Pico

Commander updates 21.01.2021 Ragnhild Aurlien and the Oslo group

Method

- Component separation using Commander1
- Model 90.91/90.92 with both r = 0.003 and r = 0
- Smoothe simulated input maps to 60 arcmin and nside 256 before Commander1 analysis

Fitting 6 parameters for 90.91	Fitting 12 parameters for 90.92
• CMB (<i>A_{cmb}</i>)	• CMB (<i>A_{cmb}</i>)
• One dust model (A_{dust} , T_{dust} , β_{dust})	• Two dust models $2x(A_{dust}, T_{dust}, \beta_{dust})$
• Synchrotron model (A_{sync} , β_{synch})	• Synchrotron model (A_{sync} , β_{synch} , C_{synch})
	• AME (A_{AME} , v_{AME})

- Resulting CMB map: masking the galaxy plane and using Wiener filtering to fill inn the CMB
- Using anafast to create a power spectrum
- Blackwell Rao estimator to estimate r

Summary of models can be found in note on Pico "home page" 2

Commander1 runs over Christmas

Model 90.91

- 20 simulations analysed
 - 10 with r = 0
 - 10 with r = 0.003
- Restarted Commander run with bigger pixels for synchrotron
 - Nside256 for dust and cmb
 - Nside64 for synchrotron
- Increases signal-to-noise level for synchrotron

Model 90.92

- 20 simulations analysed
 - 10 with r = 0
 - 10 with r = 0.003
- Post run analysis still to be done
 - Estimate r etc

Residuals 21 GHz presented last telecon

Synchrotron pattern in 108 GHz 21GHz residual map



U

666 GHz

Residuals now

Synchrotron pattern in 21GHz gone. Mostly just white 108 GHz noise left in the residuals. Synchrotron is fitted to nside 64 instead of 256. 666 GHz



Resulting maps from commander1, model 90.91 0001 (r = 0)





0,500

0,648

Input map used to generate simulations, model 90.91 0001 (r = 0)







CMB

Input map used to generate simulations, model 90.91 0001 (r = 0)





Diff map: Input-output CMB Smoothed to 5°. Plotting scale: $\pm 0.01 \mu K$

CMB

⁸

Resulting maps from commander1, model 90.91 0001 (r = 0)













Work in progress

- Find best mask with optimal f_{sky}
 - Need big enough mask to cover residuals in the galaxy plane
 - Need small enough mask for Wiener filtering to converge
- Started post analysis on 90.92 simulations
- Started work on discarding top 2 and bottom 2 frequencies