OSURC Nightlog 20220209 UT

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

Plan:

- [x] ~~OSU_BHBinaries/2MJ0152p4611 02:20 - 03:00~~
- [x] ~~OSU_BHBinaries/BDp50 03:00 - 03:30~~
- [x] ~~Switch to MODS 03:30 - 04:00~~
- [x] ~~OSU_ASASSN/J093300 04:00 - 04:30~~
- [x] ~~OSU_ASASSN/J081658 04:30 - 05:00~~
- [x] ~~MODSPhotCal/feige34 04:25 - 04:35~~
- [x] ~~OSU_ASASSN/J062307 05:00 - 05:30~~
- [x] ~~OSU_ASASSN/J063552 05:30 - 06:00~~
- [x] ~~OSU_ASASSN/J075654 06:00 - 06:35~~
- [x] ~~MODSPhotCal/feige66 06:35 - 06:50~~
- [x] ~~OSU_ASASSN/J140925 06:50 - 07:15~~
- [x] ~~OSU_ASASSN/SN2021gpw 07:15 - 09:00~~
- [x] ~~OSU_XMDs_MODS/SBS1152 09:55 - 11:15~~
- [x] ~~OSU_ASASSN/SDSSJ1430 11:15 - 12:30~~

Summary:

We started with PEPSI and observed the two OSU_BH_Binaries targets: 2MASS J01521960+4611339 and BD+50 943, both with good SNR. The seeing during the observation was good, ~0.6-0.8".
The log of PEPSI observations is here: 20220209UT_pepsi_obs.log

We then switched to MODS and observed many of the bright OSU_ASASSN targets and two spectrophotometric standards when the seeing trend seemed uncertain and then started to go up: J09330, J081658, J075654, J062307, J063552, J075654 and J140925. The seeing was better when we observed the fainter MODS targets: OSU_ASASSN/SN2021gpw, UM_XMDs_MODS/SBS1152 and OSU_ASASSN/SDSSJ1430.

Issues:

- There were no problems with the MODS1B quadrant 2 (lower right)
- MODS1 Red IMCSLOCK (dual grating) sometimes times out, though a retry worked. This happened at elev 40 and rotangle ~30 deg. At low elevation and rotangle 180 deg from that, IMCS locked within the timeout. And near where the zero points were measured, at elevation ~65 and rotangle ~210, the IMCS was quick to lock.
- The Blue CD mechanism on PEPSI again gave us some problems at the start. Once set at CD3, there was no issue.
- The Ne lamp in MODS2 did not come on in 4-5 tries in the morning (IT 7869)

Weather:

The skies were clear, although the seeing was variable and high, up to 2" at times, as predicted by ALTA. But on the whole, the seeing was closer to 1" most of the time.

Preparations:

luci[1|2].20220209.0NNN.fits
mods[1|2][b|r].20220209.NNNN.fits
lbc[b|r].20220209.HHMMSS.fits

LBCs run up and 2 checkout biases taken.
MODS sieve & imaging snaps taken (MODS1B is behaving for now).
PEPSI OBs ready - I see Blue CD is causing problems and think Ilya is online.

Overview (times are given in UT):

00:45 While we were talking about the plan, I found that the Blue CD mechanism was moving and taking a long time. I am not sure how the move started (maybe I let the cursor stay over the button to queue up a random target). I aborted the motion and eventually reintialized the Blue CD and sent it successfully to CD3.

00:52 Starting PEPSI calibrations: ThAr & traces through 100 and 300 mic fibers and CDs 3 & 5. Start with pepsi[b|r].20220209.002.fits.

01:10 Shutter doors are open. Waiting for it to get dark.

01:39 Josh corrected pointing & just sent the collimation preset. Seeing is 2.4" and 1.76" on SX and DX.

01:44 Presetting to first PEPSI target, J01521960+4611339.

OSU_BH_Binaries/

2MASS J01521960+4611339

01:47 Starting the exposures.
01:51 Now on the guiders, FWHM ~ 0.7"!
02:15 Guiders still showing 0.7-0.75" but DIMM (zen-corr) bouncing around 0.96"-1.4" (I don't think the DIMM is that trustworthy - or it does have some latitude to look at higher or lower elevation than where we're pointing. Maybe things are unstable but the guiders are not really showing these excursions.)

02:25 SNR in CD 3 ~144 and CD5 ~ 318

BD+50 943

02:28 Starting the exposures
FWHM ~0.6" on the guiders (0.96 on the DIMM, zen-corr)

Star barely appeared in acquisition field of view on DX, but the flux (PEPSI) and the relative flux (GCS) are consistent - flux as plotted on PEPSI GUI are the same and on GCS there is the usual 0.5 mag offset between SX (fainter) and DX (brighter). The PEPSI photon counters are discrepant (hadn't noticed such a discrepancy before) DX is 6x higher than SX. [The spectra have similar lines, e.g. Halpha in absorption, so I think the larger SX/DX discrepancy is because we're using the 100 mic fiber - the discrepancy doesn't look so great with the 300 mic one].

SNR in CD 3 ~ 49 and in CD5 ~ 112

02:42 Starting another set since there's time.

02:54 Unchecking the "engage" button to close hatch & stop ADC

Reconfiguring: PEPSI -> MODS

02:54 Slewing to zenith to start the reconfiguration

03:11 Josh is correcting pointing.
03:16 and sending the collimation preset. MODS guiders say 1.2", but WFS images say 0.9"

OSU_ASASSN/J093300

Edited the acquisition script to use a shorter integration time (30 → 5 sec) for R=13.07 and to change the POSANGLE from 90 to 107. The same guide star works.

03:21 acqBinoMODS J09330_edit.acq
FWHM on guiders during acq is ~1.2" (but we are at low airmass). On the WFS, 0.9"

m1r: 3 & 4 → offsetxy -0.552 10.681 rel → 5 ok
m2r: 3 & 4 → offsetxy 3.862 8.797 rel → 5 ok

03:31 execBinoMODS J09330.acq
03:34 imcslock red failed. retry worked. elev 40, ldg = 27 deg.

UT	m1b	m1r	m2b	m2r	airmass	seeing (WFS)
03:33	3-5	6-8	3-5	6-8	1.543	0.85/0.89

OSU_ASASSN/J081658

Reduced the acqExptime from 30 → 6s (R=13.0) and changed the POSANGLE from 60 → 35. No change of guide star needed.

03:55 acqBinoMODS J081658_edit.acq

FWHM on guiders ~ 0.9-1" and on WFS Shack spots ~ 0.72"

m1r: 9 & 10 → offsetxy -0.273 11.159 rel → 11 dx=0.185 → 12
m2r: 9 & 10 → offsetxy 3.840 8.326 rel → 11 dx = -0.061

04:07 execBinoMODS J081658.obs
04:10 red IMCSlock failed: elevation 41 deg/ ldg rotator 30 deg

UT	m1b	m1r	m2b	m2r	airmass	seeing
04:09	6-8	12-14	6-8	13-15	1.518	WFS: 0.7/0.76" GCS 1"

Feige34

04:xx acqBinoMODS feige34.acq

Guide star FWHM ~ 1, but it blew up to 2" while taking the confirmatory images

m1r: 15 → offsetxy -0.054 10.807 rel → 16 offsetxy -0.318 -0.168 rel → 17 → offsetxy 0.531 0.619 rel → 18 -
m2r: 16 → offsetxy 5.123 7.914 rel → 17 offsetxy -1.443 -0.077 rel → 18

04:48 execBinoMODS feige34_dualGrating.obs

04:50 MODS1 red imcslock took a long time, but locked within timeout: elev 44 rotangle 125

UT	m1b	m1r	m2b	m2r	airmass	seeing guider SX/DX
04:52	9-11	21-23	9-11	19-21	1.436	1.4/2"

05:00 FWHM on guiders now ~1.2"/1.4"

OSU_ASASSN/J062307

Edited the script to set POSANGLE to 53 deg (old guide star was available but there was a brighter one), exptime to 10-sec (R=12.79 but poor, ~1.5", seeing).

05:04 acqBinoMODS J062307_edit.acq

FWHM on the guiders ~ 1" and on the WFS ~ 0.7-0.8" - looking back South again. But when examining the confirmatory thru-slit images, FWHM on the guiders went up to ~1.5"

m1r: 24 & 25 → offsetxy -0.503 10.858 rel → 26 dx = -0.123 → 27 dx = -0.061" → 28
m2r: 22 & 23 → offsetxy 3.566 8.764 rel → 24, ok

05:18 mods1r readout delay on 0028 — we've had a number of these already.
05:19 execBinoMODS J062307.obs

05:21 m1r imcslock took a while, but locked within timeout: elev 75 deg/ rotangle 205 deg

UT	m1b	m1r	m2b	m2r	airmass	FWHM guider
05:21	12-14	29-31	12-14	25-27	1.034	0.8" - 1.6"

OSU_ASASSN/J063552

Edited the acq script to change exptime to 5 sec (R=11.14). Even with this, the core saturated on MODS2 and the peak pixel on MODS1.

05:43 acqBinoMODS J063552_edit.acq

m1r: 32 & 33 → offsetxy 0.391 9.506 rel → 34, dx = -0.061
m2r: 28 & 29 → offsetxy 4.321 7.498 rel → 30, ok

05:52 execBinoMODS J063552.obs

UT	m1b	m1r	m2b	m2r	airmass	FWHM guider
05:52	15-17	35-37	15-17	31-33	1.076	0.95/1.1"

06:02 FWHM on guiders 0.8/0.95" - SX went down <0.7" for a few seconds.

OSU_ASASSN/J075654

Edited the POSANGLE from 80 to 160 and chose a new guide star. Edited exptime to 10-sec (R=13.2).

06:08 acqBinoMODS J075654_edit.acq

m1r: 39 & 40 → offsetxy -0.608 11.555 rel →41
m2r :35 & 36 → offsetxy 3.746 9.617 rel → 37

06:19 execBinoMODS J075654.obs
M1R imcslock fairly quick — elev 74/rotangle 215

UT	m1b	m1r	m2b	m2r	airmass	FWHM guider
06:19	19-21	42-44	19-21	38-41	1.037	0.86/.97 but up to 1.8"

06:29 Seeing is bouncing around and going up to 1.5-1.8" sometimes.

Feige66

06:40 acqBinoMODS feige66.acq

m1r: 45 offsetxy -0.004 10.789 rel → 46, ok
m2r: 41 offsetxy 4.872 7.261 rel → 42 offsetxy -1.053 0.145 rel → 43, ok

06:52 execBinoMODS feige66.obs

MODS1R imcslock failed, retry worked. Elev/Rotangle = 40/95

UT	mb	m1r	m2b	m2r	airmass	FWHM
06:53	22-24	47-49	22-24	44-46	1.552	1.3-1.6- 2"

OSU_ASASSN/J140925

Edited exptime to be 10-sec (R=13.25) but left POSANGLE at -80 deg since I figure parallactic angle will be ~ -82 at midpoint.

08:08 acqBinoMODS J140925_edit.acq

Seeing ~ 2" during acquisition sequence. Airmass 1.8 (elev 33).

m1r: 50 & 51 → offsetxy -0.938 13.656 rel → 52
m2r: 47 & 48 → offsetxy 3.155 10.310 rel → 49

07:16 execBinoMODS J140925.obs

We lost the preset on both sides. Was it the wind? We are pointing into it (15 m/s).

I edited the acq scripts to fold in the last offsets made and take only the thru-slit images, pausing to allow for tweaking the alignment.

07:22 acqBinoMODS J140925_edit_m1.acq J140925_edit_m2.acq
m1r: 53 dx = -0.123" → 54, ok - a bit to the left but ok
m2r: 50 dx = 0.061" → 51, dx = 0.061" - did not take another exposure

07:31 execBinoMODS J140925.obs

M1R imcslock worked. Elev/rotangle = 37/205 (180 deg from where it failed earlier tonight)

UT	m1b	m1r	m2b	m2r	airmass	FWHM
07:31	25-27	55-57	25-27	52-54	1.661	1.6/1.8"

07:50 The image counter on mods2b did not advance - While taking 27, it shows we're on the 2nd of 3, but we are reallyl on the 3rd of 3 images. But the script finished anyway.

OSU_ASASSN/SN2021gpw

Edited the script to set the acqexptime to 30 sec for the slit, but keep 120 sec for the field and confirmatory thru-slit images.

07:54 acqBinoMODS SN2021gpw_edit.acq

A long AZ slew - we have to check pointing.

08:05 acqBinoMODS SN2021gpw_edit.acq

The SN is in/superposed on the nucleus of the galaxy - used centroid for MODS1 but for MODS2, selected a center about 1 pix below the centroid.

m1r: 58 & 59 offsetxy -0.620 11.235 rel → 60, dx = -0.13" → 61
m2r: 55 & 56 offsetxy 3.601 7.942 rel → 57, dx=0.061" → 58

08:24 execBinoMODS SN2021gpw.obs

08:25 mods1r imcs locked within timeout: elev 46, rotangle 195

UT	m1b	m1r	m2b	m2r	airmass	FWHM
08:25	28-31	62-65	28-31	59-61	1.376	1.2"

08:16 FWHM on guiders: avg~1.1", jumping up to 1.5 at times.

09:52 Finished, reading out final set of exposures

OSU_XMDs_MODS/SBS1152

09:53 acqBinoMODS SBS1152_UT1000.acq
FWHM on guiders ~0.95" during acquisition

m1r: 66 & 67 offsetxy -0.762 11.421 rel → 68, dx = -0.061" → 69
m2r: 63 & 64 offsetxy 3.381 9.215 rel → 65, ok

10:08 execBinoMODS SBS1152.obs

FWHM on guiders just bounced up to 1.5" as we started the observation.
MODS1R IMCSlock was quick, elevation = 65, rotangle = 216 (close to where we measure ZPs)

UT	m1b	m1r	m2b	m2r	airmass	FWHM

10;12	32-34	70-72	32-34	66-68	1.103	1.1/1.2" on guiders 0.9" on wfs

On first m2r spectrum (66), peak counts in H_alpha ~ 56k. no other lines close to saturation. On m1r (70) peak ~16k.

10:42 about ½ through 2nd set of spectra, avg FWHM on guiders ~0.85"

11:13-11:14 Finished last set of spectra, reading out. Seeing ~1.1", varying.

OSU_ASASSN/SDSSJ1430

No star was found on DX. Josh checked pointing.
But the "star" on SX was very faint - SDSS shows that it is a galaxy
Rotated by 180 to get a better guide star.

11:23 acqBinoMODS SDSSJ1430.acq — another guide "star" galaxy
Patrick edited the script -
11:28 acqBinoMODS SDSSJ1430.acq — much better, a guide star.

Seeing ~1.4-1.6" during acquisition (FWHM on guider). FWHM on WFS ~1.1"

m1r 73 & 74 offsetxy -0.568 10.802 rel → 75, dx=-0.13" → 76
m2r 69 & 70 offsetxy 3.608 7.977 rel → 71, dx= +0.13 → 72

11:44 execBinoMODS SDSSJ1430.obs – FWHM on guiders at the start is ~1.2-1.3"

UT	m1b	m1r	m2b	m2r	airmass	FWHM
11:45			35	73	1.032	

SX - shell TSS activated and shell RIP'd. We were pointed right into the wind. Read out the MODS2 exposures, though they were only ~200 sec of 600-sec.

Wind speeds ~14 m/s, but almost 7 m/s at the adSec.

11:49 Josh has moved out of the wind and is resetting the shell.

11:54 We are trying again, but may need to abort if the adSec sees high wind.
acqBinoMODS SDSSJ1430.acq

m1r: 78 & 79 offsetxy -0.541 11.003 rel → dx=-0.061"
m2r: 74 & 75 offsetxy 3.539 7.941 rel → ok

12:06 execBinoMODS SDSSJ1430.obs

12:08 mods1 comm glitch: timeout on PI_NAME

UT	m1b	m1r	m2b	m2r	airmass	FWHM
12:10	36-40	81-85	36-40	77-81	1.019	1.02/1.26" on guiders 0.81/0.99 on wfs

12:17 The wind speeds at the adSec look ok now -it was just initially when the object was to the E, which is the direction from which the wind is coming. It is transiting, in the south, in 15 min.

12:41 near the end of the 3rd MODS2 pair & with 3-min left on the 3rd MODS1 pair, avg FWHM on the guiders ~ 1.1/1.2".

12:45 18-deg twilight begins

13:08 MODS2 pair finishes
13:09 MODS1 pair finishes

13:13 12-deg twilight

~13:30 Josh closed the chamber

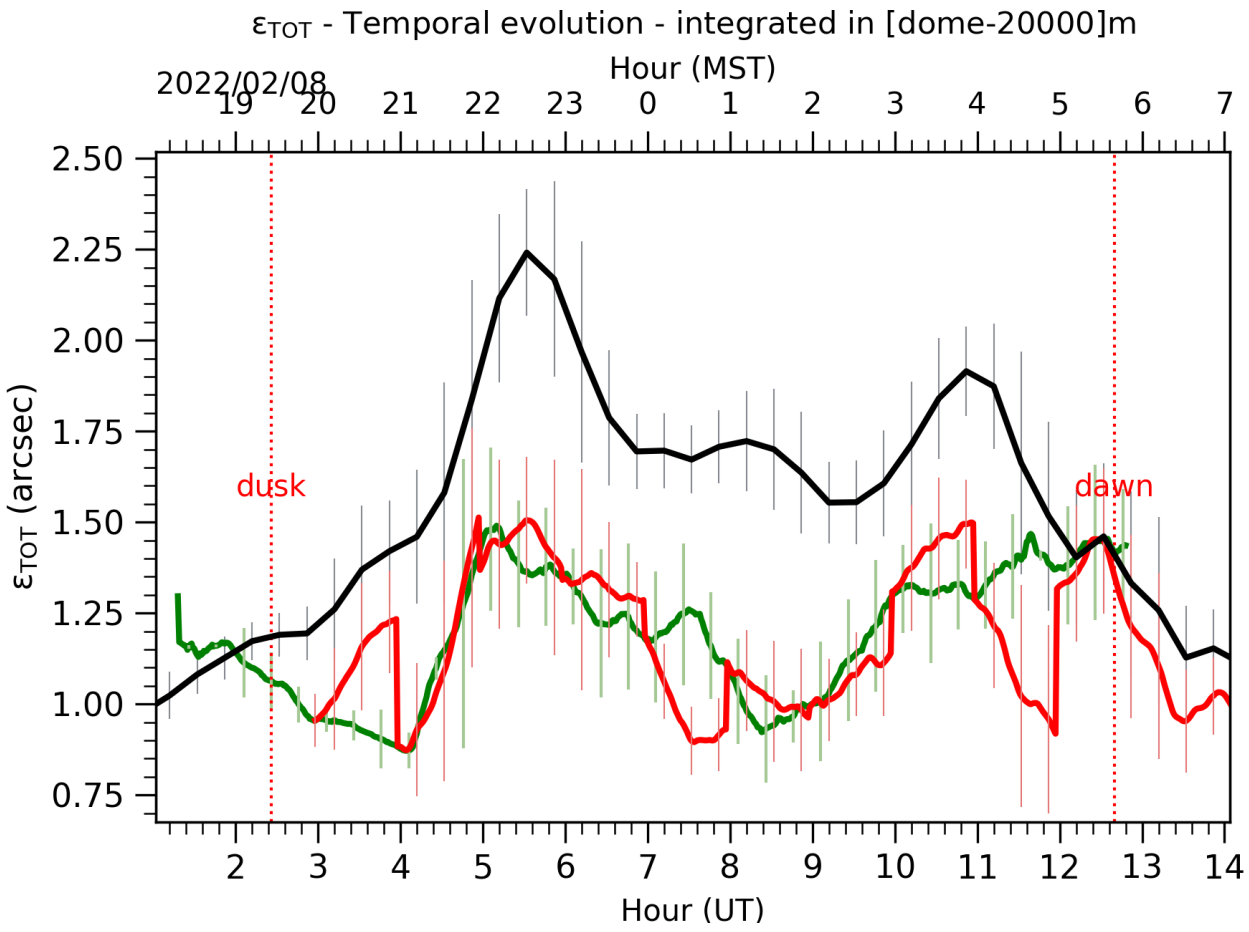
14:04 sunrise

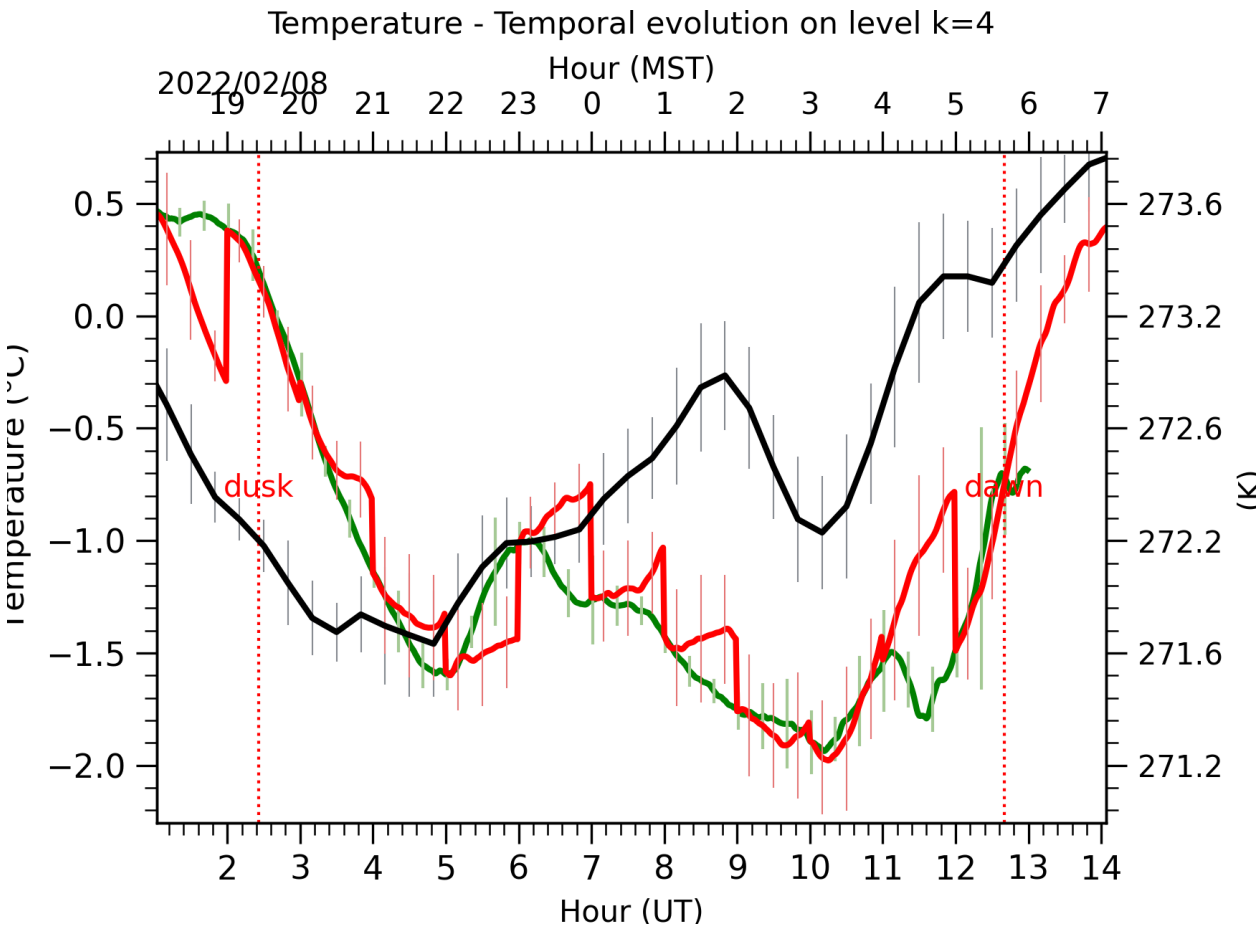
MODS Calibrations

	m1b	m1r	m2b	m2r	Comments
dual grating pixflats	41-45 46-50	86-90	41-45 46-50	82-86	

dual grating lamps	51-53	91-93	51-53	87-89	MODS2: Ne lamp did not come on for b51 & r87 same for: b54 & r90 and 4 more tries - no luck
dual grating 1" slit flats	54-56 57-59	94-96 97-99	59-61 62-64	95-97 98-100	

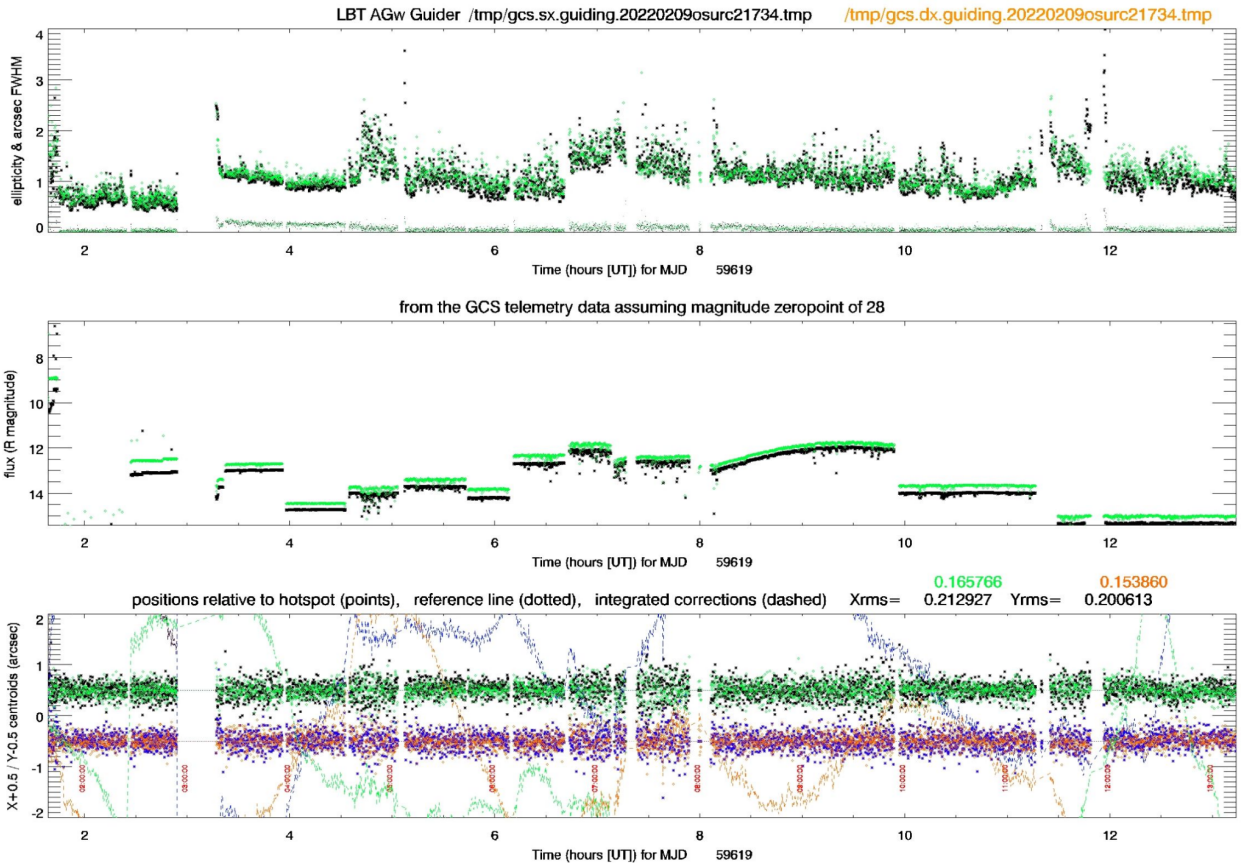
ALTA predictions





LBTplot

The SX (black) and DX (green) guide star FWHM and flux are plotted below. I'm not sure why both SX/DX guide star magnitudes slowly ramp up during the SN2021gpw observation. I didn't notice clouds, and they would not usually cause such a gradual, progressive, change.


LBT AGw Guider /tmp/gcs.sx.guiding.20220209osurc21734.tmp /tmp/gcs.dx.guiding.20220209osurc21734.tmp
ellipticity & arcsec FWHM
Time (hours [UT]) for MJD 59619
from the GCS telemetry data assuming magnitude zeropoint of 28
flux (R magnitude)
Time (hours [UT]) for MJD 59619
positions relative to hotspot (points), reference line (dotted), integrated corrections (dashed) Xrms= 0.212927 Yrms= 0.200613
0.165766
0.153860
X+0.5 / Y-0.5 centroids (arcsec)
Time (hours [UT]) for MJD 59619