Spectral attenuation surrogates and graph-basis limitations — review sheet

Use this after attempting the worked examples and practice. Explain each claim in words before calculating.

Key ideas

- Low error can follow from exact representability.
- Retained modes and parameter ranges define the baseline contract.
- Mean preservation does not imply field accuracy.
- Graph normalization and basis conventions affect interpretation.
- Research analogy is different from reproduction.

Common errors and repairs

Treating finer-grid evaluation as new-physics evidence. Keep representation and physical-parameter tests separate.

Assuming an unexcited mode has a fitted gain of zero. It is unidentifiable without additional assumptions.

Using published GFuNK performance to describe this companion. Report only this companion's own calculations and limitations.

Retrieve without your notes

- Why does a consistent basis sign flip cancel?
- What time map does the companion fit?

Readiness check

- Explain the verified GFuNK pipeline at the level of graph basis, learned generator and integration.
- Fit and verify a three-mode linear baseline without calling it a neural-operator reproduction.
- Measure same-family grid transfer separately from changed-parameter and omitted-mode errors.
- Identify representation, conservation and identifiability assumptions in a spectral model.