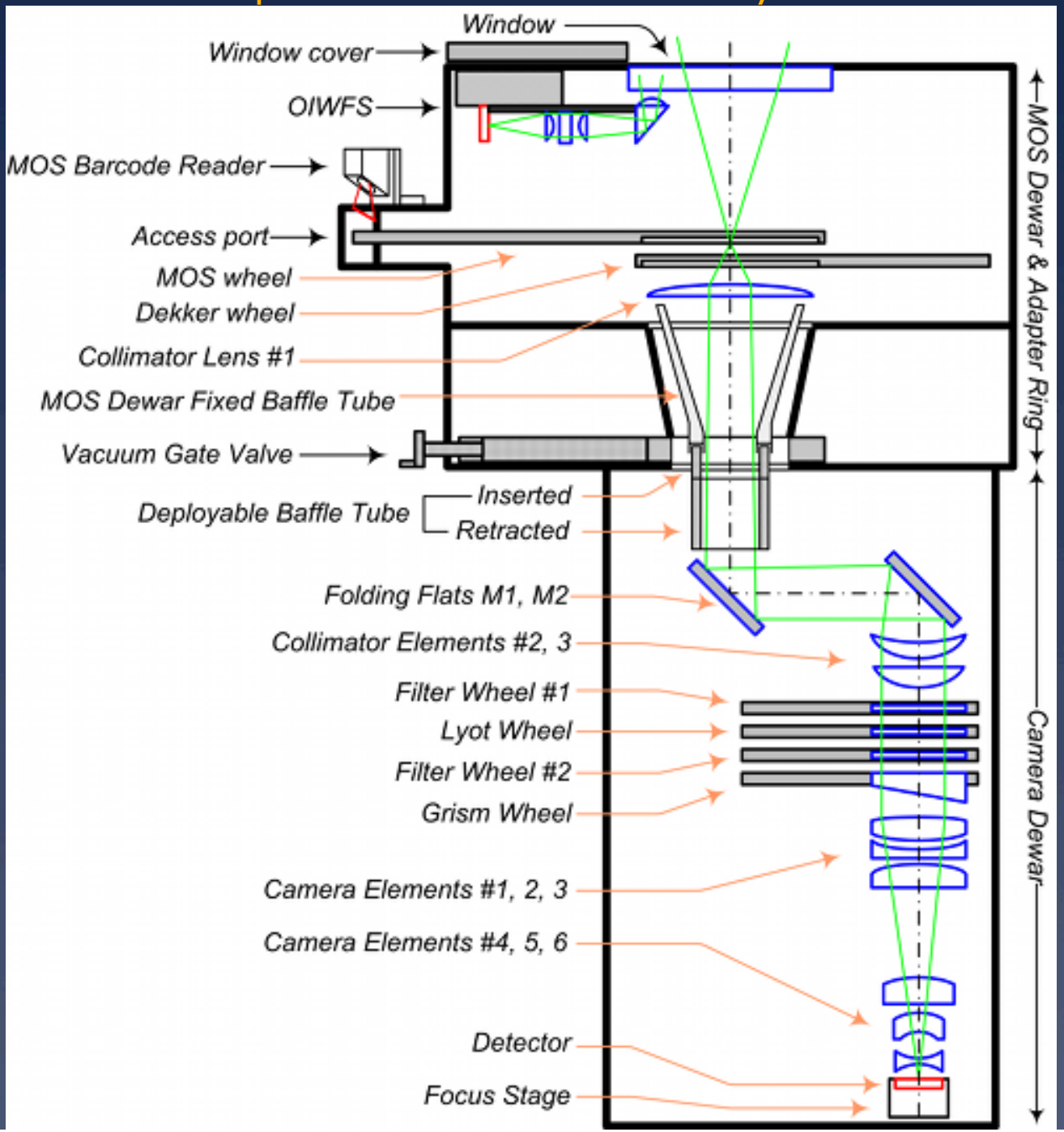
GEMINI OBSERVATORY

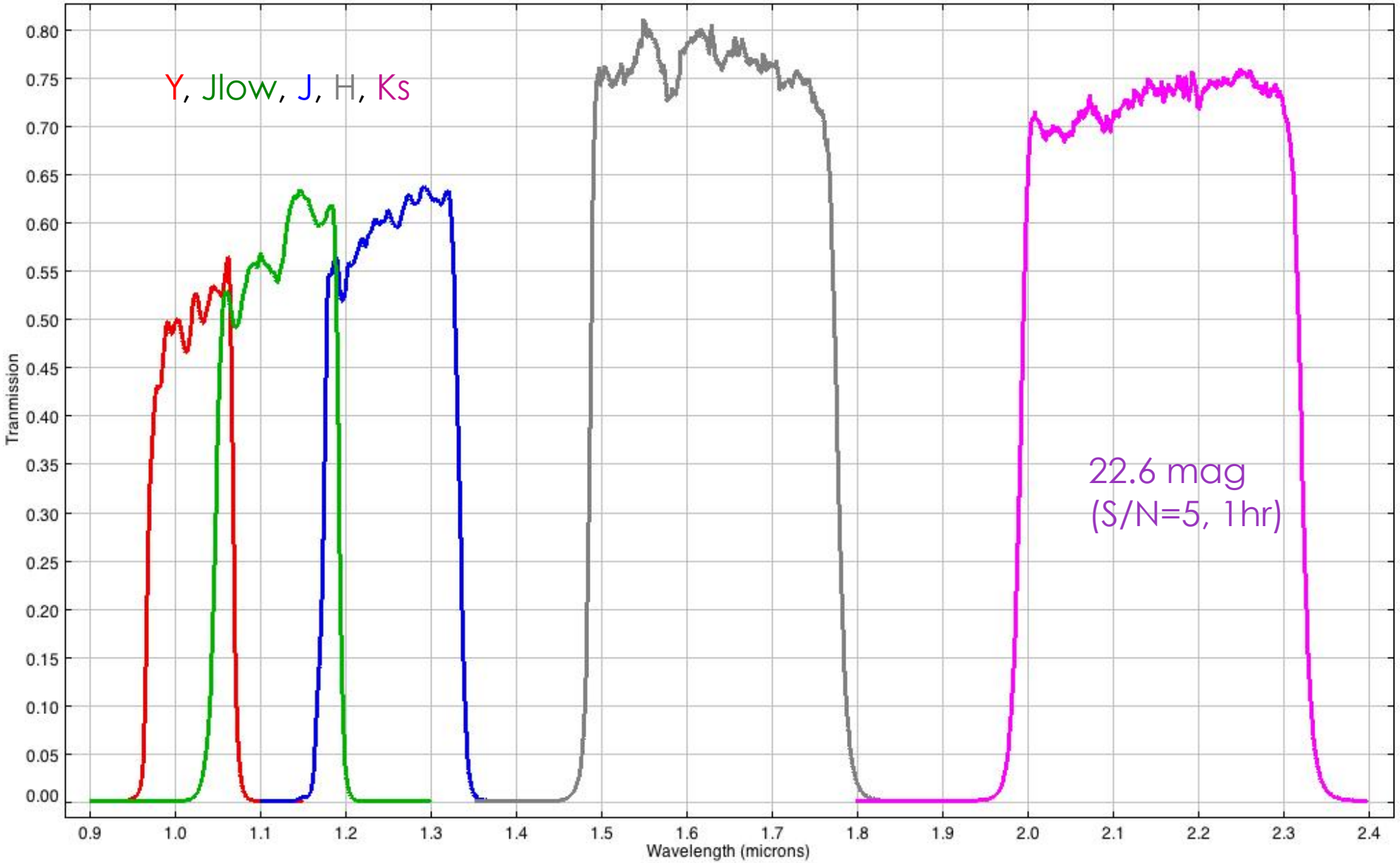
FLAMINGOS-2

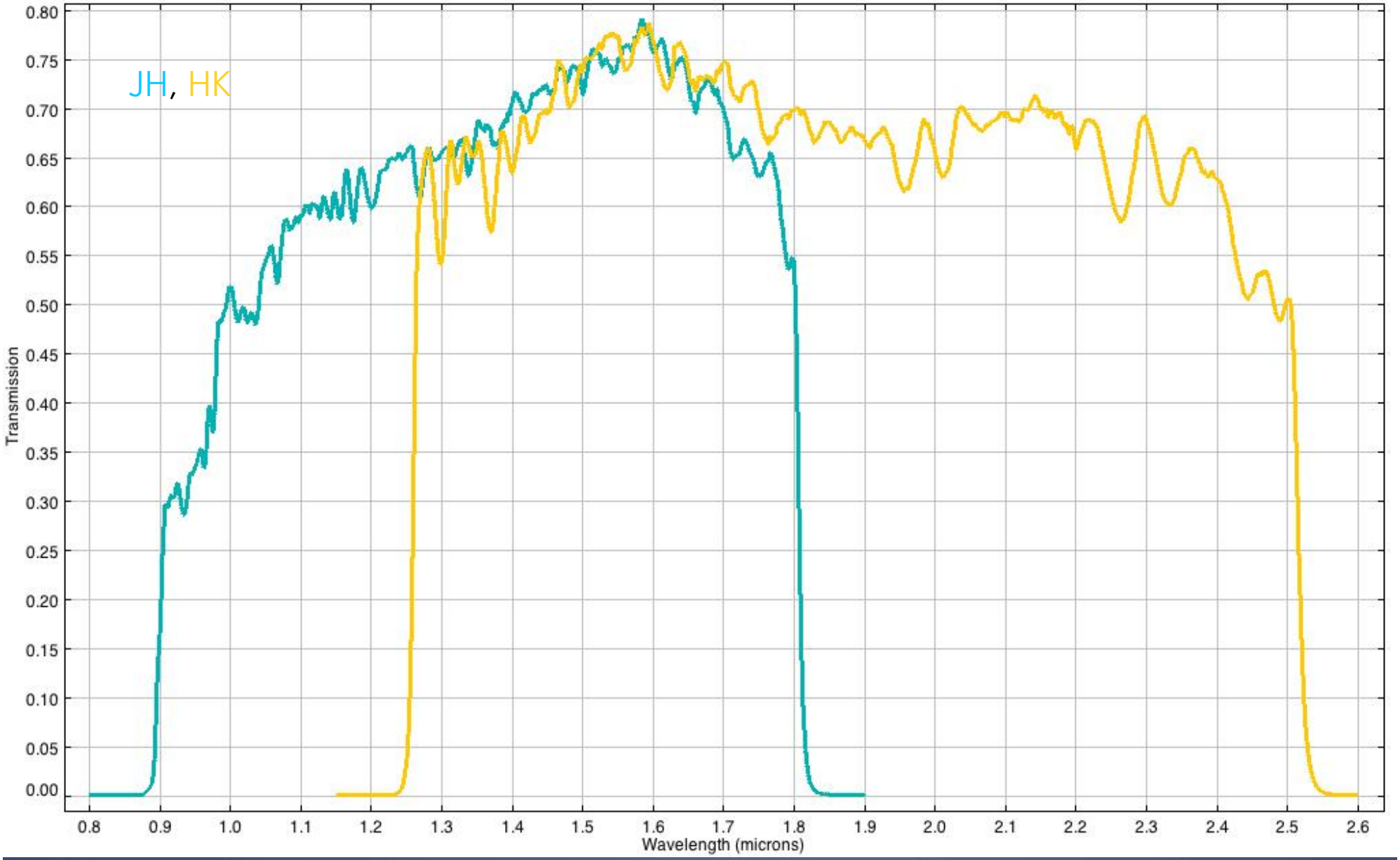
Team members : P. Hibon, P. Candia, R. Diaz, P. Gomez, M. Lazo, G. Perez, M. Schirmer

Opto-Mechanical Layout

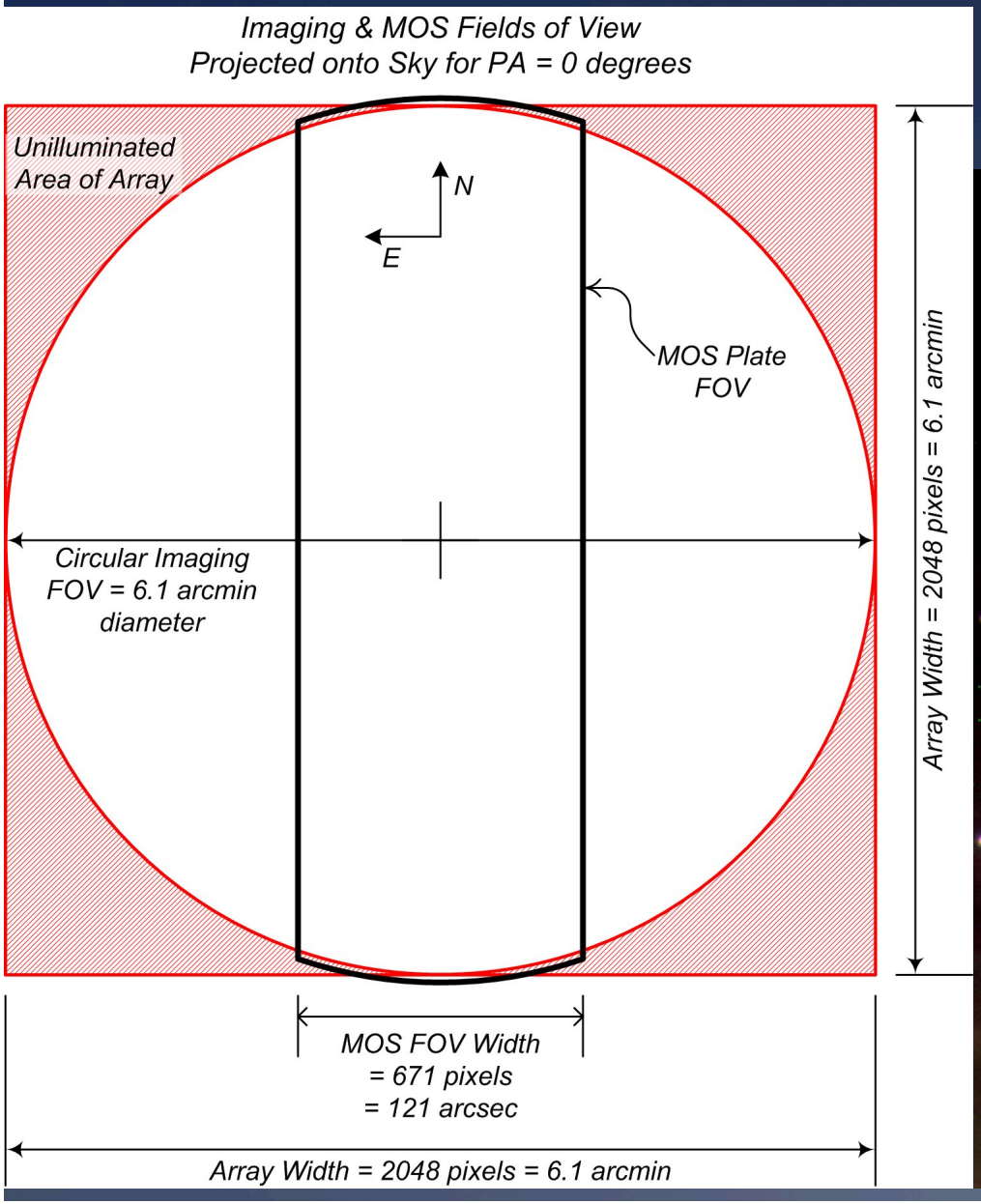


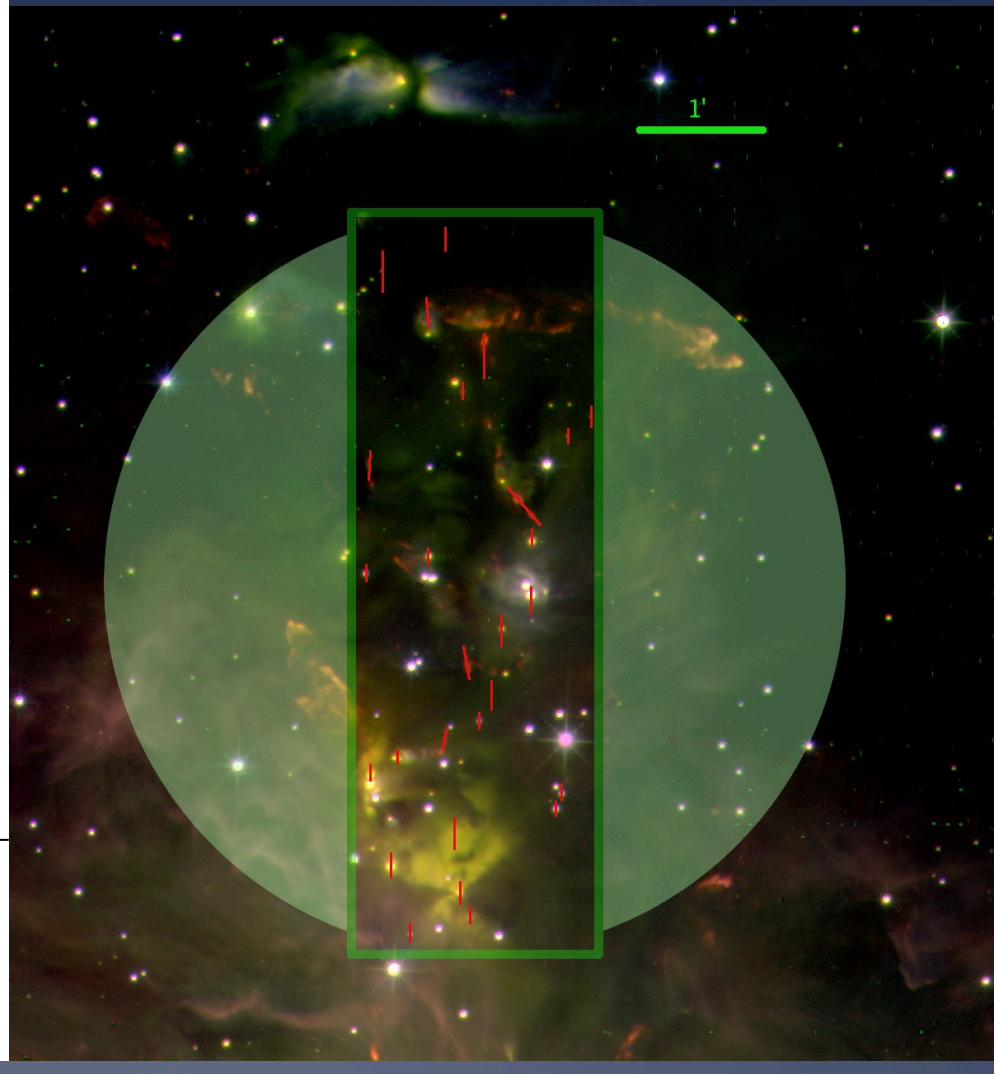
Filters Transmission



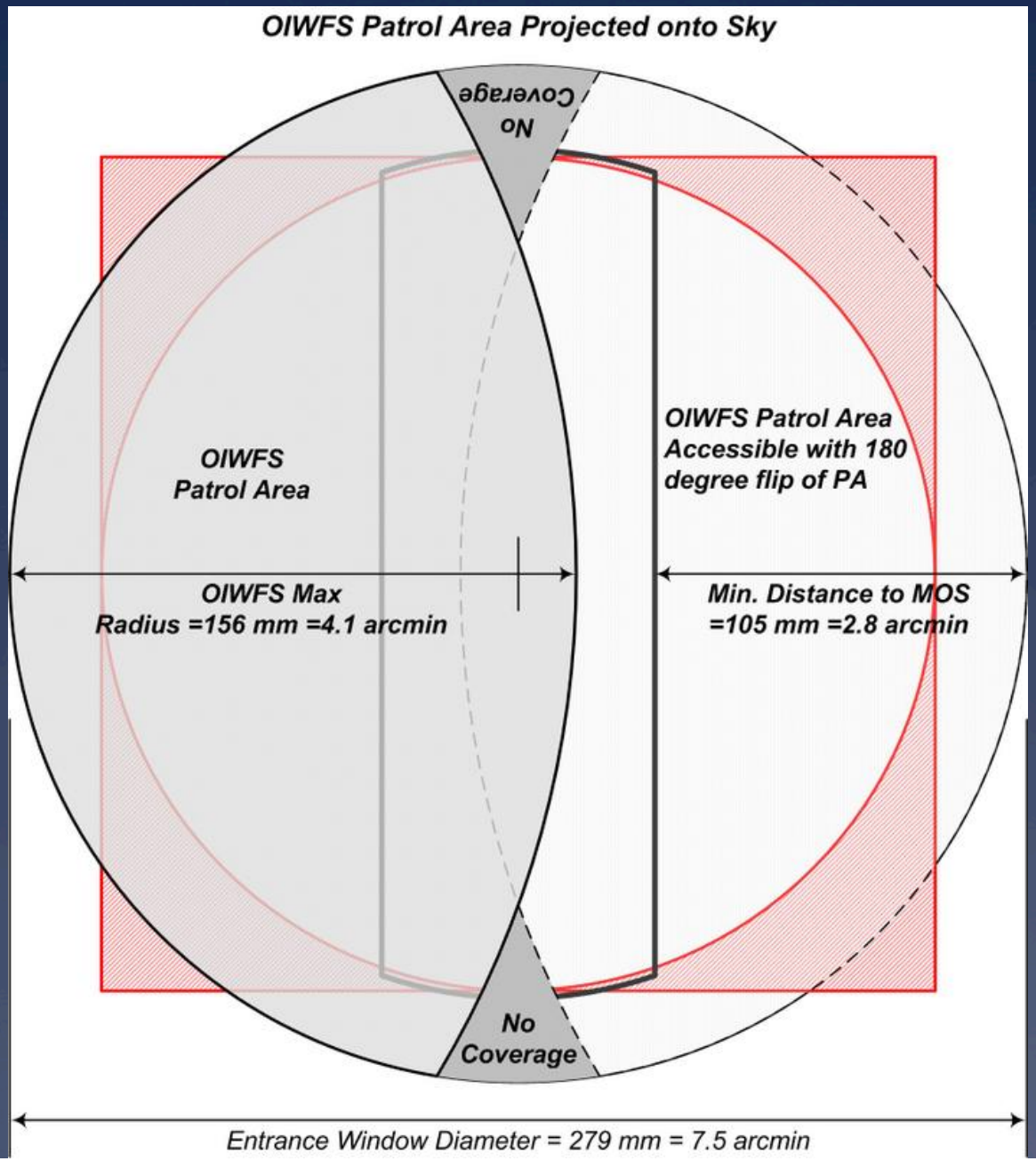

JH, HK
Transmission
Wavelength (microns)
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2.0
2.1
2.2
2.3
2.4
2.5
2.6

Fields of View

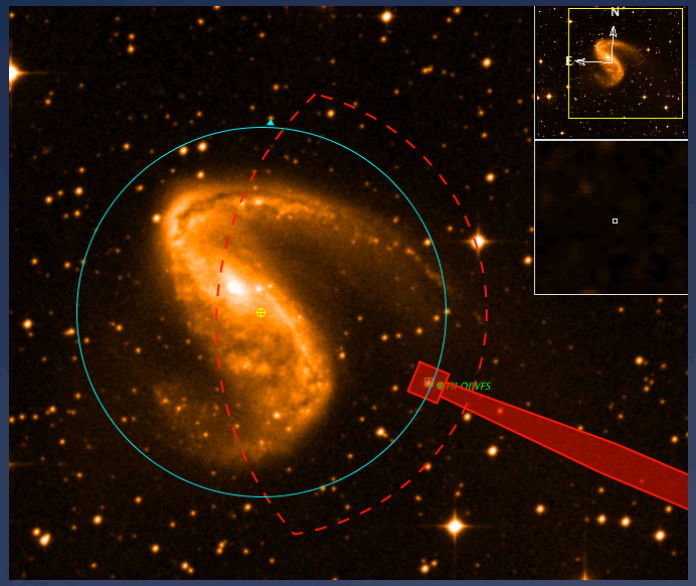


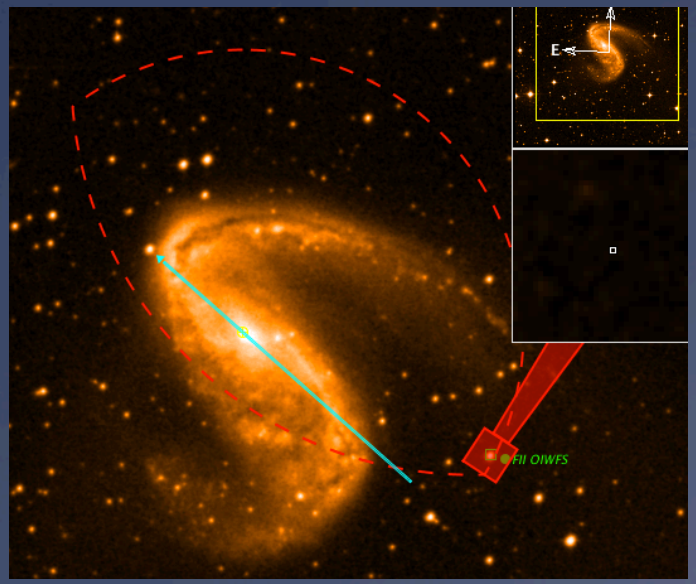


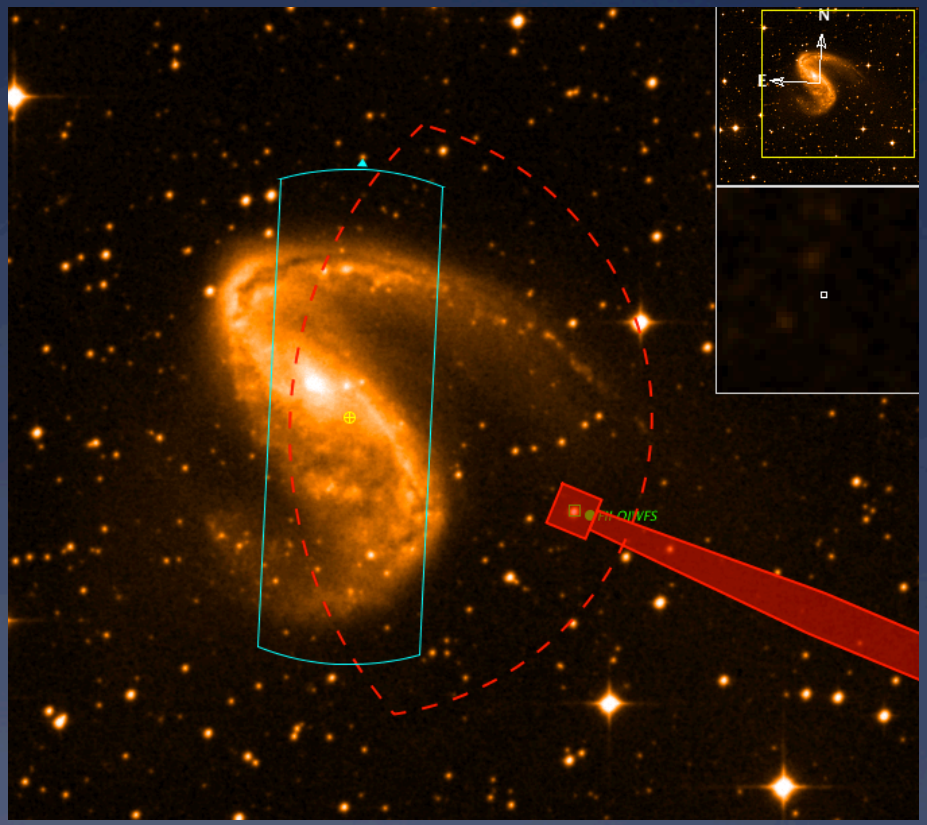
➢ Guiding options : Similar in design and function to the GMOS OIWFS though with a larger patrol field of view



➢ Guiding options : Similar in design and function to the GMOS OIWFS though with a larger patrol field of view







LAST NEWS

- F2 new science detector tested and characterized - End of Sept 2011.

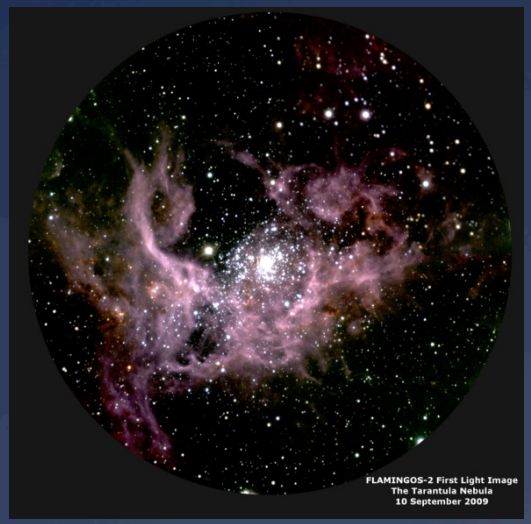
- F2 being re-integrated at Pachón Laboratory

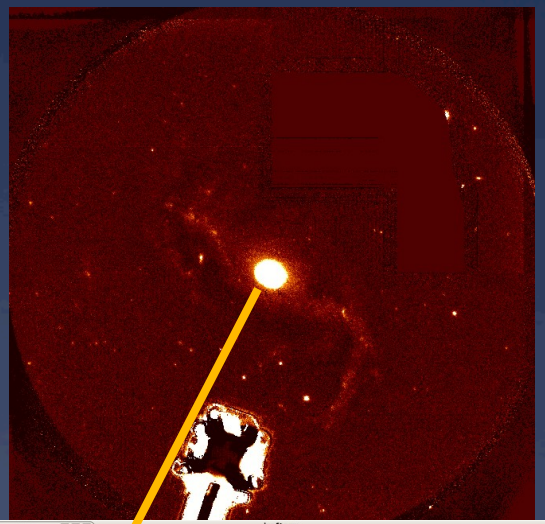
The instrument arrived to Cerro Pachón in June 2009.

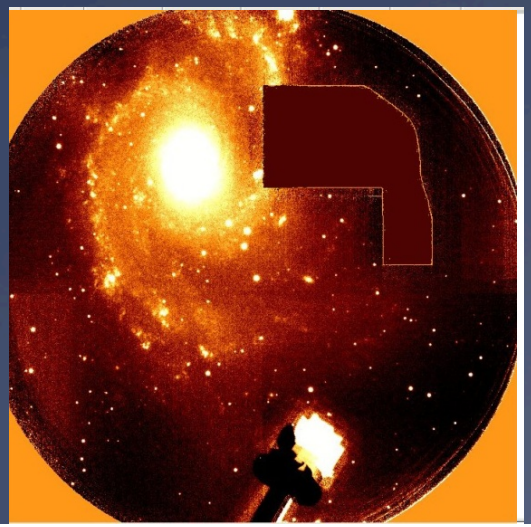
It was completely disassembled for the transport.

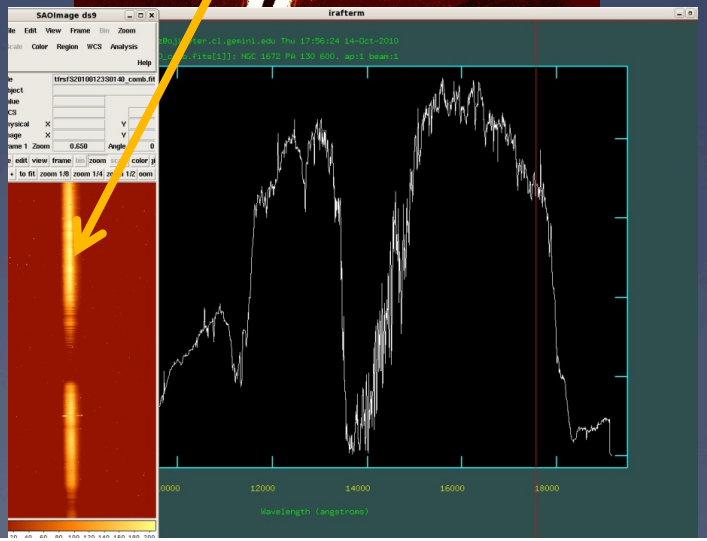
F2 was installed in the up-looking port in late Sep 2009

F2 performed well during the on-sky AT, but with outstanding issues.
Gemini took responsibility in January 2010 in order to address remaining issues in-house

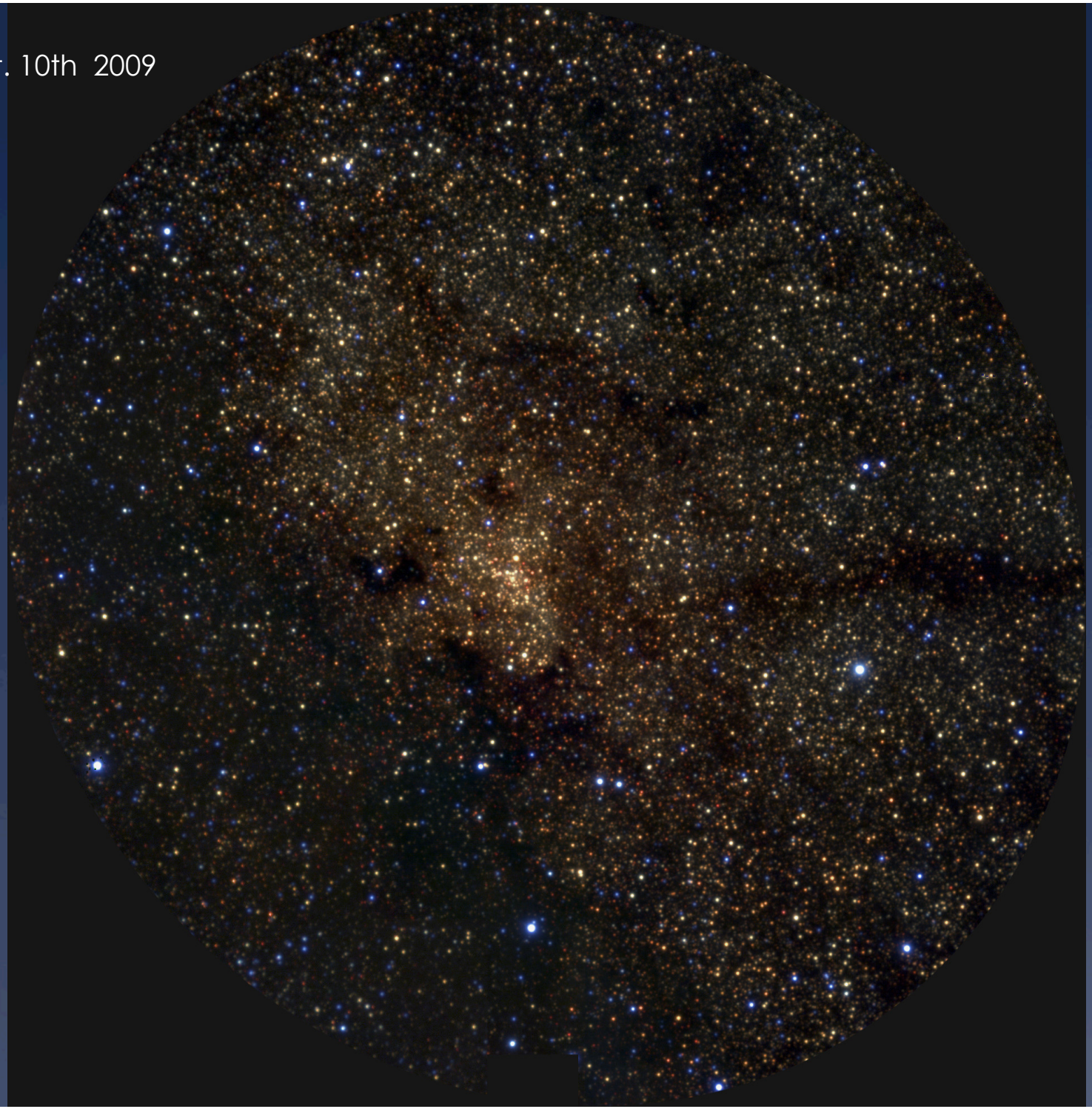








Sept. 10th 2009

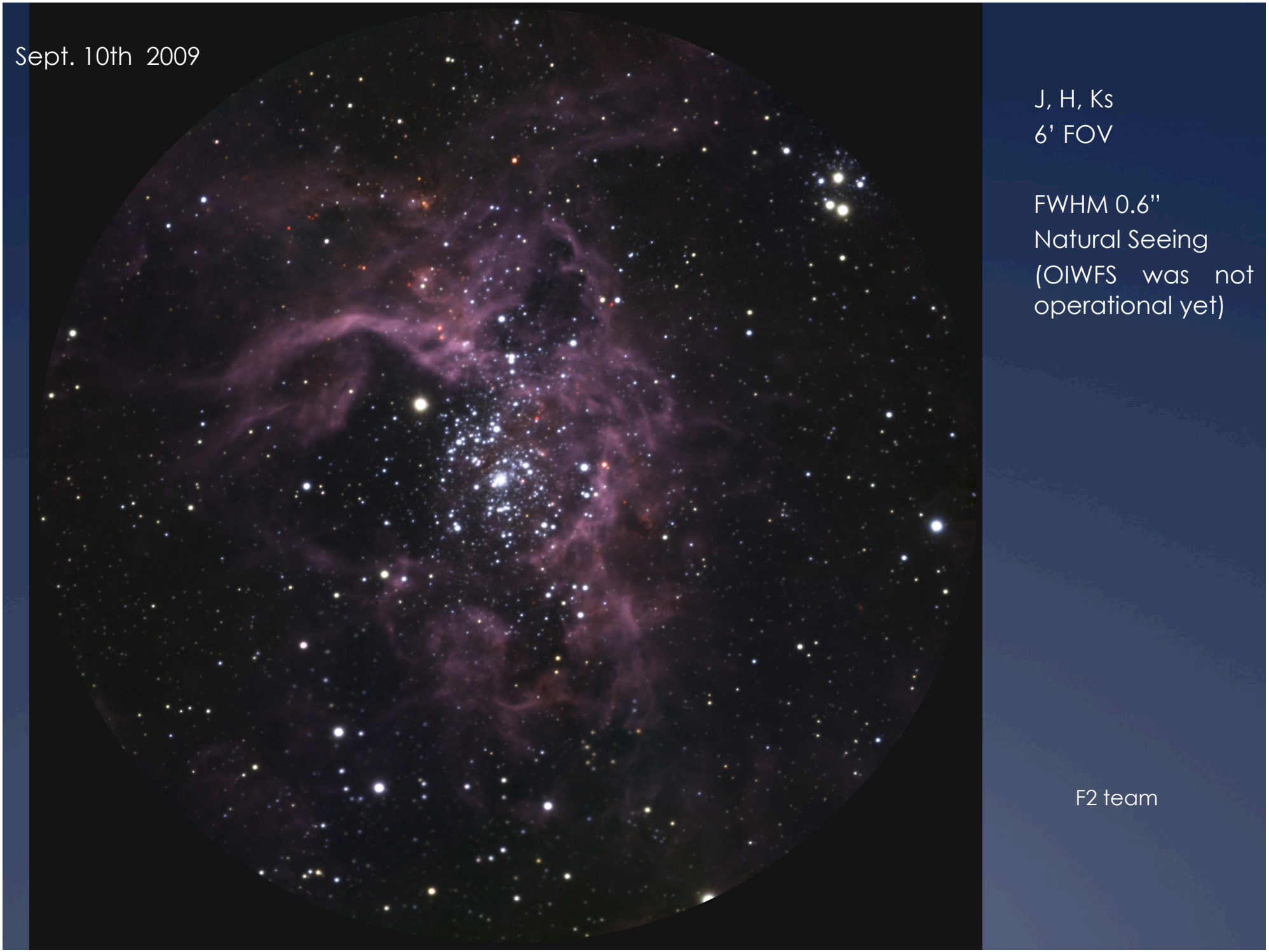


J, H, Ks
6' FOV

FWHM 0.6"
Natural Seeing
(OIWFS was not operational yet)

Total exp. Time ~8mins
(the blue objects would be visible on an optical image from a 8m telescope).

F2 team

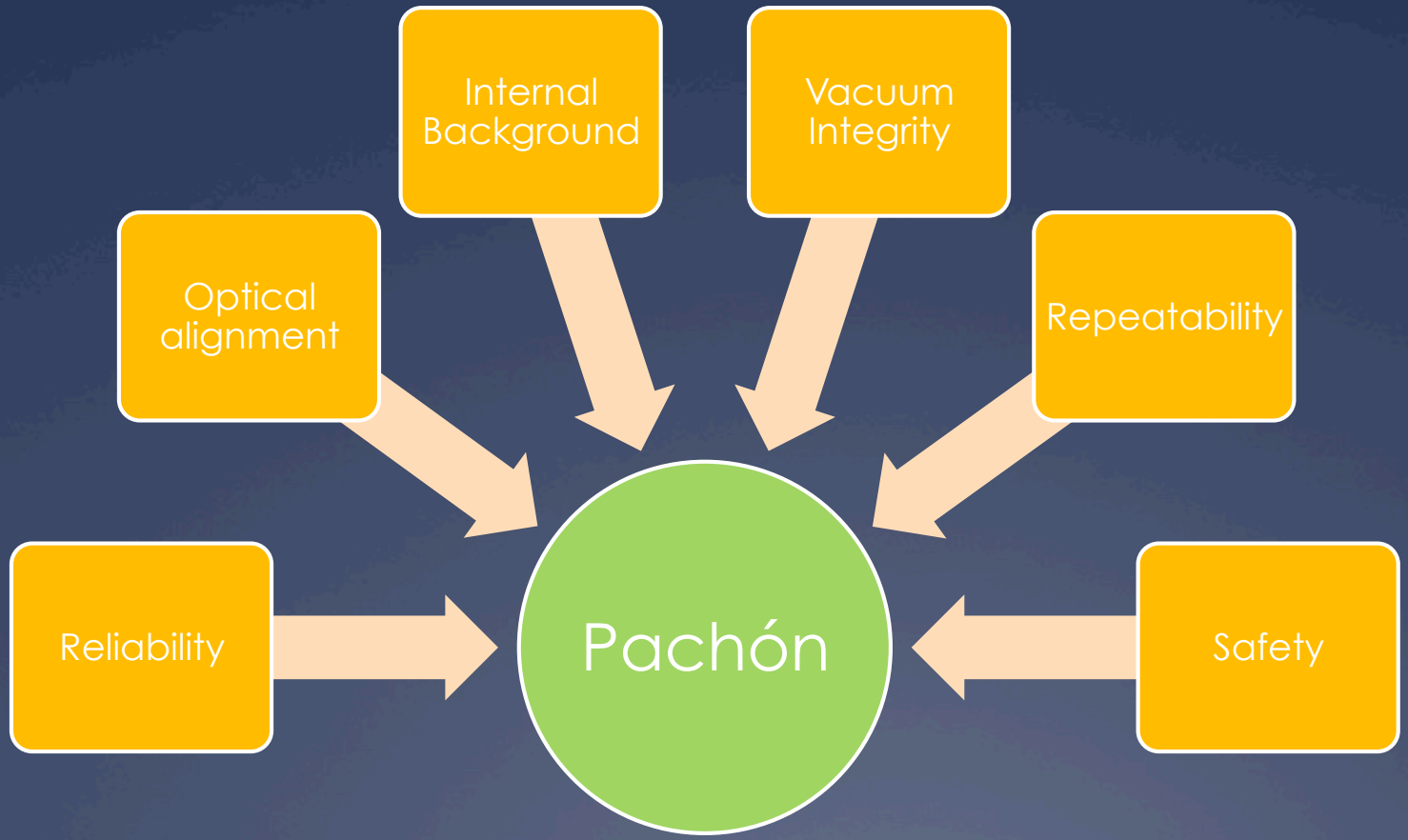


J, H, Ks
6' FOV

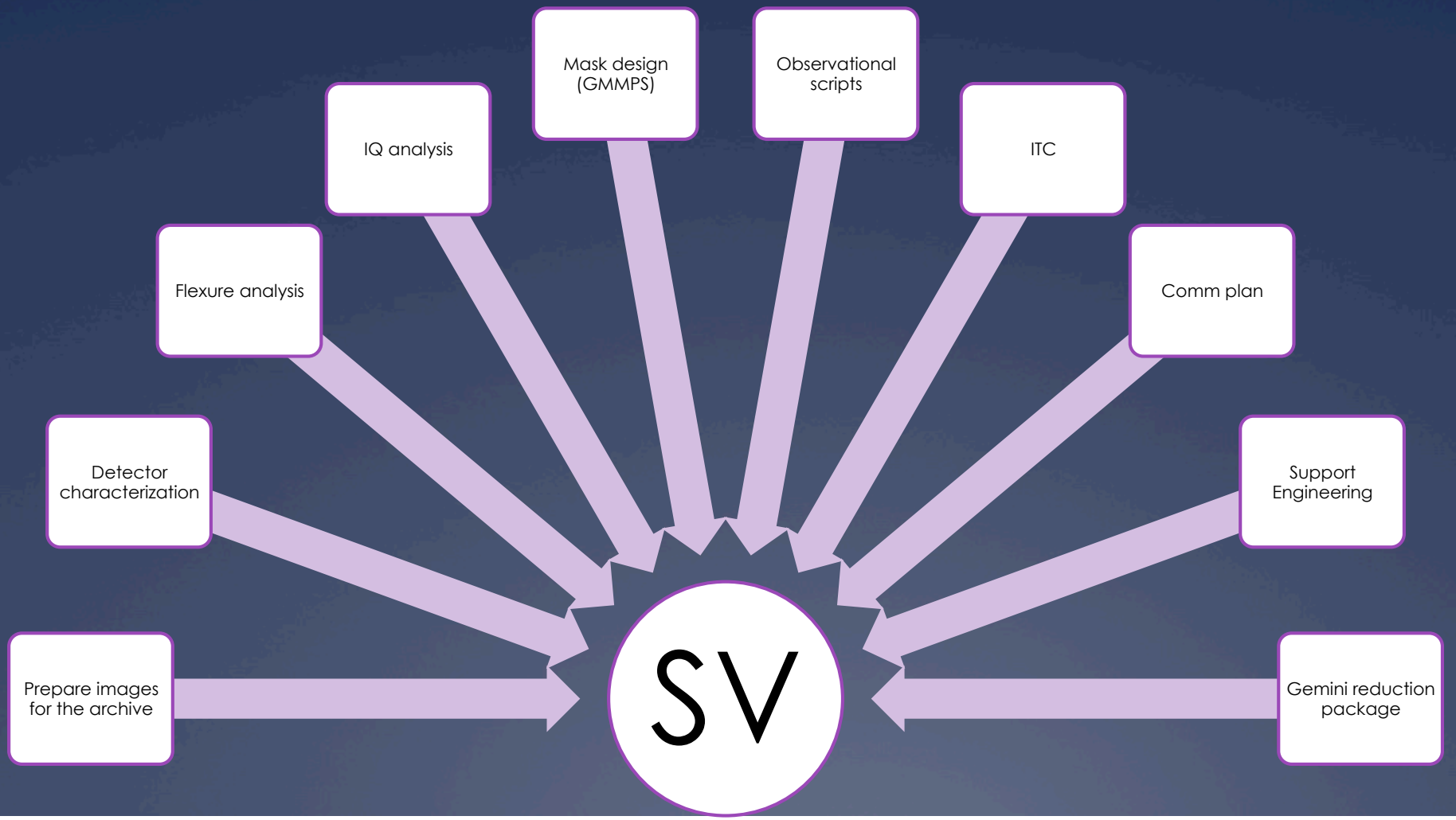
FWHM 0.6"
Natural Seeing
(OIWFS was not operational yet)

F2 team

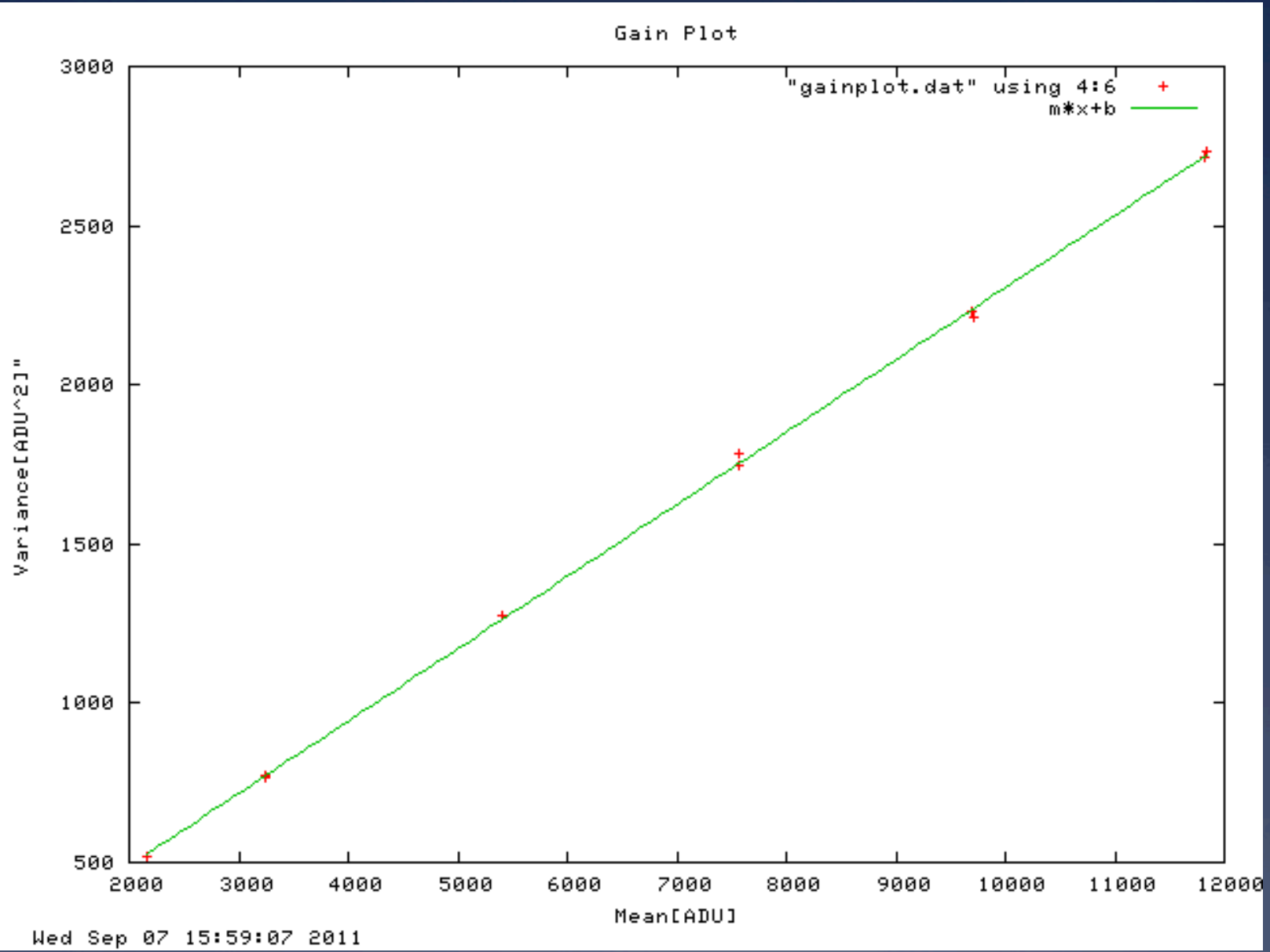
F2 was moved to La Serena instrument Lab for an extensive period of repairs and improvements to address problems. F2 sent to the flexure test (Nov 2011)



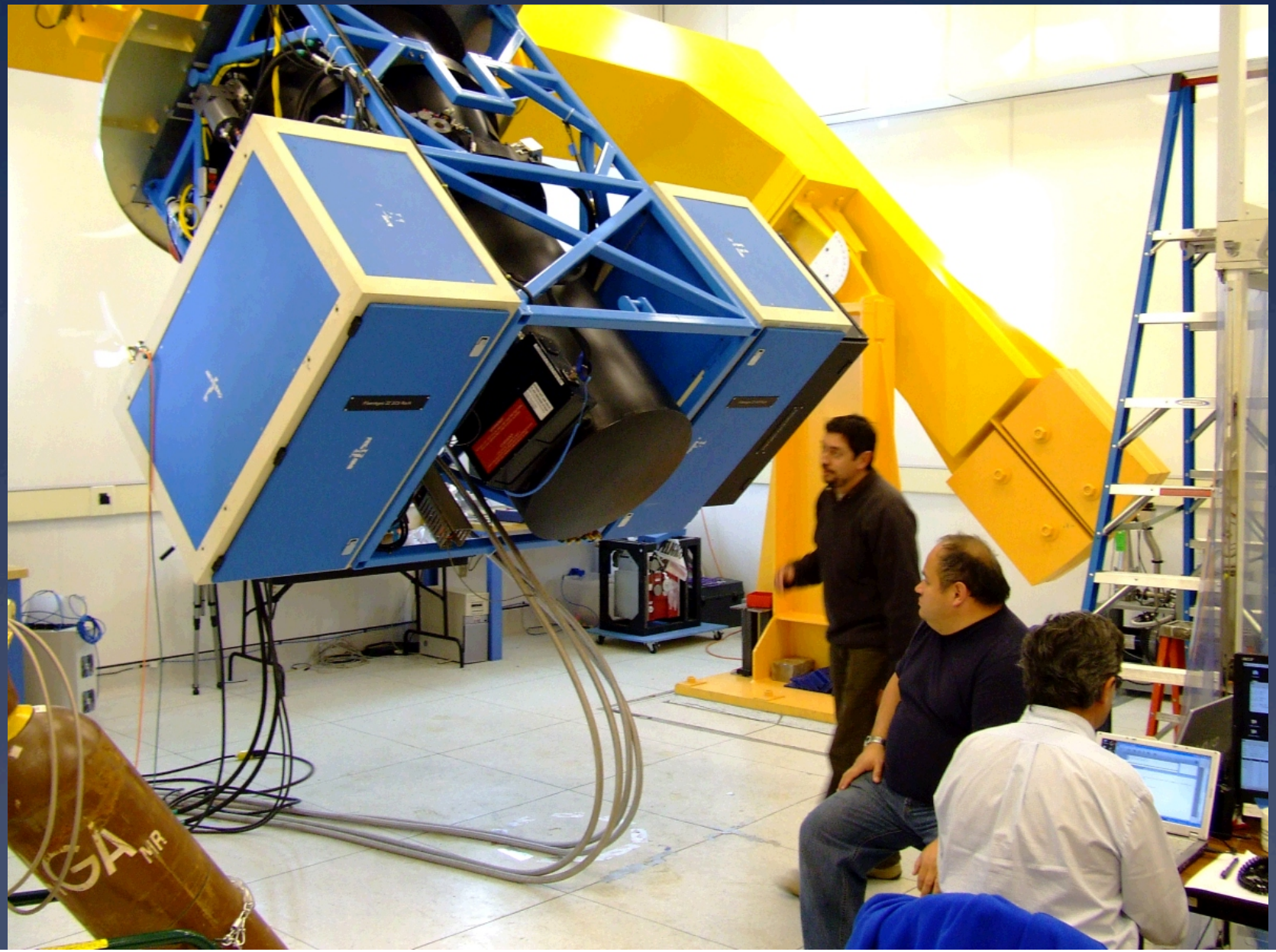
In parallel, we are also working on these items to be ready for science in 2012



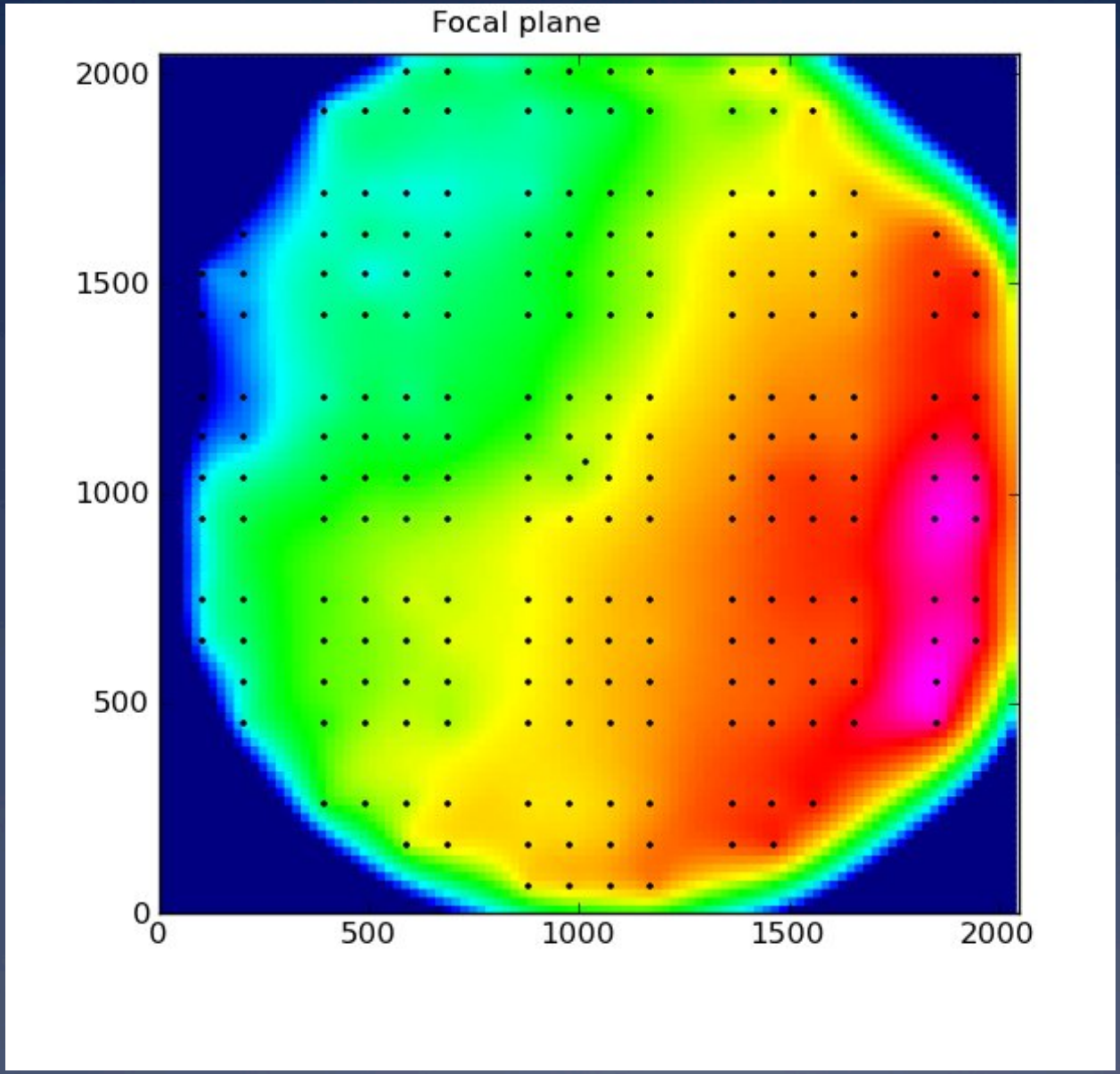
Detector characterization



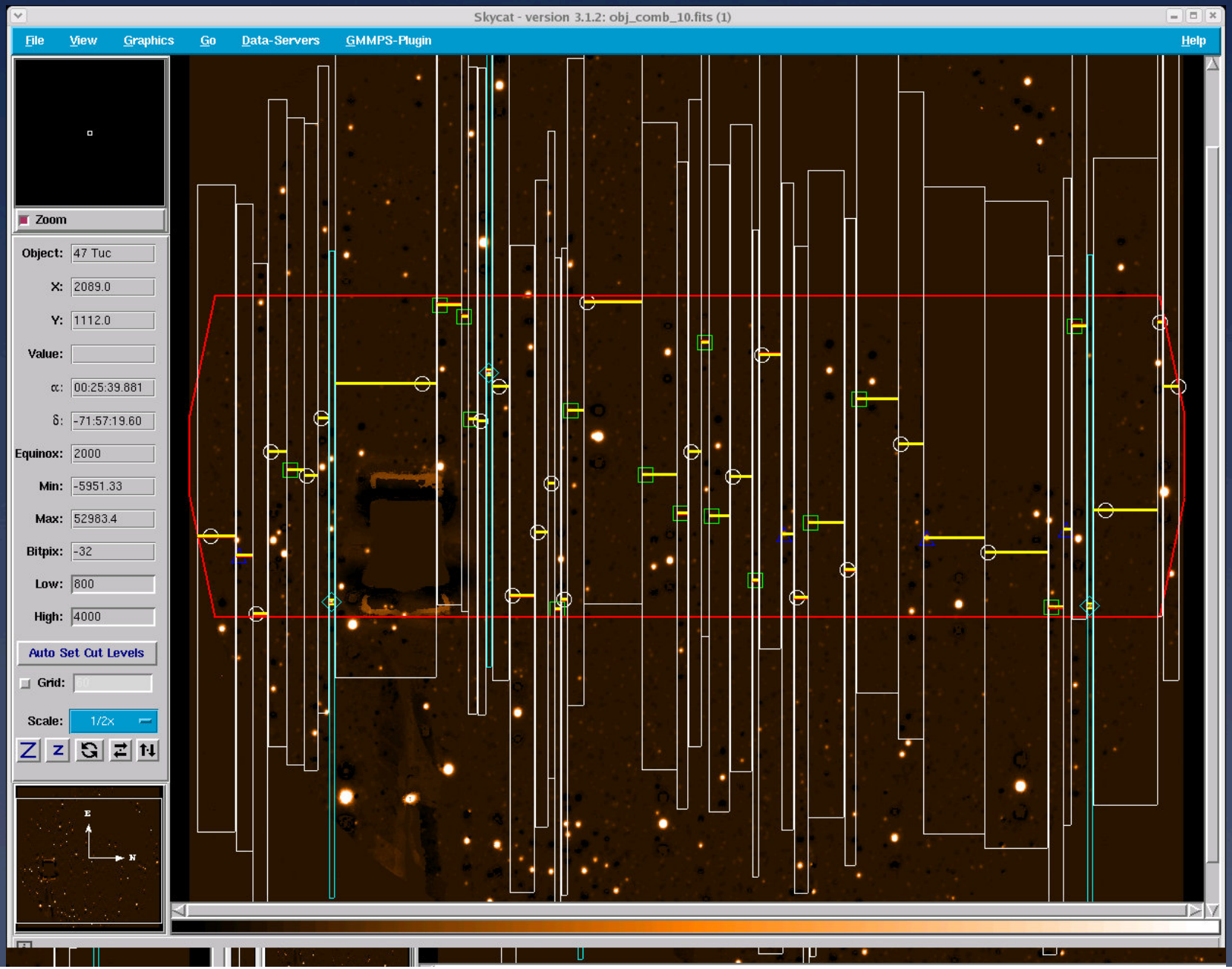
Flexure Tests to be repeated in Nov. 2011



IQ analysis

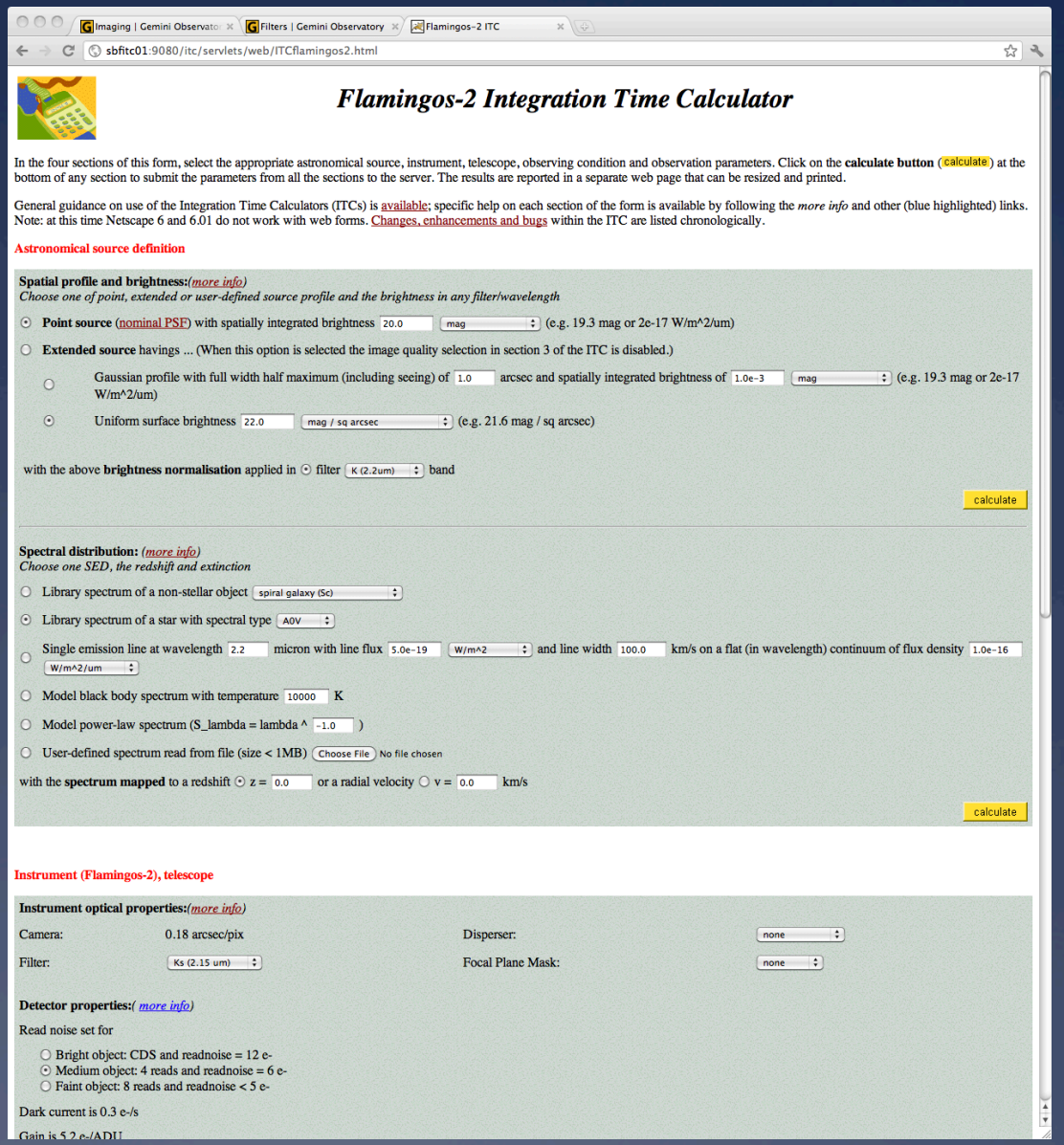


Mask design


Skycat - version 3.1.2: obj_comb_10.fits (1)
File
View
Graphics
Go
Data-Servers
GMMPS-Plugin
Help
Zoom
Object: 47 Tuc
X: 2089.0
Y: 1112.0
Value:
α: 00:25:39.881
δ: -71:57:19.60
Equinox: 2000
Min: -5951.33
Max: 52983.4
Bitpix: -32
Low: 800
High: 4000
Auto Set Cut Levels
Grid:
Scale: 1/2x
E
N

ITC

- ITC has been tested and verified
- Available for next call



Data Reduction package

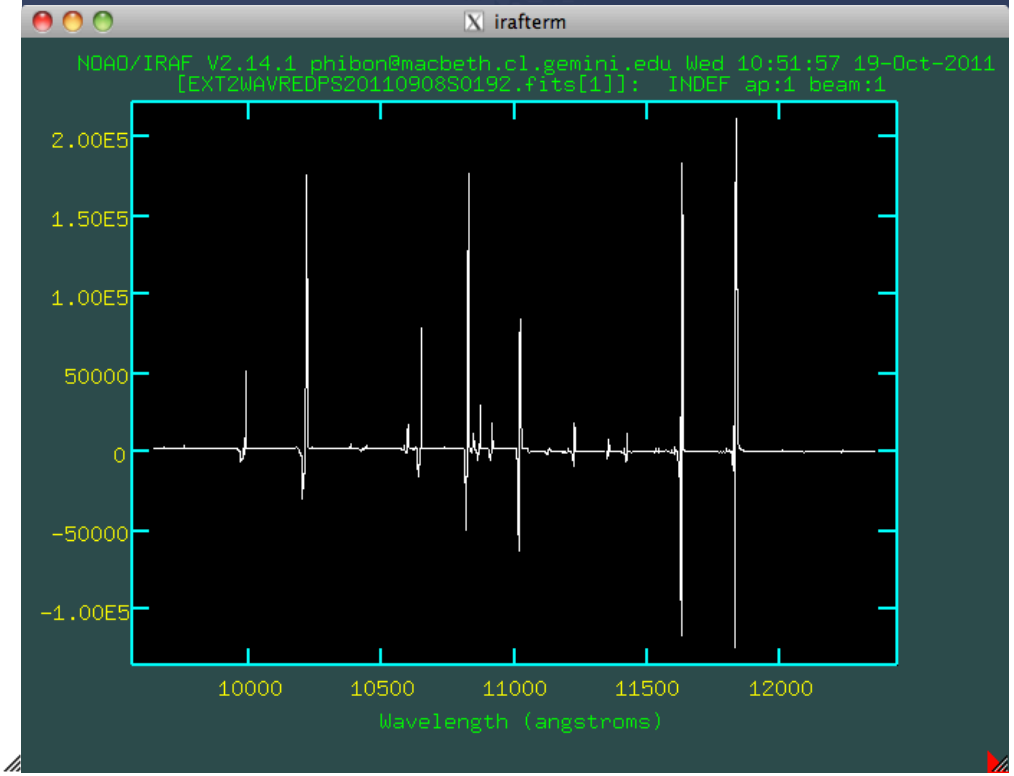
cl

```
                                  IRAF
                Image Reduction and Analysis Facility
PACKAGE = gnirs
   TASK = nsreduce

inimages= S20110908S0192.fits  Input image(s)
(outimag=                   ) Output image(s)
(outpref=               REDMAN3) Prefix for output image(s)
(fl_nscu=                   yes) Call nscut (cut data according to MDF)?
(section=              SPECSEC1) Alternative section or keyword (blank for MDF)
(fl_corn=                   yes) Zero corners, if specified in MDF?
(fl_proc=                   yes) Do processing to cut data (otherwise, use uncut)?
(fl_nsap=                    no) Call nsappawave?
(nsappwa=                   ) nsappwave calibration table
(crval  =                INDEF) Central wavelength
(cdelt  =                INDEF) Resolution in wavelength per pixel
(fl_dark=                    no) Do dark subtraction?
(darkima=                   ) Dark current image to subtract
(fl_save=                    no) Save dark after calling nscut?
(fl_sky =                   yes) Do sky subtraction?
(skyimag=                   ) Sky image(s) from other nod positions
(skysect=                   ) Level, sample area, or header keyword for sample area
(combtyp=               median) Type of combine operation for sky
(rejtype=           avsigclip) Type of rejection for combining sky
(masktyp=           goodvalue) Mask type
(maskval=                  0.) Mask value
(scale  =                none) Image scaling for combining sky (see imcombine.scale)
(zero   =              median) Image zero-point offset for combining sky (see imcombine.zero)
(weight =                none) Image weights for combining sky (see imcombine.weight)
(statsec=              [*,*]) Statistics section
(lthresh=                INDEF) Lower threshold
(hthresh=                INDEF) Upper threshold
(nlow   =                    1) minmax: Number of low pixels to reject
(nhigh  =                    1) minmax: Number of high pixels to reject
(nkeep  =                    0) Minimum to keep or maximum to reject
(mclip  =                  yes) Use median in sigma clipping algorithms?
(lsigma =                   3.) Lower sigma clipping factor
(hsigma =                   3.) Upper sigma clipping factor
(snoise =                  0.0) ccdclip: Sensitivity noise (electrons)
(sigscal=                  0.1) Tolerance for sigma clipping scaling correction
(pclip  =                 -0.5) Percentile clipping parameter
(grow   =                   0.) Radius (pixels) for neighbor rejection
(skyrang=                INDEF) Time window for includinging sky frame (seconds)
(nodsize=                   3.) Minimum separation of nod positions in arcsec
(fl_flat=                    no) Do flat-fielding?
(flatima=                   ) Spectral flat field image to divide
(flatmin=                   0.) Lower limit to flat (avoiding overflows)
(fl_vard=                  yes) Create variance and data quality frames?
(logfile=                   ) Logfile
(verbose=                  yes) Verbose
(debug  =                    no) Very verbose
(force  =                    no) Force use with earlier IRAF versions?
(status =                     1) Exit status (0=good)
(scanin1=                   ) Internal use
(scanin2=                   ) Internal use
(mode   =                    ql)
```

Ready
Using GNIRS package
Tasks have been tested

irafterm



SCIENCE CASES

- Imaging Applications :
  - Galactic Center
  - Intermediate redshift clusters
  - Local Group galaxies
  - Globular Clusters
  - Star Formation in dwarf galaxies
  - Intergalactic stars
  - etc …
- Spectroscopic Applications :
  - Galaxies in distant clusters
  - Stars and star clusters in nearby galaxies
  - Evolution of globular clusters
  - High redshift galaxies
  - etc …

Summary

- NIR wide field imager and Multi-Object Spectrometer :
Only NIR MOS instrument mounted on an 8m telescope available to observe the southern sky until VLT /KMOS

- Very versatile instrument able to support many types of science investigations

- Main characteristics : FoV : 6' arcmin diameter
  Y, Js, J, H, Ks, + narrowband filters
  MOS 6' X 2': 9 MOS masks available
- Compatible with GEMS

- End of Nov. 2011 : Installation on the telescope

- Dec 2011- March 2012 : Commissioning
- Science Verification call of proposals : first half of 2012.

Links : http://www.gemini.edu/sciops/instruments/flamingos2/?q=sciops/instruments/flamingos2
http://www.gemini.edu/sciops/instruments/flamingos2/status-and-availability