Data Provenance — PTA Spectrum (Official) and Conversion

We use the official NANOGrav-15 public datasets. The collaboration does not publish a single ASCII “spectrum.csv”; instead it provides KDE representations of the free GWB spectra (Zenodo DOI 10.5281/zenodo.8060824) and sensitivity/noise products. Below is a one-command converter to extract a representative frequency/strain table from the KDE package for our pipeline.

- Sources: (i) NANOGrav Data portal → KDE Free Spectra (Zenodo), (ii) NANOGrav 15-yr discovery papers for amplitude A(1/yr), (iii) Planck-2018 N_eff for ΔN_eff prior.

- Method: Download the ZIP from Zenodo. Run kde_to_csv.py to export freqs (Hz) and a central estimate of h_c(f) with credible-interval bands.

- Caveat: KDEs encode probability densities over spectra; this preserves the official intent better than a single power-law fit. For publication, cite the Zenodo record and paper.

- Repro tip: Drop the produced CSV into pta_cmb_fit_skeleton.py via --pta path/to/exported.csv and re-run to regenerate our Two-Pager + posteriors.

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