# OSURC Nightlog 20220524 UT

Observer\*: Olga Kuhn Lead Partner Observer\*: Jack Neustadt (OSU) Other Partner Observers\*: Miqaela Weller (OSU), Anusha Pai (OSU) Special Assistants\*: AO Operator\*: Telescope Operator: David Gonzalez Huerta \* = from home

#### Plan:

[]	OSU_XMDs_LUCI/HS1028	UTC 03:40 - 05:10
**s	switch to MODS**	
[]	OSU_ASASSN/SN2021adlw	UTC 05:40 - 07:20
[]	OSU_XMDs_MODS/WISEAJ133126	UTC 07:35 - 08:50
[]	MODSPhotCal/bd332642	UTC 09:10 - 09:20
**s	switch to LUCI**	
[]	UVa_nirjets/G49.27	UTC 09:40 - 11:00

#### Summary:

The night didn't go according to the plan due to the high wind speeds. Although we started out configured for LUCI, we switched to MODS and observed: OSU\_XMDs\_MODS/WISEAJ133126 followed by OSU\_ASASSN/ASASSN22cs, UVa\_FRAGN/J1442+05, OSU\_ASASSN/J180531 and the spectrophotometric standard, BD+28 4211. After that we switched to LUCI to observe UVa\_nirjets/G049.27-00.34. Due to a miscommunication about the reconfiguration, we started G049 late and finished only when we could no longer guide 8 exposures into the set of 14 for the final filter pair (PaB+FeII).

#### **Issues**:

When I brought MODS1 up, I noticed the MODS1 red grating not reporting a position. After I cycled power to the microLynx controller and reset the grating wheel, it worked fine. I added a note to IT 8317.

At exactly midnight I think, I lost my x2go session onto robs, and I could not recover it. In fact a "mods status" showed that the MODS guis were stopped. At the time, the script was on the 5th

of 5 exposures; all of these completed successfully except the mods1 b exposure. I have not checked whether it was taken and lost or just not started before the machine went down (mods1b does tend to lag the other channels).

There was a miscommunication which caused lost time in reconfiguring to LUCI at the end of the night.

Observing with MODS, there were three instances when the objects did not fall on the sweet spot; for one, it was obvious from the relative SX/DX guide star fluxes that the wrong guide star had been selected on SX; for the second, the flux ratio was consistent with the same star being used on both sides, however the target on MODS2 was far from the sweet spot. This was preceded by an IMCSlock timeout on MODS2 and, also at the same time, on MODS1 the imcs was still locking while the slit image was being taken. The third instance was straightforward - a brighter star was in the acquisition image and GCS selected it on both SX and DX sides.

#### Weather:

The wind speeds were moderate to high, with some gusts up to ~18-20 m/s. High winds made it impossible to observe the start-of-night LUCI target - it had the telescope pointing directly into the wind and the SX AdSec went into a failure state. The winds calmed down afterwards, but because of some uncertainty about whether they'd remain lower, we moved on from another target that would have also had the telescope pointing into the wind.

There was some cirrus - obvious at the start and also as the moon rose, although in the morning there was no cirrus visible on the allsky camera.

The seeing was variable (1.3-2" at the start) though it improved to  $\sim$ 1" towards the morning.

#### **Preparations:**

Ran up LUCI and checked the field stop alignments. I made a tiny adjustment for LUCI2.

I ran up both MODS. I found that the MODS1 grating mechanism was not reporting its position a red background on the GUI. I power cycled the corresponding microLynx controller (6) and reset the grating mechanism which seems to have worked, but I'll update the IT or open a new one as this may need attention soon.

### Overview (times are given in UT):

02:30 (about) David opened the enclosure

#### LUCI Twilight Sky Flats (cirrus)

02:32 Starting skyflats for UVa\_nirjets — there is cirrus passing over where we are looking - causing changing count levels and possibly changing illumination gradients.

Trying BrG+H2 first - too late for these.

02:34 Trying K+K - 13k counts to start with.

02:42 Trying JH at 1 DIT Of 2.5 sec/DIT - the counts were low, about 7000 -5000.

02:45 Running JH with 3 DITS of 2.5 sec/DIT — counts are bouncing around.

02:50 K+K for low illum (5000 cnts)

~03 J+H for low counts, though at H the count levels had not dropped enough (or clouds?).It was dark enough to collimate, and so we stopped.

In summary, we might have gotten decent flats at K+K and J, provided the illumination is even although variable. At H, we did not get a set of low illumination flats, probably due to clouds and we started too late for the NB filters.

	DIT x NDIT	L1	L2	count levels	counts L2
K+K high	2.5 x 1	16-25	8-17	~13k	9000-13k
J+H high	2.5 x 3	32-40	24-32	~12-16k	13-16k
K+K low	2.5 x 1	41-50	33-42	~6000	6-7000
J+H low	2.5 x 3	51-60	43-52	~6000-8000	12k*

03:10 (about) David is checking pointing at the field of the first target, HS1028.

The wind has shifted from SWand WSW to coming from the W and this target would be looking into the wind. The adSec went into a failure mode as we were about to collimate.

03:22 Switching to MODS to try OSU\_XMDs\_MODS/WISEA\_J133126 (RA, DEC = 13:30, 41).

03:50 David is checking pointing now for the first MODS target and collimating. The guide star has 1.2" - FWHM of Shack spots on WFS images is 0.7-0.8"

#### OSU\_XMDs\_MODS/WISEAJ133126

POSANGLE was not ideally matched to parallactic angle, though Jack confirmed with the MODS DAR calculator that for the relatively high elevation, there should be no light loss for the HA range.

04:03 acqBinoMODS WISEAJ133126\_UT0400.acq m1r: 3 & 4  $\rightarrow$  offsetxy -0.951 11.999 rel  $\rightarrow$  5, dx = -0.15"  $\rightarrow$  6, looks centered m2r: 3 & 4  $\rightarrow$  offsetxy 3.554 8.350 rel  $\rightarrow$  5, looks centered

The object has a core and extended emission, which throws off the centroiding. Used "x" to center on the core. In the screenshot below, the + which marks the center used is the left-most one of the 3 clustered around the core on the MODS1 image (the one to the upper left is the result of "a") and on the MODS2 image, it is the + to the lower right, on the core.



#### 04:21 execBinoMODS WISEAJ133126.obs

UT	m1b	m1r	m2b	m2r	seeing	AM
04:21	3-5	7-9	3-5	6-8	1.3"	1.016

04:26 The seeing has been varying, from 1" near the start of the observation to 1.4/1.3 (SX/DX) about 5 min into the first set of exposures.

05:02 The seeing has remained variable - it just bounced up to 1.7/1.9" (FWHM on the guiders), but it has since gone back to 1.1".

#### OSU\_ASASSN/ASASSN22cs

We edited the POSANGLE from 0 to -10 deg.

05:36 acqBinoMODS ASASSN22cs\_edit.acq

The seeing down here is not too good... FWHM on the guiders around 1.8".

On the SX side, GCS grabbed the wrong guide star - about 1.5-2 mags fainter than the intended one. Guiding and wavefront sensing (whatever is done at 2") seemed to hold, but when I ran modsAlign, the +16,-18" offset that was needed to put the target on the slit would have driven the guide probe to the Y limit. David is going to check pointing.

05:52 acqBinoMODS ASASSN22cs\_edit.acq

m1r: 12 & 13  $\rightarrow$  14, dx=-0.17", OK m2r: 11 & 12  $\rightarrow$  13, looks centered

06:05 execBinoMODS ASASSN22cs.obs

UT	m1b	m1r	m2b	m2r	seeing	AM
06:09	6-9	16-20	6-10	14-18	1.7"	1.807

00:00 - I lost my x2go session and the MODS guis went down also (mods status showed no guis running, by anyone). This happened during the 5th of 5 exposures. I checked the modsNdata machines to confirm that the exposures were continuing, but when they finished, I did not see m1b 10. It does not seem to have been taken (next counter is 10 and last is 9 so it wasn't a data transfer issue). Right now, a mystery, but we're moving on.

#### OSU\_ASASSN/ASASSN22ci (not observed)

07:10 acqBinoMODS ASASSN22ci.acq

m1r: (21 &) 22 (slit image 21 is smeared) & 23  $\rightarrow$  m2r: 20 & 21  $\rightarrow$ 

mods2r imcslock timeout, retry worked.

On the MODS2 acquisition image (0020), the target is about 50" from where it needs to go to center it up on the slit. The guide star flux looks fine, but we did have the IMCS issue where retry worked. David checked pointing and said it was not as far off as earlier.

m1r: 24 & 25  $\rightarrow$  26 m2r: 21 & 22  $\rightarrow$  23

We are pointing right into the wind - currently the wind speeds are not a problem, although David possible.

#### UVa\_FRAGN/J1445+05

The POSANGLE was edited to be 45 deg to better match the parallactic angle, and a new guide star was selected. In the future, though, don't use this star - it is too close to an R~10 star and GCS chose that one. Despite the too-short WFS images, it looks like collimation is ok. And the offsets needed to move the star into the slit are <~20", so there is no problem with exceeding the copointing limits.

00:45 acqBinoMODS J1445+05\_edit.acq

m1r: 27 & 28  $\rightarrow$  offsetxy -17.747 -3.373 rel  $\rightarrow$  29, dx=+0.1"  $\rightarrow$  30 m2r: 24 & 25  $\rightarrow$  offsetxy -13.649 -6.575 rel  $\rightarrow$  26, dx=+0.1"  $\rightarrow$  27

The centroid of the target is marked with a green circled "+" in the screenshot below.



08:06 execBinoMODS J1447+05.obs

UT	m1b	m1r	m2b	m2r	seeing	AM
08:07	10-12	31-33	11-13	28-30	1.25"	1.313

There are no features that stand out above the continuum in the first mods1 spectra that were run through the quickreduce pipeline to do sky-subtraction & a rough wavelength calibration.

08:42 Finished

#### OSU\_ASASSN/J180531

08:43 acqBinoMODS J180531.acq (used the original script)

m1r: 34 & 35  $\rightarrow$  offsetxy -0.585 11.963 rel  $\rightarrow$  36, dx = -0.24"  $\rightarrow$  37, dx = 0.06" m2r: 31 & 32  $\rightarrow$  offsetxy 3.673 8.541 rel  $\rightarrow$  33, dx = -0.13"  $\rightarrow$  34, dx = 0.06"

08:58 execBinoMODS J180531.obs

UT	m1b	m1r	m2b	m2r	seeing	AM
08:58	13-15	39-41	14-16	35-37	1.0"	1.023

#### BD+28 4211

02:24 acqBinoMODS bd284211.acq

m1r: 42  $\rightarrow$  43, well-centered m2r: 38  $\rightarrow$  39  $\rightarrow$  40

02:30 execBinoMODS bd284211\_dualgrating.obs

UT	m1b	m1r	m2b	m2r	seeing	AM
02:31	16-18	44-46	17-19	41-43	1.3"	1.418

02:42 Reconfiguring to LUCI (we went to the LBCs first due to a miscommunication)

Taking 1.2" slit flats while the telescope is at zenith for the reconfiguration.

03:25 David is checking pointing and collimating with LUCI

#### UVa\_nirjets/G049.27-00.34

03:29 Starting the G049 imaging

filters	DIT x NDIT	L1	L2	seeing
K+K (17 min)	2.51x20	61-71	53-63	0.9" @ K, 1.42/1.55 on the guiders
BrG+H2 (26 min)	10x6	72-86	64-78	
J+H	2.51x20	87-97	79-89	sat trail in 96, 88

				backgnds are varying, but not steadily increasing although we are well into twilight
Pbeta+Fell (8 of 14 completed)	10 x 6	98-105 too light to continue	90-97 too light to continue	L1 103 - not WFSing or on L2 096 (around that time) background rising from L1 100 and L2

We could not guide any longer and the wavefront sending had paused about 3 images before we stopped. Image quality appeared quite good.

#### LUCI Twilight Sky Flats

11:49 twilight sky flats

Trying J+H to start but will concentrate on getting the NB flats

	DIT x NDIT	L1	L2	
J+H	2.51 x 1	106-110 111-114	098-102 103-106	14k-too high @ J and 6000-~25k @ H
PaB+Fell	2.51 x 1	115-126	107-118	4500 @ PaB and 3200 @ Fell and rising
BrG+H2	2.51 x 1	127-150	119-142	starting at ~4000, going to 20k 5 min after sunrise

### **Closed Dome Calibrations**

## MODS

	m1b	m1r	m2b	m2r	
1.2" slit flats	19-21 22-24	47-49 50-52	20-22 23-25	44-46 47-49	
1" slit flats (will repeat)	25-27 28-30	53-55 <del>56-58</del>	26-28 29-31	50-52 <del>53-55</del>	Reconfig was done
pixflats	31-35 36-40	57-61 62-65 (extras taken - how?)	32-36 37-41	55-59	m1r 62-65 seem to be extras taken, but how?
comp lamps	41-43	66-68	42-44	60-62	
8K biases	44-48	69-73	45-49	63-67	

## LUCI

filters (L1+L2)	L1	L2	
BrG+H2 lamp off	151-155	143-147	
lamp on	156-160	148-152	
PaB+Fell off	161-165	153-157	
on	166-170	158-162	
K+K off on off on	171-175 176-180 181-185 186-190	163-167 168-172 173-177 178-182	lamp off flats have ~10k counts but 3 DITs. lamp on have ~50k counts. (50/3 per DIT).
J+H off	191-195	183-187	
on	196-200	188-192	

1" slit G200 zJ flats & arcs	201-205 lamp off 206-210 halo2 on 211,212 lamp off 213,214 Ne 215,216 lamp off 217.218 Ar	193-197 lamp off 198-202 halo1 on 203,204 lamp off 205,206 Ne 207,208 lamp off 209,210 Ar	
	217,21070	200,210,1	

### **ALTA predictions**









Time (hours [UT]) for MJD 59723