

NIKA: Notice for Observers

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Abstract

This notice gathers instructions for observers using the NIKA instrument.

1 Getting Ready

1. From the main control terminal, log on `mrt-lx1.iram.es`. Let's call T1 this terminal that will be dedicated to PAKO.
2. From another terminal, log on `mrt-lx1.iram.es`. Let's call T2 this terminal dedicated to IDL real time analysis.
3. From another terminal, log on `mrt-lx3.iram.es`. Let's call T3 this terminal, that will be dedicated to Xephem.

1.1 PaKo

In T1:

1. type `goPako`
2. type `PakoDisplay`
3. type `PakoNIKA`

1.2 Xephem

In T3:

1. type `ps xa |grep azElToXephem.py &` to check if the script is already running.
2. If yes, then do nothing. If not, then type `azElToXephem.py &`
3. Once the script is running, type `xephem &`

1.3 IDL set up

In T2, you will log in and work on SAMI, the computer dedicated to NIKA data processing during observations:

1. type `ssh_sami`¹
2. type `rt`. This will put you in the "Realtime" directory.
3. type `emacs &`. This will allow you to edit the scripts relevant for real time data analysis.
4. type `idl`

2 Analyzing data

Shortly after a scan is done, the NIKA scientific data and the AntennaIMBfits are written on SAMI and can be processed. There are two types of observation: the "science" scans and the "calibration" scans. There is a specific routine to analyze each type of scan.

- The science scans are meant to be optimally processed offline with tailored procedures. The real time software mentioned in this note only aims at giving a quick feedback
- The calibration scans expect actions from the observer and interaction with PaKo.

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¹This is an alias to `ssh observer@150.214.224.22 -Y` with password `nika30m`.

2.1 Calibration scans

2.1.1 Pointing

1. In the emacs window, edit `run_pointing.pro` and update the `day` and `scan_num` parameters.
2. update the `p2cor` and `p7cor` parameters with the “SET POINTING” values displayed in the PAKO window.
3. Save the file
4. In the idl session in T2, type `.r run_pointing`
5. Several plot windows might be on top of eachother
6. Follow instructions returned by the code in T2. By default, follow instructions “B (2mm) : (MAP) (for PAKO and pointing model)”.

2.1.2 Pointing_liss

1. In the emacs window, edit `run_pointing_liss.pro` and update the `day` and `scan_num` parameters.
2. Save the file
3. In the idl session in T2, type `.r run_pointing_liss`
4. Several plot windows might be on top of eachother
5. Follow instructions returned by the code in T2

2.1.3 Focus

1. In the emacs window, edit `run_focus.pro` and update the `day` and `scan_num` parameters.
2. Check the value of `focusz` in the PAKO display window.
3. Do not change the `foffset` values unless you have modified the pako script `focusp.pako`.
4. Save the file
5. In the idl session in T2, type `.r run_focus`
6. Several plot windows might be on top of eachother
7. Follow instructions returned by the code in T2

2.1.4 Focus_liss

1. In the emacs window, edit `run_focus.liss.pro` and update the `day` and `scan_num` parameters. Scan num should be the first of the five scans involved in this analysis.
2. Save the file
3. In the idl session in T2, type `.r run_focus_liss`
4. Several plot windows might be on top of eachother
5. Follow instructions returned by the code in T2

2.1.5 Skydip

1. In the emacs window, edit `run_skydip.pro` and update the `day` and `scan_num` parameters.
2. Save the file
3. In the idl session in T2, type `.r run_skydip`
4. Several plot windows might be on top of eachother
5. Follow instructions returned by the code in T2

2.1.6 OTF_geometry

1. In the emacs window, edit `run_otf_geometry.pro` and update the `day` and `scan_num` parameters.
2. Save the file
3. In the idl session in T2, type `.r run_otg_geometry`
4. Several plot windows might be on top of eachother
5. Follow instructions returned by the code in T2

2.2 Science scans

2.2.1 Total power maps

All maps (OTF or Lissajou) in total power mode can be reduced by the same script:

1. In the emacs window, edit `run_otf_map.pro` and update the `scan_num` and `day` parameters.
2. If you're observing a point source, set `diffuse = 0`. If you're observing diffuse emission set `diffuse = 1`.
3. Save the file
4. In the idl session in T2, type `.r run_otf_map`
5. Several plot windows might be on top of eachother

2.2.2 Polarization maps

All maps (OTF or Lissajou) in Polarization modes can be reduced by the same script:

1. In the emacs window, edit `run_otf_polar_maps.pro` and update the `scan_num` and `day` parameters.
2. Save the file
3. In the idl session in T2, type `.r run_otf_polar_maps`
4. Several plot windows might be on top of eachother