Dual-Sector Expansion Framework

PHOTON SECTOR

$\beta_\gamma < 1.4 \times 10^{-6}$

$H_0 = 67.4 \ \mathrm{km \ s^{-1} \ Mpc^{-1}}$

- CMB acoustic scale
- No decoherence
- Planck measurements

Sector Separation

$\longleftrightarrow$

$\dfrac{\beta_\gamma}{\beta_m} < 8.5 \times 10^{-6}$

MATTER SECTOR

$\beta_m = 0.164 \pm 0.029 \ \text{(growth)}$

$\beta_{\text{distance}} \approx 0 \ \text{(geometry)}$

$H_0 = 72.7 \ \mathrm{km \ s^{-1} \ Mpc^{-1}}$

- Gravitational decoherence
- Structure formation

INFORMATIONAL ACTUALIZATION

Decoherence → Information

Horizon Encoding → Pressure

Structure Drives Expansion

Dark Energy = Info Production

TYPE Ia SNe (This Work)

¤ Reject $H_0 = 67.4$ (photon)

¤ Accept $H_0 = 73.04$ (matter)

¤ Maintain ΛCDM distances

Validates sector separation

Hubble Tension Resolution: Both measurements correct—they probe different sectors

Planck (photon) = $67.4 \ \mathrm{km \ s^{-1} \ Mpc^{-1}}$ • SH0ES (matter) = $73.04 \ \mathrm{km \ s^{-1} \ Mpc^{-1}}$