Testing ΛCDM

Eleonora Di Valentino

University of Manchester

We can quantify the improvement on constraining the cosmological parameters of PICO with respect to Planck 2018, by considering the ratio of the Figure of Merit (FoM) for an extended parameter space:

$$FoM_{ext} = (\det[\mathrm{cov}\{\Omega_{\mathrm{b}}h^2,\ \Omega_{\mathrm{c}}h^2,\ \theta,\ \tau,\ A_{\mathrm{s}},\ n_{\mathrm{s}},\ p_i\}])^{-1/2}$$

where p_i are the extra parameters we considered.

- The FoM is discussed in more detail in Di Valentino et al. (2018) JCAP Vol. 4 pg. 17

The FoMs (given in the next page) are normalized to the Planck value and has been obtained with:

- TT,TE,EE,BB
- fiducial m_ν=0.06 eV, r=0 and cosmological parameters fixed to Planck 2018
- multichannel approach using the 70-220 GHz specs for v4.1 and v4.0.
- delensing 85% for PICO v4.0 and 81% for PICO v4.1, no delensing for Planck.
- α_1 is the amplitude of correlated CDM isocurvature perturbations (see equation 43 in astro-ph/1502.01589)

Model	PICO v4.0	PICO v4.1	Planck18
ΛCDM + $N_{\rm eff}$ $+\alpha_1+w_0+w_a+\Sigma m_\nu$	7.4×10^6	4.8×10^6	1
ΛCDM + $N_{\rm eff}$ $+\alpha_1+w_0+w_a+r+\Sigma m_\nu$	2.7×10^{10}	9.5×10^9	1