Apeiron

Apeiron Version Note and Numerical Erratum

Release: Preprint v1.4
Date: 19 September 2026
Supersedes for current citation: v1.3 (19 September 2026)
Historical versions: retained unchanged.

1. Scope of this update

Version 1.4 retains the Version 1.3 microstructure/UV update and adds the closed internal EFT spectrum, local higher-derivative/one-loop block, and bounded minimal UV-matching family. It does not modify the frozen v7.13 numerical classification, single-carrier ontology statement, or black-hole reconversion feasibility classification.

2. Numerical erratum

The previously used intermediate canonical X^2 coefficient

$$2.9131\times10^{11}$$

is **withdrawn**. The binding corrected value is

$$c_{X^2}^{(\phi_1)}=3.91305380277\times10^{11}M_{\rm Pl}^{-4}.$$

Consequently, the old dependent value

$$\Lambda_{\rm unit}/\Lambda=1.38688$$

is also withdrawn. The binding corrected tree-unitarity result is

$$\Lambda_{\rm unit}/\Lambda=1.28824506.$$

This is an erratum propagation only. No completed physics was recomputed for the publication update.

3. New closed microstructure/UV items

- controlled internal EFT vacuum;
- normalized σ, θ, and Z_2^χ-protected χ modes;
- delimited neighboring tachyonic χ phases;
- perturbative/tree-unitarity control through the nominal EFT scale;
- $C_6^{(\chi)}=-21.0925M_{\rm Pl}^{-6}$;
- $\beta_{C_6}=-2.85893108646\times10^{12}M_{\rm Pl}^{-6}$;
- bounded minimal heavy scalar-mediator UV matching;
- quantitative one-parameter family $1<M_S/\Lambda\lesssim1.28824506$.

4. Mandatory limitation

The fundamental Apeiron microtheory is **not** claimed to be completely determined. The physical nonlocal response kernel is still required for a possible independent pole/mediator determination of M_S.

5. Canonical thermodynamics / information alignment

The binding current-facing Apeiron formulation now states that reconversion follows **access region → conversion region → directed phase return to Apeiron** and is treated as a transformation/re-encoding within the same underlying Apeiron system. Information conservation is not equated with constant total entropy. Entropy may be produced, redistributed or transferred into Apeiron degrees of freedom; physically relevant entropy is not assumed to be erased by reconversion.

The same distinction is applied to Genesis: a comparatively low-entropy observable phase does not require an entropy reset of the complete Apeiron system. These are model assumptions, not experimentally established facts.

Open gap: no quantitative total entropy balance or generalized-second-law-like consistency test has yet been completed.

No numerical gate, UV coefficient, reconversion feasibility classification or other closed scientific result was recomputed or reset by this documentation update.