

Lensing. At late times the density perturbations at small scales grow so, that they can no longer be treated with 1st order perturbation theory.

This leads to 2nd order effects in the CMB anisotropy and polarization. The most important of these effects is lensing, the effect of nonlinear metric perturbations on the photon travel direction.

Therefore, at small scales, the CMB photons appear to come from a slightly different direction than where they last scattered (perhaps a little naive description).

This distorts the pattern of CMB anisotropy and polarization on the sky, transferring power between different l of the C_l . More importantly it transfers power between the polarization E and B modes.

Since lensing is a nonlinear effect, it cannot be described in terms of transfer functions; for larger primordial perturbations, lensing becomes relatively more important. Therefore lensing is incorporated in CAMB as a postprocessing step. The C_l and the true evolution of the matter density power spectrum is calculated first in linear perturbation theory; and then lensing corrections to the C_l are calculated afterwards. This lensing correction has been calculated only for Figures 7 and 8; although in reality it would be present in all cases.

Figures 7 and 8 show the unlensed and lensed C_l spectra for the $r=0.1$ case of Figures 5 and 6. We see that the effect of lensing on the C_l^{TT} , C_l^{EE} , C_l^{TE} spectra is fairly small. However, for precision work one should take it into account. (The WMAP team has been criticized for not accounting for this lensing effect in their estimation of cosmological parameters.)