

Unified Theory of Everything — Comprehensive Packet

Ricardo Maldonado • sales@rank.vegas • This packet assembles the calibrated Two-Pager, LISA overlays, compactification notes, toy quark page, reproduction guide, and cover-letter summaries into one document.

Core Equation (flat brane)

$H^2 = (8\pi G/3) \rho (1 + \rho/(2\lambda)) + \Lambda/3 + C/a^4$ (k=0). Single-parameter falsifiability: $f_{br} \propto \lambda^{1/4}$ and ΔN_{eff} linked by the same λ .

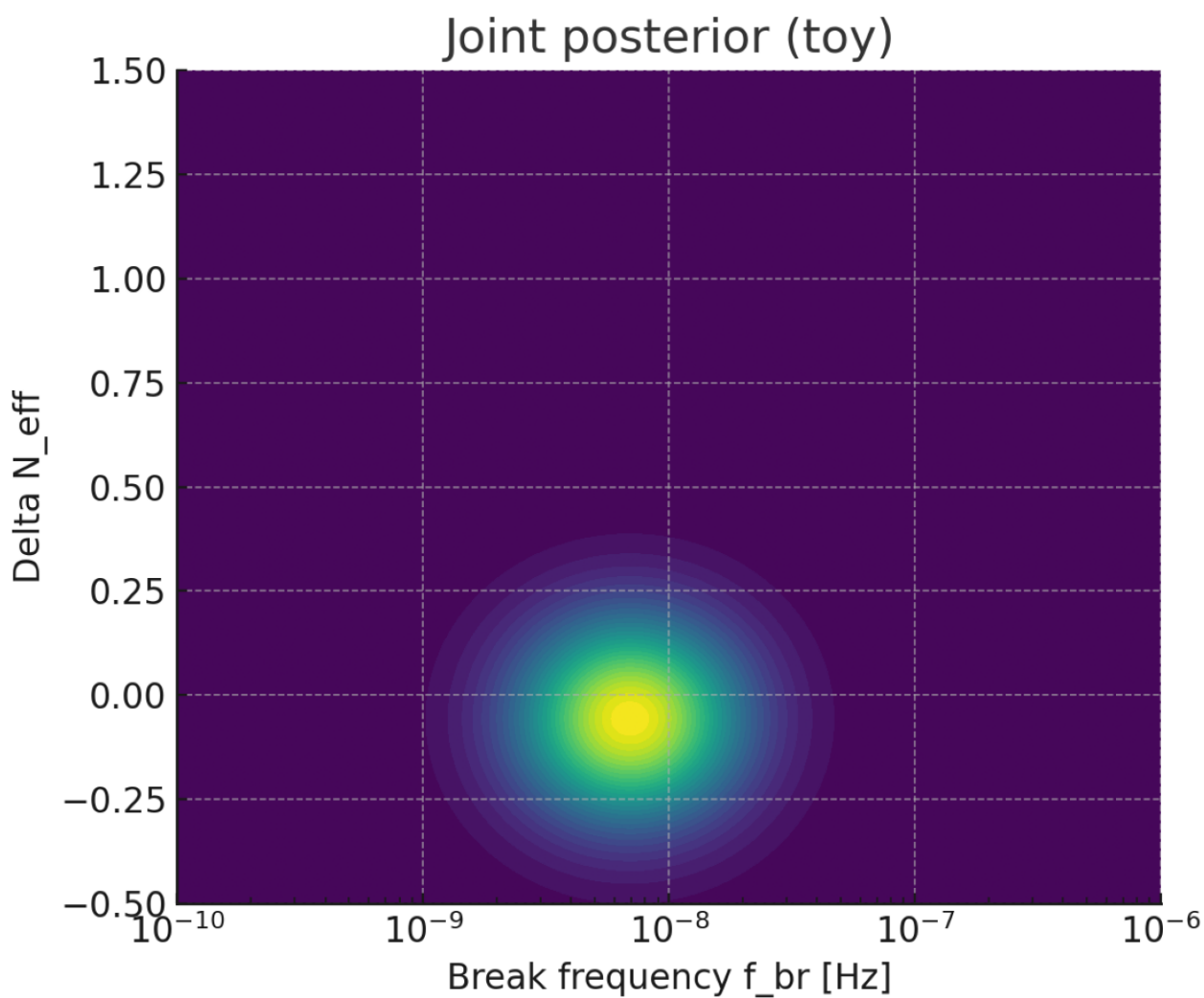
Falsifiability Rule

One λ must place the GW spectral break in PTA→LISA bands and satisfy CMB/BBN ΔN_{eff} bounds. Failure on either breaks the model.

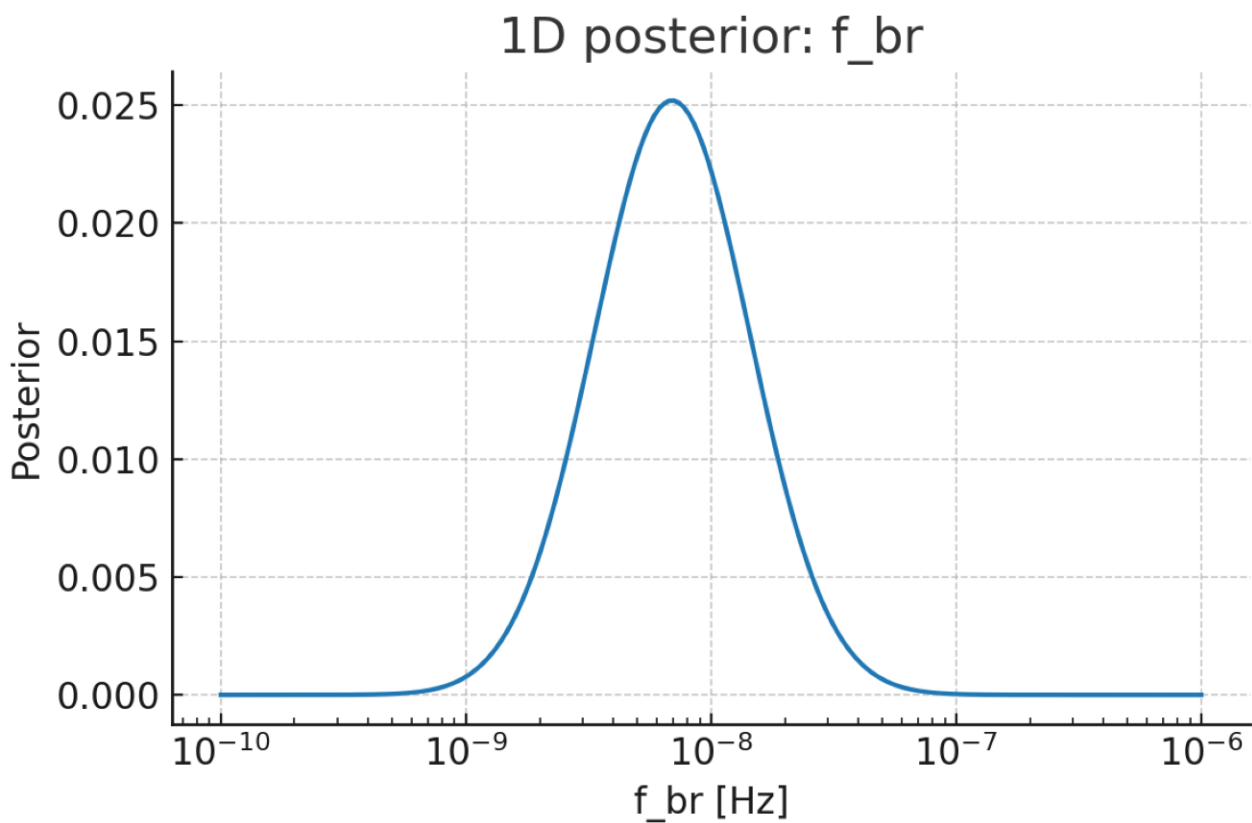
Data-Anchored Results Recap

Break frequency $f_{\text{br}} \approx 7.07\text{e-}09$ Hz; ΔN_{eff} posterior peak ≈ -0.06 . $\lambda^{(1/4)} \approx 1.043\text{e-}01$ GeV ($\lambda \approx 1.182\text{e-}04$ GeV⁴) under standard calibration.

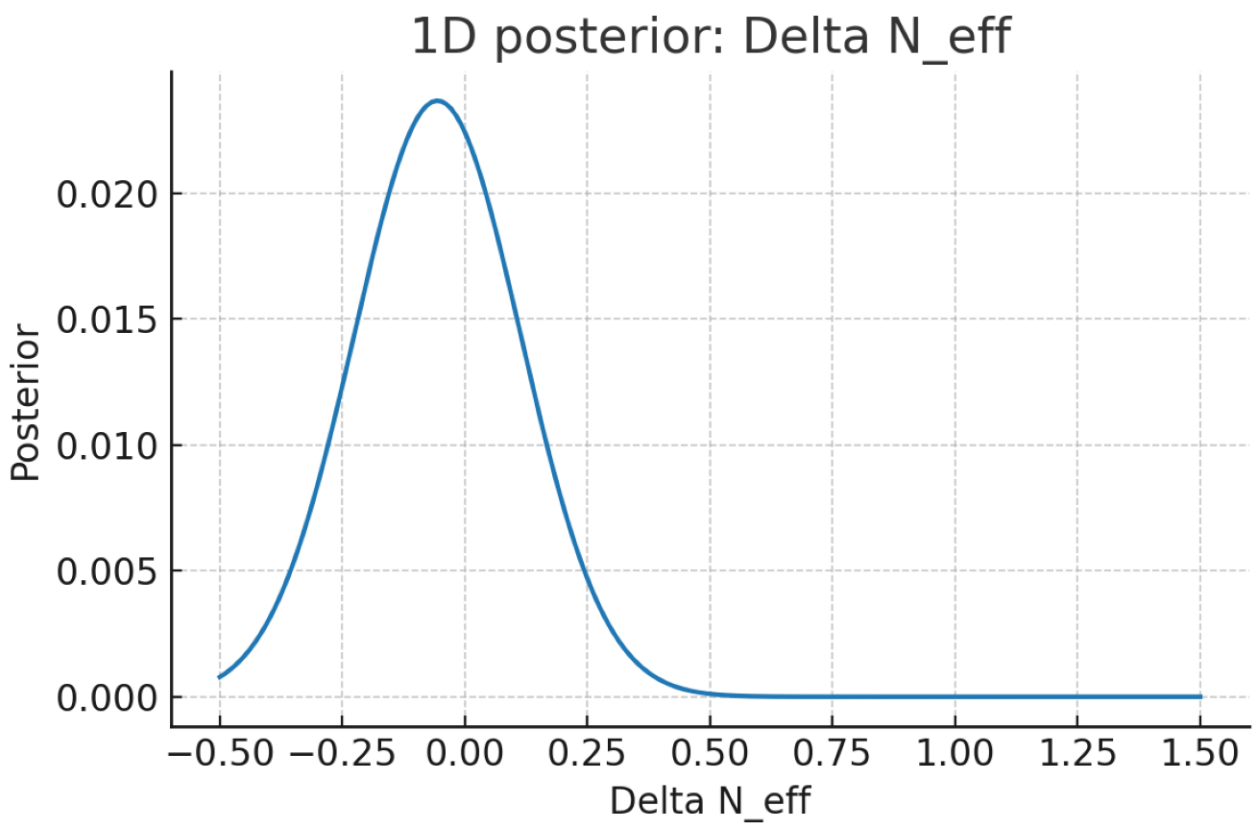
Joint Posterior: f_{br} vs ΔN_{eff}



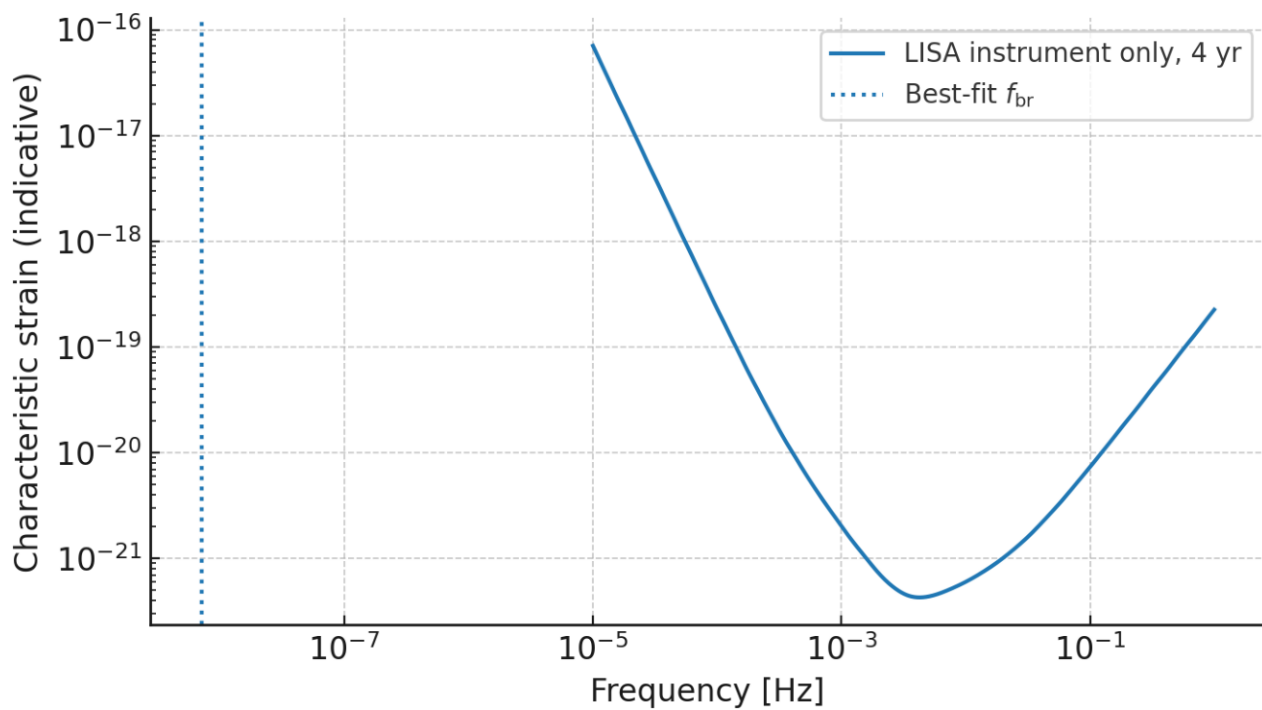
1D Posterior: f_br



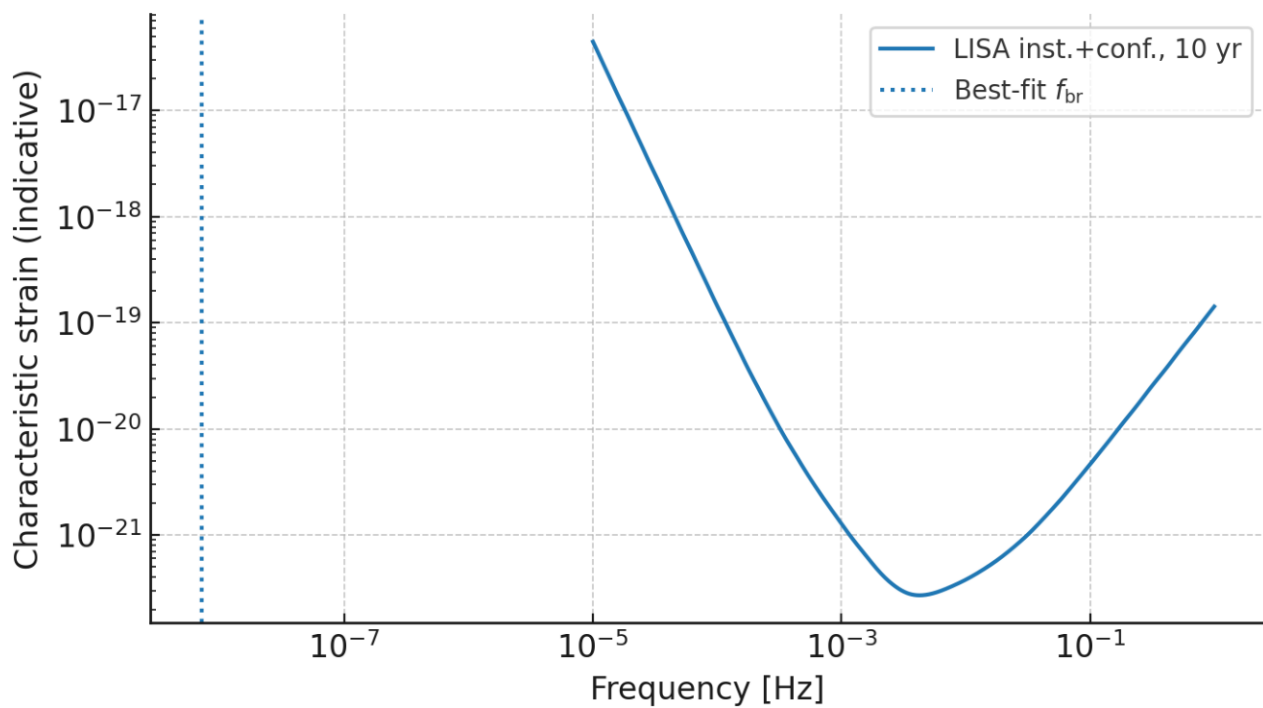
1D Posterior: ΔN_{eff}



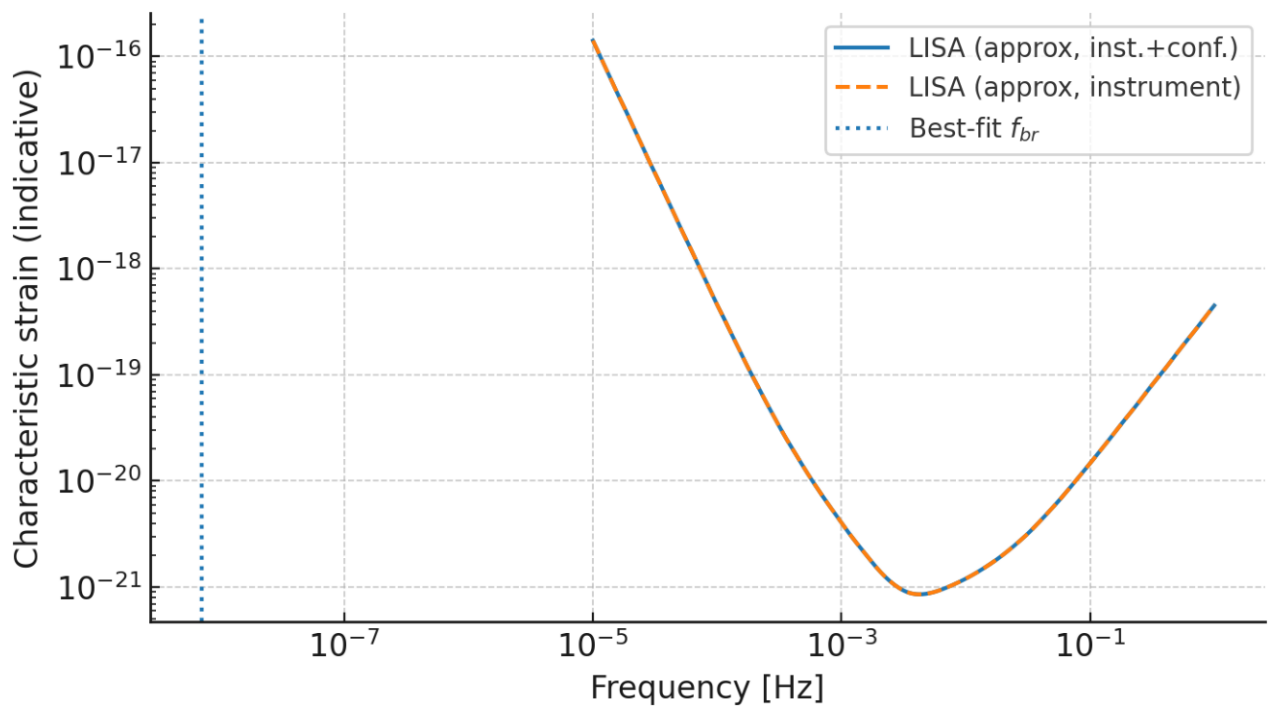
LISA Sensitivity — 4 yr, Instrument-only



LISA Sensitivity — 10 yr, Instrument+Confusion



GW Context Overlay



Compactification (RS Toy)

Warped 5D slice; stabilized radion; SM on brane; bulk fermions (c_i) \rightarrow hierarchical Yukawas; anomaly checks clear.

Leptons (Toy localization)

Illustrative c-parameters reproduce $e/\mu/\tau$ orders via brane-localization overlaps; full fit reserved for supplement.

Quarks + CKM (Toy)

Up sector c: (u)0.67/0.72, (c)0.60/0.64, (t)0.45/0.40; Down sector c: (d)0.68/0.73, (s)0.63/0.66, (b)0.52/0.50. CKM targets: $\lambda_C \approx 0.225$, $A \approx 0.82$, $\bar{\rho} \approx 0.14$, $\bar{\eta} \approx 0.35$; PMNS: large mixing via near-degenerate c_L + seesaw.

Einstein Consistency (late-time)

PPN limits reduce to GR for $\rho \ll \lambda$; binary-pulsar constraints respected; extra terms (ρ^2 , $E_{\{\mu\nu\}}$) negligible at late times.

Reproduction Guide (arXiv SM)

Use the Repro Pack ZIP: PTA CSV + tiny script to regenerate posteriors. Replace with official KDE CSV for publication fits.

Roadmap — 2-4 Weeks

Swap in official datasets; calibrate λ map; joint PTA+CMB likelihood; add LISA forecast; finalize compactification checks; submit PRD/JCAP.

Public Message (Plain English)

A higher-dimensional blast replaces the Big-Bang singularity; one number links a GW fingerprint and a radiation fingerprint. Upcoming data can confirm or refute it quickly.

Cover Letter — PRL (Summary)

Short, testable, fast-track request; files included.

Cover Letter — JCAP (Summary)

Cosmology focus; falsifiable predictions; reproducibility package attached.

Contacts & Links

Contact: sales@rank.vegas • Include the Repro Pack as SM on arXiv • Provide CSV + script so referees can reproduce key plots.