LBT Observing Log for 2024 10 31 UT

Observers: Jenny Power
Partner Observer: Don Terndrup, Lucy Lu, Xavier Lesley (OSU), Evan Skillman (UMN)
Telescope Operator: Josh Williams

Plan:

Summary:

- UM_PEPSI_V1405Cas
- UVa_Multistar TIC 414026507
- UVa_Multistar TIC 427092089
- OSU BH Binaries Gaia DR3 2864987179231370368
- OSU BH Binaries Gaia DR3 1796406772051028224
- OSU_LiDwarf 2MASSJ01064189-0027182
- OSU_LiDwarf 2MASSJ01084954-0030464
- OSU_LiDwarf 2MASSJ01244193+0124528
- OSU_LiDwarf 2MASSJ03435417+1719250
- OSU_LiDwarf 2MASSJ04134178+2305579
- OSU BH Binaries Gaia DR3 2847197557833077504
- OSU BH Binaries Gaia DR3 362498302094814720
    - SWITCHING TO LBC
- OSU_Monitor: N628
- OSU_Monitor: N672
- OSU_Monitor: N925
- OSU_Monitor: N2403
    - Reconfig MODS
- OSU_SCAT 2023ufx
- SpecPhot - G191B2B
- Calibrations

PEPSI Log:
https://drive.google.com/file/d/1btSB4GctOuSmKrg98HBOdHf-47O4QGyl/view?usp=sharing

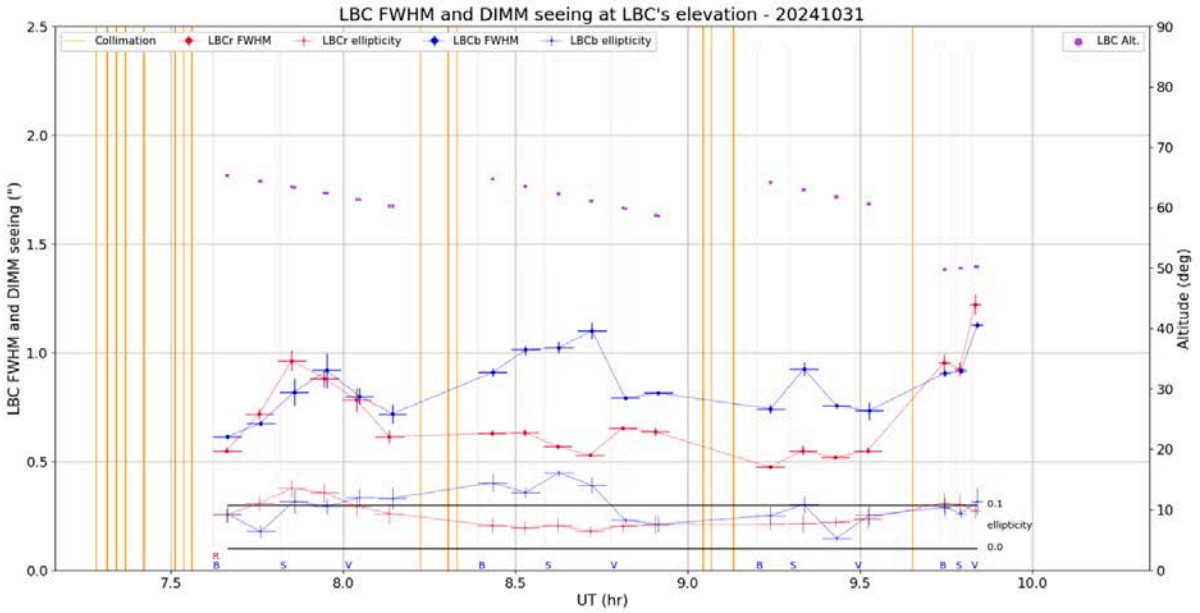
Issues:

DIMM unavailable tonight

Weather:

Variable cloud cover for the first half of the night. Subarcsecond seeing for most of the night, particularly good the second half.

LBC data summary:



Overview (times are given in UT):

23:39 UT Josh has telescope setup and checked out for PEPSI operations to start tonight. Conditions have low-moderate north westerly winds just below 10m/s, much warmer than yesterday with temps just above freezing, some thin cirrus.

23:43 UT Waking MODS and LBCs

Calibrations
23:58 UT Taking some MODS calibrations and LBC biases
execMODS --mods1 grslitflats_5.0_m1.txt

00:30 UT Josh is opening up

00:50 UT Preset for pointing and collimation

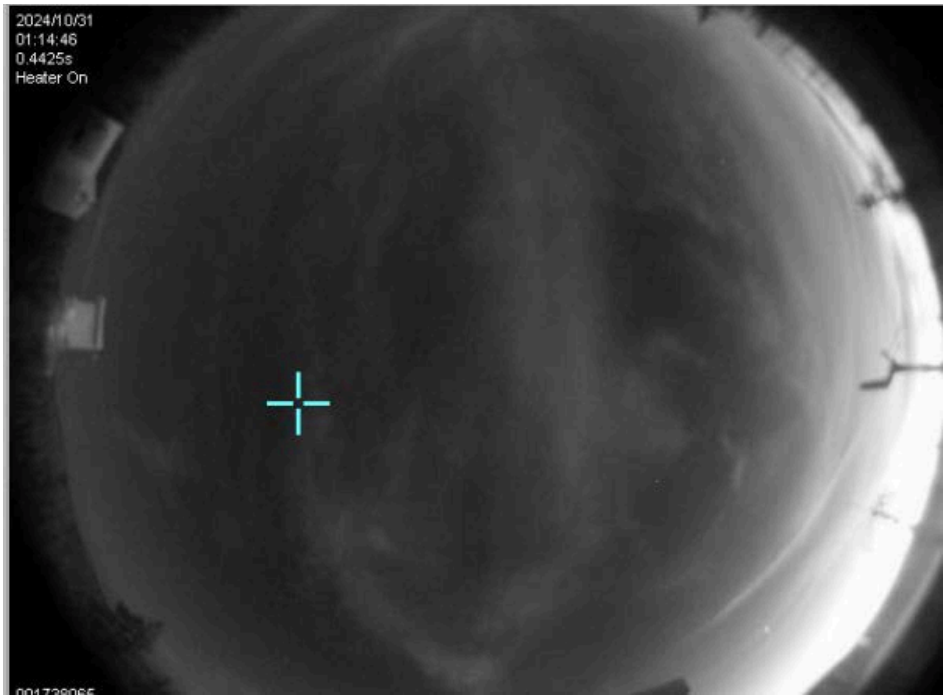
01:00 UT Seeing is 0.89” on the guider.

UM_PEPSI_V1405Cas

01:01 UT Preset to calibrator 58 Aql.

01:03 UTStarting CD 2/ CD 4. Seeing 1.38”
SNR: CD2 721, CD4 946 D200
Starting CD3/CD5
SNR: CD3 687, CD5 758 D200

01:16 UT Josh is executing a pointing check near V1405 Cas. Conditions are partly cloudy now

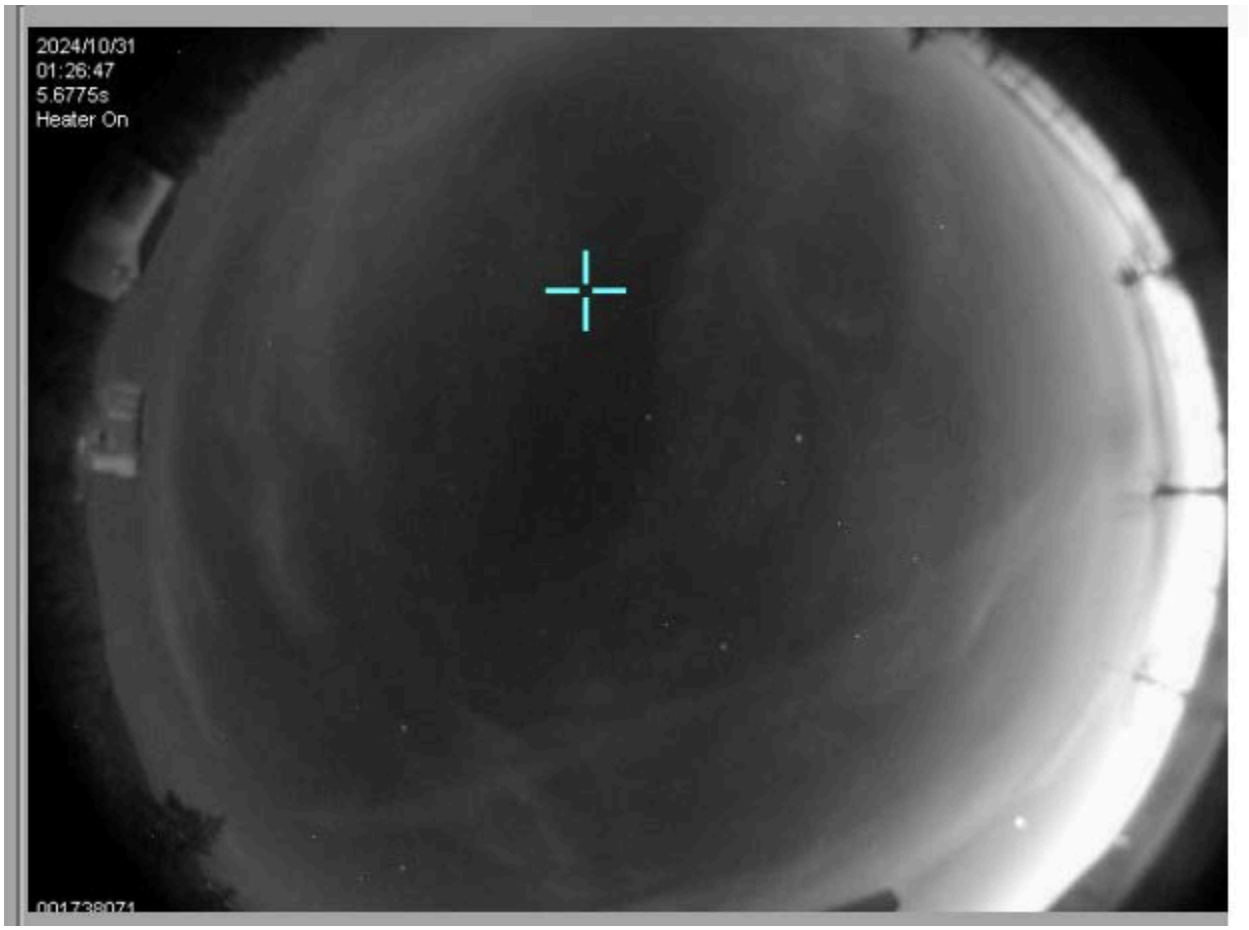


01:19 UT Preset to V1405 Cas. Seeing 1.25” Variable clouds.

01:24 UT We are not getting enough photons for a reasonable collimation solution. I am resending with BS2. This didn’t send but we are ok anyways.

01:25 UT 12 degree twilight

01:28 UT That looks better. Guide solution is more stable now as sky darkens anyways. Josh has long WFS exp time. Seeing 0.84” on the guider. Starting CD2/CD4 science on V1405 Cas.



01:42 UT Seeing up to 1.1”, a bit variable. Clouds thinning.

01:49 UT SNR CD2 38 CD 4 46 D200, significantly less than the 125 requested. Don and team discussing how to address. Because this is variable and a monitoring program we will stop at the 1 pass and move on to other programs.

02:10 UT SNR CD3:41 CD5: 39 D200

UVa_Multistar TIC 414026507

02:10 UT Preset to TIC 414026507

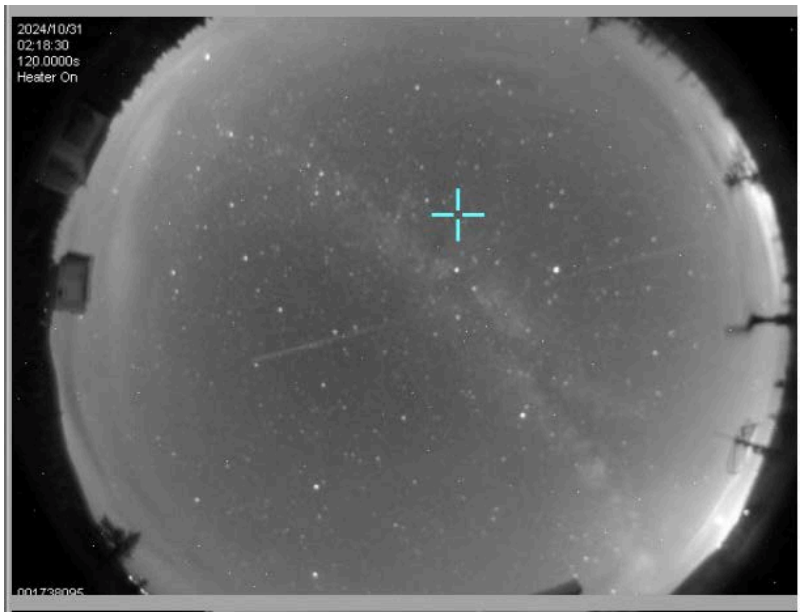
02:12 UT Starting science in CD 3 & CD6 D300. Seeing 0.84” on the guider, thin cirrus with thicker clouds concentrated to the north.

SNR CD3:131 CD6: 163 D300

UVa_Multistar TIC 427092089

02:20 UT Preset to TIC 427092089

02:22 UT Starting science in DC3 &CD6 D300. Seeing is 0.69” on the guider. Thin cirrus now and thicker clouds have largely moved out.



SNR CD3:145 CD6:175

OSU BH Binaries Gaia DR3 2864987179231370368

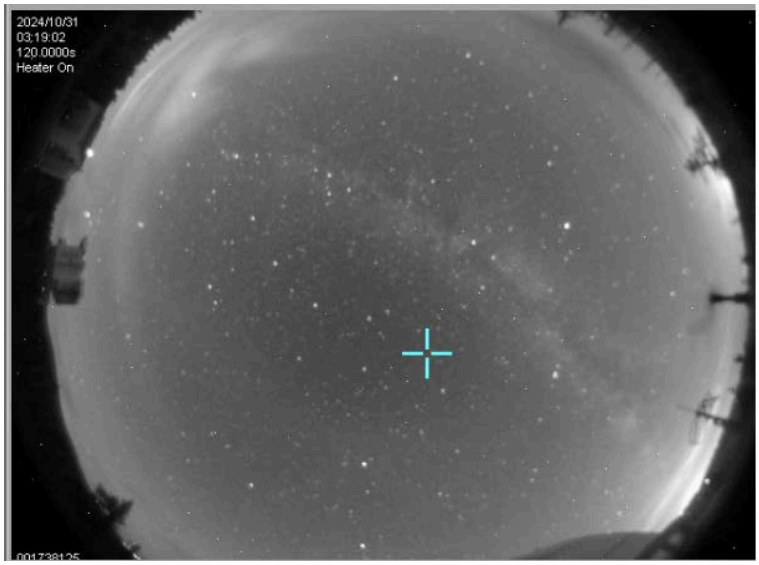
AKA: 2MASSJ23434829+2706302
02:47 UT Preset to BH Bin target Gaia DR3 2864987179231370368

02:50 UT Starting science in CD3 CD5 with D300. Cirrus, particularly to the north. System looks like it will continue to pass to the north of us for the most part. Seeing is 0.76” on teh guider.
SNR CD3: 107, CD5 128

OSU BH Binaries Gaia DR3 1796406772051028224

AKA: 2MASSJ21561240+2510478

03:21 UT Preset to Next target Gaia DR3 1796406772051028224. This is a big slew so we may need a pointing check. Still partly cloudy with some thin clouds, primarily in the north.



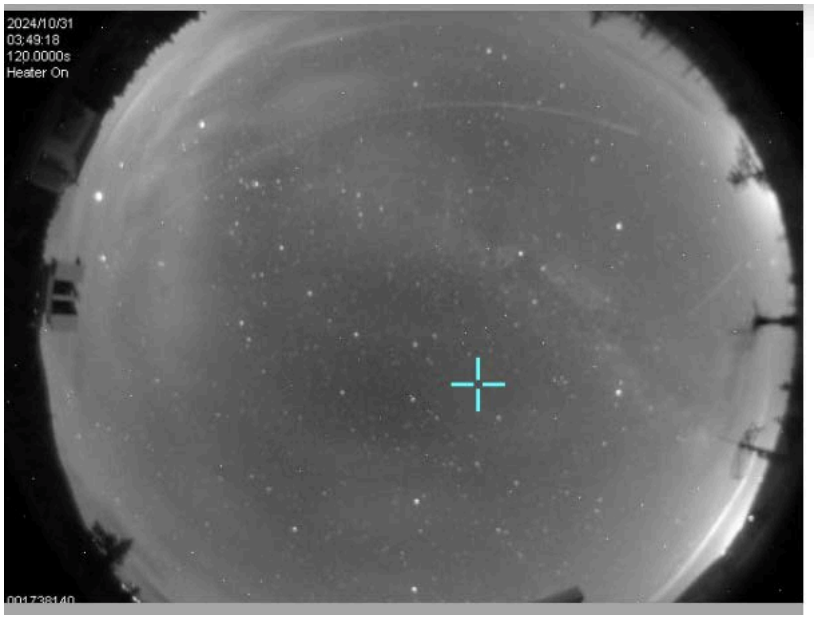
03:24 UT Yup, pointing check needed, Josh is sending that now.

03:26 UT Presetting back to target after pointing verification.. Seeing 0.73” on the guider. Starting science in CD3/CD5.

03:45 UT Large flux drop, must have a cloud moving through. Target is still on the hotspot.

03:52 UT Flux back up to normal. Seeing is 0.55” on the guider.

SNR CD3: 102 CD5: 145



OSU_LiDwarf 2MASSJ01064189-0027182

Exposure times in readme file were for binocular operations. They were doubled for monocular PEPSI.

03:57 UT Presetting to 2MASS J01064189-0027182.

04:00 UT Not sure if we grabbed the right star. Josh is doing a pointing check.

04:05 UT Resending to target after pointing check. Very faint.

04:07 UT Resending with BS2.

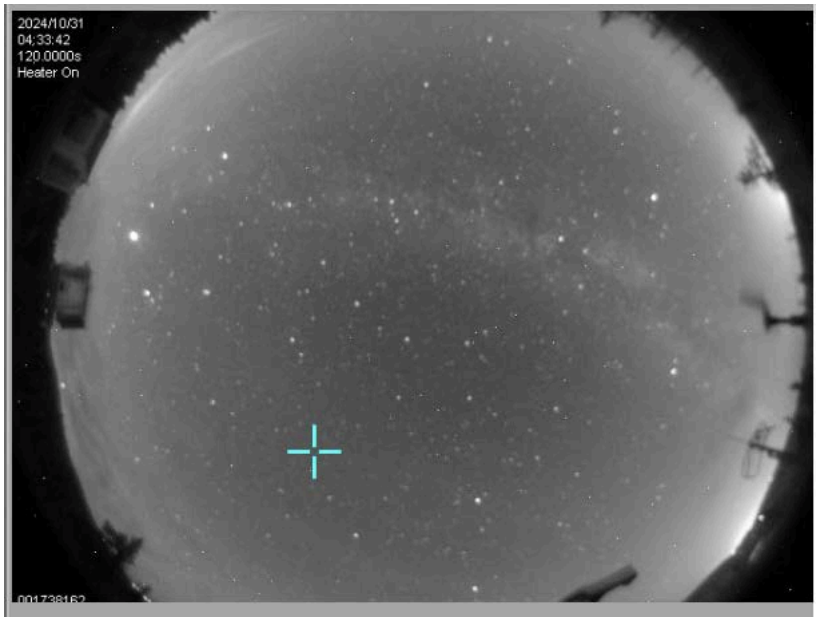
04:09 UT Starting science with CD3/CD5 D300. Seeing 0.75” on the guider. Partly cloudy. Exp time doubled to 22min.

SNR CD3:75, CD5 86. PI confirmed this is ok despite being a bit below the requested 100.

OSU_LiDwarf 2MASSJ01084954-0030464

04:34 UT Preset to next Liwarf target. Again exposure time was doubled for monocular operations (20min)

04:37 UT Starting science. Seeing 0.75” on the guider. Clouds seemed to be moving out again.



SNR CD3:74 CD5: 76

OSU_LiDwarf 2MASSJ01244193+0124528

04:59 UT Preset to next LiDwarf target J01244193+0124528. Time doubled again for monocular operations (to 10 min).

05:01 UT Starting science. Seeing 0.6" Cirrus.
SNR CD3: 81 CD5: 92. The PI has requested additional time to get the requested SNR.

05:13 UT Starting second exp of 10min.

05:22 UT Thin cirrus, seeing 0.65".
SNR CD3:87 CD5: 101

OSU_LiDwarf 2MASSJ03435417+1719250

05:24 UT Preset to next LiDwarf Target 2MASS J03435417+1719250.

05:26 UT Starting science. Seeing is 0.9". Thin cirrus.

SNR CD3:79 CD5:84
05:29 UT Taking a second pass. This is short with a 2 min exp time.

OSU_LiDwarf 2MASSJ04134178+2305579

05:33 UT Preset to next LiDwarf target 2MASS J04134178. Exp time doubled to 8min for monocular operations.

05:34 UT Seeing up to 1.43" on the guider. Thin cirrus.
SNR CD3: 67, CD5: 73

05:44 UT Taking another while we talk about what to do with the deteriorating seeing. Seeing up to 1.8".
SNR CD3: 66, CD5: 70

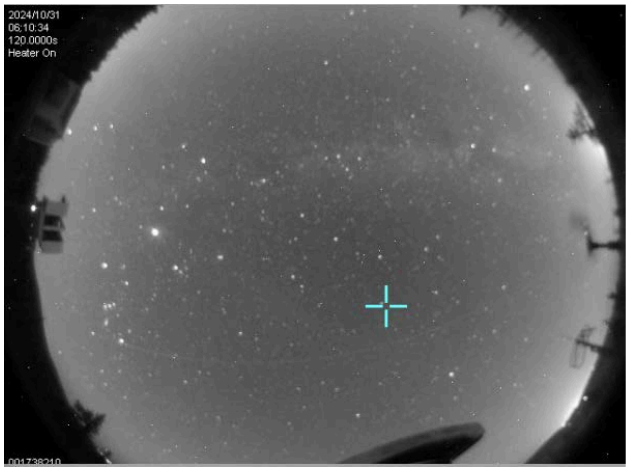
OSU BH Binaries Gaia DR3 2847197557833077504

AKA: 2MASSJ00011343+2156114
05:53 UT Sending preset to Gaia Dr3 2847197557833077504
05:55 UT Pointing check needed.

05:57 UT Sending preset back to source.

05:59 UT Starting science. Seeing appears to have improved again, back down to about 0.75".

06:15 UT Conditions now mostly clear with seeing ~0.75” on average.



SNR CD3: 109, CD5 132

OSU BH Binaries Gaia DR3 3624983020948147 20

AKA: 2MASSJ00435538+3505407

06:20 UT Preset to next BH Binaries target: Gaia DR3 362498302094814720
06:21 UT Another pointing check needed.

06:24 UT Resending preset.

06:26 UT Starting science.

SNR CD3: 126, CD5: 160

SWITCHING TO LBC

06:55 UT Starting PEPSI calibrations
06:58 UT TMS lasers on

OSU_Monitor: N628

07:14 UT Sending focus field for N628.

07:15 UT Running dohybrid.

07:25 UT Sending copointing field
Radial star offsets from rotator centers: BLUE 23.5" and RED 21.5"

lbcrangebal:

COPOINTING: B=72519 R=72514
Pointing updates: delta_IE = 16.41", delta_CA = -7.10"

Mirror updates:	dX(mm)	dY(mm)	dRX(")	dRY(")
SX:	0.65	0.28	6.11	-13.91
DX:	-0.53	-0.25	-5.33	11.38

The copinting star is very saturated.

07:29 UT Running one more quick iteration of dofpia. This adjusted focus slightly on both sides. Seeing is ~0.6”

07:35 UT TMS reference set. 0.7-1” on the guiders. Starting science on N628 B & R

07:44 UT 2.6 pixels on the blue B-Bessel, and 3 pixels in the red R-Bessel

08:00 UT seeing has been good, sub arcsecond through out, and stable. Mostly clear.

OSU_Monitor: N672

08:12 UT Sending for copointing on N672. Collimation still looks good
Radial star offsets from rotator centers: BLUE 6.7" and RED 7.3"

lbcrangebal:

COPOINTING: B=81325 R=81322
Pointing updates: delta_IE = -3.72", delta_CA = -4.06"

Mirror updates:	dX(mm)	dY(mm)	dRX(")	dRY(")
SX:	-0.12	0.18	3.80	2.62
DX:	0.16	-0.17	-3.54	-3.36

The blue copointing looks a little elongated so we are just running a quick dofpia pass.

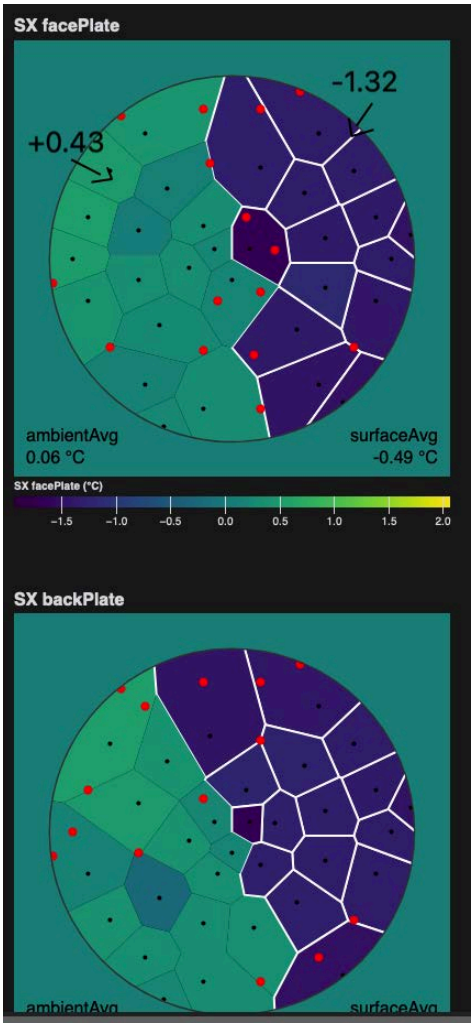
08:16 UT Running dofpia.

08:22 UT Starting science.

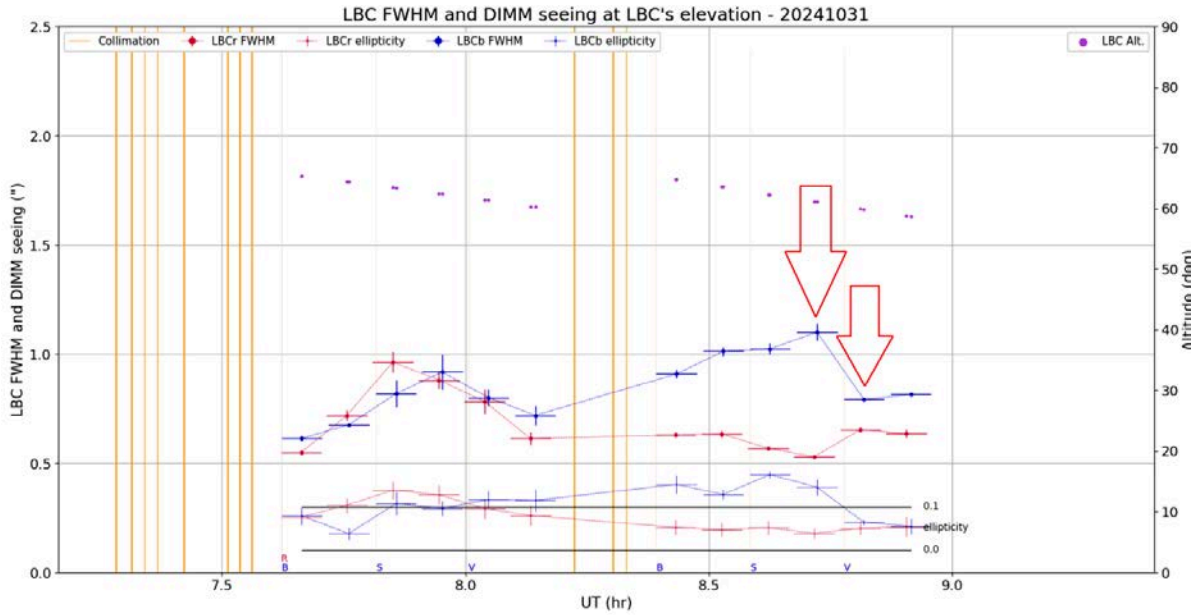
08:31 UT The first image on blue looks a bit elongated, still ~3.4 pixels. We will see what the next image looks like.

08:42 UT Although blue images do look elongated, we talked it through and we will continue as is. Still sub arcsec.

08:59 UT oddly we noted that the M1 thermal plot on PMC and the dms info page showed the SX M1 half at temperature and half cold by -1C. It suddenly (instantaneously) reported all the same temperature. When it did that the next image did not look as elongated… Timestamp



around 8:50. Look at the IQ change on SX:



OSU_Monitor: N925

08:59 UT Sending copointing script for N925 and running dofpia. Not much needed though….
Radial star offsets from rotator centers: BLUE 0.3" and RED 8.2"

lbcrangebal:

```
---------------------------------------------------------------------
COPOINTING: B=90757 R=90752
Pointing updates: delta_IE = 3.53", delta_CA = -1.72"
  Mirror updates:   dX(mm)   dY(mm)   dRX(")   dRY(")
          SX:      0.07     -0.18    -3.81    -1.53
          DX:      0.03     0.22     4.63     -0.74
---------------------------------------------------------------------
```

09:10 UT Starting science on N925

09:26 UT Seeing in 0.9-1.1” on the guiders. 3.6 pixels on the blue Uspec, 2.6 pixels on the R-Bessel.

09:30 UT The M1 thermals started showing the half cold half warm again on the PMC. Collimation held fine so it was just a coincidence earlier.

OSU_Monitor: N2403

09:35 UT Sending copointing and collimation for N2403. Collimation has held well, so only doing copointing.

Radial star offsets from rotator centers: BLUE 7.1" and RED 6.8"

lbcrangebal:

```
------------------------------------------------------------------------
COPOINTING: B=93905 R=93902
Pointing updates: delta_IE = -0.70", delta_CA = 4.35"
  Mirror updates:   dX(mm)   dY(mm)   dRX(")   dRY(")
          SX:   -0.07      0.33     7.15     1.50
          DX:     0.09     -0.08    -1.71    -2.01
------------------------------------------------------------------------
```

09:42 UT Starting science on N2403. Seeing is 0.9-1” on the guiders, mostly clear.

09:54 UT Switch to MODS

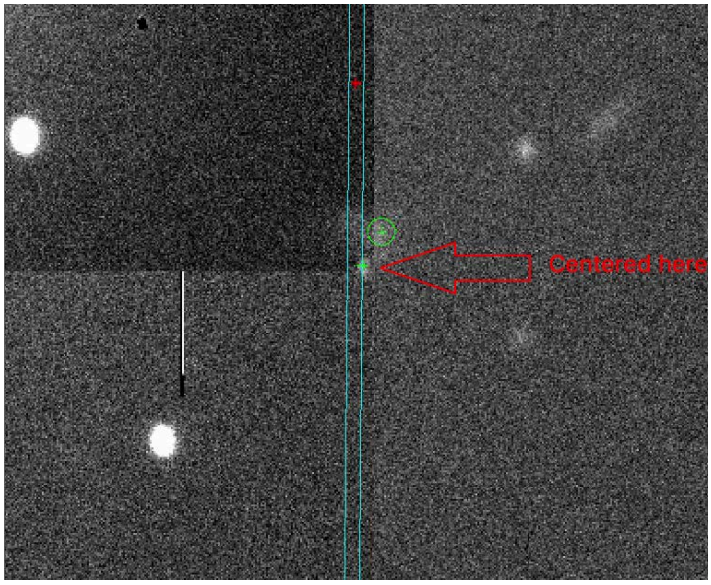
Reconfig MODS

09:57 UT TMS lasers off.
1:10 UT Sending pointing and collimation preset near first target
10:19 UT Seeing is 0.86” on the WFS

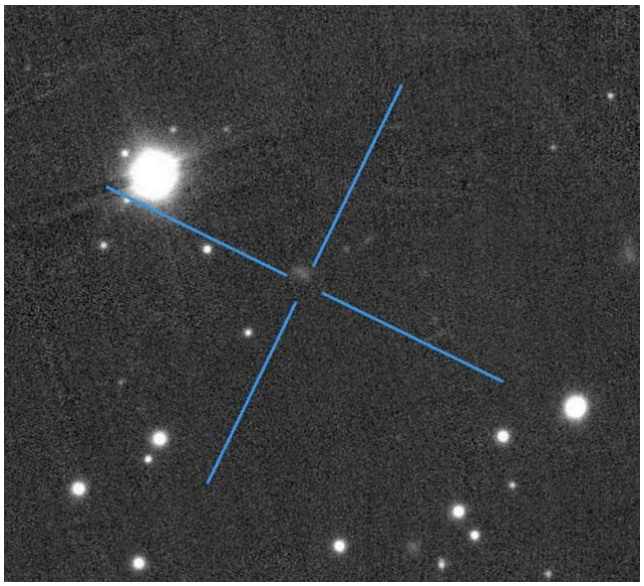
OSU_SCAT 2023ufx

10:20 UT Sending acquisition preset for SN2023ufx. Seeing 0.7” on the WFS
acqMODS --mods1 2023ufx_UT1000.acq

The object is not entirely clear from finder



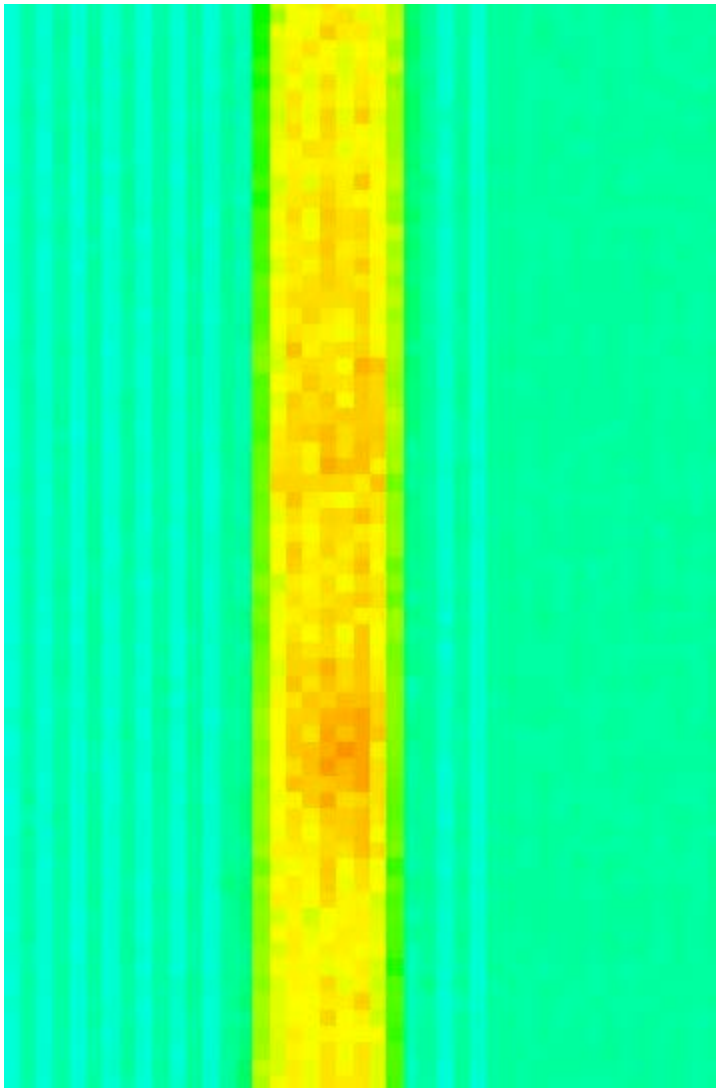
Finder (rotated roughly to match):



Computed Slit Alignment Offset:
dX = -0.425 arcsec
dY = 12.458 arcsec

MODS1 Offset Command:
offsetxy -0.425 12.458 rel

Additional -0.12” in X to better center. This object could benefit from a blind offset setup in the future. We have called this good: The object is extended so difficult to tell if centered but appears best here.



10:41 UT Starting science

11:06 UT Looks like broad Halpha. Seeing is 0.55”, clear.

11:09 UT PA set to -62 and ParAngle now -60 and increasing.

11:43 UT Seeing 0.9”, clear. Lower right quadrant noisy on MODS1. Not impacting science. Note to IT8564 added

12:03 UT 18 degree twilight is approaching. For telescope safety, we will need to point away from the rising sun after this target completes. No time for the imaging. The final parAngle was -45.5 deg for target.

SpecPhot - G191B2B

12:07 UT Sending acquisition script for g191b2b. Huge slew but got the guide star first try!

12:14 UT 18 degree morning twilight

12:15 UT Acquisition script was handin
g on the inst config but nothing was happening. It did not time out. I just Ctrl-C and resent.
Computed Slit Alignment Offset:
  dX = -0.964 arcsec
  dY = 12.118 arcsec

MODS1 Offset Command:
  offsetxy -0.964 12.118 rel

12:20 UT Science started in dual grating on g191b2b. Seeing 0.8” on the WFS.

12:33 UT Closing up early.

12:42 UT 12 degree morning twilight

13:32 UT Sunrise

Calibrations

LUCI

LUCI Darks made for LUCI2 only and have 1” longslit with G200 grating…, and made with 1x1x600 but on 5 different lines? Remaking this. Also created LUCI1 zJSpec Flats and Arcs.

Luci1 darks for XMD (should verify I got the correct ones)
5x(1x600) MER NORM luci1.20241031.0001-5
5x(4x15) LIR INT luci1.20241031.0006-10
5x(1x5) LIR INT luci1.20241031.0011-15

zJ arc and Flats G200@1.17 1” Longslit luci1.20241031.0016-33

LBC

LBC bias x25

MODS

Taking 1” dual grating slit flats: m1r..19-24 m1b..16-21
execMODS --mods1 grslitflats_1.0_m1.txt

Taking dual grating pixel flats: m1r..25-29 m1b..22-31
execMODS --mods1 grpixflats_m1.txt

Taking dual grating arcs: m1r..30-32 m1b..32-34
execMODS --mods1 grlamps_m1.txt

Taking dual imaging flats: m1r..33-47 m1b..35-44
execMODS --mods1 dualimflats_ugriz_m1.txt