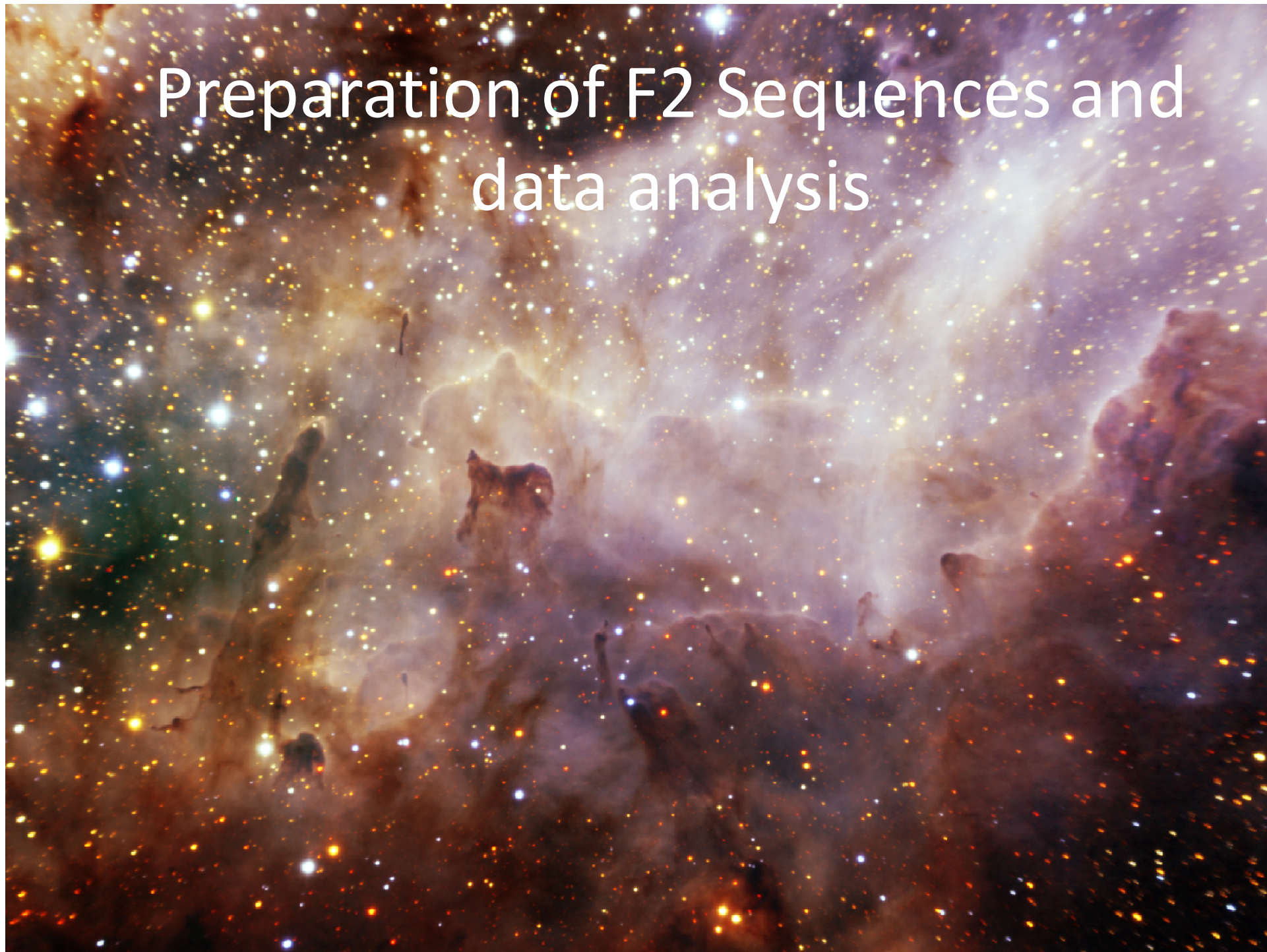


Preparation of F2 Sequences and data analysis



Please use the templates and libraries in the OT for the latest

The screenshot shows the Science Program Editor interface for the Gemini Science Program. The window title is "Science Program Editor - [GS-Flamingos2-library] Flamingos2 OT library - version 2014-Jul-28 - Gemini (Gemini South)".

Left Panel (Tree View):

- Observation
 - Flamingos2 OT library - version 2014-Jul-28
 - History
 - Imaging Templates
 - F2 Imaging Notes
 - Darks are now taken weekly
 - [3] Sparse Field Imaging
 - [4] Crowded Field / Extended Object Imaging
 - [5] Flats
 - Long-slit Templates
 - F2 Long-Slit Notes
 - Darks are now taken weekly
 - [6] Telluric Acquisition
 - [7] Telluric Observation
 - [8] Acquisition (H<12 w/o sky sub)
 - [9] Acquisition (H>12 w/ sky sub)
 - [12] Telluric Acquisition
 - [13] Telluric Observation
 - [31] Sparse Field Spectroscopy
 - [32] Extended Object Spectroscopy
 - MOS Templates
 - EXAMPLE: Sparse Field Imaging
 - EXAMPLE: Extended Object Imaging
 - EXAMPLE: Long-Slit Spectroscopy

Right Panel (Form):

Gemini Science Program
 Program information taken from the Phase 1 proposal.

Program Title:

Program Reference: GS-Flamingos2-library (Queue, Band 1)

TOO Status: None Notify PI Active Completed

Principal Investigator / Contact

First Name: Last Name:

Support: None Phone:

PI / PC Email:

NGO Contact Email:

Contact Sci. Email:

Observing Time

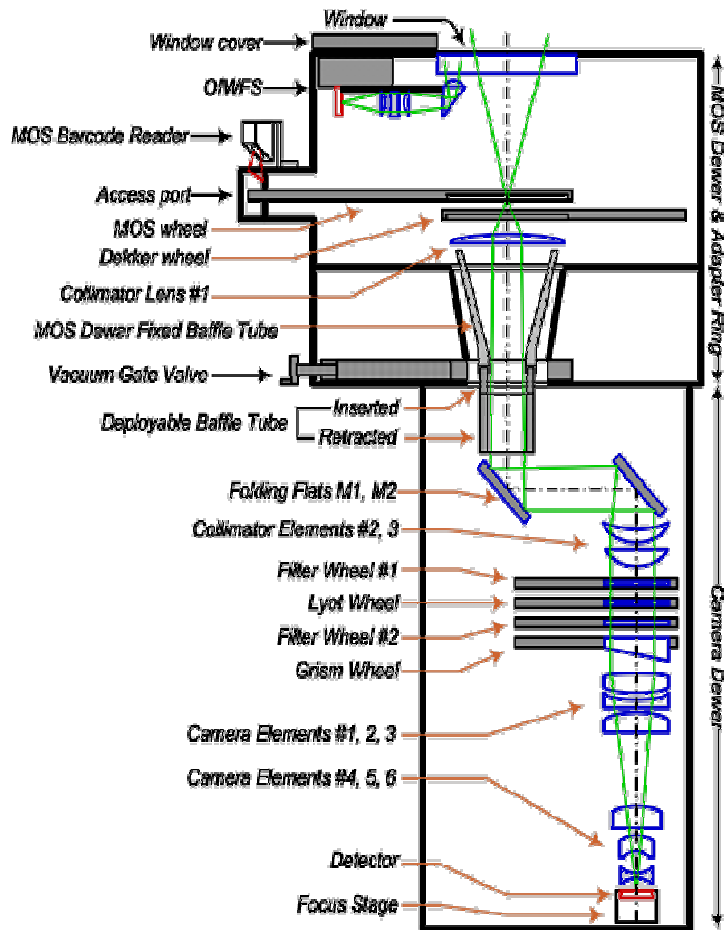
Planned		Used			
Exec	PI	Program	Partner	Allocated	Remaining
00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00

File Attachment / Sync History

Name	Size	Last Modified (UTC)	Description	NGO Check?

Buttons:

To know what happens to F2 look at the ISD



FLAMINGOS-2 Wir
 Window Cover Commands

FLAMINGOS-2
Preparing Acquiring Reading Out

GCAL

Cover Closed

OMFS NOT_FOLLOWING

MOS 2-pbx_grid

Decker Open

Gate Valve Undefined

Baffle Undefined

Filter1 Ks_G0804

Lyot f/16_G5830

Filter2 Open

Disperser Open

Detector

Focus Undefined

Error Messages

System Status: OK

Command Status: OK

Connection Status: OK

Focus Status: OK

Overall Status

FLAMINGOS-2 Health: GOOD

DHS State: CONNECTED

State: RUNNING

Action State: IDLE

Observe Setup

Data Label: S20130811S0045

Observe State: IDLE

Reads: 1

Exposure Time: 5

Time Left: 0

Progress: 260%

Temperatures & Pressures

MOS Dewar Temp (K):	101.21
MOS Dewar Press (Torr):	4.76e-08
Detector Dewar Temp (K):	89.26
Detector Dewar Press (Torr):	1.49e-07
Detector Temp (K):	80.00
Heater Power (%):	67.5

Temperature Status

STABLE

Commands

DHS:

FLAMINGOS

MOS Masks

mos1: GS2011BQ601-01

mos2: GS2011BQ601-02

mos3: GS2011SQ600-02

mos4: GS2011BQ601-03

mos5: GS2011BQ601-04

mos6: GS2011BQ601-01a

mos7: GS2011BQ601-02a

mos8: TestMask08

Circ1: 30500007

Circ2: 30500008

slit1: 30500001

slit2: 30500002

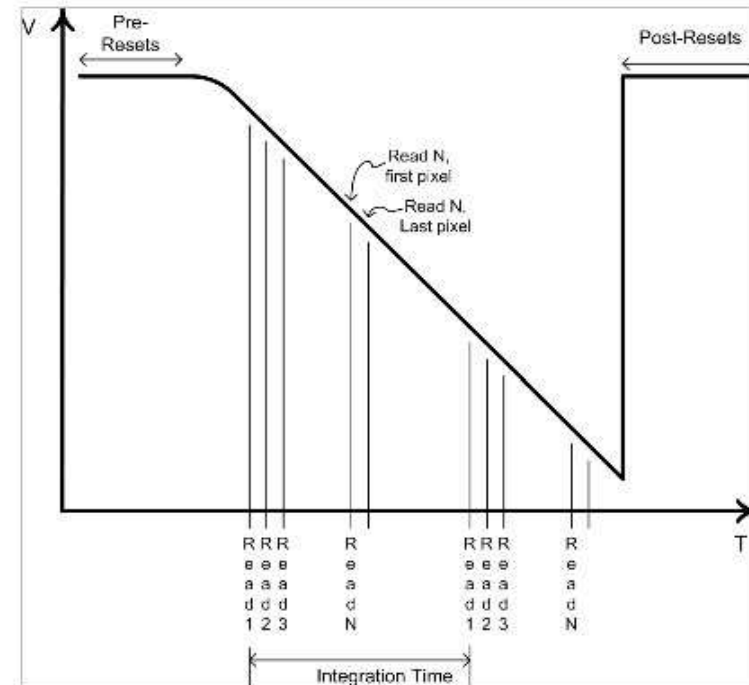
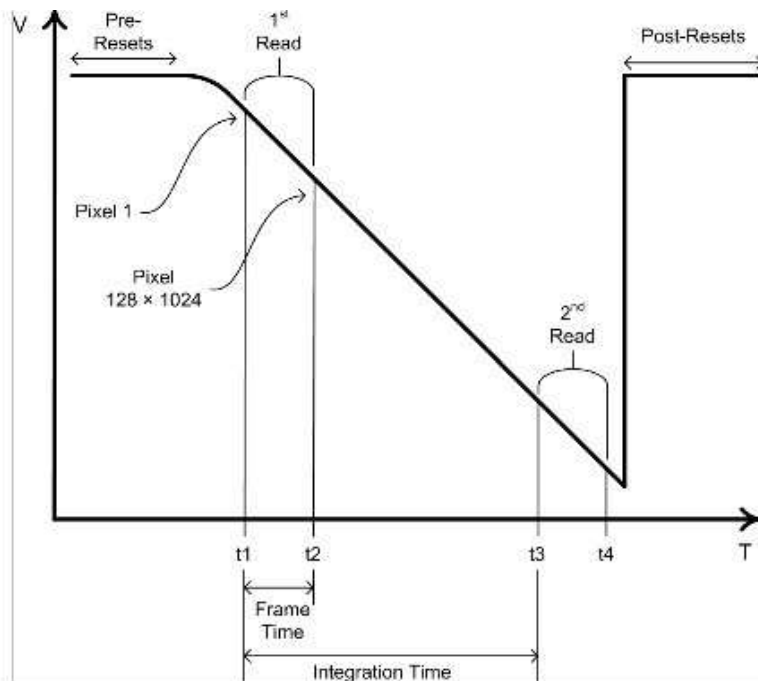
slit3: 30500003

slit4: 30500004

slit5: 30500005

slit6: 30500006

Correlated Double Sampling is how Near-IR arrays are typically read



Images MEF has:

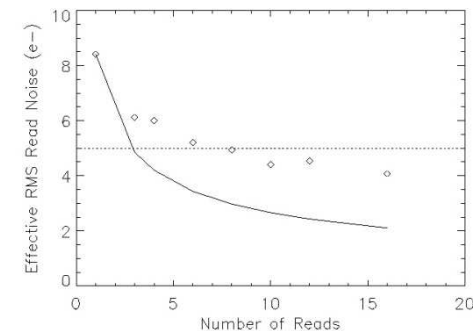
[0] has the generic info.

[1] has the data:

$CDS = \text{First_read} - \text{Second_read}$

or

$MDS = \text{Sum of First_Reads} - \text{Sum Second_Reads}$



F2 OT includes three types of preset readouts

Flamingos2 Instrument
The Flamingos2 instrument is configured with this component.

Focal Plane Unit: 2-pix longslit MOS pre-imaging

Filter: J (1.25 um) Pos Angle: 0.0 deg E of N

Lyot Wheel: f/16 (open) Allow ± 180° change for guide star selection

Disperser: R=1200 (H + K) grism Exp Time: 300.0 sec

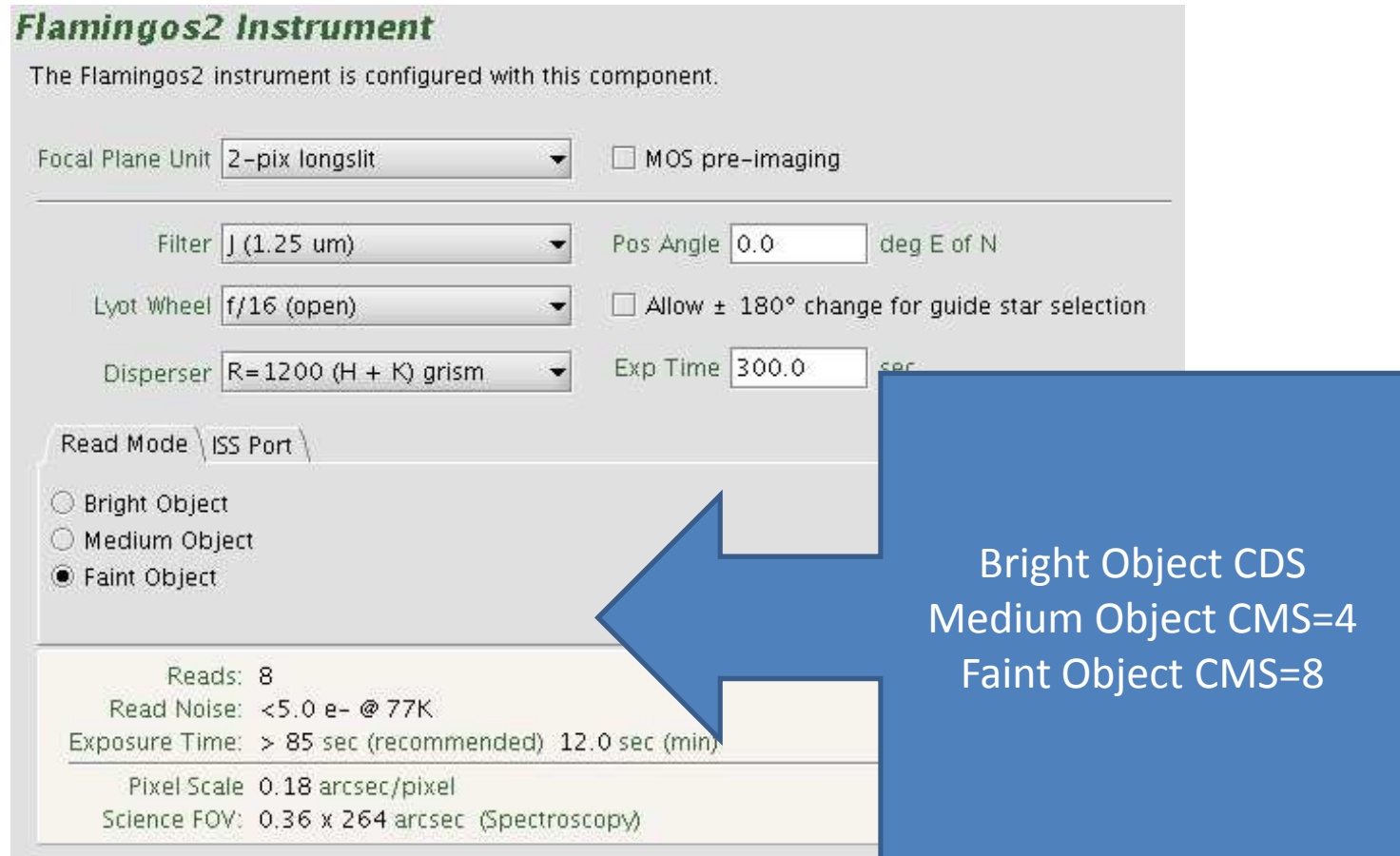
Read Mode | ISS Port

Bright Object
 Medium Object
 Faint Object

Reads: 8
Read Noise: <5.0 e- @ 77K
Exposure Time: > 85 sec (recommended) 12.0 sec (min)

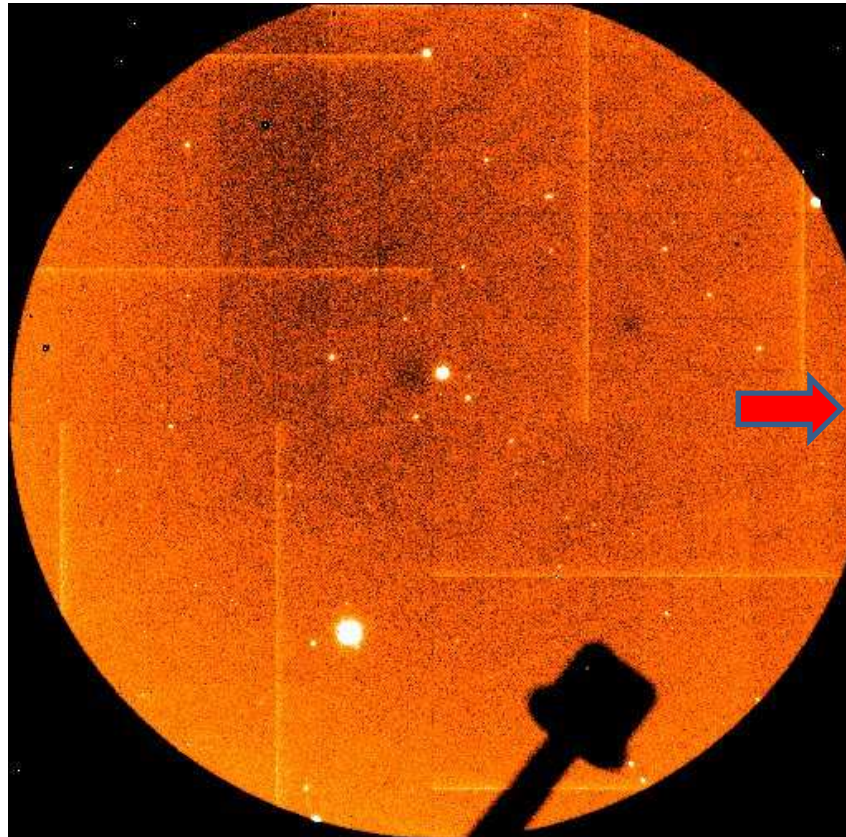
Pixel Scale: 0.18 arcsec/pixel
Science FOV: 0.36 x 264 arcsec (Spectroscopy)

Bright Object CDS
Medium Object CMS=4
Faint Object CMS=8

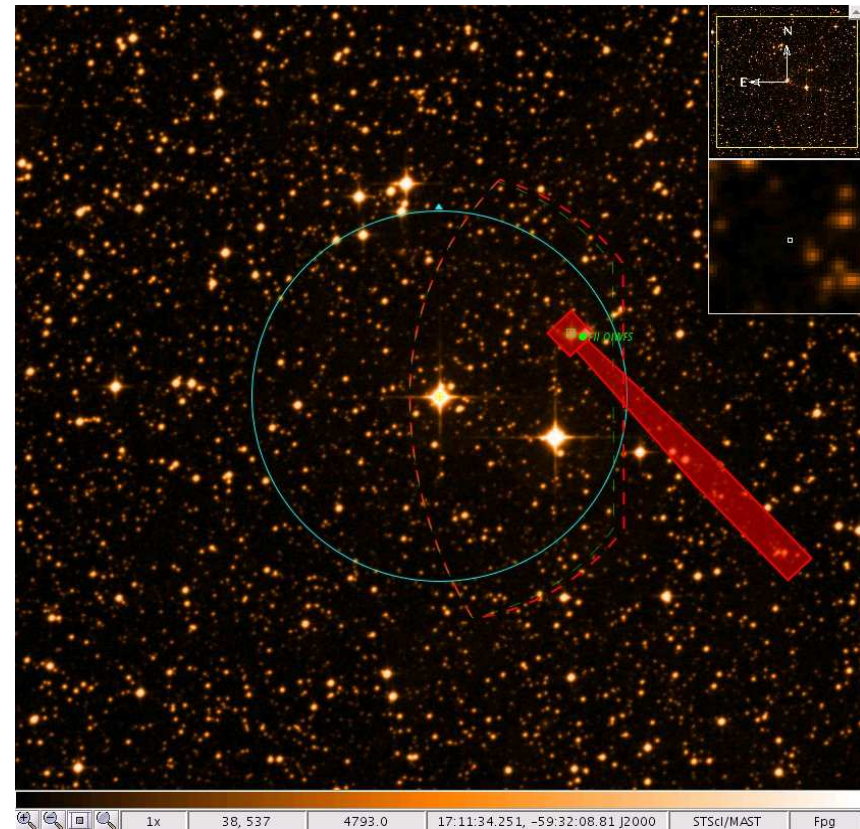


This is how an F2 image of the sky looks like

PA = 0 degrees



-- >ndisplay 23 sub-



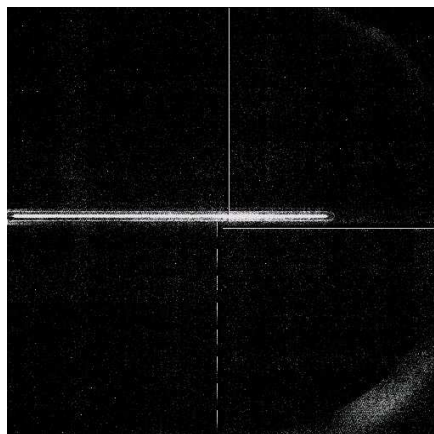
FOV has 6 arcmin diameter

Please remember that the longslits have two special properties.

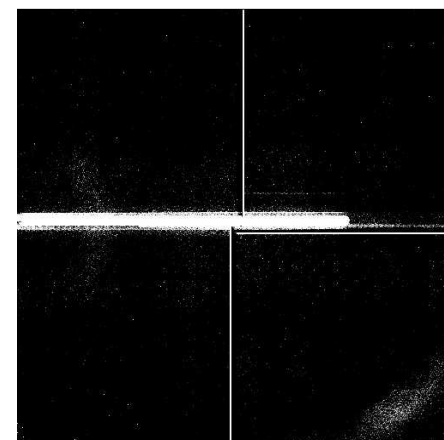
- They are all horizontal.
- They are not centered on the optical axis or the detector. They are asymmetric (90" N and 150" S).



1-pix slit



2-pix slit



8-pix slit

Most Acquisitions will put the science object in the **center of the field of view**. It will **not be at the center of the slit**.

There are Two Types of Long Slit Acquisitions

Base Sequence Component
This component contains the sequence of operations that generates the observation science data.

Title Sequence

Obs Id: GS-F2-RECOM13-RUN-3-214

step 1	0.00	0.00	OBJECT H_G0803	10.0s
step 2	10.00	0.00	OBJECT H_G0803	10.0s
step 3	0.00	10.00	OBJECT H_G0803	10.0s
step 4	0.00	0.00	OBJECT H_G0803	10.0s
step 5	0.00	0.00	OBJECT H_G0803	10.0s
step 6	0.00	0.00	OBJECT H_G0803	10.0s

Base Sequence Component
This component contains the sequence of operations that generates the observation science data.

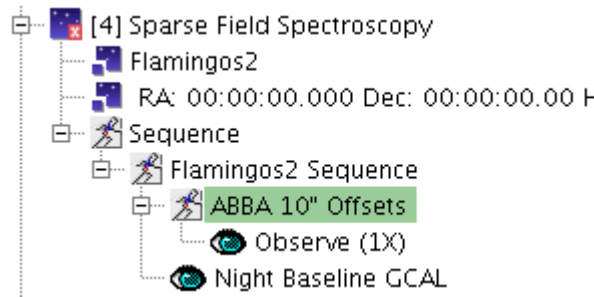
Title Sequence

Obs Id: GS-F2-RECOM13-RUN-3-322

step 1	0.00	10.00	OBJECT J_G0802	90.0s
step 2	0.00	0.00	OBJECT J_G0802	90.0s
step 3	10.00	0.00	OBJECT J_G0802	10.0s
step 4	0.00	10.00	OBJECT J_G0802	90.0s
step 5	0.00	0.00	OBJECT J_G0802	90.0s
step 6	0.00	0.00	OBJECT J_G0802	90.0s
step 7	0.00	0.00	OBJECT J_G0802	90.0s

Static Configuration

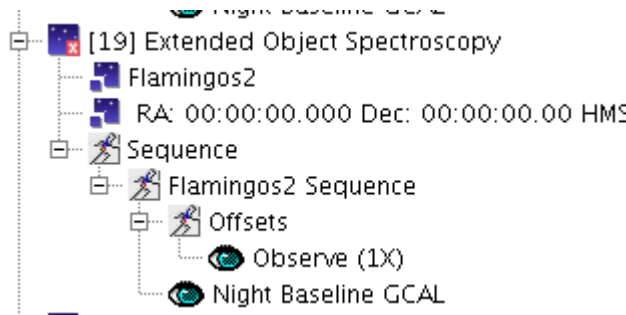
Sky subtraction is a **must** in near-IR



Title: ABBA 10" Offsets

Index	p	q	Guiding
0	0.0	10.0	on
1	0.0	-10.0	on
2	0.0	-10.0	on
3	0.0	10.0	on

Advanced Guiding Options



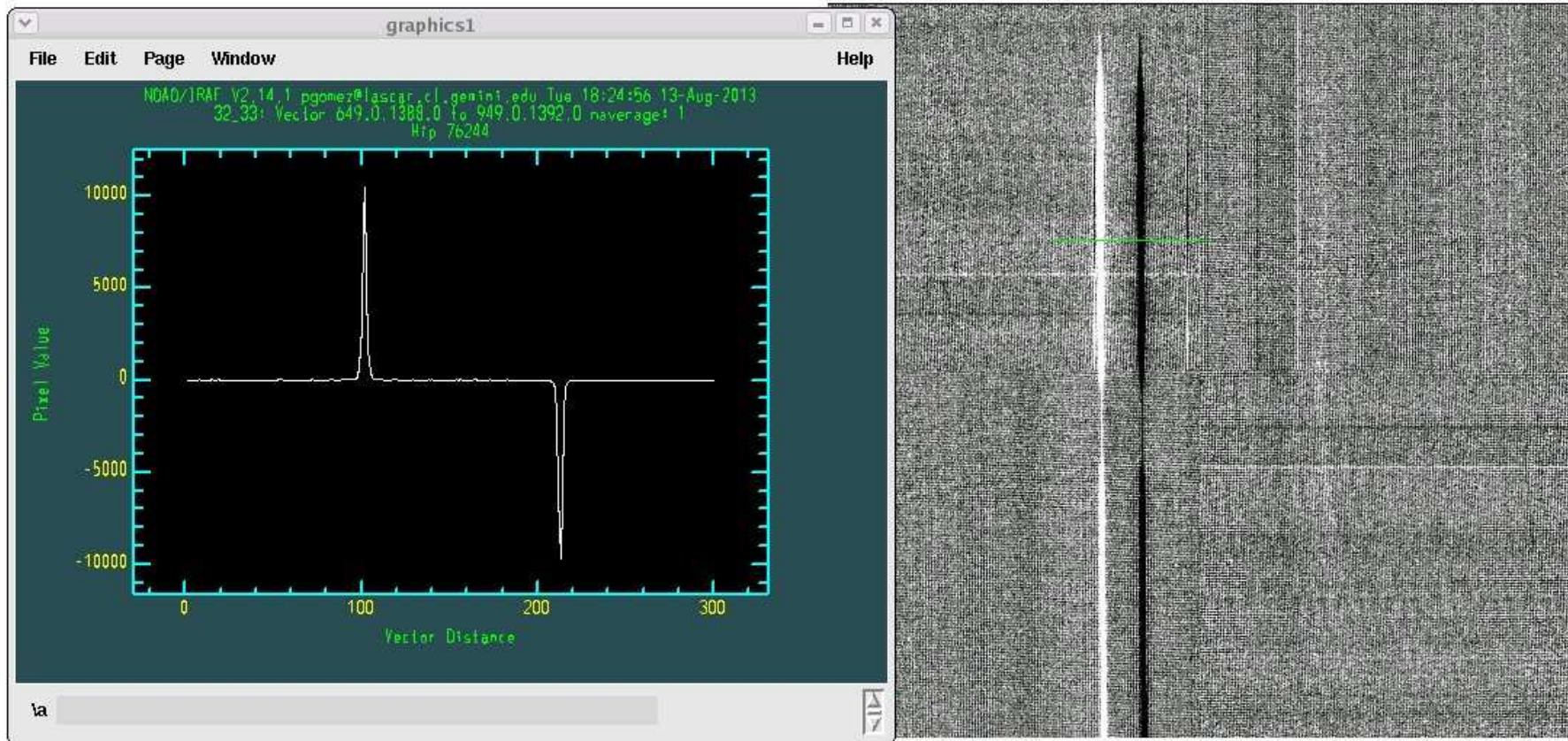
Offset Sequence Component
Configure offset based patterns with this component.

Title: Offsets

Index	p	q	Guiding
0	0.0	10.0	on
1	0.0	-10.0	on
2	300.0	0.0	off
3	310.0	0.0	off
4	0.0	-10.0	on
5	0.0	10.0	on
6	-300.0	0.0	off
7	-310.0	0.0	off

Advanced Guiding Options

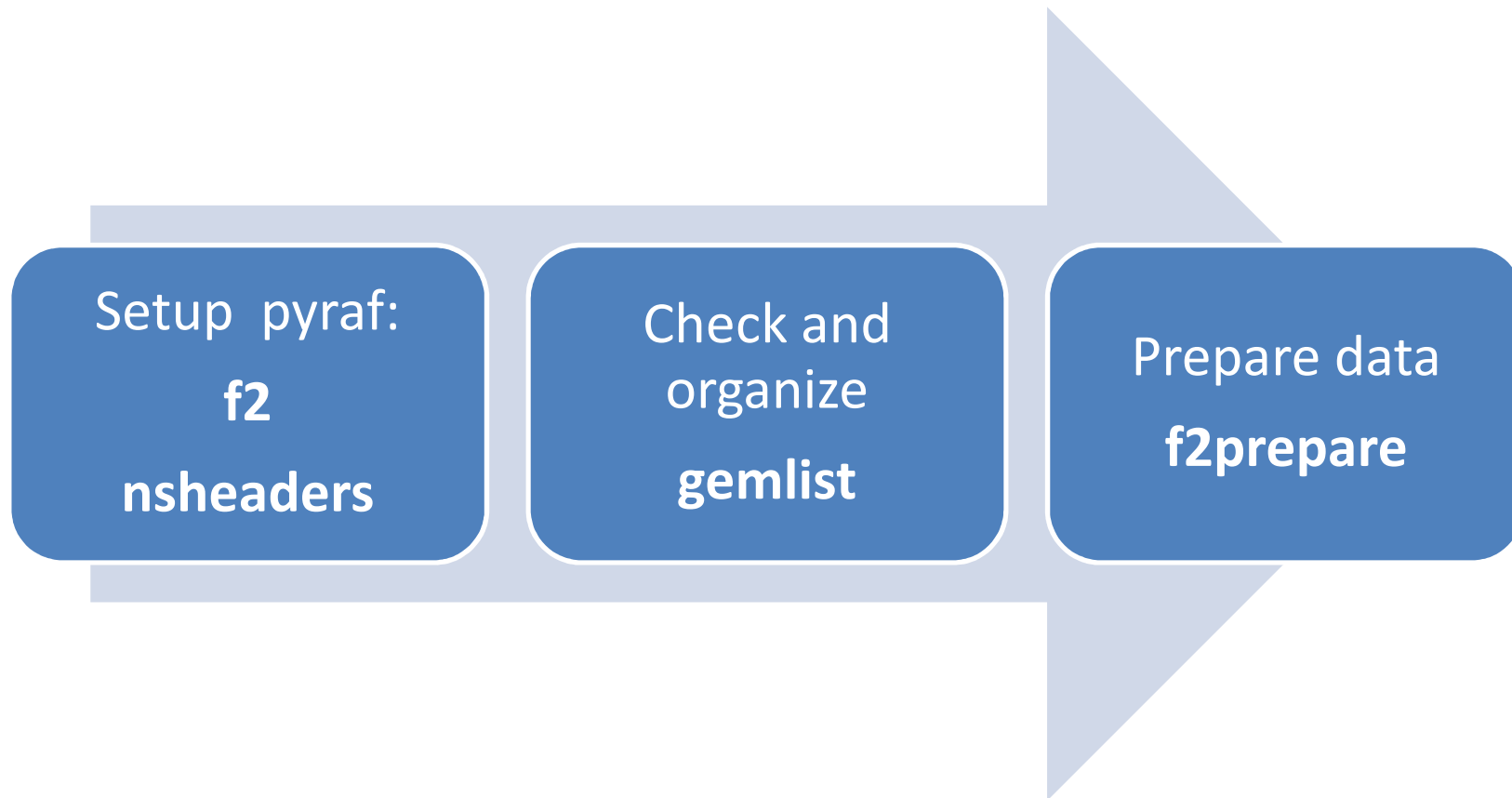
This is an example of a telluric



Don't forget the calibrations ...

- **Imaging:** We will try to take photometric standards whenever possible.
- **Imaging:** Flats to be taken once a month by SOS.
- **Long Slit:** Night Baseline GCAL will include flats and Arcs. No need for day baseline.
- **Long Slit:** **All must have a telluric.** It can be shared within a program if individual targets < 30 minutes.
- **ALL:** darks will be taken once a week. 10 needed per exp time and readout mode for science and flats only (not for Acq and arcs).

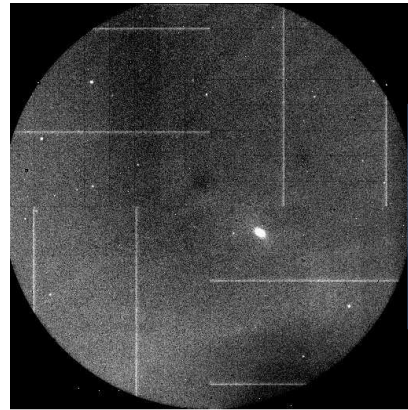
Gemini provides software for Imaging data reduction



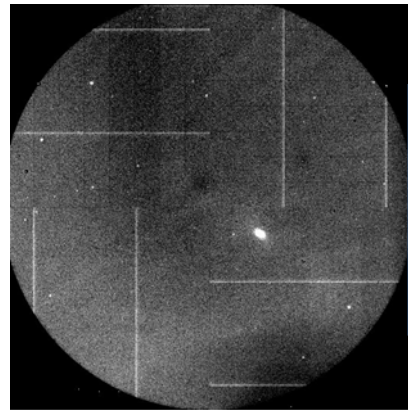
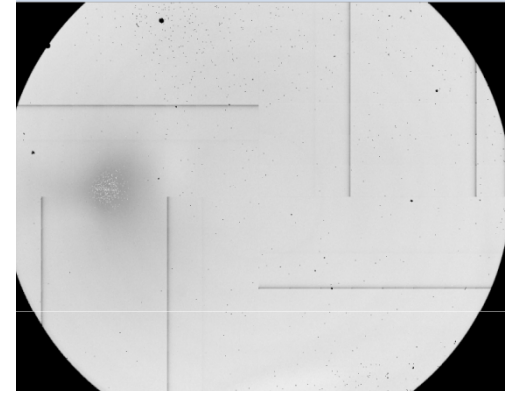
F2 data reduction package

- Examples script for:
 - Imaging
 - Longslit
 - MOS
- If you follow the steps and parameters set you will obtain reduced data.
- File a helpdesk or email in case of questions and/or problems

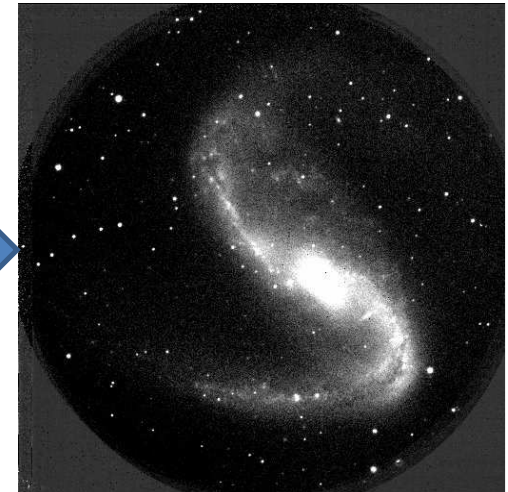
Imaging Data Procedure



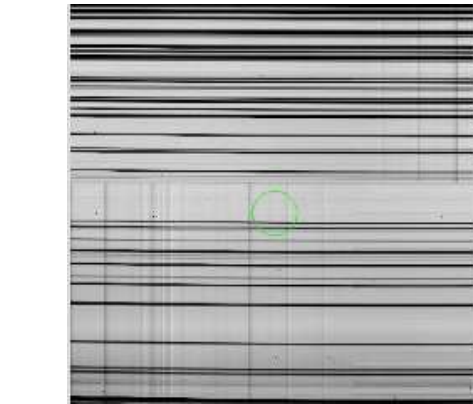
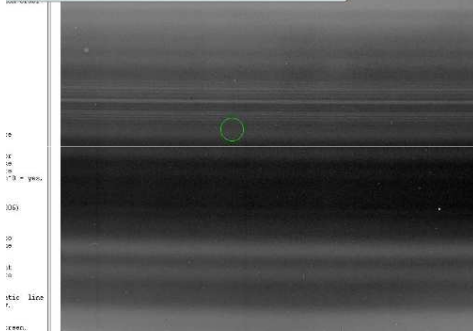
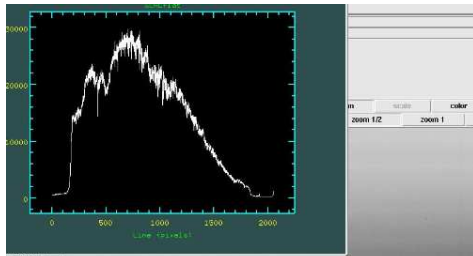
**F2prepare
Nireduce (fl_dark+)
Nisky**



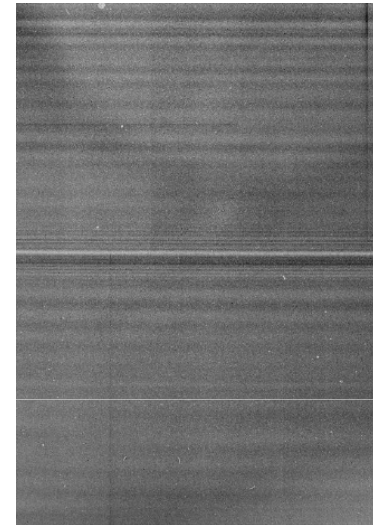
**F2prepare
Nireduce (fl_sky+ fl_dark+)
Imcoadd (align=header)**



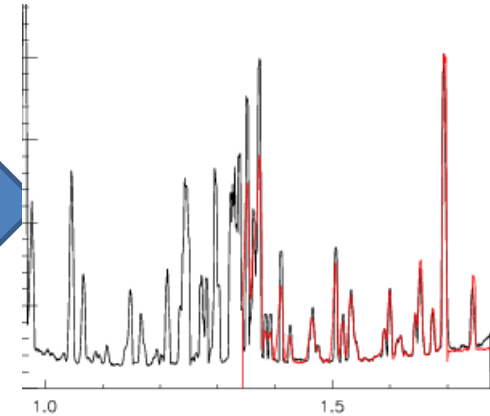
Spectroscopic Data Procedure



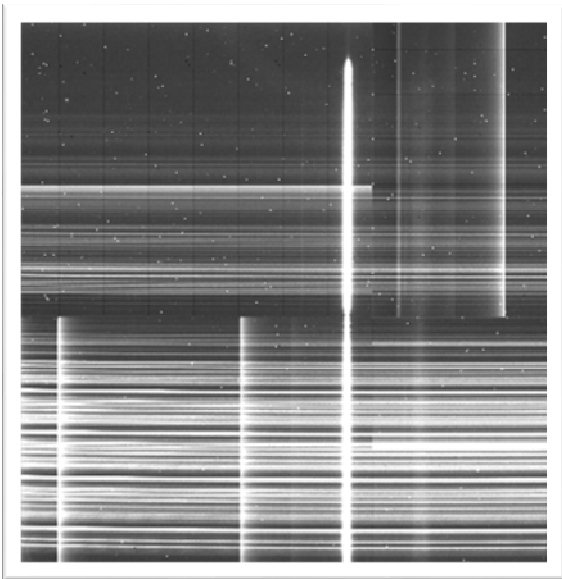
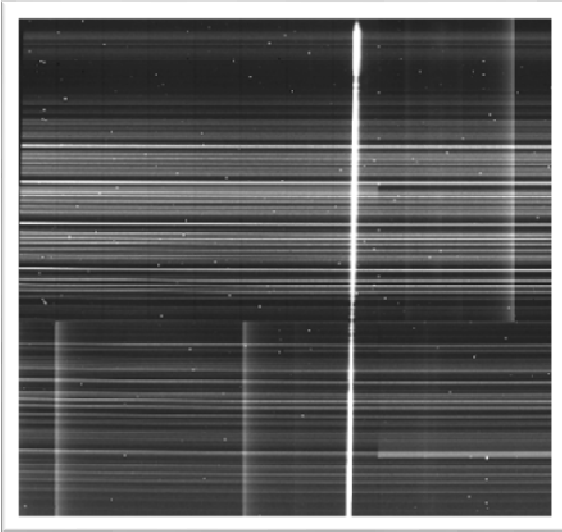
Gemcombine @fdarks.lis
Nsreduce @flats.lis
Nsflat f@flat.lis



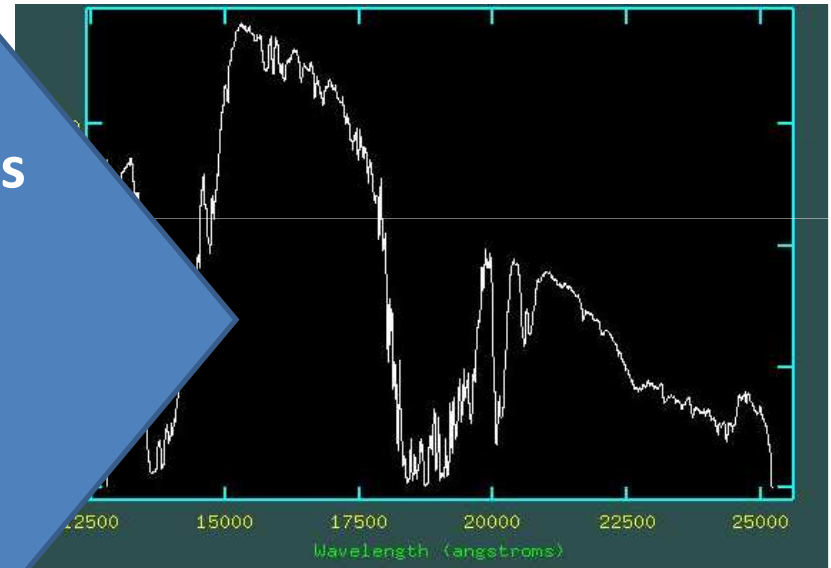
Nsreduce @arc.lis
Nswavelength arc.fits



Spectroscopic Data Procedure



`Nsreduce f@obj.lis`
`Nscombine`
`Nsfitcoords`
`Nstransform`
`nsextract`



Final Comments

- We want you to come to Gemini : "Bring One, Get One" Student Observer Support Program
- We want your instruments. New modes to bring PI instruments to Gemini (check webpages)