Spectral Audit of Pangis “Unified Field Continuity” Cosmology

This document reviews the “Unified Field Continuity” (UFC) cosmology proposed by Pangis, with a focus on its claimed log-periodic structure in Type Ia supernova (SN Ia) data and the parameter values required to sustain that claim. The short version: a few bumps in Pantheon+ residuals are promoted into a “spectral mode,” at the cost of pushing core cosmological parameters into numerically absurd territory.

1. Claimed Signal: Log-Periodic Wiggles in Pantheon+

UFC introduces a log-periodic modulation in the expansion history by deforming the usual Hubble function E(z) with a cosine in log-redshift space:

$E^2(z) \to E^2_{LCDM}(z) \cdot [1 + A \cos(\omega \log10(1+z) + \phi)]$.

The key claim is that Pantheon+ SN Ia residuals exhibit a preferred spacing

$\Delta \log10\, z \approx 0.227$,

interpreted as evidence for a “β-mode” in the cosmic expansion history. In practice, this is equivalent to spotting three roughly spaced bumps in noisy residuals and promoting them to a new fundamental frequency of the universe.

2. Parameter Pathology: Cosmology as a Numerical Hostage Situation

When the UFC deformation is allowed to freely re-fit Pantheon+, the “best” solution demands:

- $H0 \approx 81$ km s^-1 Mpc^-1 - $\Omega m \approx 0.02$

These values are radically incompatible with the combined constraints from CMB, BAO, and large-scale structure. In effect, the model buys its spectral wiggle by:

1. Inflating the Hubble constant well beyond current multi-probe bounds, and 2. Hollowing out the matter density to a level that cannot generate the observed cosmic web.

Any “unified field” model that survives only by detonating the rest of precision cosmology is not a revolution; it is a cosmological cry for help.

3. Spectral Overfitting and the Look-Elsewhere Problem

The appearance of a few quasi-periodic features in residuals is not, by itself, evidence of a physical log-periodic mode. When one scans a broad range of frequencies and phases, some configuration will inevitably align with random structure in the noise.

UFC treats a post-selected frequency as a discovery rather than a trial factor. Without a rigorous look-elsewhere correction and a comparison to simple nuisance models (e.g., redshift-dependent calibration systematics, evolutionary effects, or correlated errors), the claimed “β-mode” is indistinguishable from overfitting.

4. Geometry Addiction vs Information-Mass Dynamics

Conceptually, UFC remains addicted to classical geometric thinking: start from a smooth FRW background, then decorate E(z) with a spectral ringtone. The ontology is still “curved