Pico

Commander updates 9.7.2020 Ragnhild Aurlien and the Oslo group

Reminder of the method

- Sky model 90.92, with r = 0 and r = 0.003
- Maps smoothed to 60 arcmin and nside 256
- Optimized 10 parameters using Commander1
 - CMB (*A_{cmb}*)
 - Two independent dust models (A_{dust} , T_{dust} and β for both)
 - Synchrotron model ($A_{sync}, \beta_{synch}, C_{synch}$)
- Resulting CMB map: masking the galaxy plane (mask covers 21% of the sky) and using Wiener filtering to fill inn the CMB
- Using anafast to create cross-spectra between two half missions

Power spectrum for r = 0.003

- Brown: Power spectrum from clean CMB map used to generate simulations
- Red: Power spectrum from input map after going through the infilling process (proof of concept)
- Orange: Power spectrum from CMB map from Commander after infilling process



Power spectrum for r = 0

- Brown: Power spectrum from clean CMB map used to generate simulations
- Red: Power spectrum from input map after going through the infilling process (proof of concept)
- Orange: Power spectrum from CMB map from Commander after infilling process



Status today

- Process of infilling is working
 - We will produce thousands of different versions of the infilled CMB maps for the final results
- Commander is currently not able to produce clean CMB maps from the PICO simulations. We are now investigating reasons for this
 - Smoothing the simulations may cause unwanted effects due to the beams in the simulations being smaller than the pixels.
 - Not fitting for AME
- Smoothing maps in spherical harmonic space instead of in map space
 - Currently running