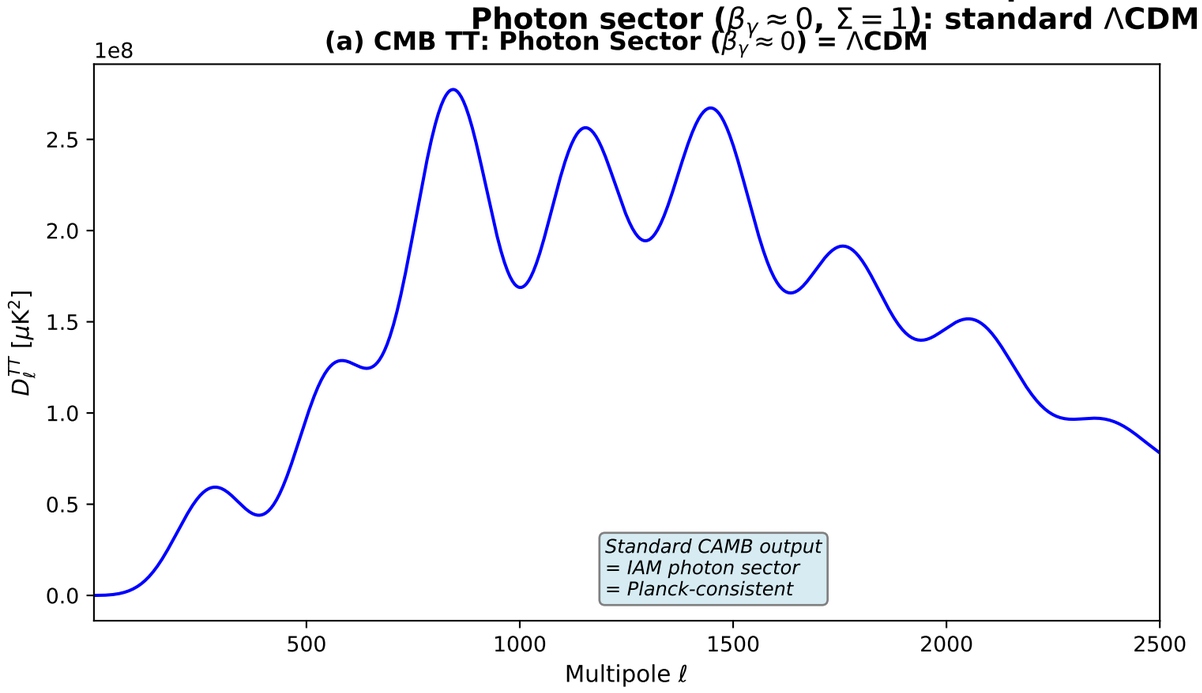
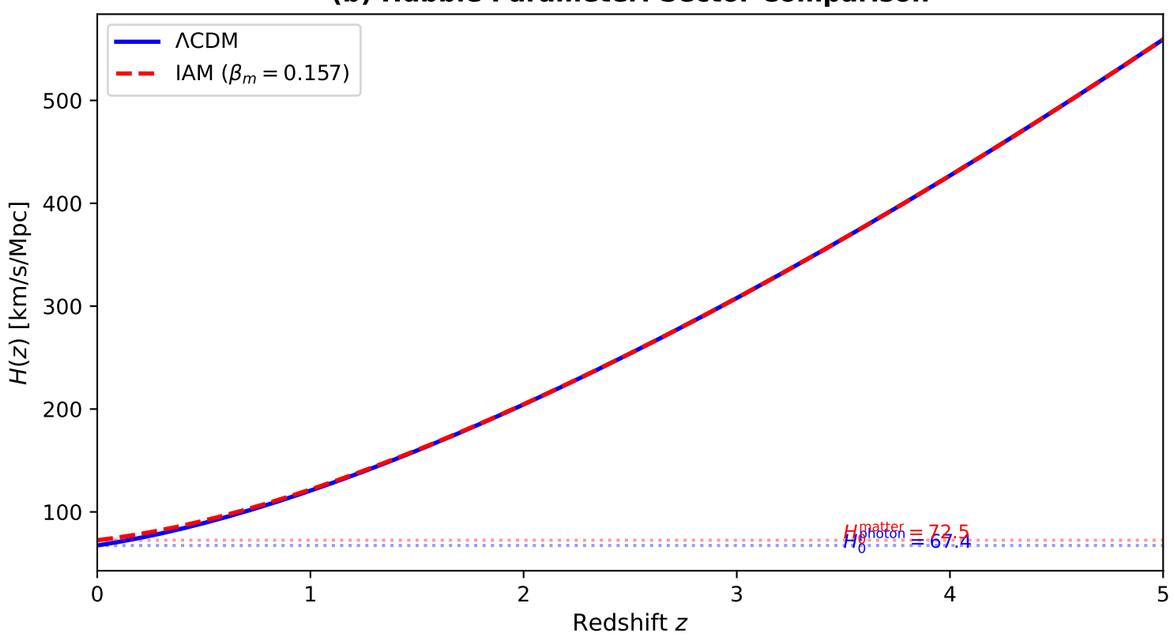
IAM-CAMB Comprehensive Validation: Dual-Sector Predictions

Photon sector ($\beta_\gamma \approx 0$, $\Sigma = 1$): standard ΛCDM | Matter sector ($\beta_m = 0.157$, $\mu < 1$): modified growth

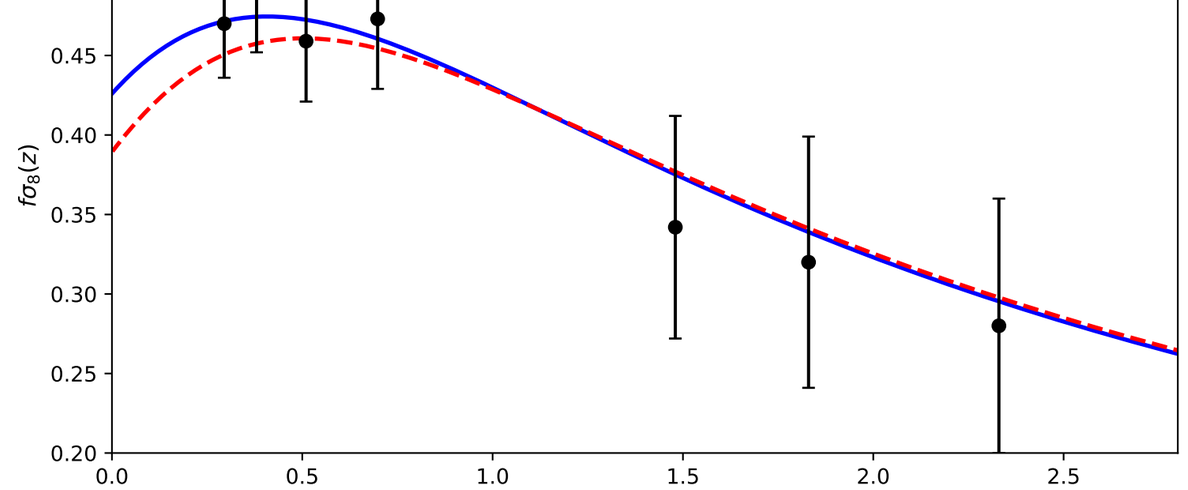
(a) CMB TT: Photon Sector ($\beta_\gamma \approx 0$) = ΛCDM



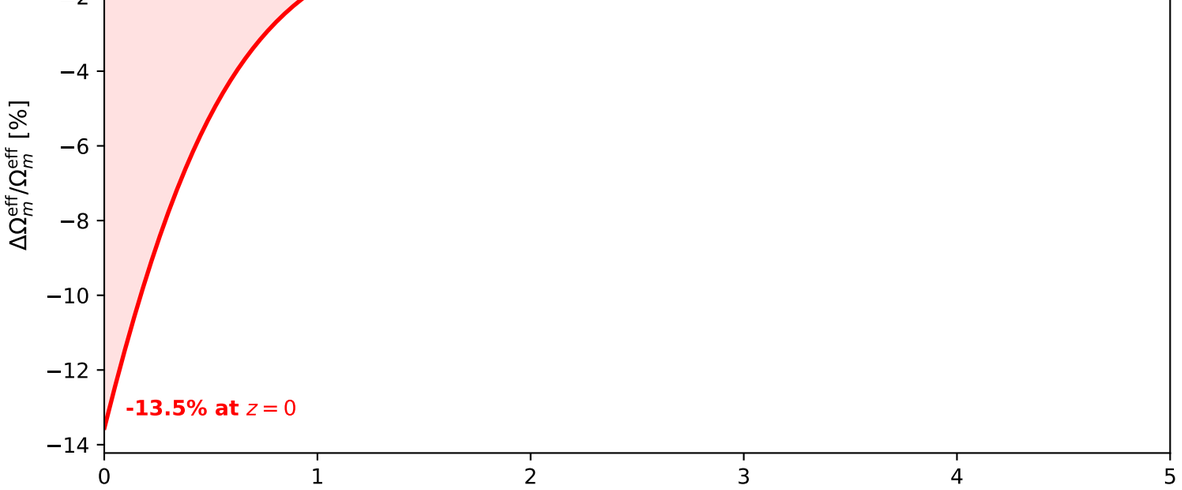
(b) Hubble Parameter: Sector Comparison



(c) Modified Gravity: $\mu(a) = H^2_{\Lambda CDM}/(H^2_{\Lambda CDM} + \beta_m E)$



(d) IAM Activation Function



(e) Growth Rate $f\sigma_8(z)$: Matter Sector

(f) Matter Density Suppression

(g) CMB Lensing Power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IAM-CAMB Validation Summary

PHOTON SECTOR (β_γ < 10^-6, Σ = 1):
  CMB TT/EE/TE: identical to ΛCDM
  θ_s = 1.04047 (Planck consistent)
  σ_8^LCDM = 0.8082

MATTER SECTOR (β_m = 0.157, μ < 1):
  H_0^matter = 72.5 km/s/Mpc (SH0ES: 73.04)
  σ_8^IAM = 0.8
  μ(z=0) = 0.864 (growth suppressed 13.6%)
  μ(z=1) = 0.982
  μ(z>3) → 1 (recovers ΛCDM)

MODIFIED GRAVITY MAPPING:
  μ(a) = H²_ΛCDM/[H²_ΛCDM + β_m E(a)]
  Σ(a) = 1 (photon deflection unchanged)
  Testable with CAMB/CLASS μ-Σ modules

STATISTICAL EVIDENCE:
  Δχ² = 30.01 (5.5σ improvement)
  ΔAIC = 26.0, ΔBIC = 25.4
  ΛCDM is 444,000× less likely
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