Cover Letter — Physical Review D

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Subject: Presubmission: Unified brane-cosmology with $\rho^2 + C/a^4 \to$ GW break $f_{br}(\lambda)$ and ΔN_{eff} correlation

Dear Editors,

Please consider the manuscript “Unified Brane-Cosmology: A Testable Route to Unification.”

We show that a higher-D brane setup yields a 4D Friedmann equation with a high-energy ρ^2 correction and a dark-radiation term (C/a^4). A single parameter (brane tension λ) sets a stochastic-GW spectral break $f_{br} \propto \lambda^{1/4}$ and correlates with ΔN_{eff}, providing a falsifiable bridge from theory to data (PTA→LISA with CMB/BBN priors).

Highlights:

- Full exposition of the effective 4D equations, cosmology reduction, and minimal likelihood.
- Real-anchored preview fit and DataKit for immediate reproducibility.

We attach an 18-page All-in-One summary (Unicode), a Results Two-Pager with a real-anchored preview fit, and a small DataKit for reproducibility. We will submit the full manuscript via your online system.

Sincerely,

Ricardo Maldonado (sales@rank.vegas)