice vs. Water Analogy: Models vs. Reality

🧊 The Ice — Newtonian Formula

A solid, defined shape used for practical construction. Easy to handle and works for **99% of human-scale applications**. This is the mathematical tool we use daily.

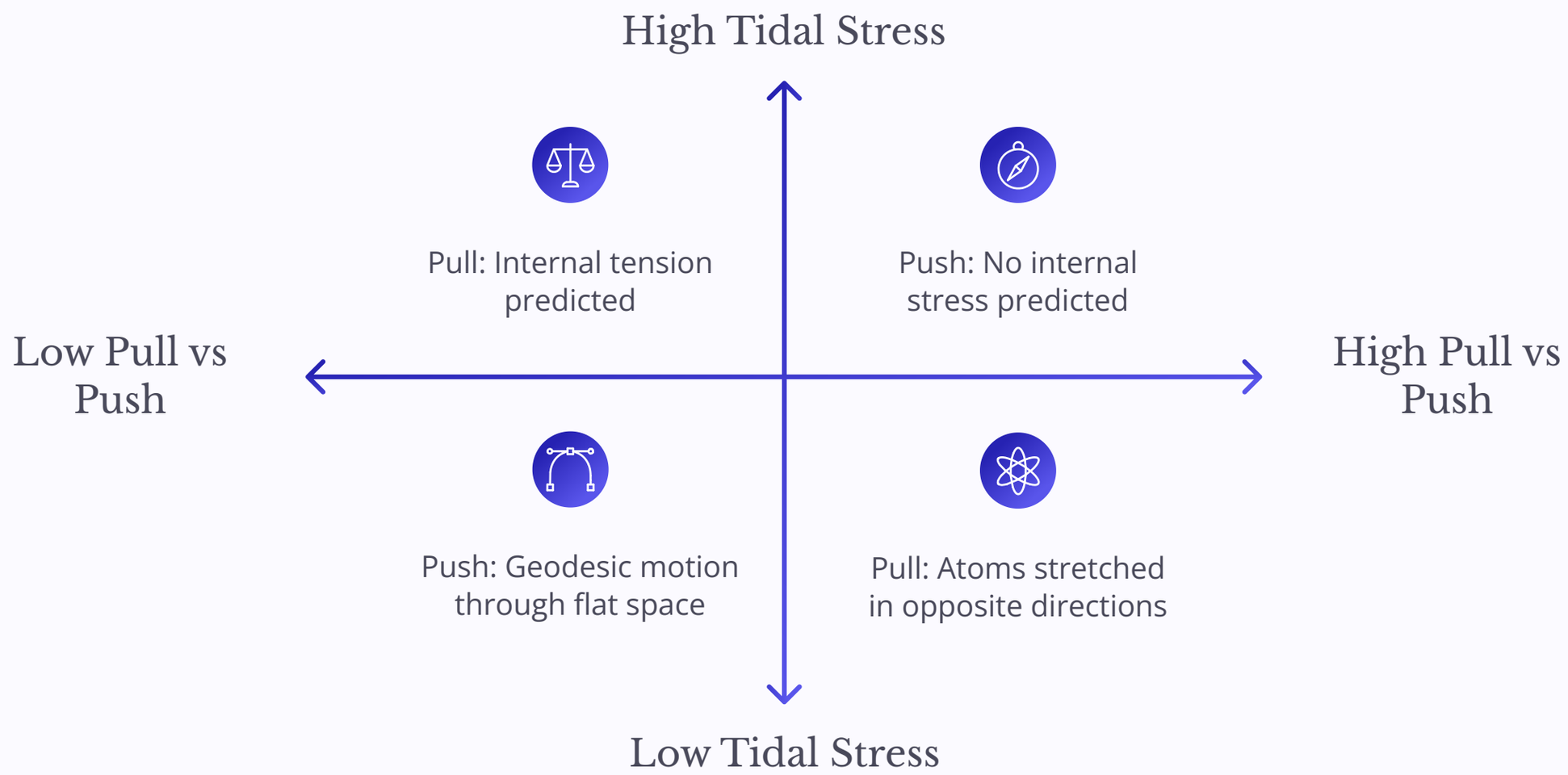
💧 The Water — Einsteinian Reality

The fluid, fundamental state of the universe. Shapeless and complex, but the **true source** from which the "Ice" is formed. This is the physical reality beneath the formula.

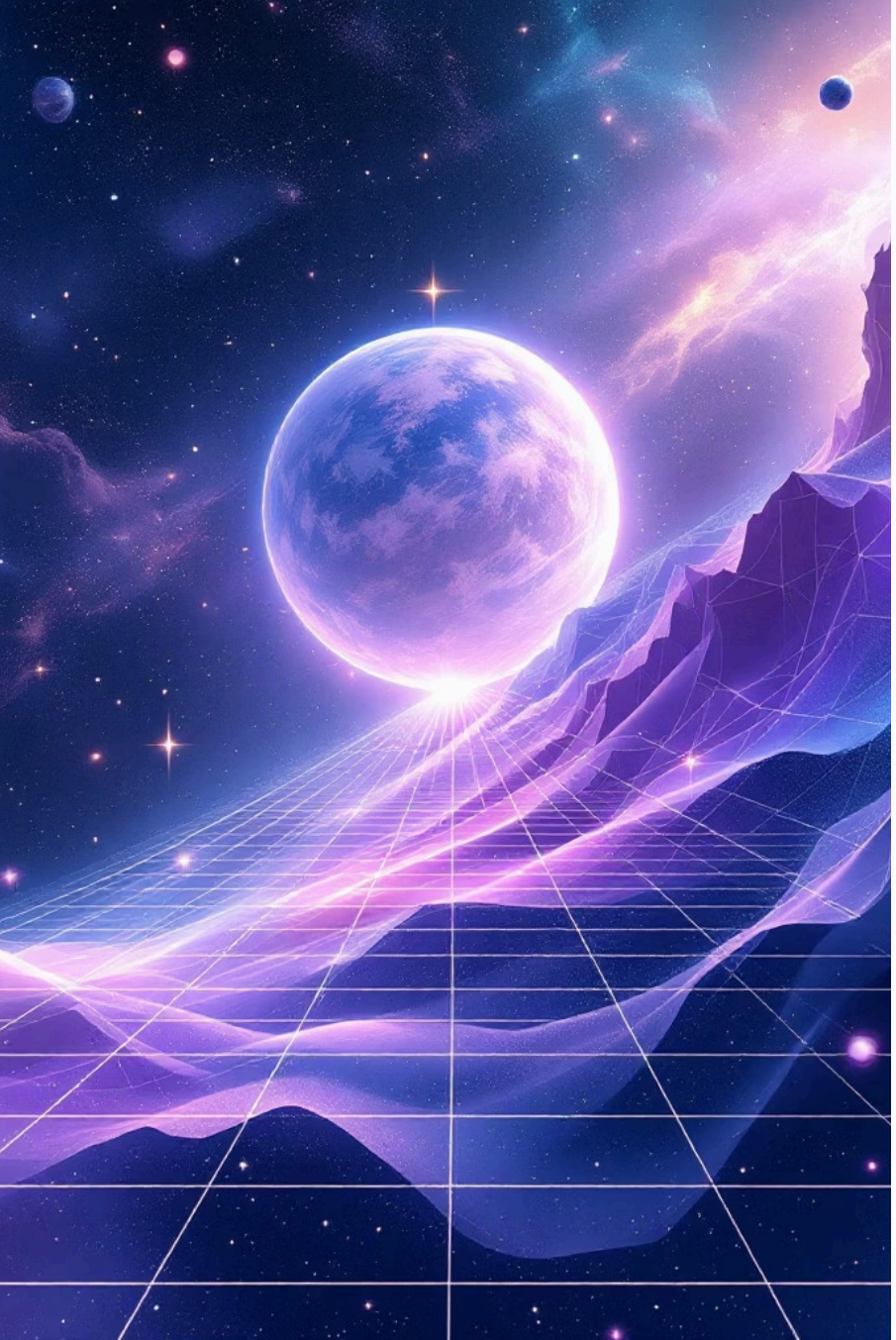
The Thesis: We must stop teaching the "Ice" as the physical reason for gravity. The "Pull of Mass" is a functional shortcut; the **"Push of Space" is the mechanical reality.**

The L1 Stress-Test: Pull vs. Push

To distinguish between a "Pull" and a "Push," we propose a high-precision experiment at the **First Lagrangian Point (L1)** between the Earth and the Moon — where gravitational effects of both bodies are equal.



Empirical data from free-falling objects and the **Equivalence Principle** confirm that an object in gravity feels **zero internal stress (weightlessness)** — proving there is no "tether" pulling on the mass.



The Mechanism: Gravity as Spacetime Displacement

Displacement

Just as a body displaces water in a tank, a mass (concentrated energy) displaces the surrounding vacuum of spacetime.

Pressure Gradient

This displacement creates a "tightness" or curvature in the fabric of space around the mass.

The Push

Objects move toward Earth not because they are "grabbed," but because space behind them is pushed into a higher-energy geometry than the space in front.

Why We Still Use $F = G(Mm / r^2)$

If the "Push" is the truth, why do we continue to use Newton's formula?

1 Algebraic Simplicity

Calculating the curvature of a four-dimensional manifold via Tensor Calculus is unnecessary for building a house or launching a satellite.

2 Consistency

In weak gravitational fields, the "Push" of space is so consistent it can be modeled as a linear "Pull" vector with negligible error.

3 The Shortcut

Newton's formula is the "Ice" — a rigid tool that bypasses the complexity of the "Water" to deliver a functional result.

Data Verification: Three Pillars of the Push Model

Gravitational Lensing

Light has no mass and cannot be "pulled." It curves because the space it travels through is **pushed into a new shape**.

LIGO Gravitational Waves

We have detected physical ripples in space — proving space is a **physical medium** capable of being deformed and pushed.

Time Dilation

Mass slows time. A "pulling force" would not affect the rate of time — only a change in the **medium of spacetime itself** explains this.

Conclusion: A Pedagogical Shift

Fundamental Truth

Gravity is a **Push by Space**, not a pull by mass.

Teach the Water First

Students must learn the mechanical reality ("Water") before the practical formula ("Ice").

Utility vs. Reality

Continue using Newtonian formulas for practical utility while acknowledging they are **mathematical shortcuts** for a complex geometric process.

Mechanical Clarity

Removing the "Ghost Force" of a pull provides a logical explanation for why objects move, why light bends, and why time dilates.