UNNS, Big Bang, and String Theory: Structural vs. Resonance Substrates

Abstract

We explore the relation between the UNNS (Unbounded Nested Number Sequences) substrate and two dominant physical paradigms: Big Bang cosmology and String Theory. We argue that UNNS shares structural affinities with the Big Bang picture and resonance affinities with String Theory, thereby forming a conceptual bridge between expansion and vibration.

1 UNNS as a Generative Substrate

In the UNNS framework, recursion acts as the fundamental driver of structure:

- Collapse corresponds to absorption into zero, modeling singular origins.
- Inlaying embeds sequences into lattices, creating spatial structure.
- Inletting corresponds to inflows of energy, modeling temporal expansion.

This recursive substrate naturally produces both expansion and resonance phenomena.

2 Big Bang Correspondence

The Big Bang describes an initial singularity followed by rapid expansion. In UNNS terms:

- The singularity is modeled as the *absorbing nest at zero*.
- Expansion corresponds to recursive inletting: constant inflow yields exponential growth.
- Discrete curvature
$$\kappa_k = \frac{S_{k+1} - S_k}{S_k}$$
provides an analogue to cosmological curvature.

Thus, UNNS aligns with Big Bang theory at the structural and generative level.

3 String Theory Correspondence

String Theory posits vibrating one-dimensional objects whose resonances produce particles and forces. In UNNS terms:

- Recurrence coefficients act as eigenvalues, analogous to string vibrational modes.
- Inlaying into Gaussian, Eisenstein, or cyclotomic lattices mirrors compactification into special manifolds.
- Spectral geometry of UNNS provides discrete analogues of resonance spectra.

Thus, UNNS aligns with String Theory at the harmonic and symmetry level.

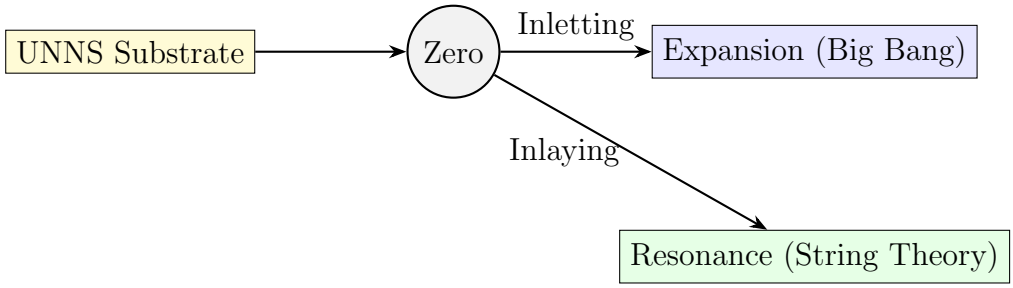
4 Synthesis: UNNS as a Bridge

We propose:

- Big Bang $\leftrightarrow$ UNNS expansion (structural generation).
- String Theory $\leftrightarrow$ UNNS resonance (spectral vibration).

UNNS provides a common arithmetic substrate in which both expansion and resonance emerge from recursion.

5 Diagram



Conclusion

While UNNS is not a physical theory, it provides a unifying recursive architecture that parallels Big Bang cosmology in its expansion dynamics and String Theory in its resonance structure. Its potential significance lies in serving as a discrete bridge between cosmological generation and quantum resonance.