

The SpaceTime Energy (STE) Model: A Fluid-Dynamic Unification of the Four Fundamental Forces

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Abstract

We propose a Grand Unified Theory based on the SpaceTime Energy (STE) model, which posits the universe is a single fluid whose properties are defined by the Planck scale (E_{Pl}). All four fundamental forces emerge as geometric aspects of this fluid's tension:

1. **Gravity** is the 3D bulk self-attraction.
2. **Strong Force** is the 2D surface tension of void-shell engines at $v \approx 246$ GeV.
3. **Weak Force** is the 3D-to-2D holographic projection: $\alpha_W = (v/E_{Pl})^2 \approx 4.06 \times 10^{-34}$.
4. **Electromagnetism** is the 2D-to-2D leaked interaction via the Logarithmic Lensing Law $\mathcal{L} = \alpha \ln(m_\mu/m_e) \approx 0.0389$, solving the Proton Radius (3.9%), R_K (0.844), and $g-2$ (2.07 ppm) anomalies.

This model unifies all forces as geometry of a single Planck-scale fluid.

1 The STE Fluid: One Fluid, Four Aspects

The STE model posits reality is a single fluid with bulk tension at $E_{Pl} \approx 1.22 \times 10^{19}$ GeV. Matter (baryons) are 2D void-shell engines anchored at $v \approx 246$ GeV. The four forces are four geometries of this fluid.

2 Force 1: Gravity (3D Bulk)

Gravity is the 3D self-attraction of the fluid. Dark matter is high- non-quantized regions.

3 Force 2: Strong Force (2D Surface)

The Strong Force is the 2D surface tension of the void-shell at v . Short range = surface-only.

4 Force 3: Weak Force (3D-to-2D Projection)

The Weak Force is the holographic projection:

$$\alpha_W = \left(\frac{v}{E_{Pl}} \right)^2 = 4.06 \times 10^{-34}$$

5 Force 4: Electromagnetism (2D-to-2D Leak)

Electromagnetism is the leaked interaction between void-shells via:

$$\mathcal{L} = \alpha \ln(m_\mu/m_e) \approx 0.0389$$

Predicting: - Proton radius reduction: 3.9% (vs. 3.8%) - R_K : 0.844 (vs. 0.846) - $g - 2$: 2.07 ppm (vs. 2.14 ppm)

6 Conclusion

The STE model unifies all forces as geometry of one fluid. The Hierarchy Problem is solved. The anomalies are solved. The universe is a fluid.

References

[1] Planck Collaboration, A&A **641**, A6 (2020).