

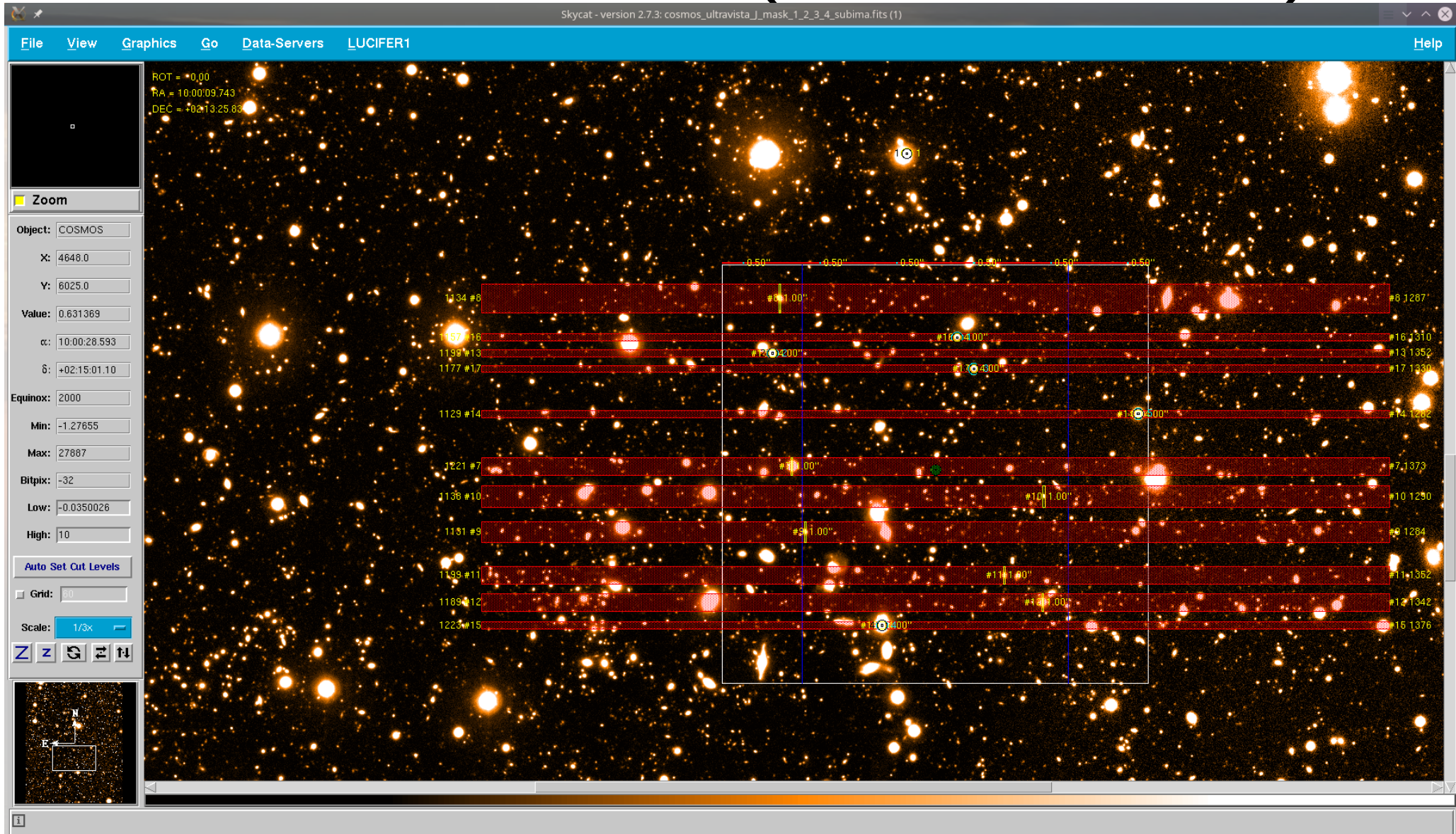
A LUCI user experience

A. Contursi
LBTB/ MPE Garching

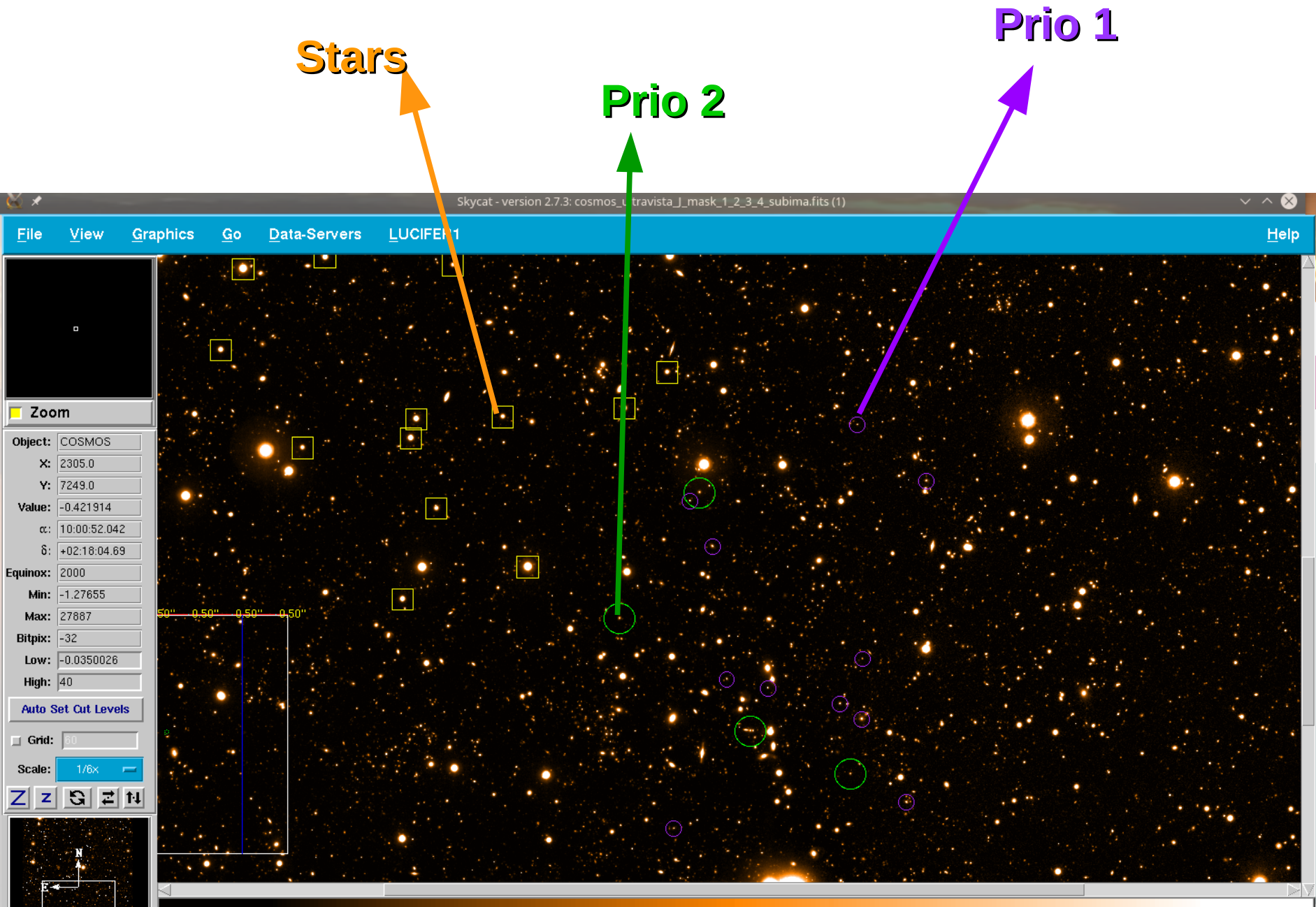
OUTLINES

- 1: preparing MOS Masks
- 2: preparing scripts
- 3: at the telescope

1

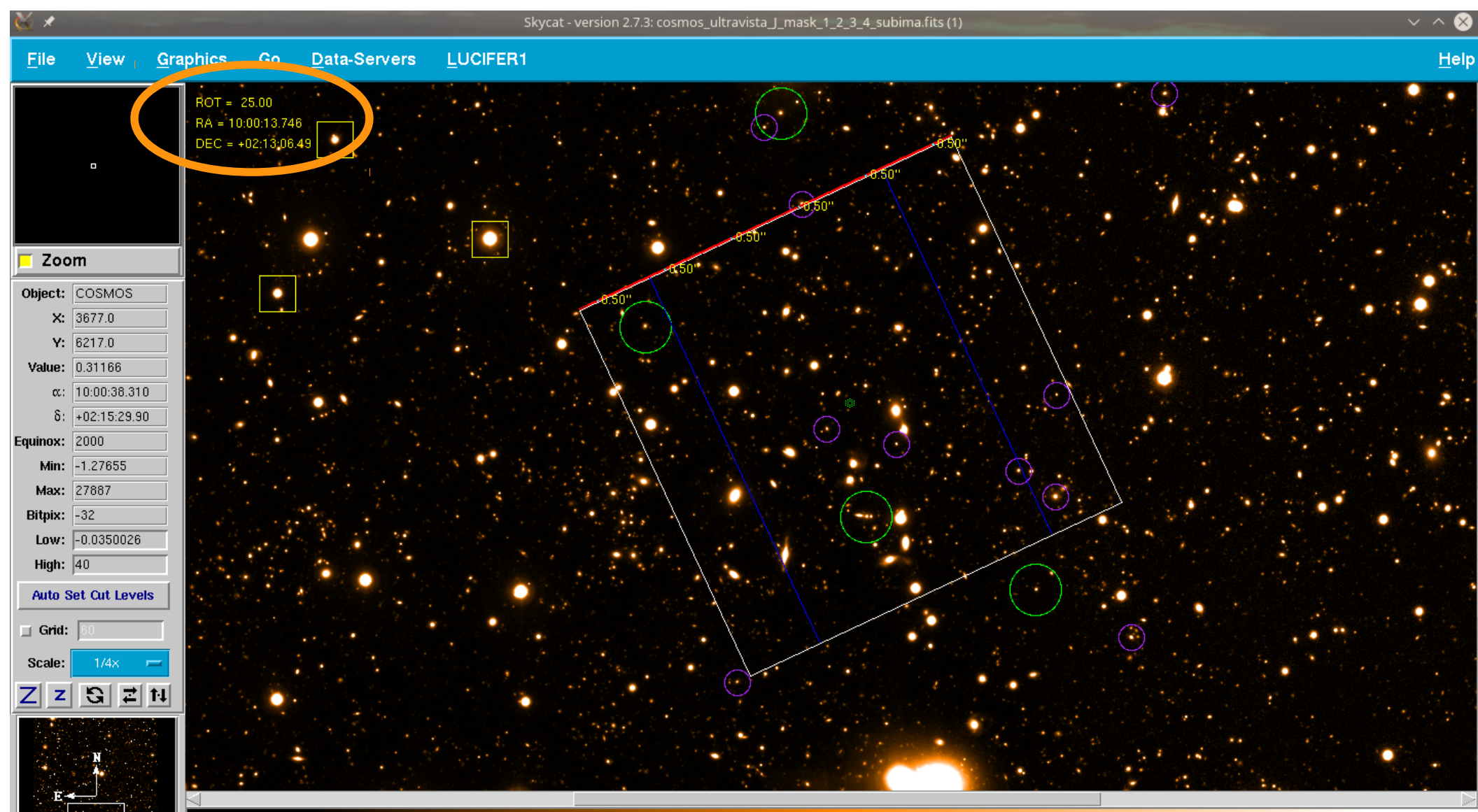


Targets with different priorities

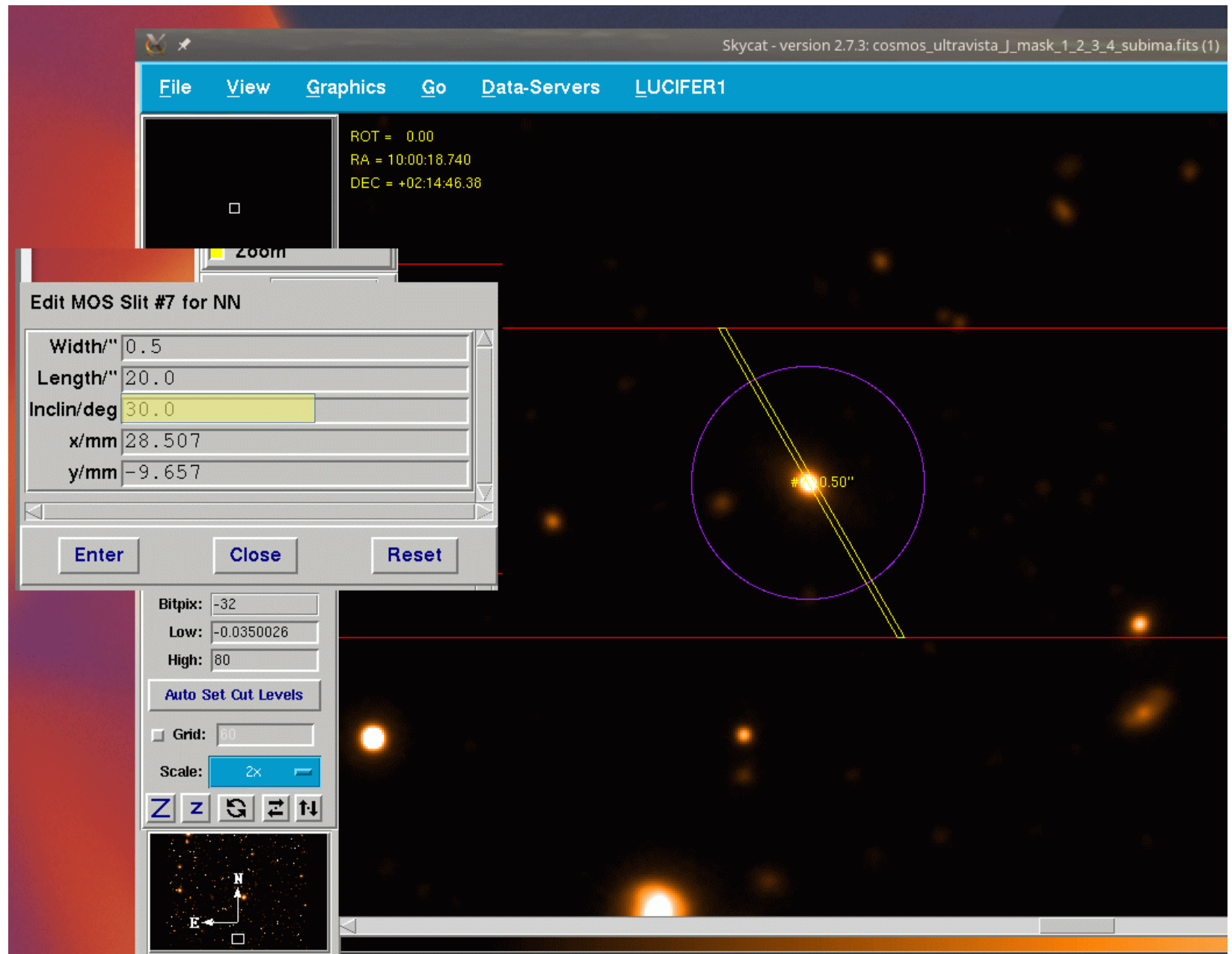


MASK Orientation

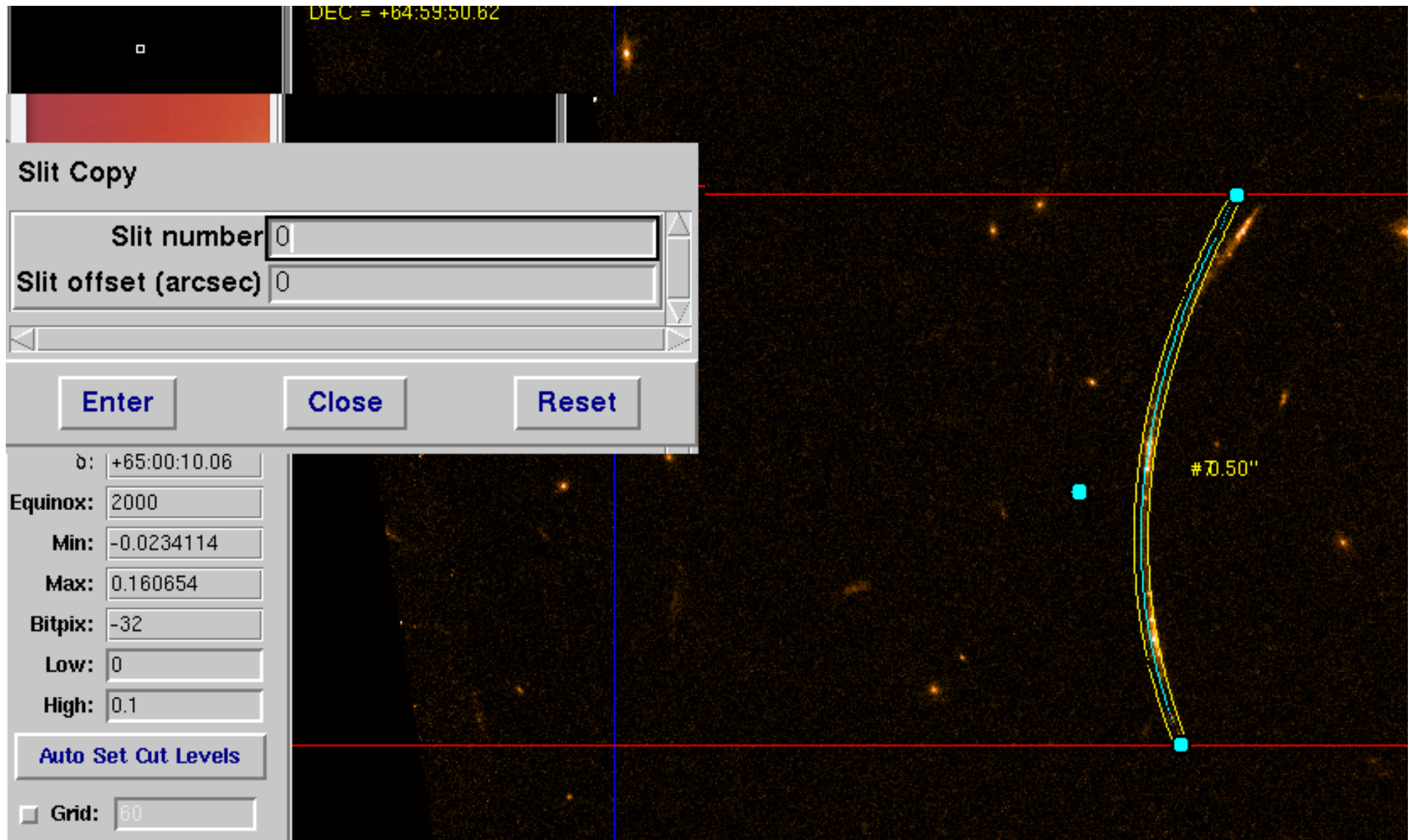
From 0.05 deg/click to 90 deg/click



Slits length, width and orientation



Curved slits and its copy for nodding



Saving with catalog targets names

The screenshot displays the LUCIFER software interface, which is used for astronomical data processing. The main window features a menu bar with 'File', 'Edit', 'Options', 'Data-Servers', and 'LUCIFER'. Below the menu bar, there are search options and a table of search results.

Search Options:

- Object Name:
- Equinox:
- α :
- δ :
- Min Radius:
- Max Radius:
- Max Objects:
- Buttons:

Search Results (11):

ID	RA	DEC
117562	10:00:18.131	+02:10:23.16
118225	10:00:02.761	+02:10:49.36
120372	10:00:05.717	+02:12:11.60
120488	10:00:07.156	+02:12:26.73
120758	10:00:11.917	+02:12:42.23
121033	10:00:14.626	+02:12:51.12
121482	10:00:05.673	+02:13:11.16
124139	10:00:15.582	+02:15:02.37
125015	10:00:17.065	+02:15:47.33
125490	10:00:01.443	+02:16:07.15
126603	10:00:05.999	+02:17:02.82

Plotting objects...

Plot Controls:

- Max:
- Bitpix:
- Low:
- High:
- Auto Set Out Levels:
- Grid: ☐
- Scale:
- Buttons:

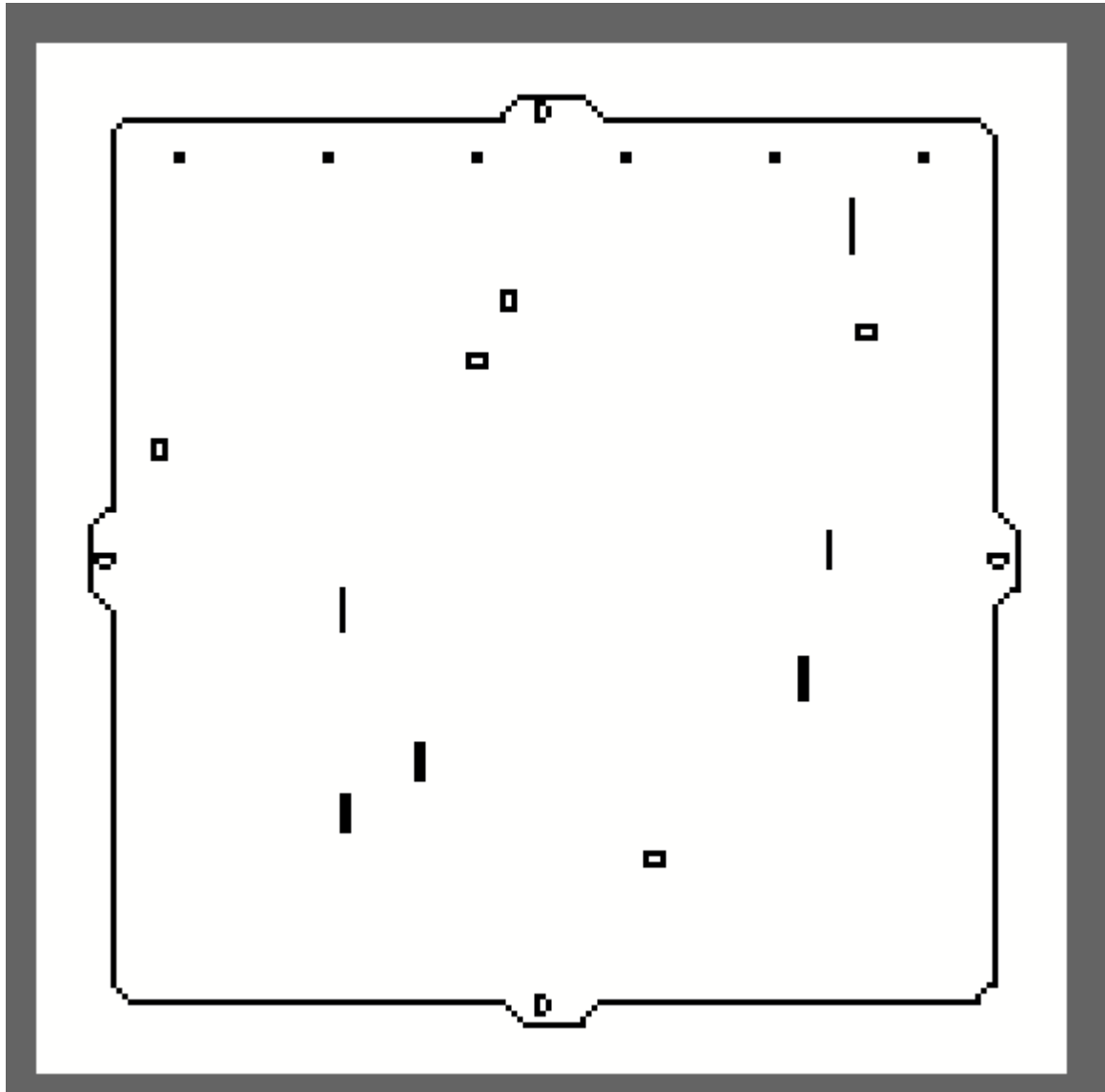
Select catalog dialog:

Select catalog :

- Sources_Coe_etal.cat
- JCOSMOS_mask1_pri01.

The main plot area shows a star field with several objects circled in red. A rectangular region is outlined in blue, and a scale bar indicates 0.50" for each segment.

LMS Output: .lms. .gbr and .epsf



.epsf

LMS Output: .lms. .gbr and .epsf

```
File Edit Search Preferences Shell Macro Windows Help
# created by SKYCAT-TOOL -- LMS-plugin v2.0
# orig filename : lucil.607.JCOS1 : /home/contursi/.lms/SET/lucil.607.JCOS1.lms
# user-date : contursi 2016-11-25T15:26:45
# fits file : /home/contursi/LBT/FIELDS/JCOSMOS_LEGA_C/cosmos_ultravista_J_mask_1_2_3_subima.fits
# fits instrument: VIRCAM
# fits origin : ESO-PARANAL
# fits object : COSMOS
# catalog name : no_catalog
# INS.MASK.NA : M607JCOS1
# INS.MASK.ID : 952645
# INS.MASK.NAID : M607JCOS1+952645
# target setup for LUCIFER1
# -----

TEL.TARG.ALPHA 100009.743
TEL.TARG.DELTA +021325.830
TEL.ROT.OFFANGLE 0.000
TEL.TARG.EQUINOX 2000.0

INS.SLIT.NUMBER 17

INS.RSLIT.NUMBER 6
INS.TARG101.NAME      refs slit
INS.SLIT1.REF 101
INS.TARG101.SHAPE     STRAIGHT
INS.TARG101.WID      0.5
INS.TARG101.LEN      0.5
INS.TARG101.ROT      0.0
INS.TARG101.WIDMM     0.300
INS.TARG101.LENMM     0.300
INS.TARG101.XMM      -65.000
INS.TARG101.YMM      -70.000

INS.TARG102.NAME      refs slit
INS.SLIT2.REF 102
INS.TARG102.SHAPE     STRAIGHT
INS.TARG102.WID      0.5
INS.TARG102.LEN      0.5
INS.TARG102.ROT      0.0
INS.TARG102.WIDMM     0.300
INS.TARG102.LENMM     0.300
INS.TARG102.XMM      -39.000
INS.TARG102.YMM      -70.000

INS.TARG103.NAME      refs slit
INS.SLIT3.REF 103
INS.TARG103.SHAPE     STRAIGHT
INS.TARG103.WID      0.5
INS.TARG103.LEN      0.5
INS.TARG103.ROT      0.0
INS.TARG103.WIDMM     0.300
INS.TARG103.LENMM     0.300
INS.TARG103.XMM      -13.000
INS.TARG103.YMM      -70.000
```

Form #0 to #6:
Built in alignment boxes

```
INS.TARG106.WIDMM 0.300
INS.TARG106.LENMM 0.300
INS.TARG106.XMM 65.000
INS.TARG106.YMM -70.000
```

```
INS.TARG107.NAME NN
INS.TARG107.SHAPE STRAIGHT
INS.TARG107.WID 1.0
INS.TARG107.LEN 10.0
INS.TARG107.ROT 0.0
INS.TARG107.ALPHA 100015.137
INS.TARG107.DELTA +021327.880
INS.TARG107.WIDMM 0.601
INS.TARG107.LENMM 6.006
INS.TARG107.XMM -48.561
INS.TARG107.YMM -1.235
```

```
INS.TARG108.NAME 124139
INS.TARG108.SHAPE STRAIGHT
INS.TARG108.WID 1.0
INS.TARG108.LEN 16.0
INS.TARG108.ROT 0.0
INS.TARG108.ALPHA 100015.584
INS.TARG108.DELTA +021502.370
INS.TARG108.WIDMM 0.601
INS.TARG108.LENMM 9.610
INS.TARG108.XMM -52.586
INS.TARG108.YMM -57.986
```

```
INS.TARG109.NAME 121033
INS.TARG109.SHAPE STRAIGHT
INS.TARG109.WID 1.0
INS.TARG109.LEN 12.0
INS.TARG109.ROT 0.0
INS.TARG109.ALPHA 100014.625
INS.TARG109.DELTA +021251.050
INS.TARG109.WIDMM 0.601
INS.TARG109.LENMM 7.207
INS.TARG109.XMM -43.952
INS.TARG109.YMM 20.886
```

```
INS.TARG110.NAME 121482
INS.TARG110.SHAPE STRAIGHT
INS.TARG110.WID 1.0
INS.TARG110.LEN 12.0
INS.TARG110.ROT 0.0
INS.TARG110.ALPHA 100005.668
INS.TARG110.DELTA +021311.030
INS.TARG110.WIDMM 0.601
INS.TARG110.LENMM 7.207
INS.TARG110.XMM 36.683
INS.TARG110.YMM 8.883
```

```
INS.TARG111.NAME 120488
INS.TARG111.SHAPE STRAIGHT
INS.TARG111.WID 1.0
INS.TARG111.LEN 10.0
INS.TARG111.ROT 0.0
INS.TARG111.ALPHA 100007.157
INS.TARG111.DELTA +021226.630
INS.TARG111.WIDMM 0.601
```

From #07 on: user designed
slits

From catalog: important
for archiving purposes


```

INS.TARG117.WIDMM      2.402
INS.TARG117.LENMM      2.402
INS.TARG117.XMM        12.969
INS.TARG117.YMM        -34.264

```

```

INS.TARG30.ALPHA      100008.923
INS.TARG30.DELTA     +021440.470

```

```

INS.TARG31.ALPHA      100015.866
INS.TARG31.DELTA     +021431.620

```

```

INS.TARG32.ALPHA      100008.302
INS.TARG32.DELTA     +021422.870

```

```

INS.TARG33.ALPHA      100011.753
INS.TARG33.DELTA     +021158.590

```

```

INS.TARG34.ALPHA      100002.128
INS.TARG34.DELTA     +021357.590

```

```

INS.TARG40.ALPHA      100010.814
INS.TARG40.DELTA     +021623.970

```

```

INS.RSTAR.NUMBER  5

```

```

SEQ.PREP.MASK_NA  M607JCOS1
SEQ.PREP.MASK_ID   952645

```

```

SEQ.PREP.LMIN      1170.000
SEQ.PREP.LCEN      1250.000
SEQ.PREP.LMAX      1330.000
SEQ.PREP.GRAT      GRATING1
SEQ.PREP.FILT       J
SEQ.PREP.CAM       CAM180
SEQ.PREP.GOOD      2

```

```

INS.TARG116.NAME      NN
INS.TARG116.SHAPE     STRAIGHT
INS.TARG116.WID       4.0
INS.TARG116.LEN       4.0
INS.TARG116.ROT       0.0
INS.TARG116.ALPHA     100008.923
INS.TARG116.DELTA     +021440.470
INS.TARG116.WIDMM     2.402
INS.TARG116.LENMM     2.402
INS.TARG116.XMM       7.378
INS.TARG116.YMM       -44.834

```



From #30 to max #39: alignment stars
 Caveats: the R.A. and Dec. should be identical to those of the alignment boxes!

Guide Star: !!!!”OVERWRITTEN” BY OT TOOL!!!

Instrument setting:
 !!!! “OVERWRITTEN” BY OT TOOL!!!!

2

Preparing scripts with OT tool

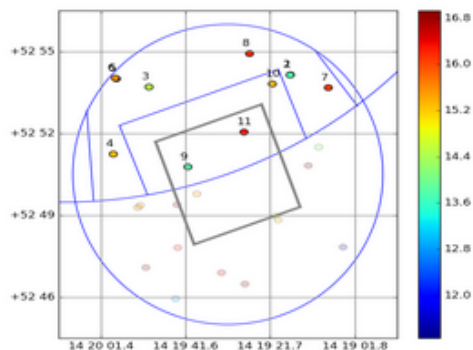
- Overall major improvement w.r.t. the previous scripting tool
- Very flexible and provides many examples easy to change
- Personal n. 1 improvement: table of tellurics exportable to ASCII. This was the most time consuming step in old scripting.

Some user suggestions

- Why inserting the observing conditions? Is this somehow binding?
- It is not handy nor logical to have to skip the target coordinates when the MOS mask are provided
- The dither pattern are a bit difficult to manipulate. I could not do it entirely
- Guide star choice: the graphic illustration of the old scripting was very helpful

Guiding Star choices old scripting

	Nr	NOMAD_ID [?]	rmag	Dist	flag
<input type="radio"/>	1	N1429-0290862	13.36	4.2	VA
<input type="radio"/>	2	N1429-0290863	14.2	4.2	VA
<input type="radio"/>	3	N1429-0290932	14.86	4.2	
<input type="radio"/>	4	N1428-0302388	15.55	4.1	
<input type="radio"/>	5	N1429-0290954	15.77	5.2	FA
<input type="radio"/>	6	N1429-0290955	15.81	5.3	FA
<input type="radio"/>	7	N1429-0290826	16.25	4.7	TA
<input type="radio"/>	8	N1429-0290883	16.38	4.4	
<input type="radio"/>	9	N1428-0302329	14.25	1.4	VAX
<input type="radio"/>	10	N1429-0290873	15.58	3.6	VAX
<input type="radio"/>	11	N1428-0302268	16.49	1.6	VAX
<input type="radio"/>	12	NO-GUIDE-STAR	0.0	0.0	



**Mask PA and patrol field
(with vignetting) clearly visible**

Important for the transition phase!

- We all do not want to loose precious minutes at the telescope: for how long the “old” scripting is still supported? The idea is to still have old scripts as backup if something is wrong in the new scripting.

3

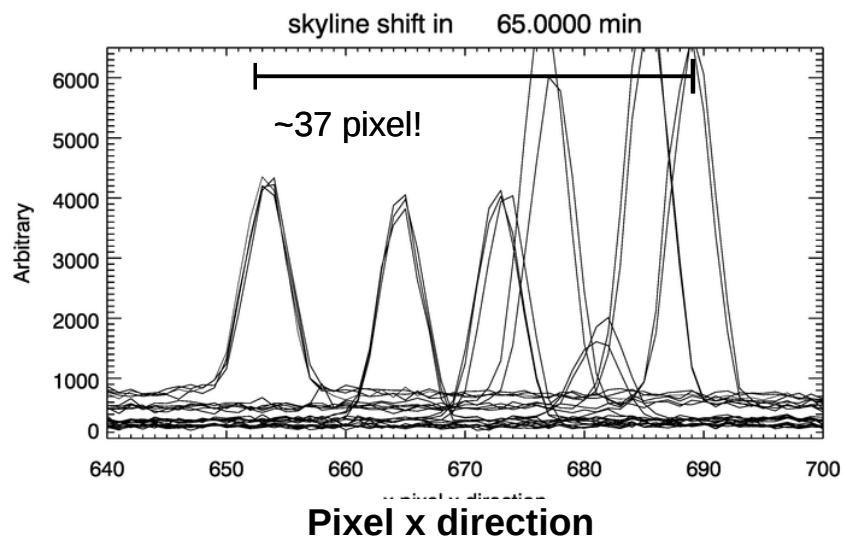
At the telescope: time lost

- MOS error (LUCI team aware of this)
- Ghost pauses: the script sometime stops as if there is a pause (that is not there!)
- Telluric did not work in binocular in March

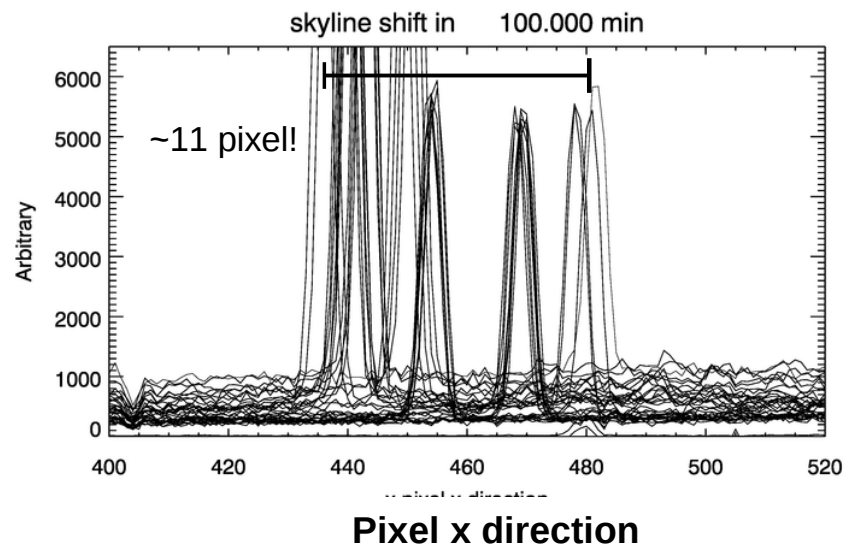
Instrument/telescope problems

- Grating instability → significant shifts in long observations

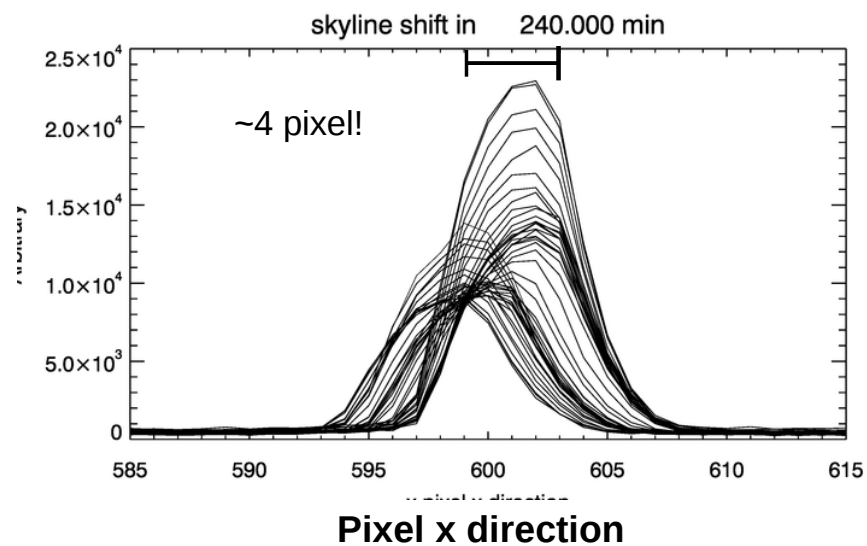
ARGOS 20170309 LUCI1



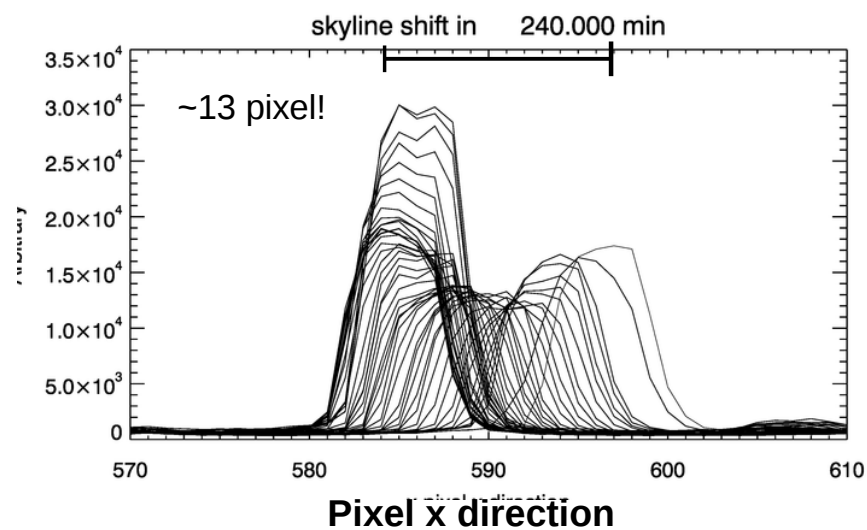
ARGOS 20170309 LUCI2



Seeing limited 20170319 LUCI1



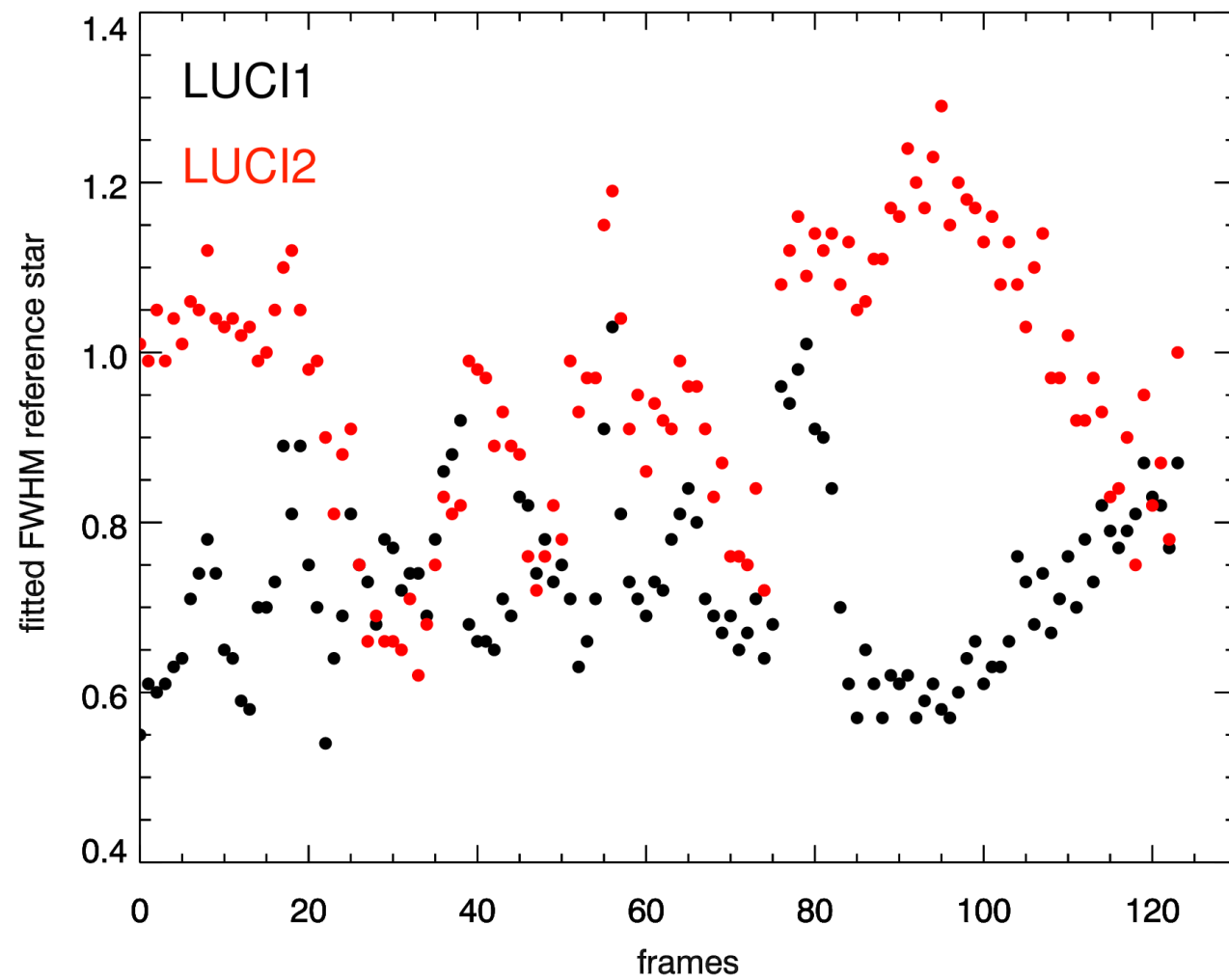
Seeing limited 20170319 LUCI2



Instrument/telescope problems

- Grating instability → significant shifts in long observations
- AO mirror strange behavior:

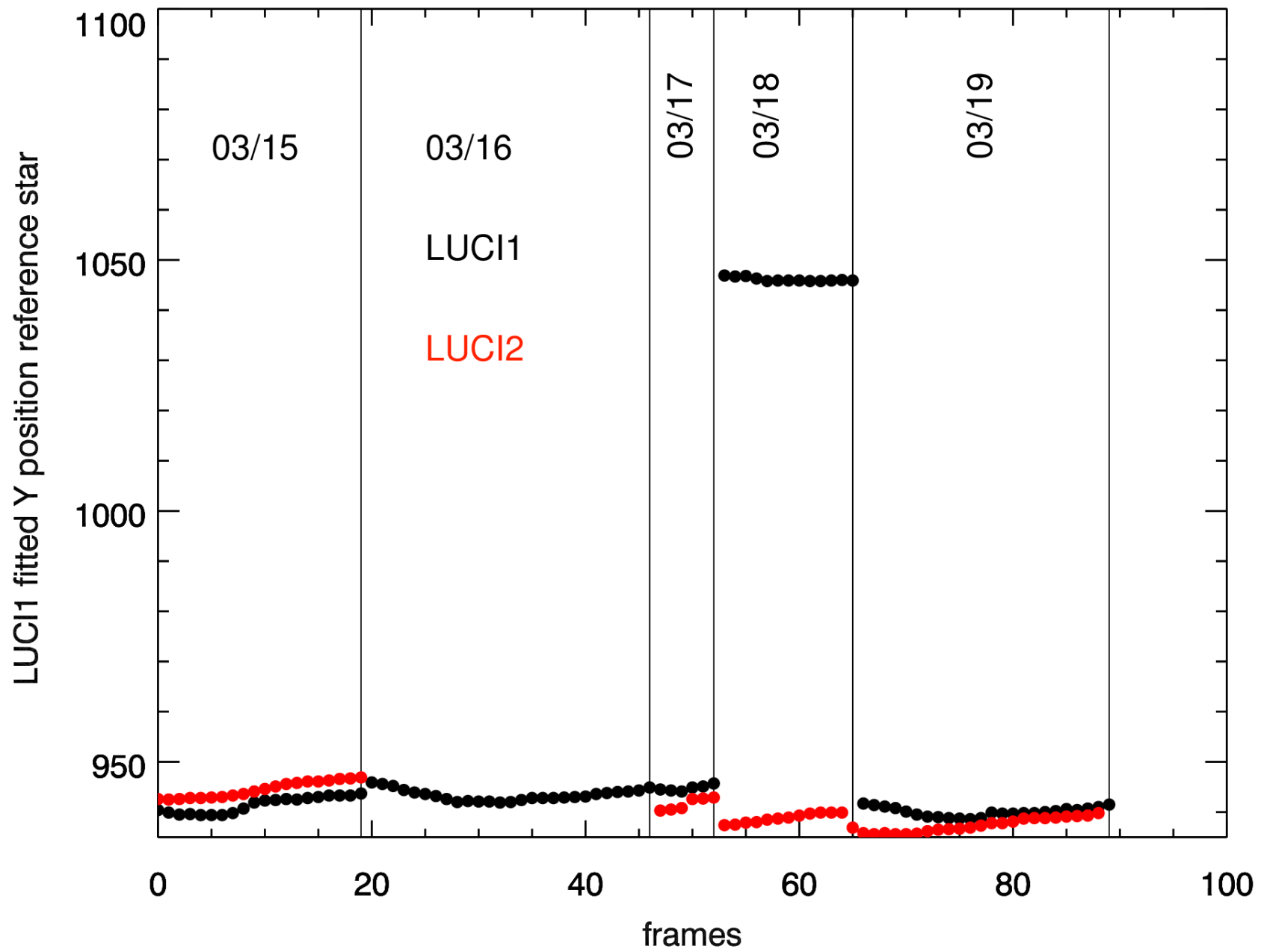
LUCI 1 and 2 reference star FWHM comparison March 2017 LBTB



Instrument/telescope problems

- Grating instability → significant shifts in long observations
- AO mirror strange behavior
- Unexplicable shift in Y position from one night to another

Y position of reference star



Guiding stability in seeing limited

