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| **Checklist:** **<GRIS observations (slit)>** | **<GRE-GRIS-KIS-CL-0009>** |

**Startup**

* Using TigerVNC connect from a FSG to the computer ARM1 (161.72.22.76:2). Use the password for the user tip.
* The AO GUI and derotator GUI must be running.
* On ARM1 go to /scratch/tip. Create a directory for the day (e.g. 20250528). Inside it create the directory level0. Execute "polar" inside the folder level0 of the correct date.
* Create a .txt file in the daily directory (e.g. 20250528) as an observing log (see “/scratch/tip/examples/slit” or “/scratch/tip/examples/IFU” directories)

**Observations**

As the first thing in the morning, if the seeing is good, start the observations. Take **flats** **every 1-1.5 hours**. Take a telescope calibration at any moment during the morning. Perform a target at any time of the day for the data reduction (alignment).

**Science data: operation=scanning**

* Make sure the derotator is tracking.
* Use 10 accumulation, 50 ms exposures for 1.56 μm and 100 ms for 10830 for slit mode
* Use 10 accumulation, 30 ms exposures for 1.56 μm and 70 ms for 10830 for IFU mode
* “#Operations” can be set >1 to repeat rasters
* SJ acq: Use 1 to save one SJ image per raster step

**Target scan: operation = scanning**

* Lock the AO on the USAF target. Make sure TT offloading is disabled in the AO.
* Use 2 acc., 1 rep, 200 steps in slit mode. Integration time: same as for science data
* Use 2 acc., 1 rep, 10 V and 5 H steps in IFU mode. Integration time: same as for science data

**Flatfields: operation = flat field**

* Start telescope flatfield mode around disk center with no magnetic activity
* Derotator should be in but stopped.
* Use 10 acc., 50 steps. Integration time: same as for science data
* Use 10 acc., 50 V steps. Integration time: same as for science data

**Telescope calibration: operation=telescope cal.**

* Go to disk center. Derotator should be in but stopped.
* Stop AO and deselect M11 pupil control
* Beam tracker should be stopped
* Use 10 accumulations
* Integration time: same as for science data.
* The operation preforms 74 steps by default. Do not use the ‘instrument’ calibration.
* When finished, revert the changes done in the first three lines.

**Data Reduction**

In the directory of the day create a calibration IDL routine (e.g. cal01jun24arm1.pro for slit observations). Its layout is:

pro cal01jun24arm2

target= '01Jun24ARM2.010'

data = limits\_fov(target)

lambda = 8542.

fileff = '01Jun24ARM2.002'

filecal = '01Jun24ARM2.012'

map = '01Jun24ARM2.000'

gris\_v9, map, fileff, filecal, lambda=lambda, fts=1, data=data,newgrating=1,/xtalki

* The last 4 lines need to be copied and adapted for each observed map.
* The reduction creates fits files in the level1 directory (their names end in cc, but they can be read via e.g. readfits). Their dimensions are [lambda, pixel along slit, iquv for each step].
* If flatfields are taken close before and after your science data, specify them with fileff=['flat1','flat2'] to use both.
* When reducing maps with multiple rasters, only specify the main map (e.g. 004, not 004-1)
* **For IFU observations, the target and data lines should be removed, and the data=data keyword should also be omitted when calling gris\_v9**.
* Additional information on the reduction files can be found in the Upgraded GRIS Manual.

**Warnings/Notes**

* **If slit and lens moved and are out of focus**

=> Click on the “Set Mid” button in the SlitScanner GUI. This will move the system to the default values.

* **Darks**

=> darks are not needed because each sequence automatically starts with a few frames with the shutter closed.

* **For more information, including the IFU mode, see GRE-GRIS-IAC-MAN-0009.**

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| Change Log |
| Vers. | DateDD/MM/YY | Author | Description of Changes | Sect./Para. |
| 1 | 18.08.18 | L. Kleint | New Document  |  |
| 2 | 14.01.18 | L. Kleint | Derotator can be kept on for FF. Reference to manual. |  |
| 3 | 1.7.20 | L. Kleint | gris\_v7; SJ images instructions |  |
| 4 | 26.5.21 | L. Kleint | gris\_v8, target scan, updated data red., slit offset |  |
| 5 | 27.6.25 | C. Quintero & J. C. Trelles | Complete revision to include the new observing modes and the multi-wavelength options |  |