

# Cover Letter — Physical Review D

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Dear Editors,

We submit the manuscript "Unified Brane-Cosmology: A Testable Route to Unification". The work connects a higher-D brane framework to a falsifiable prediction: a stochastic gravitational-wave background with a break frequency set by a single parameter (brane tension  $\lambda$ ), correlated with  $\Delta N_{\text{eff}}$ . We provide a minimal likelihood and demonstration figures; the analysis is ready to be run on public PTA/CMB/BBN datasets. We believe this fits the scope of PRD.

We have prepared a reproducibility bundle (CSV templates + notebook) and will release code upon submission. We look forward to your guidance on the appropriate article type.

Sincerely, Ricardo Maldonado (sales@rank.vegas)