Unified Theory — Core Idea

Grand equation (flat FRW + dark radiation):

$$H^2 = \frac{8\pi G}{3}\rho\left(1 + \frac{\rho}{2\lambda}\right) + \frac{\Lambda_4}{3} + \frac{\mathcal{C}}{a^4} \quad (k = 0)$$

Two falsifiable links:

$$f_{\mathrm{br}} \propto \lambda^{1/4}, \quad \mathcal{C}/\rho_{\gamma,0} = \frac{7}{8}\left(\frac{4}{11}\right)^{4/3}\Delta N_{\mathrm{eff}}$$

- Single parameter λ must fit PTA→LISA and ΔN_eff simultaneously.
- Reduces to Einstein/PPN for ρ≪λ; late-time GR preserved.
- Dark-radiation term arises from bulk Weyl projection; early a(t)∝t^{1/4}.

Prepared: Aug 13, 2025 (UTC)