

MK Deep2 field observations

Hans-Rainer Klöckner MPIfR, December 2023



MK Deep2 observation full calibration

facilitated [Sarrvesh comissioning calibration scripts](#) into a full workflow

Generation of calibration

- 1GC
- 2GC

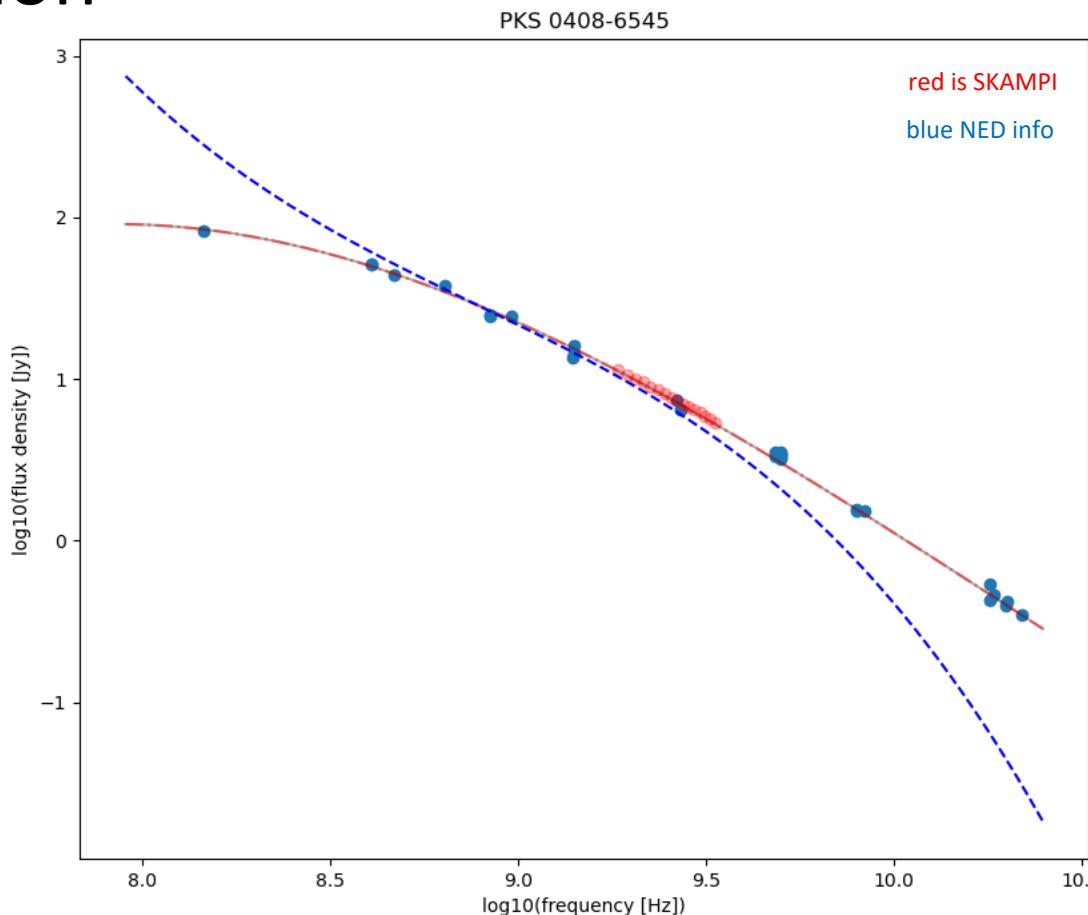
00_OBS_INFORMATION
01_BAD_SCANS_SPLITT.py
02_OBS_INFORMATION
[03_preflag_1678454471.py](#)
04_DO_SPECFLAG
04_DO_SPECFLAG_OUTPUT/
05_DO_SPECFLAG
05_DO_SPECFLAG_OUTPUT/
06_GENERATE_SPEC_FLAG
06_GENERATE_SPEC_FLAG_OUTPUT/
07_APPLY_SPEC_FLAG
08_PRECAL_FORBETTERFG.py
09_MAKE_MULTIPLE_SPWD_FILE.py
10_OBS_INFORMATION
[11_DO_FULL_CALIBRATION.py](#)
12_SPLIT_PHASE_AND_TARGET.py
13_1_0_DO_WF_FLAGING
13_1_0_DO_WF_FLAGING_OUTPUT/
13_1_1_DO_WF_FLAGING
13_1_1_DO_WF_FLAGING_OUTPUT/
13_1_2_DO_WF_FLAGING
13_1_2_DO_WF_FLAGING_OUTPUT/
13_2_0_DO_WF_FLAGING
13_2_0_DO_WF_FLAGING_OUTPUT/
13_2_1_DO_WF_FLAGING
13_2_1_DO_WF_FLAGING_OUTPUT/
13_2_2_DO_WF_FLAGING
13_2_2_DO_WF_FLAGING_OUTPUT/
14_DIAGNOSTIC_PLOTS
14_DIAGNOSTIC_PLOTS_OUTPUT/
15_1_SELF_CAL
15_1_SELF_CAL_J0252-7104_16SPWD/
15_2_SELF_CAL
15_2_SELF_CAL_J0413-8000/
16_1_CHECK_SELF_CAL
16_1_Primary_Beam_CORRECTIONS_J0252-7104_16SPWD/
16_2_Primary_Beam_CORRECTIONS_J0413-8000_16SPWD/

amplitude calibration

step 03 and 11

calibrator PKS 0408-6545

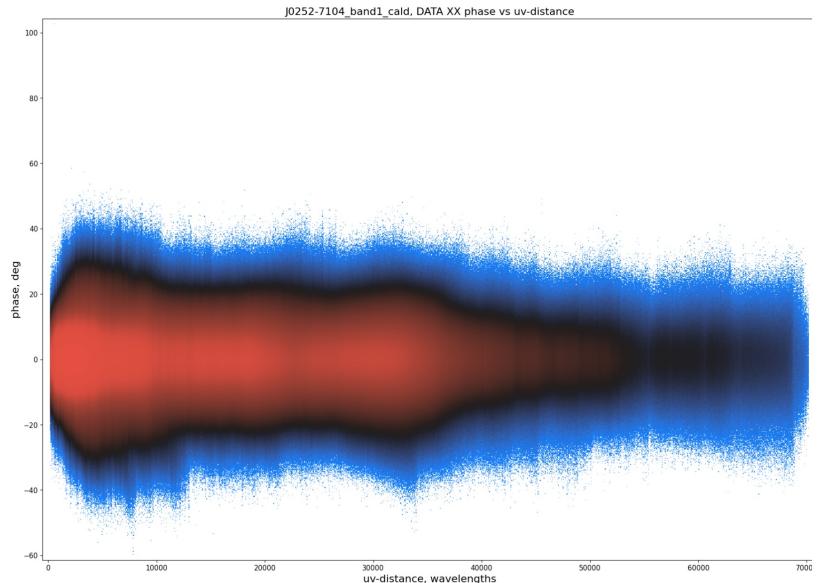
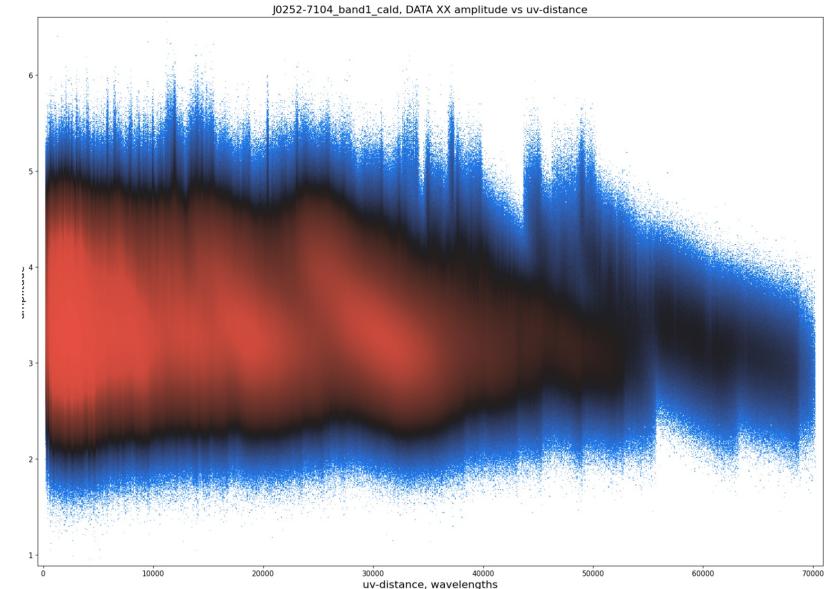
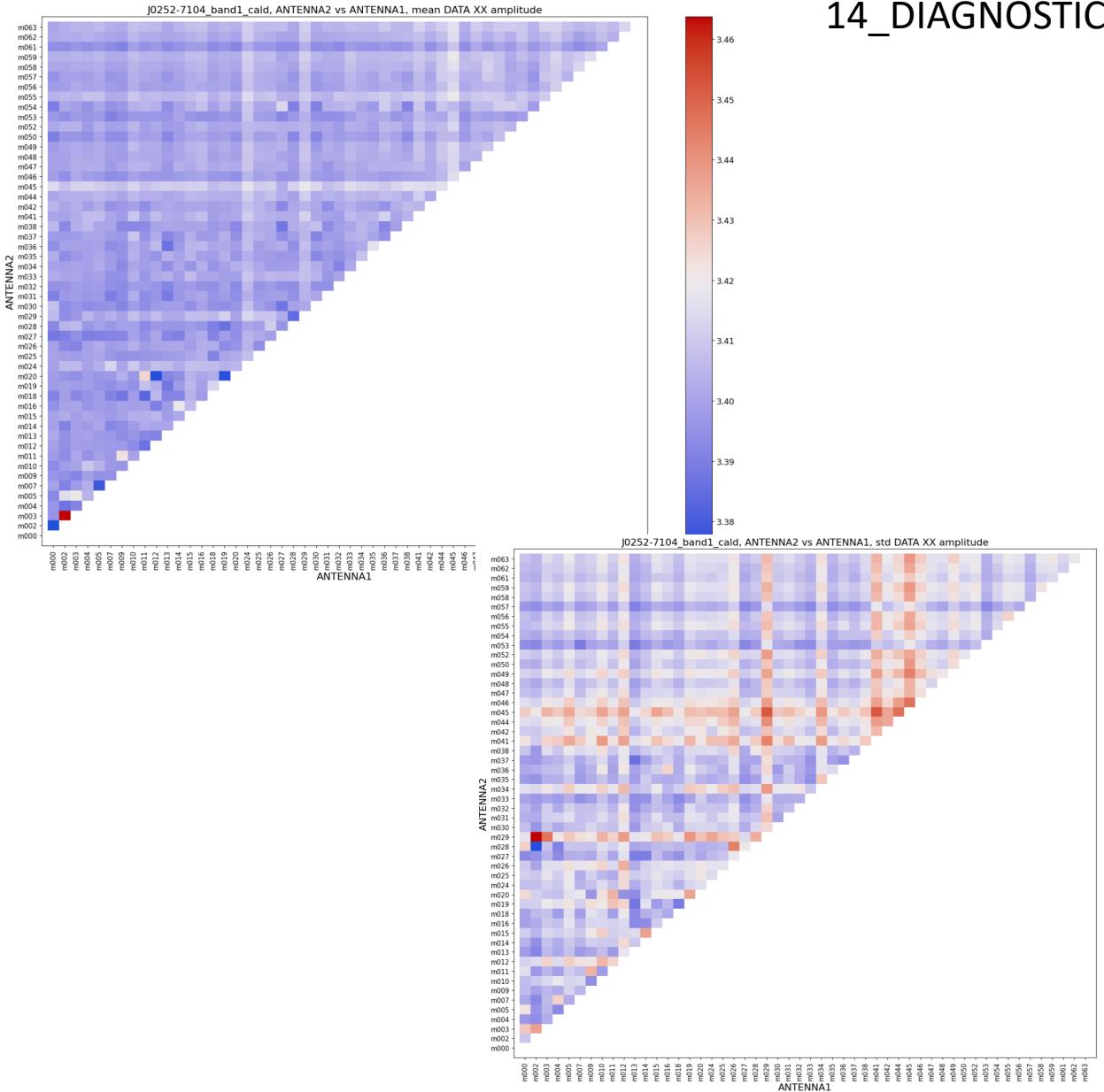
- not standard
- blue Sarvesh CASA para
- red SARAQ para



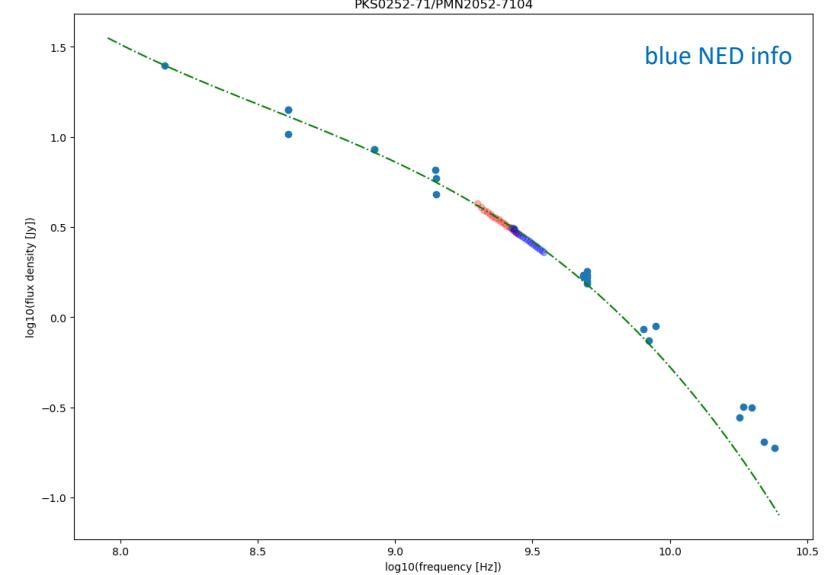
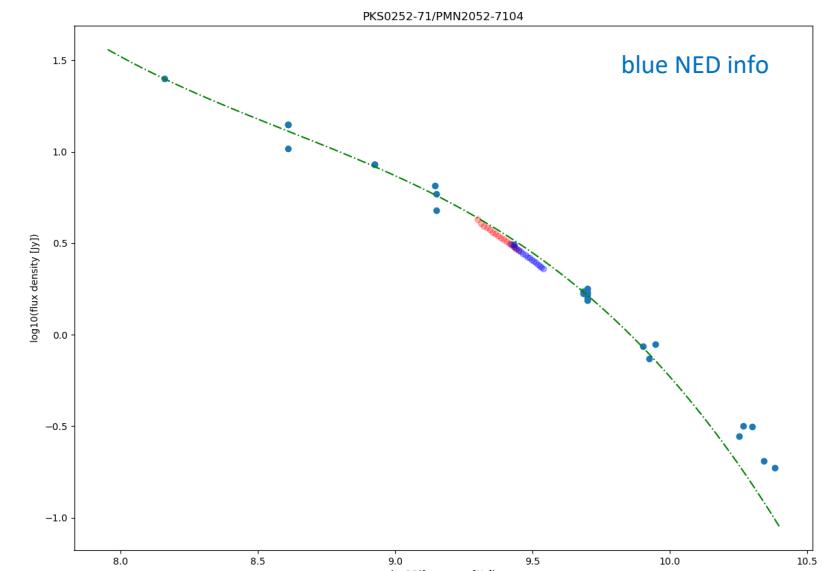
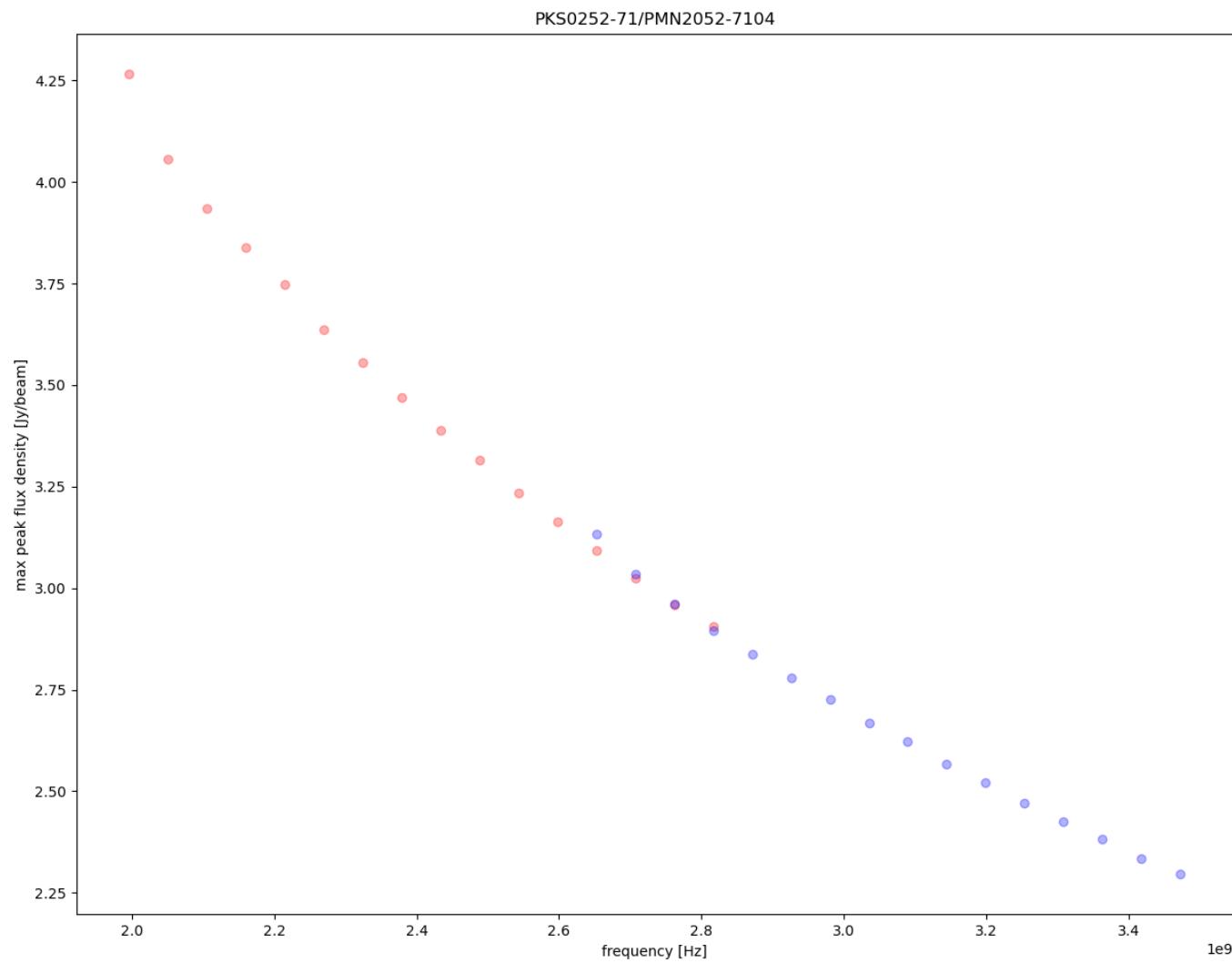
```
casatasks.setjy(vis=ms_name, field='*0408*', standard="manual",
fluxdensity=[6.98620384013591, 0, 0, 0],
spix=[-1.2897445398251446, -0.23527873971773555, 0.0860999999999989],
reffreq='2.7GHz',
scalebychan=True,
usescratch=False)
```

MK Deep2 observation full calibration

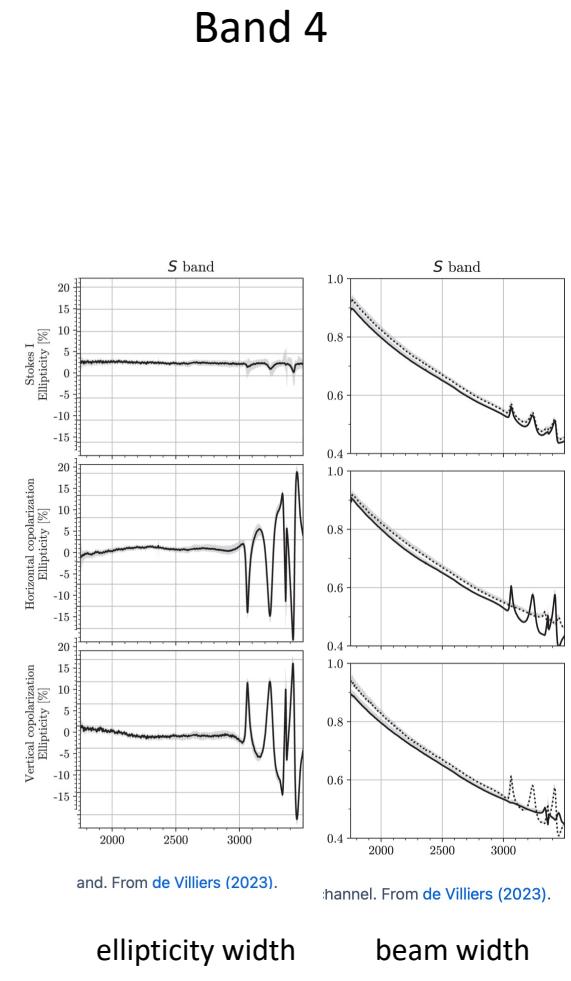
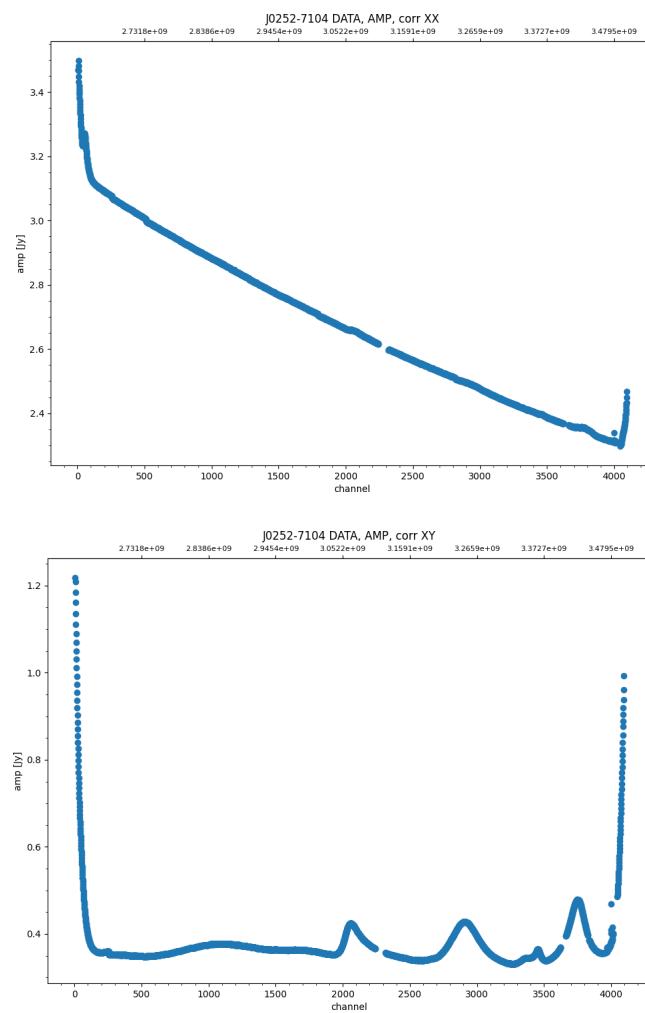
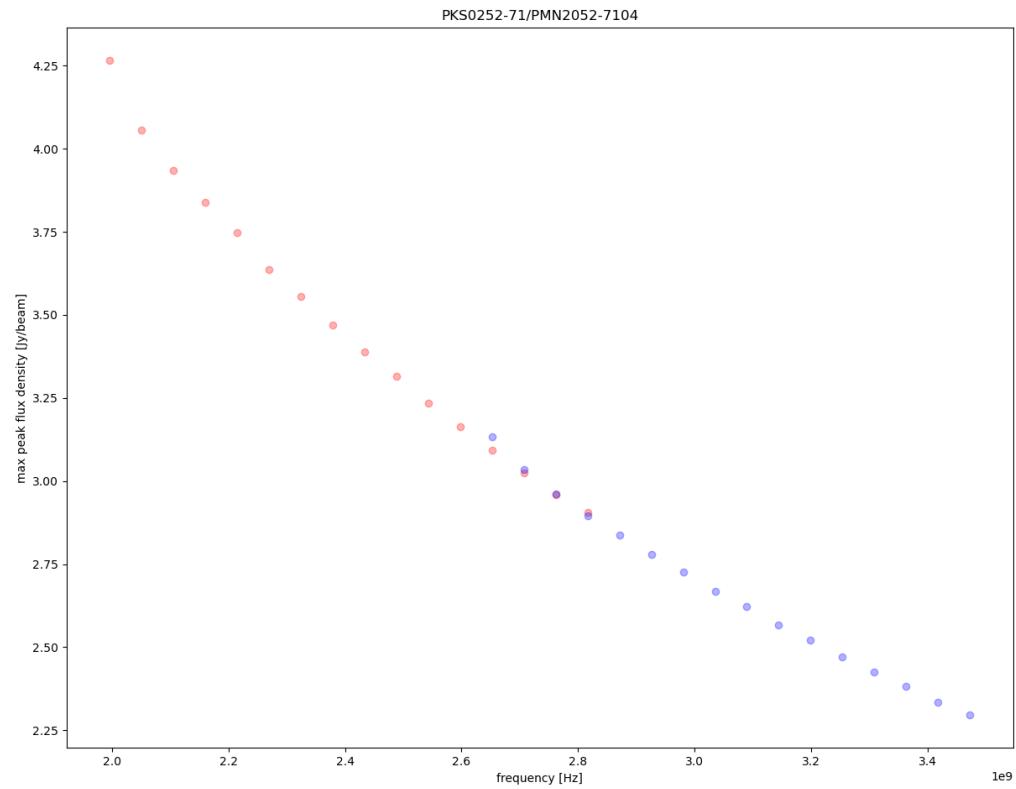
14_DIAGNOSTIC_PLOTS



MK observation S1 and S4



MK observation S1 and S4



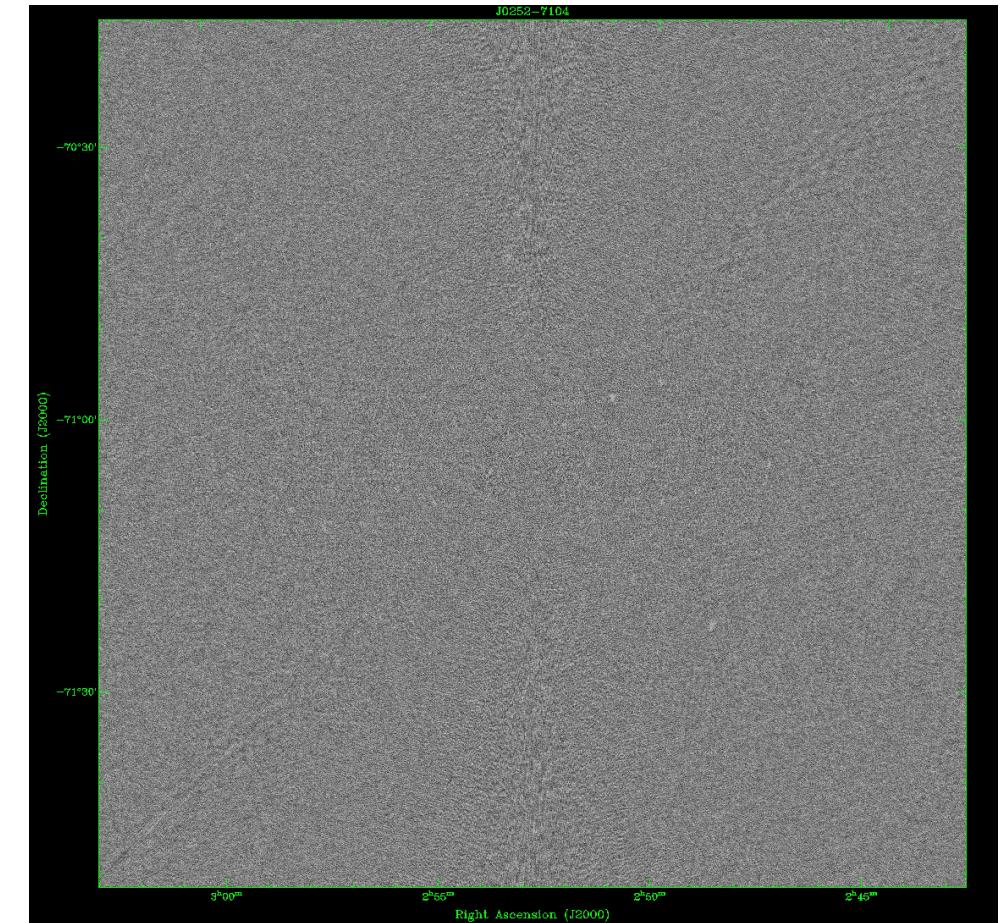
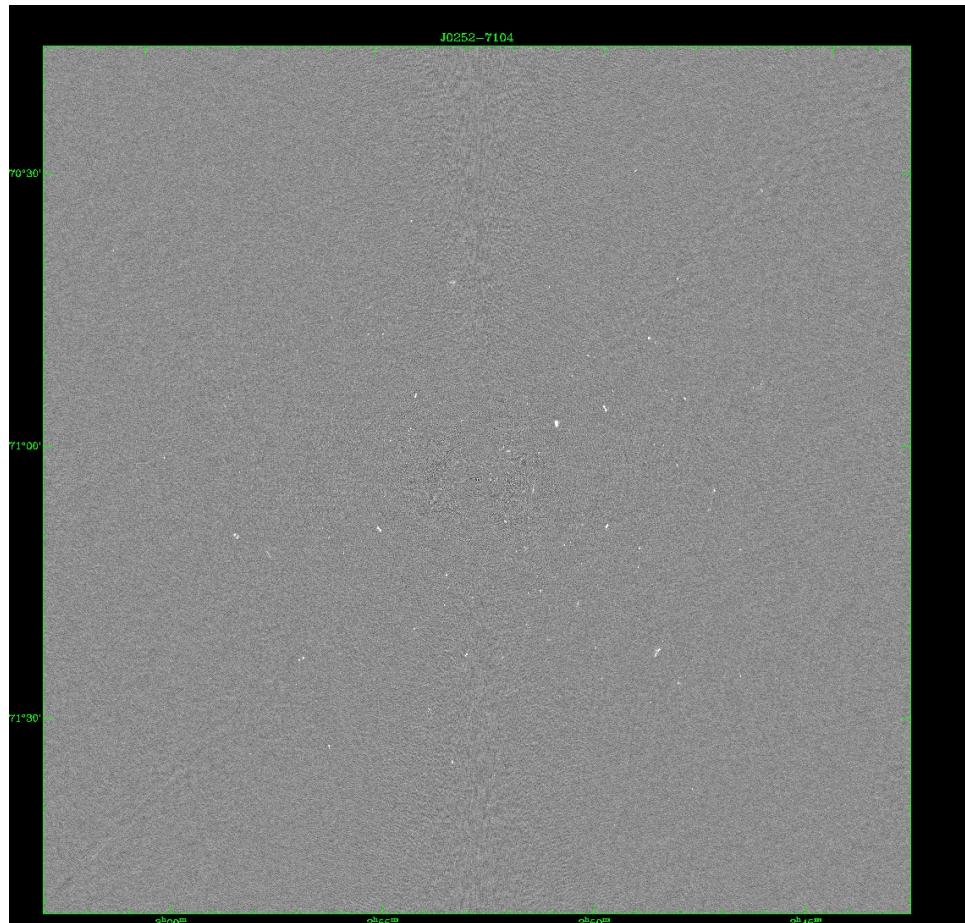
J0252-7104 self-calibration band – S1

945 sec on source

rms 7.5 mu Jy

```
selfcal_modes = ['p','p','p','ap']
selfcal_solint = ['120s','60s','10s','180s']
selfcal_interp = ['linear','linear','linear','linear']
```

dynamic range 166845



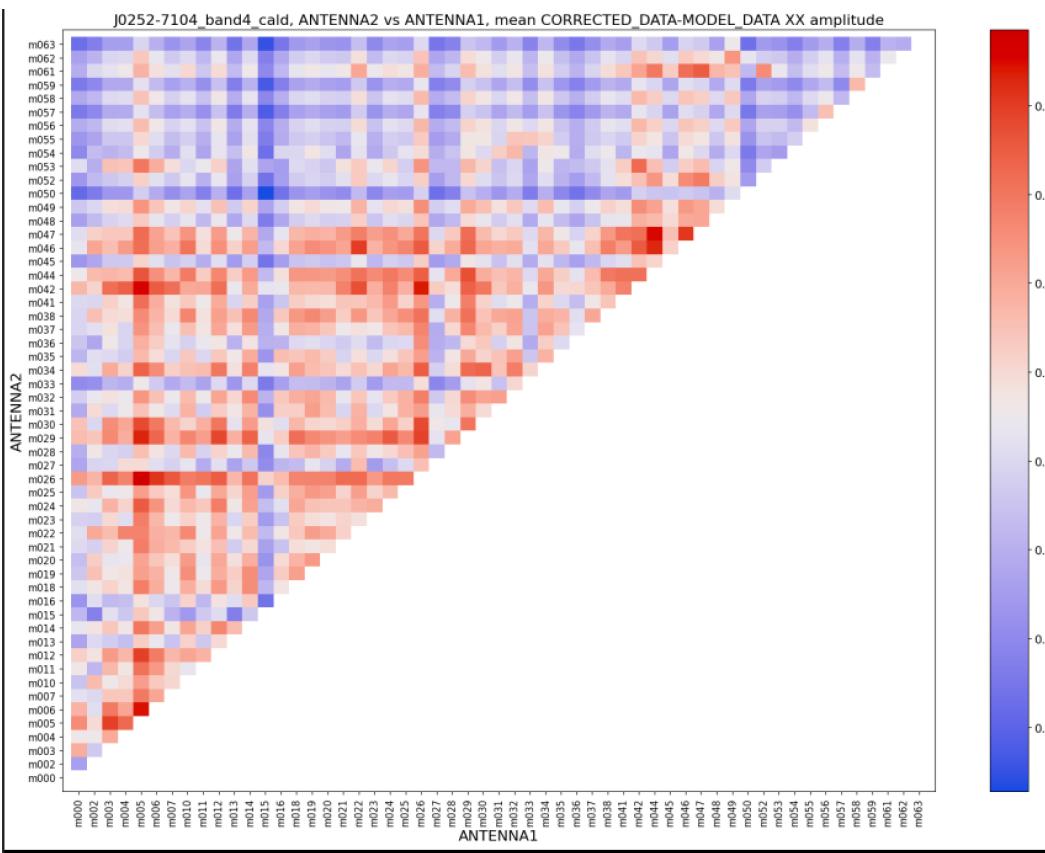
J0252-7104 self-calibration band – S1

945 sec on source

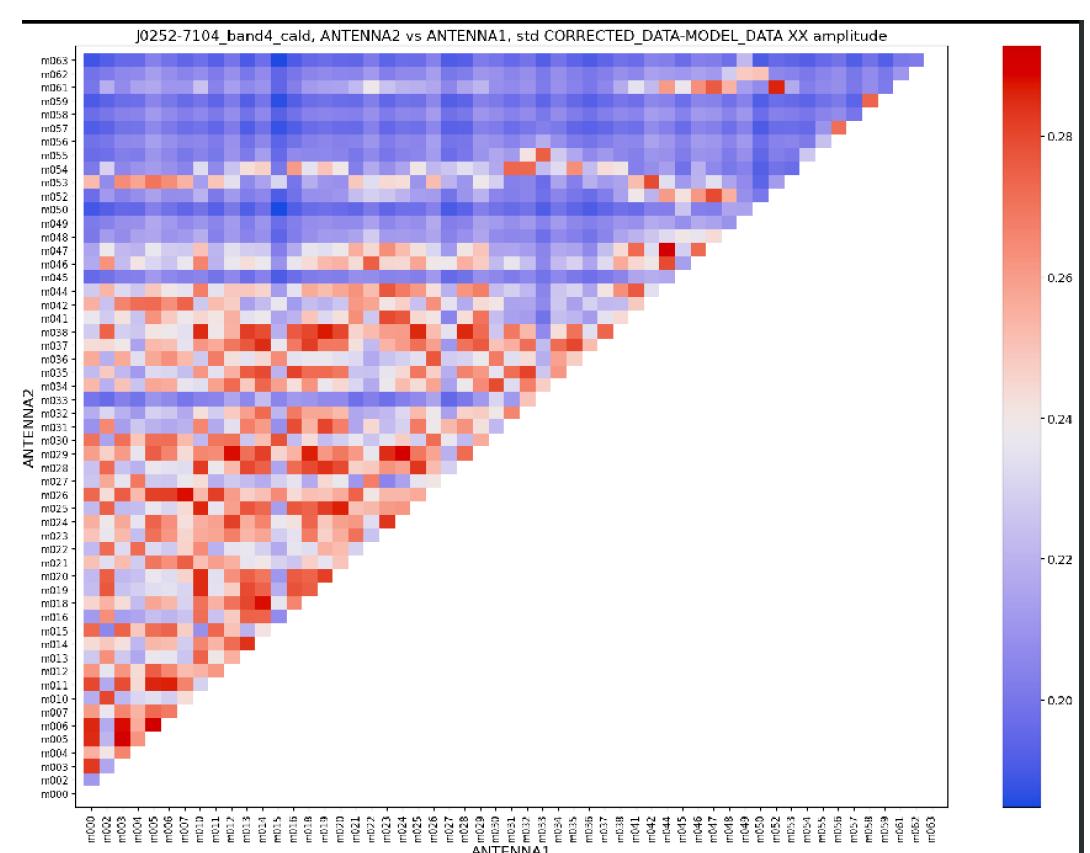
rms 7.5 mu Jy

```
selfcal_modes = ['p','p','p','ap']
selfcal_solint = ['120s','60s','10s','180s']
selfcal_interp = ['linear','linear','linear','linear']
```

mean



std



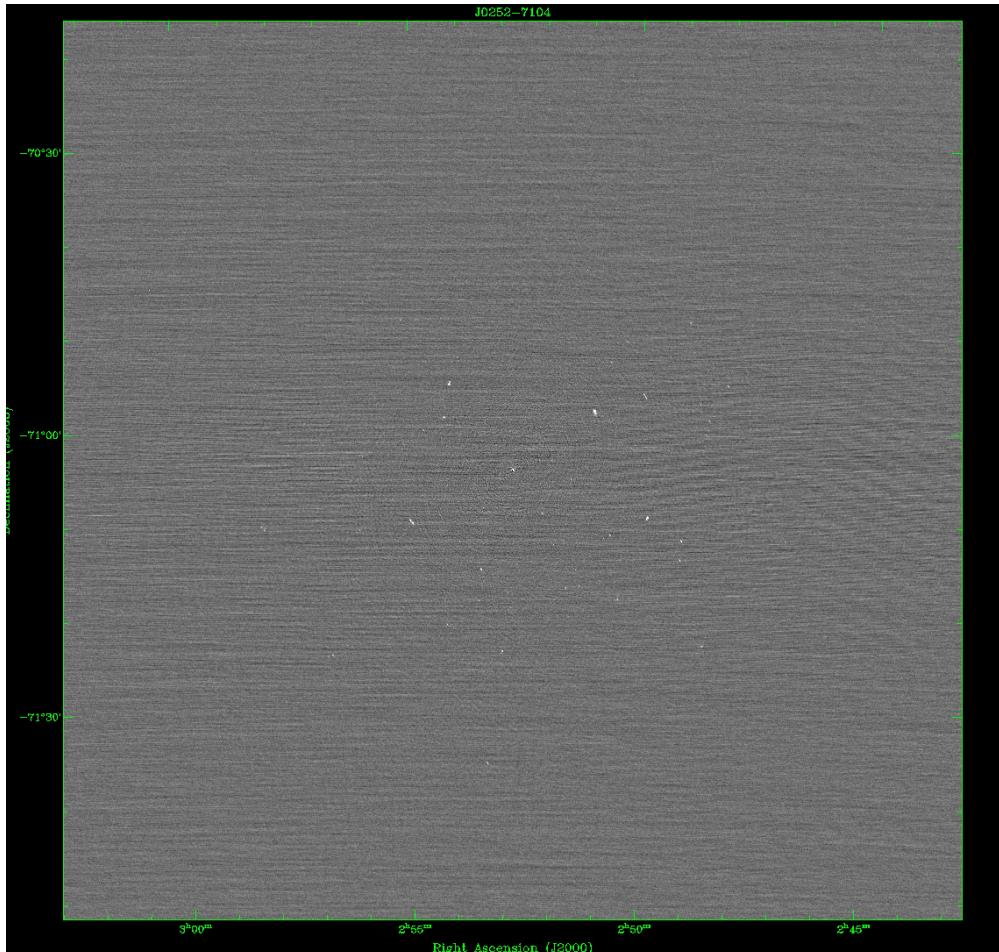
corrected data – model

J0252-7104 self-calibration band – S4

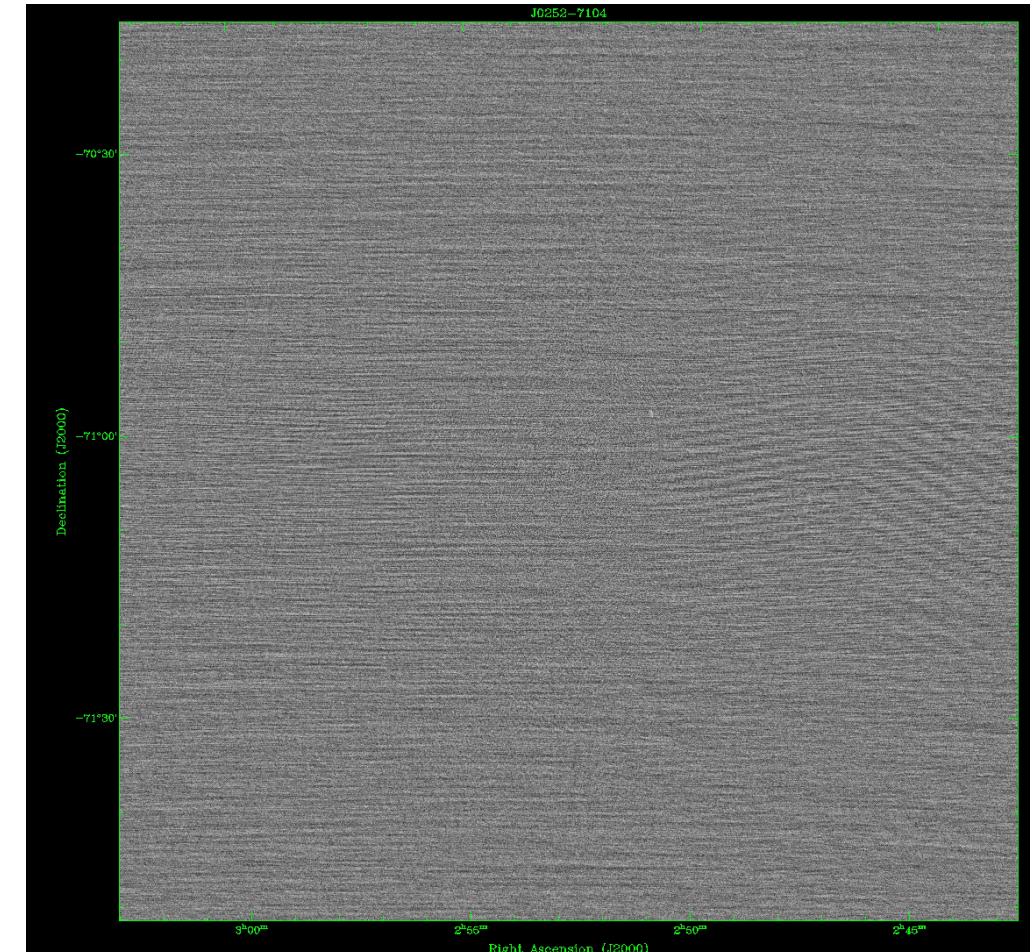
947 sec on source
rms 7.1 mu Jy

```
selfcal_modes = ['p','p','p','ap']
selfcal_solist = ['120s','60s','10s','180s']
selfcal_interp = ['linear','linear','linear','linear']
```

dynamic range 62000

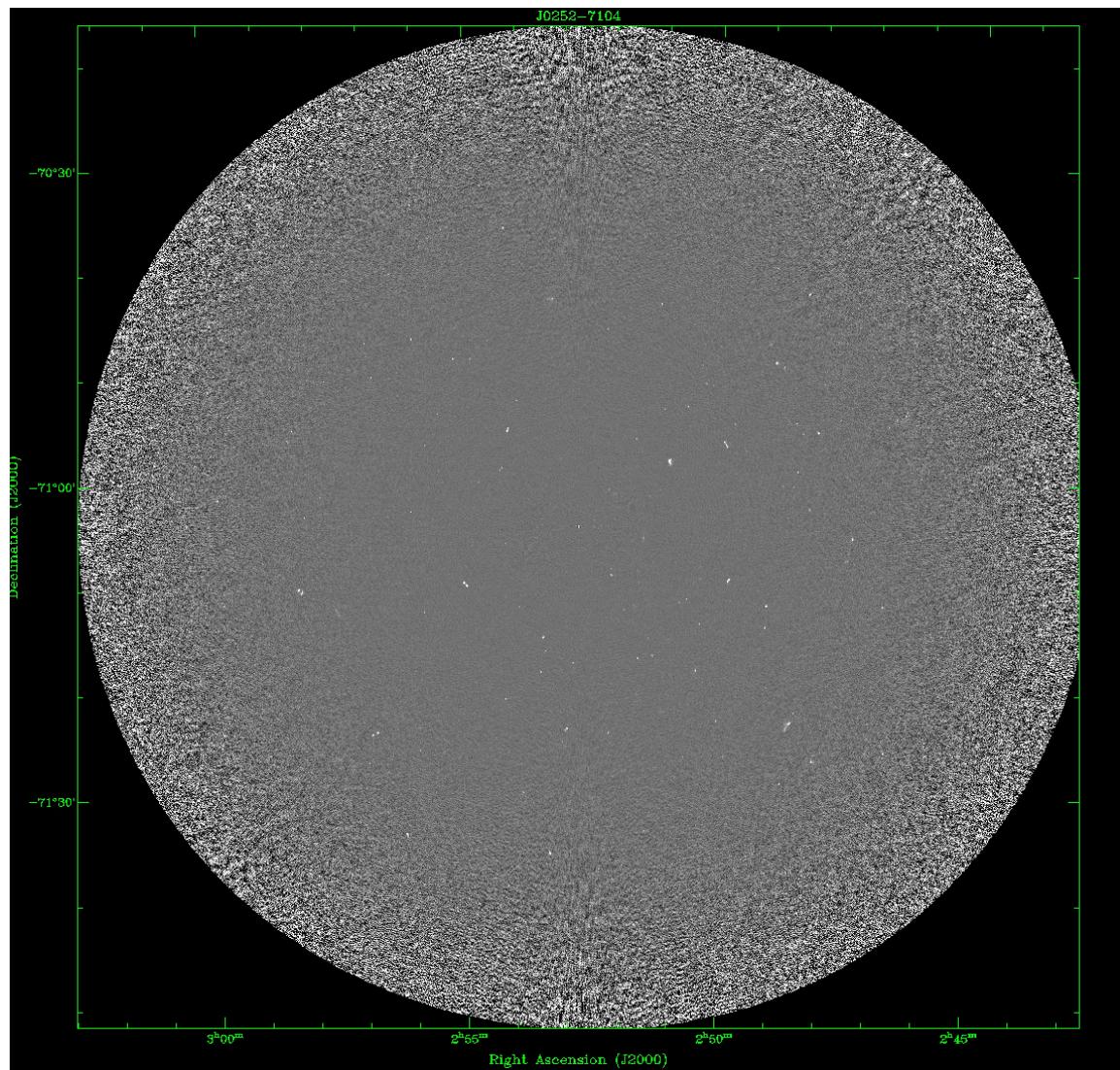


max 2.69611e+06 mu Jy

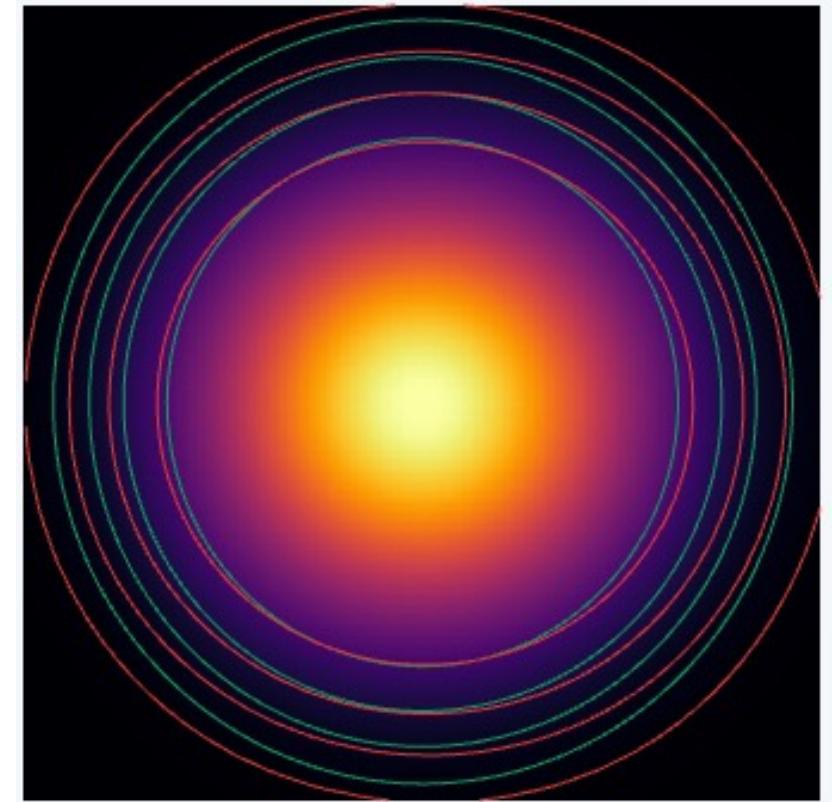


rms 42 mu Jy

J0252-7104 holographic PB corrections band – S1



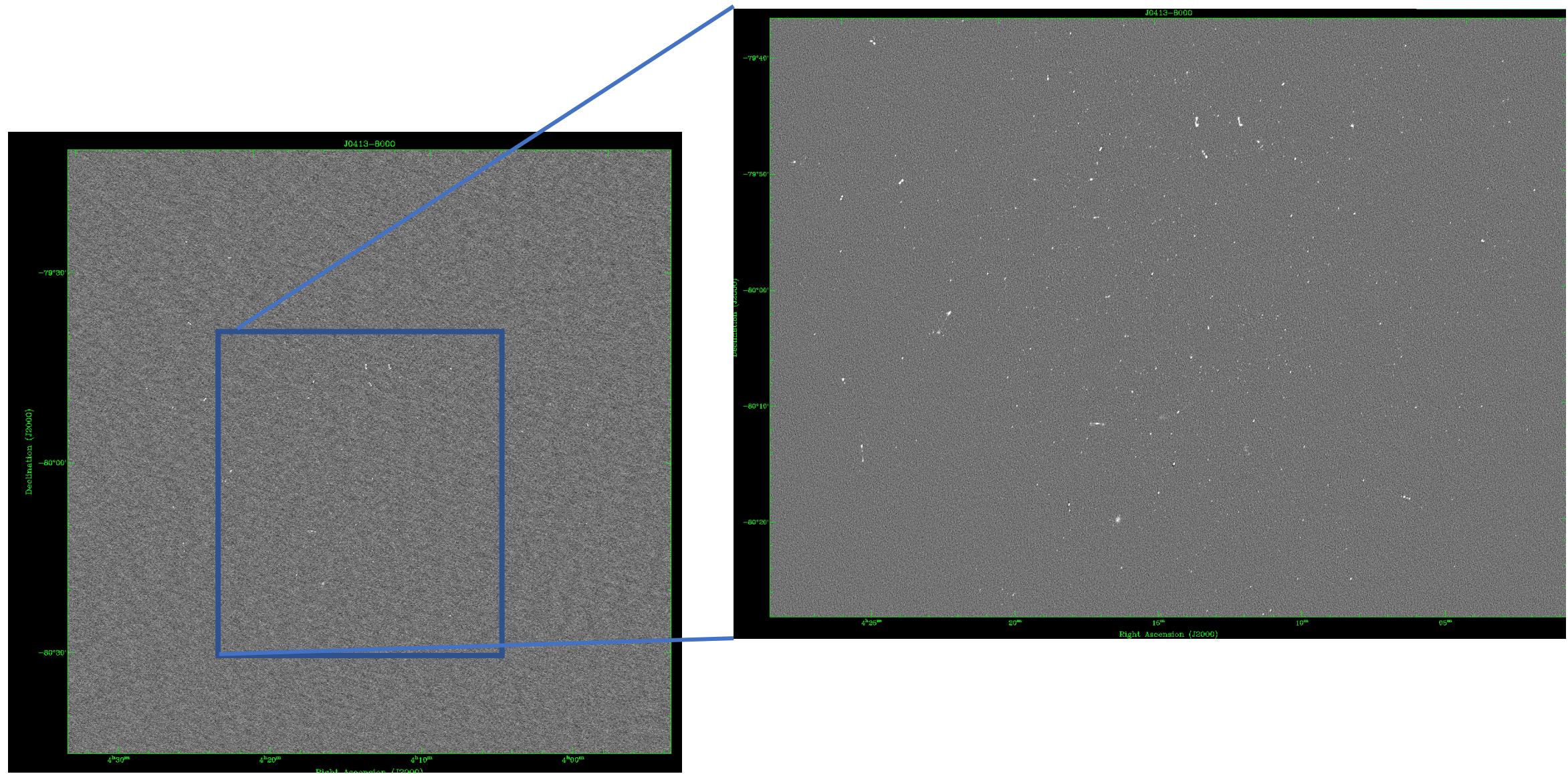
PB model, comparing katbeam contours (green) and holo (red). Contours are 0.2,0.1,0.05,0.02.



Jonah Wagenveld 2023

git clone <https://github.com/JonahDW/MeerKAT-widebeam.git>

Deep2 self-calibration band – S1



for information on individual deep2 observations see other set of slides