A UNNS Hypothesis on Dark Matter and Dark Energy: Hidden Inlayings and Expansive Residues in the Recursive Substrate

Draft Proposal

Abstract

We propose a speculative hypothesis that the anomalies of cosmology—dark matter and dark energy—may be understood as emergent residues of the *Unbounded Nested Number Sequence* (UNNS) substrate. Rather than exotic matter or unknown fluids, these effects may arise as structural inlayings and expansive residues of recursion within the universe's operational grammar.

1 Premise

The UNNS substrate models systems as nested recursive sequences generating stable constants, lattices, and resonant structures. Just as Fibonacci or Tribonacci recurrences give rise to algebraic invariants, we hypothesize that cosmological anomalies reflect hidden recursive dynamics.

2 Dark Matter as Hidden Inlaying

Hypothesis 1. *Dark matter corresponds to* inlayed sublattices *of the UNNS substrate.*

Concretely:

- Let u_n be a UNNS sequence defined by a linear recurrence

$$u_{n+r} = c_1 u_{n+r-1} + \cdots + c_r u_n.$$

- Certain coefficients c_j may be "hidden" (not directly observable in baryonic interactions).
- These hidden layers still contribute to the global *stability of the recurrence*, analogous to how unseen mass contributes to gravitational stability of galaxies.

Thus, dark matter appears as the gravitational effect of recursive coefficients that do not couple to electromagnetism.

3 Dark Energy as Expansive Trans–Sentifying Residue

Hypothesis 2. *Dark energy corresponds to a* global renormalization pressure *in the UNNS substrate, arising from recursive overshoot.*

This may be quantified through the *UNNS Paradox Index (UPI)*:

$$\mathcal{P}(S) = \frac{D \cdot R}{M + S},$$

where D is recursive depth, R is self-reference rate, M is morphism divergence, and S is memory saturation.
At cosmological scales, a rising $\mathcal{P}(S)$ induces an expansive drift, analogous to an effective cosmological constant.

4 Synthesis

- Dark Matter $\equiv$ Hidden inlayed coefficients stabilizing galactic recursions.
- Dark Energy $\equiv$ Expansive residue from recursive overshoot, modeled by $\mathcal{P}(S)$ thresholds.

Remark 1. *In this framing, dark matter and dark energy are not exotic substances but emergent* invariants *of recursion, analogous to correction terms in stability analysis.*

5 Predictions and Tests

This hypothesis suggests:

1. **Rotation Curves:** Galaxy curves may be modeled via UNNS weighting constants instead of particle dark matter.
2. **Cosmic Acceleration:** The observed rate of expansion correlates with UPI thresholds applied to recursive cosmology models.
3. **Numerical Alignments:** Dark energy density ($\sim$ 70% of total) may align with UNNS constants such as φ^2 or Tribonacci ratios.

6 Philosophical Insight

Set theory asks what can be contained; physics asks what can be observed. The UNNS substrate asks: *what can propagate, resonate, and stabilize*? From this angle, dark matter and dark energy emerge not as mysterious substances but as *echoes of recursion*, integral to the operational grammar of the universe.