

# Key Predictions — Higher-Dimensional Brane Supernova Theory

Ricardo Maldonado — sales@rank.vegas

Prediction	Observable Signature	Relevant Experiments/Surveys
Broken power-law stochastic GW background	Discontinuous change in $\Omega_{\text{GW}}(f)$	LISA, NANOGrav, SKA
CMB anisotropy & non-Gaussian isocurvature	Specific multipole pattern; phase correlations	CMB-S4, LiteBIRD, Planck re-analysis
Dark radiation term from bulk effects	$\Delta N_{\text{eff}} \approx 0.2\text{--}0.4$	CMB-S4, BAO, JWST
Deviation in early-universe expansion	Modified $H(z)$ at $z > 1000$	21cm surveys, high-z BAO
Warped extra-dimension hierarchy	Not expected Planck-scale suppression	LHC upgrades, future colliders

Note:  $\Omega_{\text{GW}}$  is the fractional energy density in gravitational waves;  $\Delta N_{\text{eff}}$  parameterizes extra relativistic degrees of freedom.