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

Startup

- Using TigerVNC connect from a FSG to Arm1 (161.72.22.76:2). Use the password for the user tip.
- In one terminal of Arm1, connect to ulises3 via ssh (the user/pass is the same as for Arm1). Execute pegaso & (for the spectrograph) and polea & (for the 2nd calibration unit if you plan to use it). Do not forget to use the ampersand to send the processes to the background and have the control of ulises3 with this terminal.
- The AO GUI and derotator GUI must be running.
- On Arm1 go to /scratch1/tip. Create a directory for the day (e.g. 20180818). Inside it create the directories level0 and level1. Execute "polar" in level0 of the correct date.
- Create a txt file in the daily directory as observing log (see “example” directory)
- You have to see clear black stripes on top, bottom, and between the two beams, otherwise the reduction may fail. On the 5th floor, move the slit mask edges in while using operation= visualization mode for a live view.
- It is possible to offset the slit from its default position, i.e. to do scans away from the AO lockpoint. Ask the assistant for the Conductor script: offset_slitscanner.script

Observations

As the first thing in the morning, take flats. Take **flats every 1-1.5 hours** (due to fringes). Take one or two telescope calibrations at any moment during the morning. Finish the day with another telescope calibration. One target scan per day is required for the data reduction (alignment).

Target scan: operation=scanning

- lock the AO on the USAF target. Make sure TT offloading is disabled in the AO.
- Use 5 acc., 1 rep, 200 steps. Integration time: 100 ms (for 10830), 30 ms (for 1.56 μm)

Flatfields: operation=flat field

- Start telescope flatfield mode about disk center
- Derotator can be kept running or can be off. Keep btf3 running
- Take flats with the settings: 6-10 acc., 50-100 steps, 50-100 ms exposures (same as for science data)

Telescope calibration: operation=telescope cal.

- Go to disk center. Stop the derotator. Stop btf3.
- Use 3-10 accumulations.
- The 74 steps are automatic. Do not use the ‘instrument’ calibration.
- When finished, reenable the derotator tracking (with rel not checked). Enable btf3.

Science data: operation=scanning

- Make sure the derotator is tracking.
- Use 6-10 accumulation, 50 ms exposures for 1.56 μm (100 ms may lead to seeing-induced crosstalk) and 100 ms for 10830 (the #counts at this wavelength is lower than at 1.56 μm).
- The #steps usually reach equally in both directions from your starting position. (This depends on the scan definition in Custom->Scanning parameters: “center” means that the starting position is the center of the scan and “edge” means it is the edge)
- “#Operations” can be set >1 to repeat rasters
- SJ acq: Use 1 to save one SJ image per raster step

Data Reduction

In the directory of the day create a calibration IDL routine (e.g. cal18aug18.pro). Its layout is:

```
pro cal25may21
target = '25may21.010'  & data = limits_fov(target)
lambda=10830.
fileff=['25may21.004']
filecal=['25may21.003']
map='25may21.000'
gris_v8,map,fileff,filecal,lambda=lambda,data=data
```

- 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.
- If you need to specify the position of the beam (e.g. because the black slit limiters were not visible), use e.g. `,data=[5,1014,16,480,5,1014,531,995]` (these numbers are set-up and wavelength dependent!). With targets, this should not be required.
- When reducing maps with multiple rasters, only specify the main map (e.g. 004, not 004-1)

Slitjaw Images

To be able to reduce the slitjaw images (if desired), take darks using the SJ GUI and using the following parameters: suffix='dk', images per fits file = 100 (>50 are required), number of files = 1 (more are optional).
Also take SJ flats using suffix='ff', frames per file = 200 (>100 are required). Take flats with different slit positions (1 file per position), the data reduction will interpolate (but not extrapolate) missing slit positions. If you take SJ bursts (e.g. for speckle later), use suffix 'sd'.

Warnings/Notes

- **If slit and lens moved and are out of focus**
  => Both positions should be ~26000 (ask for the latest values). Move them with the slitscanner GUI.
- **Derotator error message**
  => GRIS uses get pos2, which requires the derotator GUI version from Olivier (v2019++)
- **Darks**
  => darks are not needed because each sequence automatically starts with a few frames with the shutter closed.
- **Image scale**
  => The automatic scaling may not work well. Use display -> image scale
- **For more information, including the IFU mode, see GRE-GRIS-IAC-MAN-0009.**

Change Log				
Vers.	Date	Author	Description of Changes	Sect./Para.
1	18.08.18	L. Kleint	New Document	
4	26.05.21	L. Kleint	gris_v8, target scan, updated data red., slit offset	
5	20.05.25	A. Tuschinsky	Changed IP config of GRIS PC	