

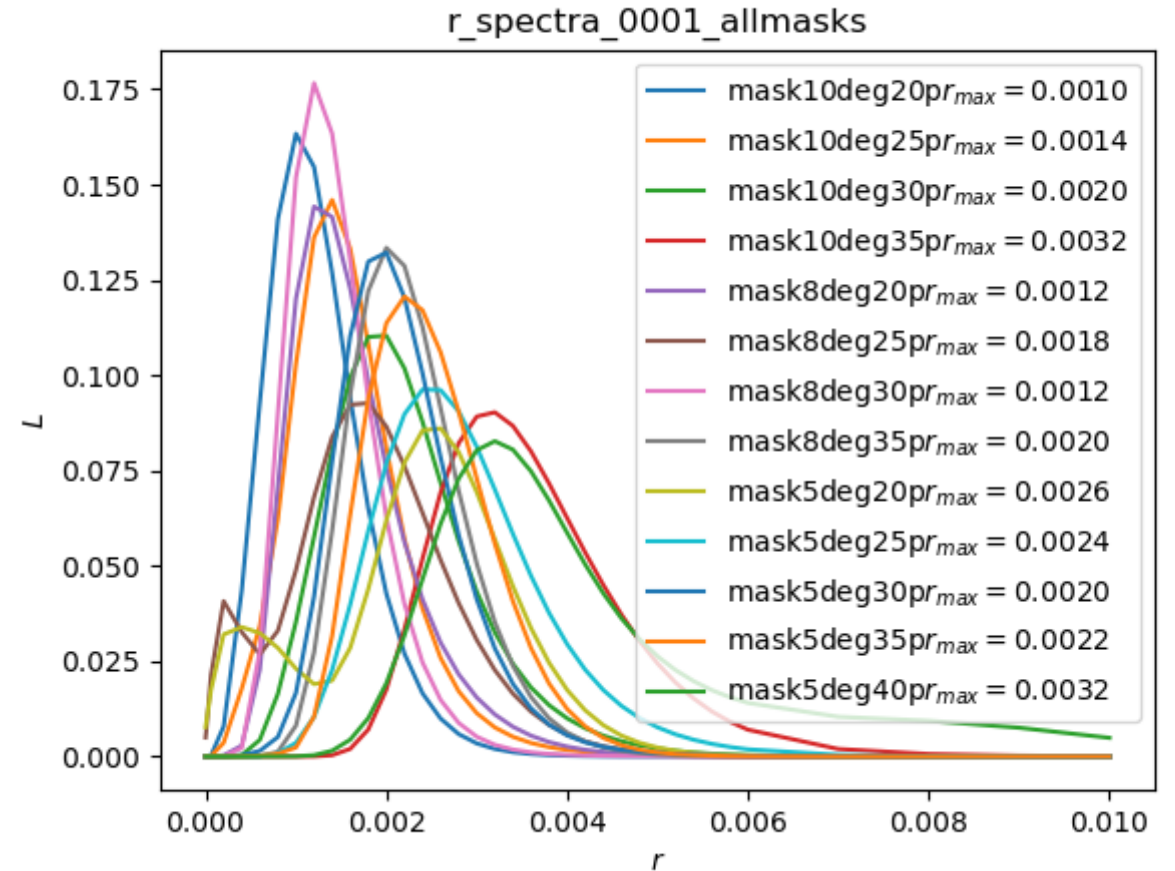
Pico

Commander updates 4.02.2021

Ragnhild Aurlen and the Oslo group

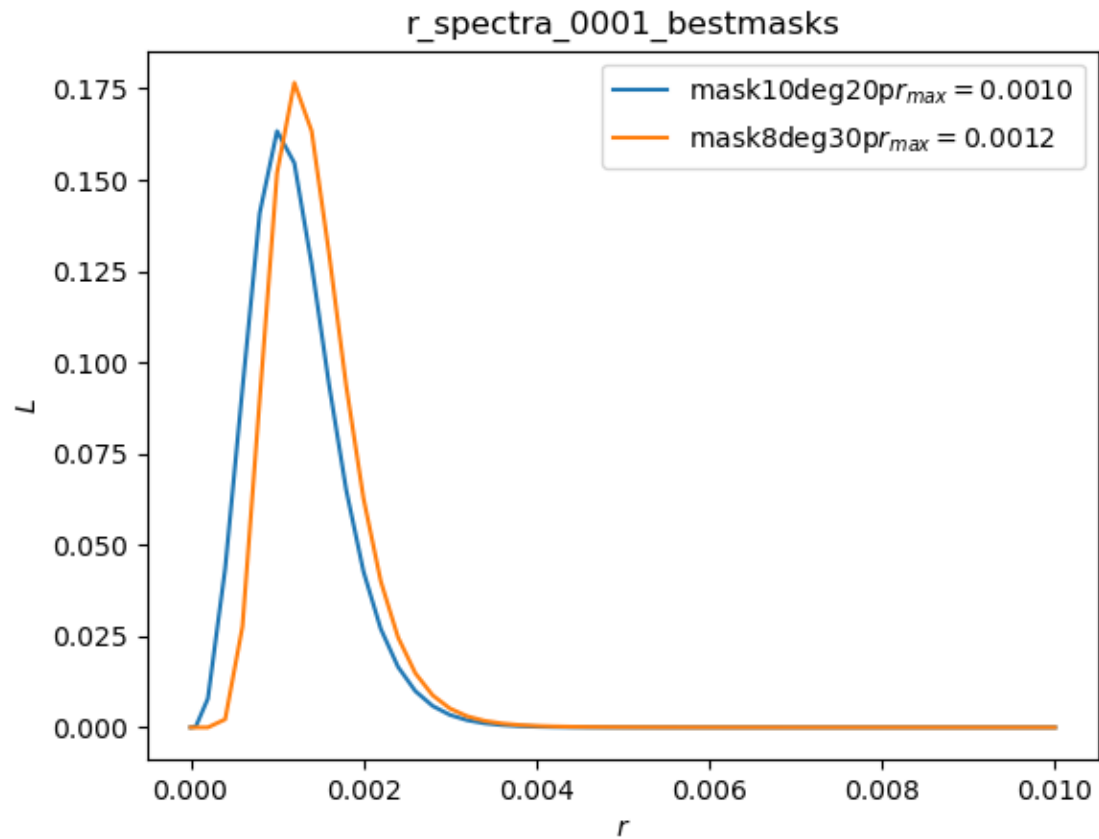
Trying to optimize mask

- Model 90.91
- Simulation 0001 with $r = 0$
- Masked between 20% and 50% of the sky, smoothed with three different beams
- Infilling in the masked area
 - The runs with the biggest masks does not converge

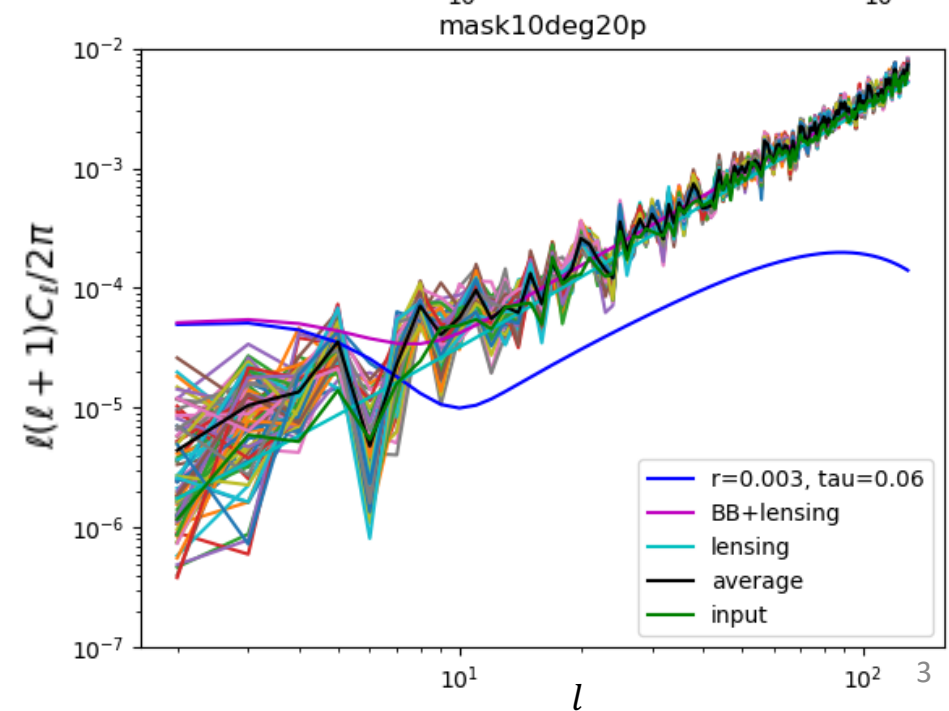
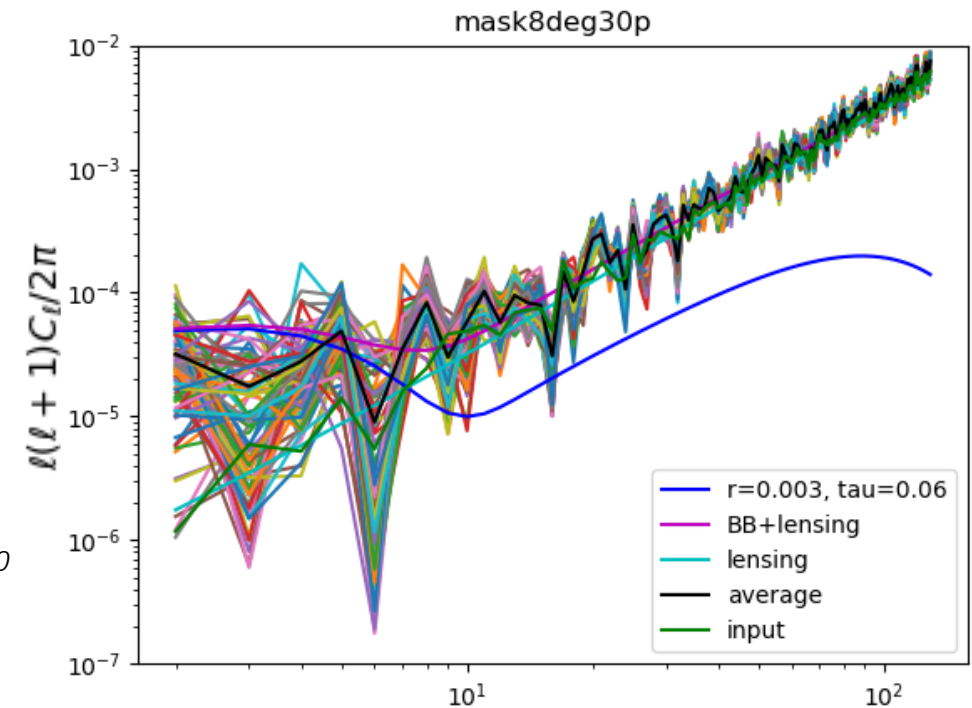


Powerspectra and r for best masks

0001 with $r = 0$

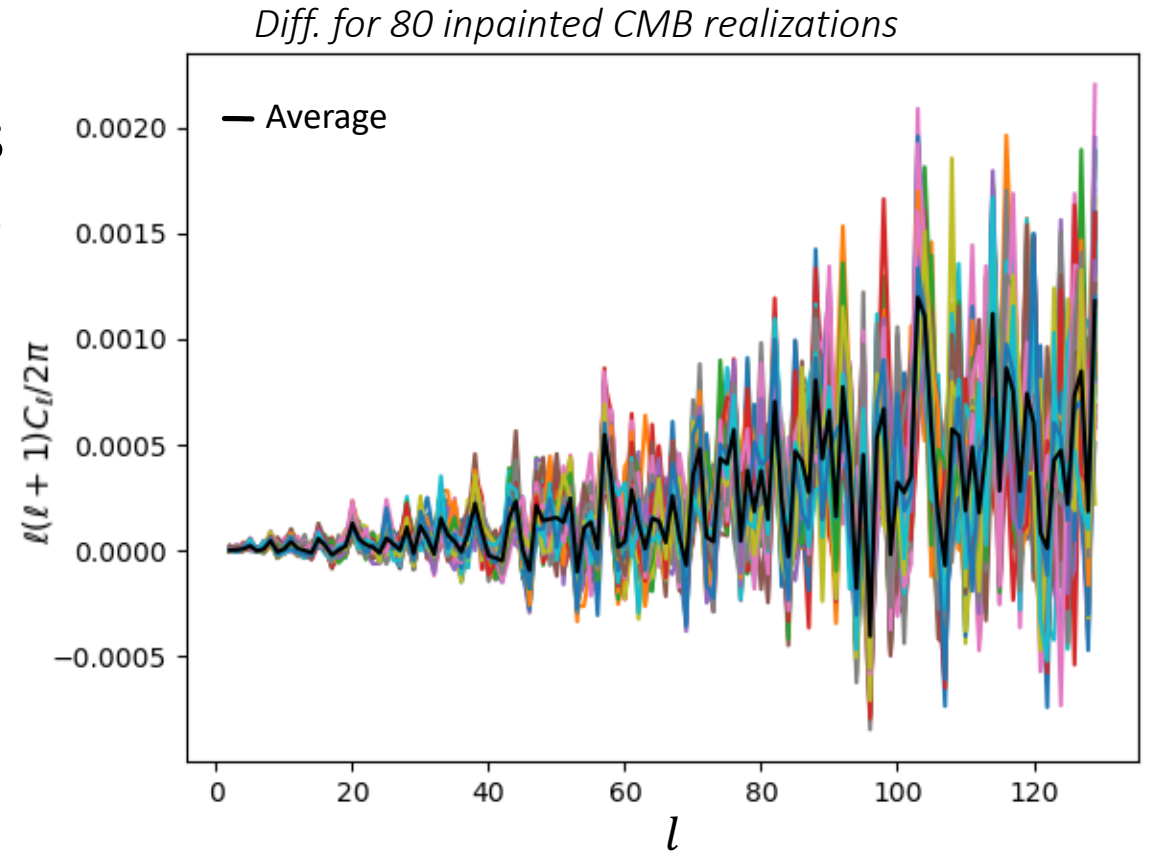
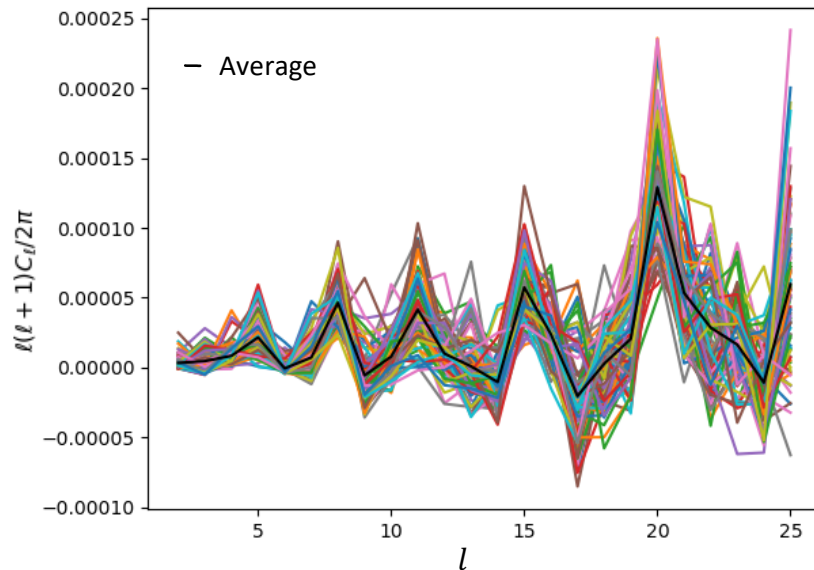


*Spectra for 80
inpainted
CMB
realizations*



Difference in powerspectrum

Subtracted powerspectrum of input CMB map used to create simulations from powerspectrum of output CMB from Commander



Commander1

- Needs same resolution and beam for all input frequency maps
- Smoothing simulated maps with white noise creates correlated noise
 - Good enough accuracy for temperature
- Same problem is faced when analysing real data

Commander2

- Frequency maps can have different resolution and beams
- Pixel size must be smaller than the beam
 - Limit lies between 2.5 and 3 pixels per beam FWHM
 - Pico simulations: nside 512 gives pixel size ~ 7 arcmin
 - Pico has beams between 38.4 and 1.1 arcmin
- Smaller beams than pixel size gives sub pixel effects

Suggested solutions

Commander1

- Simulations must be produced on the resolution they will be analysed in
- Simulations at nside 256 with beam between 42-60 arcmin

Commander2

- Need higher nside for frequency bands above 43 GHz
- or
- Beams for frequency bands above 36 GHz simulated with bigger beam
 - Between 23 and 25 arcmin