OSURC Nightlog 20220211 UT

Observer*: Olga Kuhn
Lead Partner Observer*: Patrick Vallely (OSU)
Other Partner Observers*: Tharindu Jayasinghe (OSU), Subhash Bose (OSU), Dominick Rowan (OSU)
Special Assistants*: none
Telescope Operator: Josh Williams
*** = from home**

Plan:

	Program/Target	Planned Time	Actual Completion Time
☑	~~OSU_ASASSN/SN2021aapa~~	~~02:30 - 05:00~~	~~05:13~~
☑	~~MODSPhotCal/feige34~~	~~05:05 - 05:15~~	~~05:38~~
☑	~~OSU_ASASSN/SN2021adlw~~	~~05:20 - 06:40~~	~~07:05~~
☑	~~OSU_XMDs_MODS/J113623~~	~~06:45 - 08:05~~	~~08:25~~
☑	~~Switch to LUCI~~	~~08:10 - 08:35~~	
☑	~~OSU_XMDs_LUCI/WISEAJ104457~~	~~08:40 - 10:00~~	~~10:36~~
☑	~~HIP58616~~		
☑	~~OSU_XMDs_LUCI/WISEAJ113623~~	~~10:05 - 11:10~~	~~12:12~~
☑	~~HIP56147~~		
☐	OSU_XMDs_LUCI/SDSSJ114827	11:15 - 12:35	- **not completed**
☐	HIP59147		

Summary:

We started the night with MODS, and obtained spectra of two OSU_ASASSN targets, SN2021aapa and SN2021adlw, one OSU_XMDs_MODS target, J113623 and a spectrophotometric standard Feige 34.
At 08:25 we reconfigured for binocular LUCI and observed 2 OSU_XMDs_LUCI targets, J104457 and J113623 and their associated tellurics. A rare LUCI1 MOS error while acquiring the third target delayed the start of this observation by about 30 min, until 13:00. We obtained a a pair of spectra but the sky was getting brighter. We tried to squeak out the telluric, getting the pair on LUCI2, but only 1 good spectrum on LUCI1.

There was a lot of cirrus that came in soon after the start of the night and stayed until midnight, from ~03:30-07:15 UT. The cirrus affected both MODS/ASASSN observations and moved out around the start of the J113623 observation.

The seeing was not good to start with, and varied throughout much of the night although it was better in the morning.

Issues:

- Two LUCI MOS errors for which Dave Thompson had to be called. He resolved both of them, although the LUCI1 error was one that he had not seen before.
    - LUCI2 - the robot did not move exactly to the correct position to get the 1" slit out of storage
    - LUCI1 - the mask could not be moved from turnout to the focal plane - only 3 out of about 110 degrees before it stopped.
- On AGW1 guide images, there was an elevated background. (IT 8569)
- I noticed one MODS1 B image with a bad bias level in one channel of quadrant 2.

Weather:

There was a band of cirrus that passed through from the NNE during the first part of the night. Otherwise, conditions were good.

Preparations:

luci[1|2].20220211.0NNN.fits
mods[1|2][b|r].20220210.NNNN.fits

I took the set of test images with MODS and checked the field stop alignment on both LUCIs with the N375 camera - this looks good, no adjustment was needed.

Overview (times are given in UT):

01:01 Josh opened the enclosure
01:04 sunset
01:29 Josh has already corrected the pointing and we're waiting for it to get darker to collimate.
01:30 Sending collimation preset.

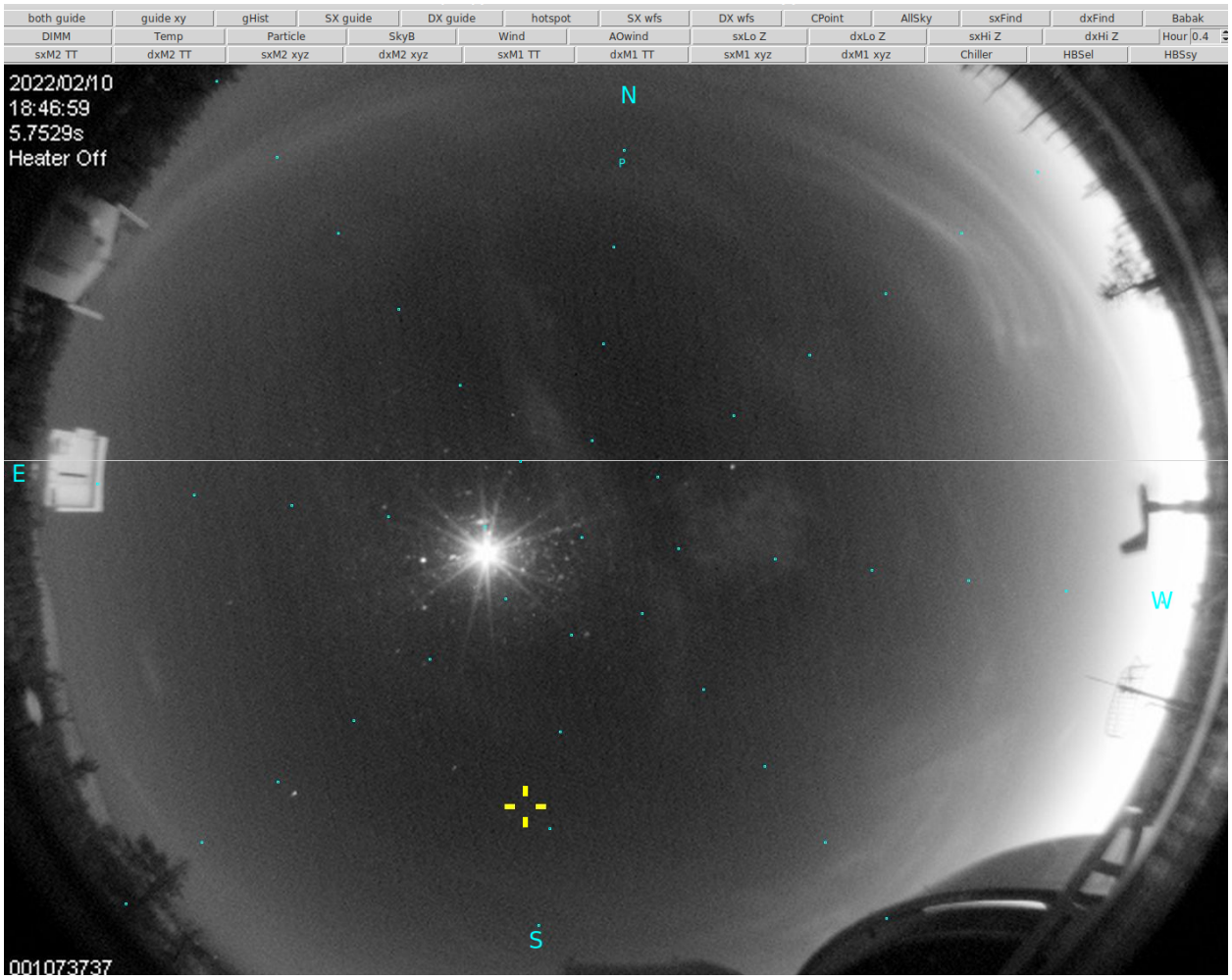
01:33 Pointed and collimated - FWHM of Shack spots on WFS images ~ 0.75" and guiders have FWHM ~0.8-0.95", but it's varying and 10 min later is ~0.9" on the WFS and 1-1.2" on the guiders.

OSU_ASASSN/SN2021aapa

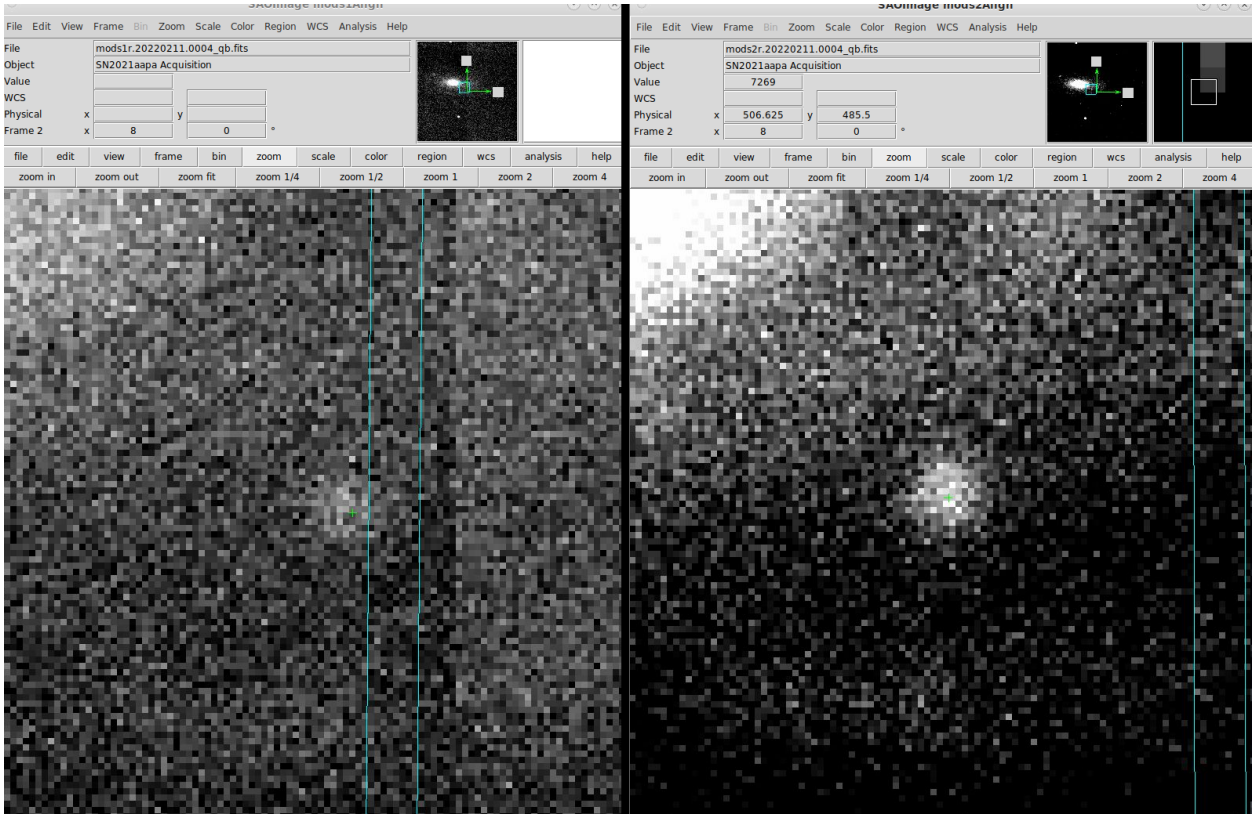
Edited the acquisition script to set the ACQexptime to 30 for the slit image and keep it at 120s for the field and thru-slit confirmatory images.

01:50 Starting the acquisition
01:50 acqBinoMODS SN2021aapa_edit.acq

01:52 There is some cirrus visible in the allsky image



FWHM on guiders is bouncing around 1.2-1.6, 1.2-1.3 on average at 01:57.



MODS1 & MODS2 field images, showing the point selected (green cross) as the center of the SN.

01:55 12-deg twilight

m1r: 3 & 4 offsetxy 0.881 9.055 rel →5, we cannot see it - taking a longer 200s exptime -> 6
m2r: 3 & 4 offsetxy 5.273 6.655 rel → 5, we can see it on the image, 200s → 6

On MODS1 R, it's very hard to see on even the 200-sec exposure through the slit. But we'll start the spectra and see.

02:16 execBinoMODS SN2021aapa.obs
(mods1r IMCS locked within the timeout. Elevation 47, rotangle 363 deg)

02:24 18-deg twilight

UT	m1b	m1r	m2b	m2r	AM	seeing
02:15	3-10	7-14	3-10	7-14	1.352	1.7" on guiders

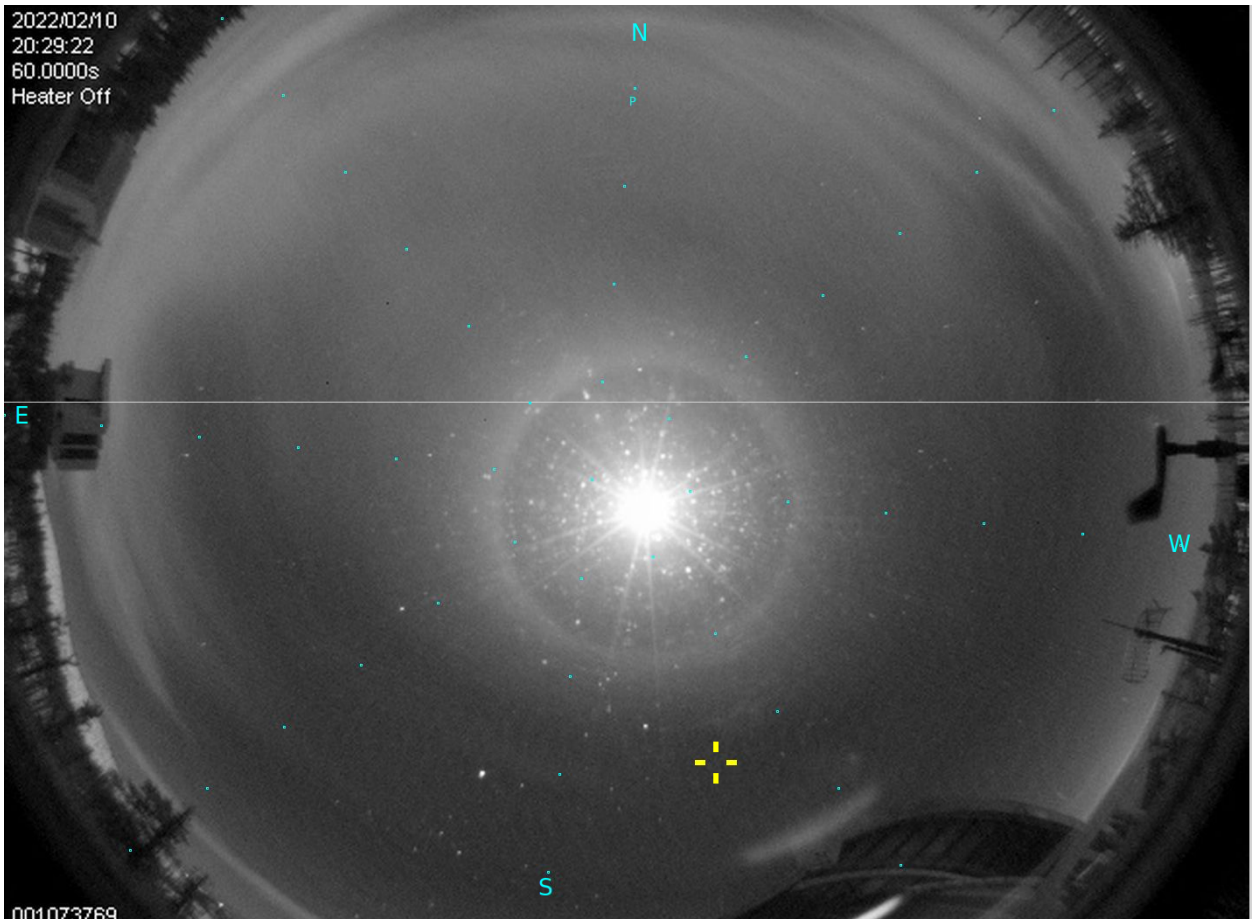
						1.2 on WFS

02:41 The first set of spectra just read out. We can see the SN trace is both the MODS1 Red and MODS2 Red spectra.

02:42 About 200 sec into the second set of spectra, the seeing seems to be improving - average FWHM on guiders 1.2/1.1 (SX/DX) and for the WFS Shack spots, 0.88/0.8" …

02:57 …although, now the guide star FWHM has just gone up to about 1.5-1.7"

03:36 There's a halo around the moon. The satellite map shows more clouds coming from the NNE, so we're probably going to be dealing with these for the next 6 or so hours (very rough guess on time).



03:55 The guide star flux is down by 3-4 magnitudes now.
04:29 Starting a 7th set of exposures.
04:53 Starting an 8th set of exposures. There is still a lot of cirrus but at this time, the guide signal is almost back to its original value…although that did not last that long.

Feige34

05:14 acqBinoMODS feige34.acq
m1r 15 offsetxy -0.328 10.757 rel → 16, ok
m2r 15 offsetxy 4.759 7.757 rel → 16, offsetxy -0.863 -0.221 rel -> 17

05:25 execBinoMODS feige34_dualGrating.obs

	m1b	m1r	m2b	m2r	AM	seeing
05:25	11-13	17-19	11-13	18-20	1.271	1" guider 0.8" WFS

OSU_ASASSN/SN2021adlw

Edited the acquisition script to change the POSANGLE from 105 ot 99.

05:41 acqBinoMODS SN2021adlw_edit.acq

m1r: 20 & 21 offsetxy -0.762 10.480 rel → 22, ok
m2r: 21 & 22 offsetxy 3.522 7.671 rel → 23, dx=+0.123 → 24

Avg FWHM on the guiders ~ 1.1/1.2" during acquisition and on the WFS, ~0.8"
The SN was easy to spot and centroid on.

05:56 execBinoMODS SN2021adlw.obs

MODS1Red IMCS failed to lock within timeout, upon retry, locked in seconds.
Elev and rotangle = 45:40 and 30 deg - the same area we had problems earlier.

UT	m1b	m1r	m2b	m2r	AM	seeing
05:56	14-16	23-25	14-16	25-27	1.406	1.1" guider 0.88/0.85" WFS

06:09 There may have been a brief interruption of internet service from the mountain: my x2go to obs5 went down, Josh lost his connection briefly to the polycom zoom and my second x2go to obs2 went down. All back now and the script is continuing without a hitch.
06:21 - However, interactions with images in my x2go on obs5 seems slower than it was before the glitch.

07:05 Finished - the seeing at the end was about 0.7", average FWHM on guiders and 0.6" on the WFS Shack spots

OSU_XMDs_MODS/J113623

Created an earlier script for 07UT and set POSANGLE to -118 deg.

07:05 acqBinoMODS J113623_UT0700.acq

m1r: 26 & 27 offsetxy -0.516 11.191 rel → 28, ok
m2r: 28 & 29 offsetxy 3.769 8.398 rel → 30, ok

The seeing was about 0.8" on average (FWHM on guider) during the acq

07:17 execBinoMODS J113623.obs

UT	m1b	m1r	m2b	m2r	AM	seeing
07:18	17-19	29-31	17-19	31-33	1.142	0.8" guider 0.6/0.64" WFS

07:41 Seeing has gotten a bit worse - 1" on the guiders and 0.8" on the WFS spots.

07:50 Ran mods_quickreduce on the first MODS1 spectra - in obs2:/scratch/osurc_20220211/
The Balmer lines, [OIII] and [OII] are visible - [NII] around Halpha also.

08:17 The guide signal has been pretty steady for the last hour and hte all sky does not show cirrus overhead, just on the horizon.

08:24 Finished

Reconfigure MODS→ LUCI

08:25 Josh is slewing the telescope to zenith to reconfigure

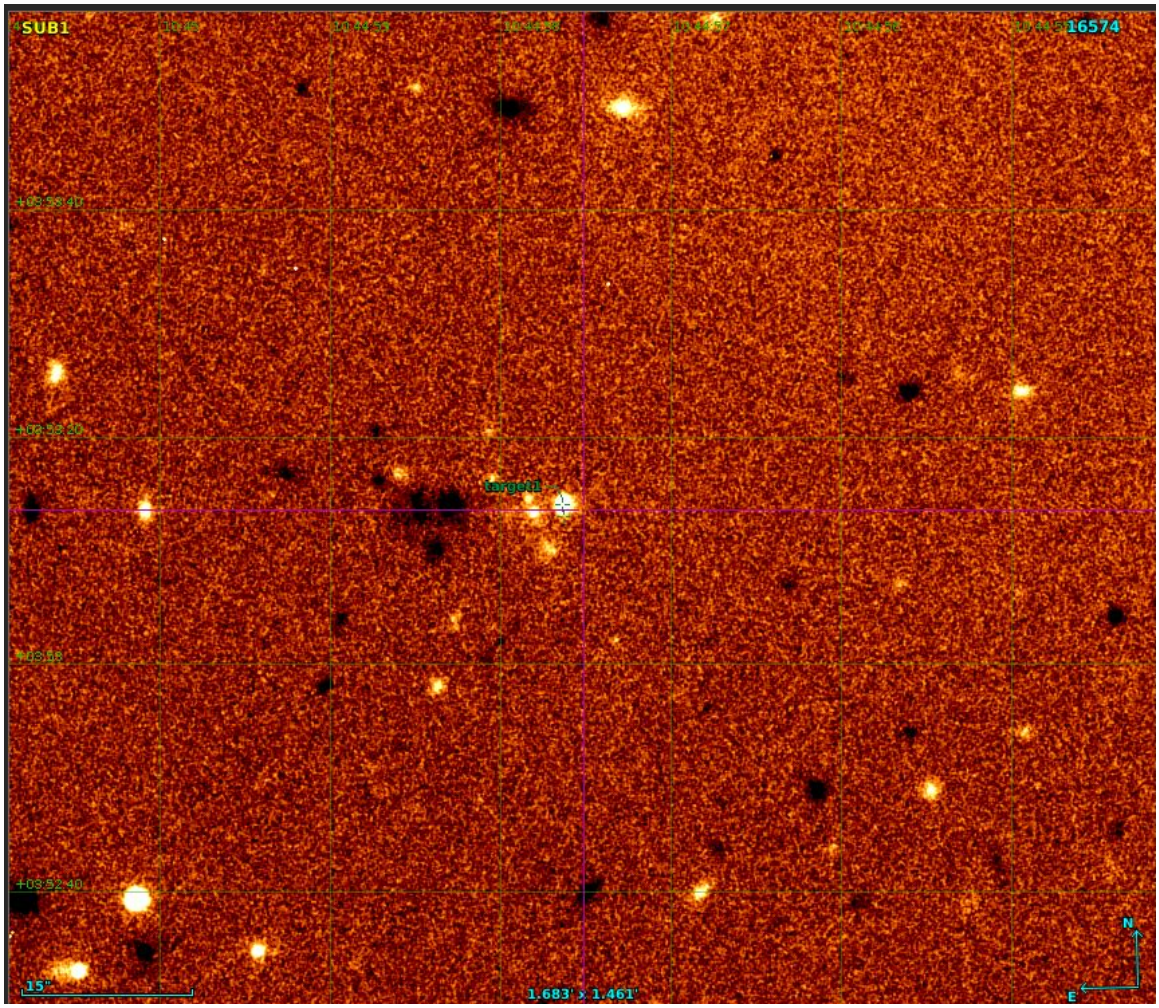
08:37 Josh is sending a preset to a pointing star
~08:45 Sending a preset to a collimation star. There is some light - a high background - on the SX guider images. Josh is closing the left side vent door and that is helping.

OSU_XMDs_LUCI/J104457

J104457 - target

08:48 Sending the script
08:48 Immediately - a MOS error on LUCI2. I called Dave Thompson - the problem was that the spindle had not quite reached the position of the 1" mask and so it was unable to grab it to take it out of storage.
09:03 is the start of the first acquisition image, L1 18, so no more than 15 min were lost to the MOS error.

(L#: sky & object, slit)
L1: 18 & 19, 20 → -0.0106 -1.1262" to put object at X=1030.47, Y=1031.76 → 5 - looks good
L2: 2 & 3, 4 → -1.1614, -0.78" to put object at X,Y = 1023.05, 1042.28 → 5, tweaking it by 0.06" on L2 → 6, looks ok (background more mottled - harder to see with 2 as background, much better with 3 as background)



In the sky-subtracted LUCI1 field image (img 19 minux 18), the green cross labelled "target1" indicates the object we aligned on the slit.

In the RTD Longslit tab, the alignment & background images do not auto-populate.

UT	Configuration	L1	L2	AM	seeing (SX/DX)
09:25	1" slit G200 @ zJ, CWL=1.17 mic	22-27	7-12	1.164	0.95/1" on guider 0.83/0.86 on WFS

09:36 The first set of spectra are out - there are emission lines visible -

The high background on the SX guider is back - all the vent doors are closed. We don't know what it is coming from.

09:40 The seeing has blown up to 1.6" on the guiders but only briefly although that was the harbinger of more unstable conditions - seeing ~ 1.2" on average

10:25 Finished

HIP58616 - telluric

10:25 Slewing to the telluric
L#: field, slit
L1: 28, 29 → -10.2722, 1.0779" to put star at X,Y = 1032.6, 1052.24 → 30
L2: 13, 14 → -8.7108, 1.8409 to put star at X,Y = 1021.25, 1061.32 → 15

10:34 Starting the observation — the spectrum has ~34000 counts in the peak.

UT	Config	L1	L2	AM	seeing
10:34	1" slit G200 @ zJ, 1.17 mic	31-32	16-17	1.08	0.70/0.78" on guider

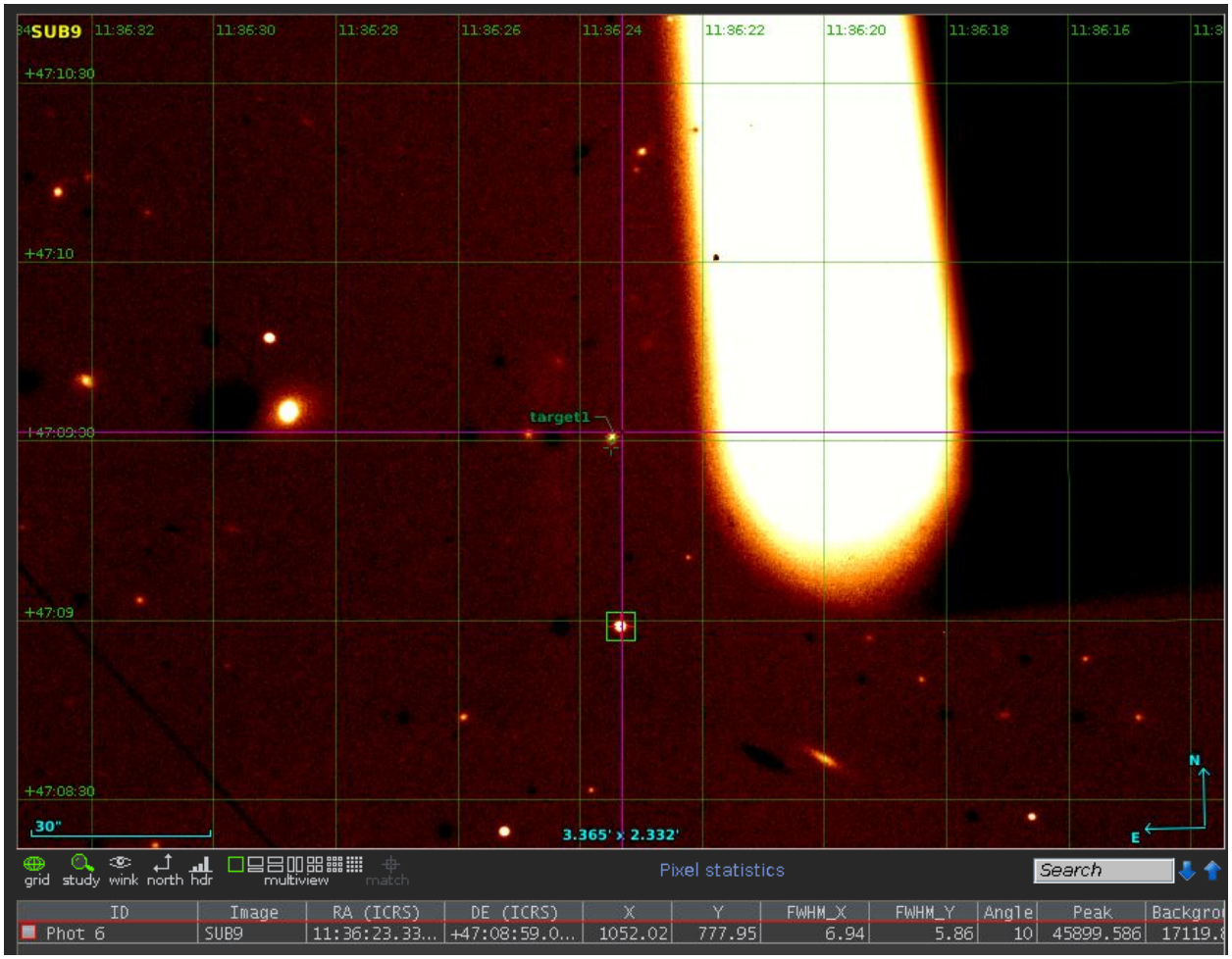
10:38 (about 1h20m for the object and telluric, including acquisitions)

OSU_XMDs_LUCI/J113623

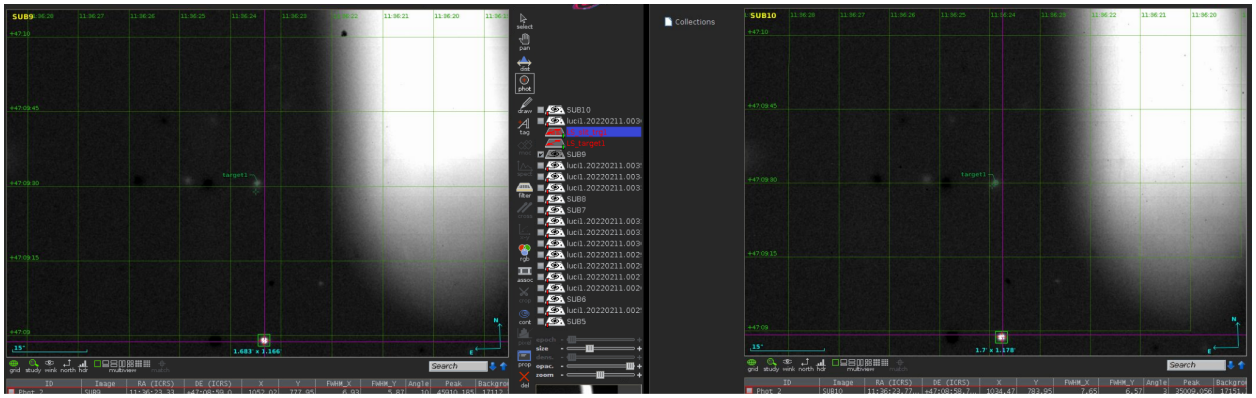
J113623 - target

10:39 Slewing to the field

L1: 33 & 34, 35 → -0.3369, -1.7870 to put target at X,Y=1037.8, 1031.62
L2: 18 & 19, 20 → -0.7616, -0.7771 to put target at X,Y=1018.49, 1041.69



The sky-subtracted LUCI1 acquisition image (34 minus 33) is shown above with the target marked by the green cross and labelled. The green box is around a star used to measure FWHM (0.77").



On the sky subtracted acquisition images (L1: 34-33 on the left and L2:19-18 on the right), the shadow from guide probe is close, but it seems like the slit is in the clear. The first spectrum shows no evidence of shadowing by the guide probe any where along the slit.

UT	L1	L2	airmass	seeing
10:55	37-42	22-27	1.074	0.9" on the guiders

11:10 - the high background is still on the SX guider - it comes and goes - LED near the AGw1??
11:44 Avg FWHM on the guiders 0.86/0.90" (0.82/0.83" on the WFS)
11:58 Finished

HIP56147 - telluric

11:59 Slewing to telluric

There is a problem where the left WFS images are not coming through. The error - "too close to edge, blocked. I aborted the wait for collimation since the guide star looked pretty well collimated. Now - we are seeing WFS images. There is vignetting on the WFS images -

L1: 43,44 -10.1709, 1.3594" to put star at X,Y 1042.96, 1051.56, dx=-0.12" → 46, ok
L2: 28,29 -8.7394, 1.4209 to put star at X,Y 1018.70, 1061.64, dx = -0.06" → 31 ok

UT	L1	L2	airmass	seeing
12:11	47-48	32-33	1.217	0.8-0.85"

12:12 Finished (1h23m for the target and telluric)

OSU_XMDs_LUCI/SDSSJ1148(DNF)

SDSSJ1148 - target

12:13 Slewing

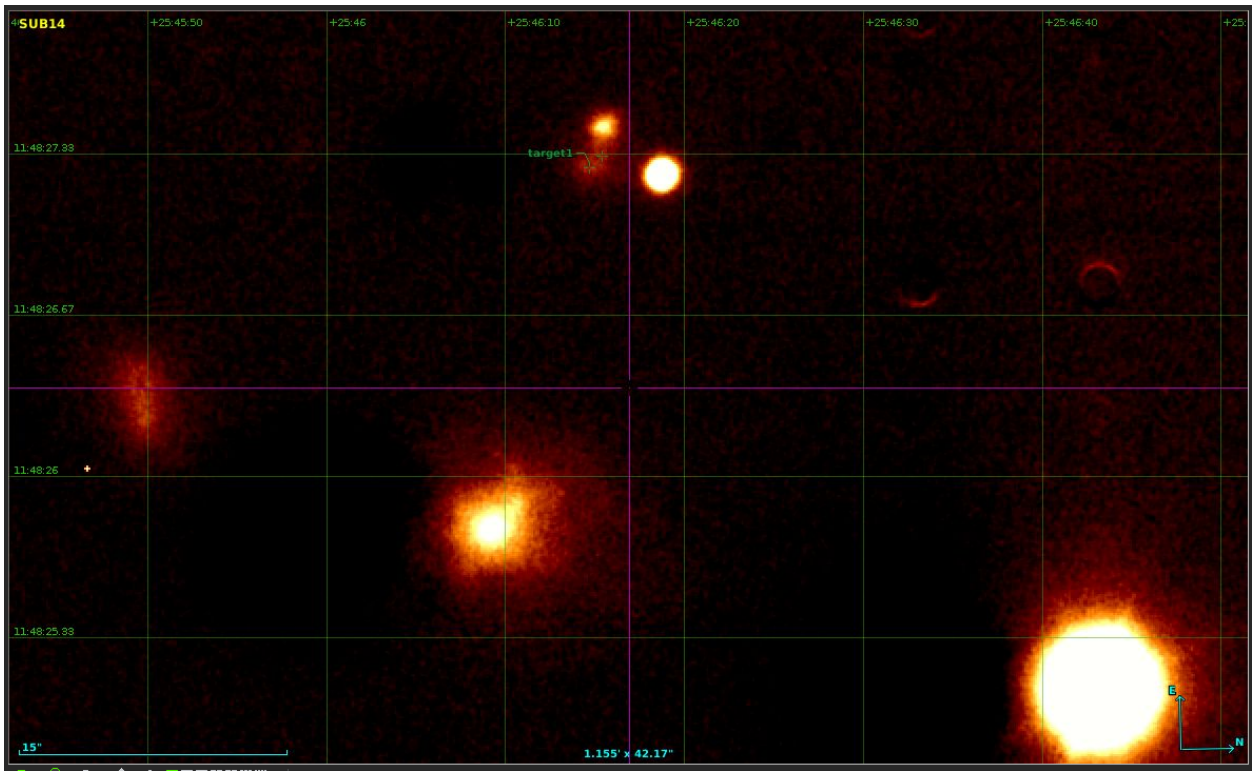
L1: 49 & 50 *(MOS error; retook field image, 51),
L2: 34 & 35, 36

12:23 LUCI1 MOS error when moving the 1" slit mask from the turnout to the FPU. Dave is logging in.
Elevation 53 deg and LFBG rotator at 389 deg.
12:38 Dave recovered the MOS error. I retook the field image (51) after which Dave tried to move the mask to the focal plane using the engineering interface, but there were still problems -

as if the mask was hitting something. It only moved 3 deg from turnout where it would need to move about 90 deg to go into the focal plane.
Dave put the mask back in storage successfully and now we are moving it back to turnout.

I'm taking another field image, 52. (date-obs 12:50)

Dave is moving the mask back into the FPU - this time it went in fine. Slit image is 53
L1: 49 & 52, 53 → dx, dy 0.6326, 0.5831" to put object at X,Y 1040.5, 1031.46 → 54
L2: 34 & 35, 36 → dx, dy 1.5161, 1.5982 to put object at X,Y 1014.35, 1041.67 → 37



We centered on the faint smudge indicated by the green cross and "target1" label. The PA=90so N is to the right and E up. The smudge is to the SW of a brighter object and to the south of a foreground star.

13:00 Starting to take spectra.

UT	L1	L2	airmass	seeing
13:01	55-56	38-40	1.38	1/1.17" guiders

We got a pair of exposures on L1 and 3 on L2. The reason for only 2 on L1 is that I aborted the script just a bit too early and it sent the abort to the L1 integration first and let the L2 one slip through.

12:43 18-deg twilight
13:12 12-deg twilight

13:30 - background in the WFS images

HIP59147 - telluric

13:36
L1: 57, 58 -10.0754, 0.0742 → 59 - did not check but looks ok
L2: 41, 42 -7.4768, 1.3019" → 43 - did not chec but looks ok

Josh turned off sending Zernikes, but while we were able to guide for the first exposure, we lost guiding for the 2nd (L1 61 & L2 45) and I took these manually. Nevertheless, 45 looks pretty good. On L1, the background on the guider saturated (still elevated like earlier?) and this probably caused a drift.

	L1	L2
13:44	60-61	44-45

13:47 Josh is closing the shutter doors.

14:03 sunrise

Closed Dome Calibrations

LUCI

	L1	L2
1" slit flats - lamp off	62-66	46-50
1" slit flats - lamp on	67-71	51-55
60-s lamp off	72-73	56-57
60-s Ne lamp	74-75	58-59
5-s lamp off	76-77	60-61

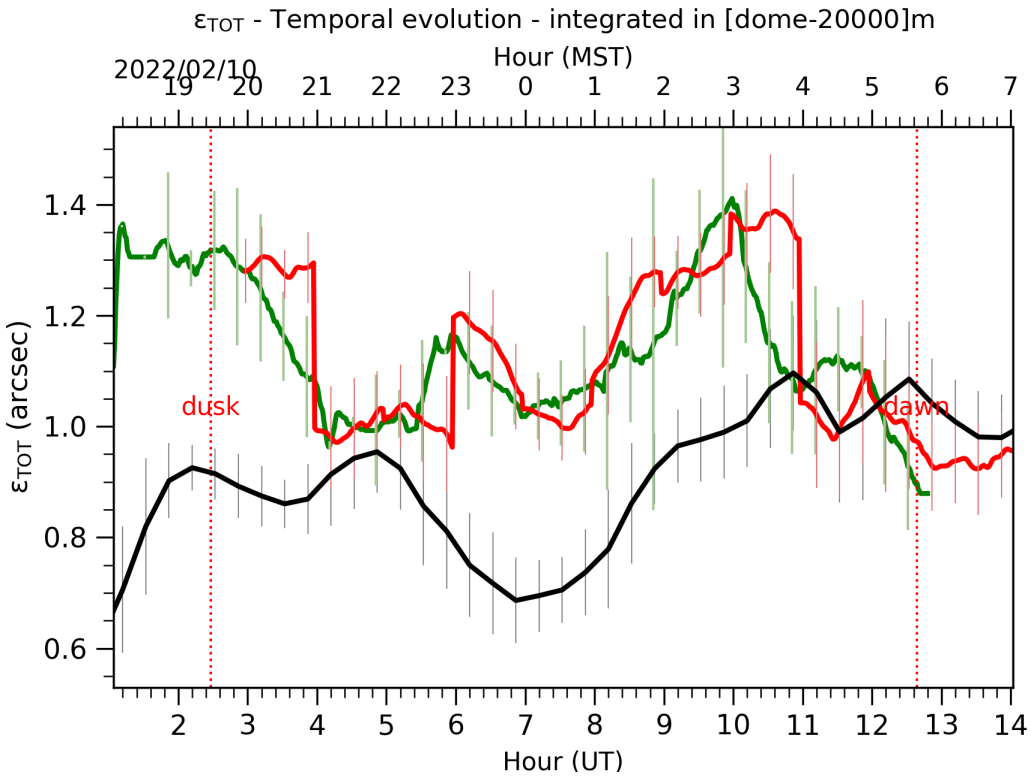
5-s Ar lamp	78-79	62-63

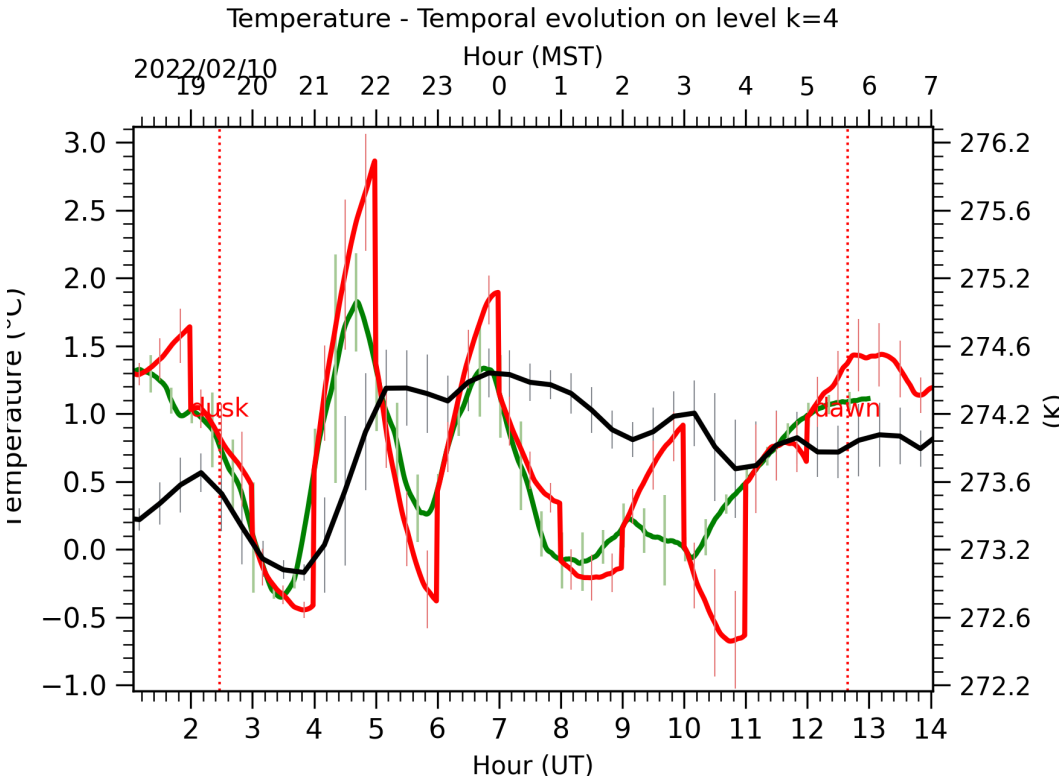
MODS

I took sets of 8K and 1K biases - mainly just as a check on the MODS1B quadrant issue. So far, I only noted one bad image tonight. We obtained the 1" slit flats, pixel flats and comparison lamp spectra already.

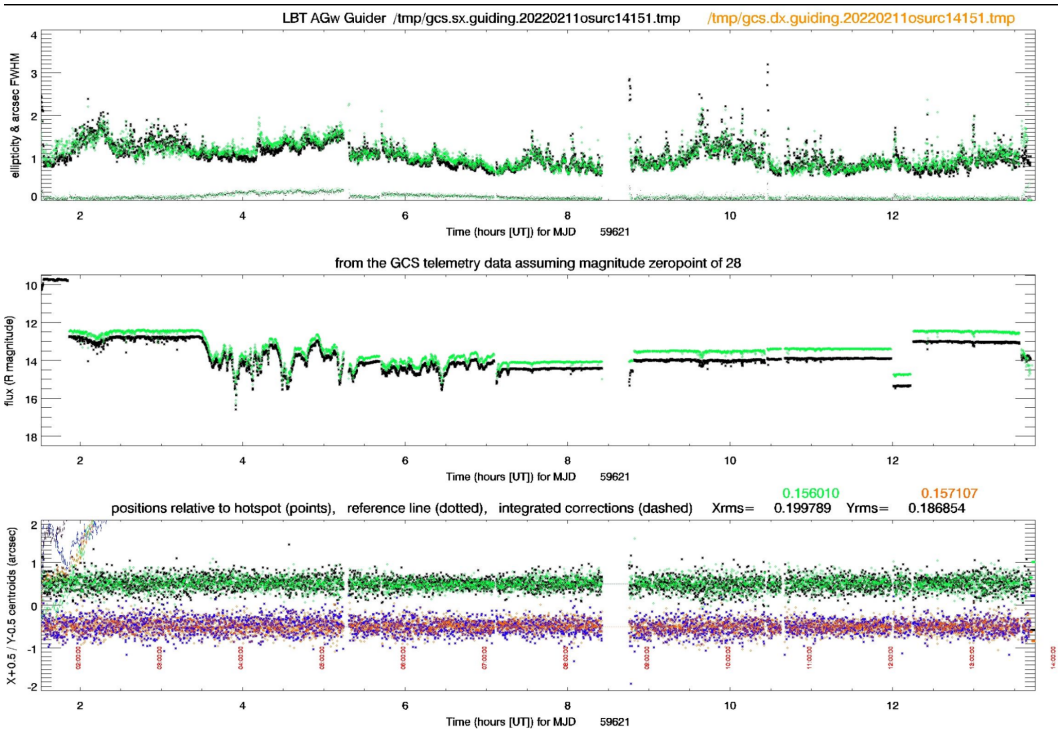
	m1b	m1r	m2b	m2r
8K biases	20-24	32-36	20-24	34-38
1K biases	25-29	37-41	25-29	38-42

ALTA predictions




Temperature - Temporal evolution on level k=4
2022/02/10
Hour (MST)
19 20 21 22 23 0 1 2 3 4 5 6 7
Temperature (°C)
3.0 2.5 2.0 1.5 1.0 0.5 0.0 −0.5 −1.0
276.2 275.6 275.2 274.6 274.2 273.6 273.2 272.6 272.2
(K)
dusk
dawn
2 3 4 5 6 7 8 9 10 11 12 13 14
Hour (UT)

LBTplot


LBT AGw Guider /tmp/gcs.sx.guiding.20220211osurc14151.tmp /tmp/gcs.dx.guiding.20220211osurc14151.tmp
ellipticity & arcsec FWHM
Time (hours [UT]) for MJD 59621
from the GCS telemetry data assuming magnitude zeropoint of 28
flux (R magnitude)
Time (hours [UT]) for MJD 59621
0.156010 0.157107
positions relative to hotspot (points), reference line (dotted), integrated corrections (dashed) Xrms= 0.199789 Yrms= 0.186854
X+0.5 / Y-0.5 centroids (arcsec)
Time (hours [UT]) for MJD 59621