LBT Observing Log for 2024 11 01 UT

Observers: Jenny Power
Partner Observer: Donald Terndrup, Lucy Lu (OSU)
Telescope Operator: Josh Williams

Plan:

- Start with LBC's for OSU_Monitor
- Switch to MODS
- Possibly switch to PEPSI depending on the clouds

Summary:

OSU_BHBinaries/2949272716964862720
OSU_BHBinaries/3048436120183383424
OSU_BHBinaries/3072979835351666304
OSU_BHBinaries/3314905481891113088
OSU_BHBinaries/3425577610762832384
OSU_BHBinaries/3123854268434443648
OSU_BHBinaries/3112097229257687680 - NOT COMPLETE
Calibrations

PEPSI Log:
https://drive.google.com/file/d/1eMIvwLA-vugWBw49aKboDZchAjQO8jgg/view?usp=sharing

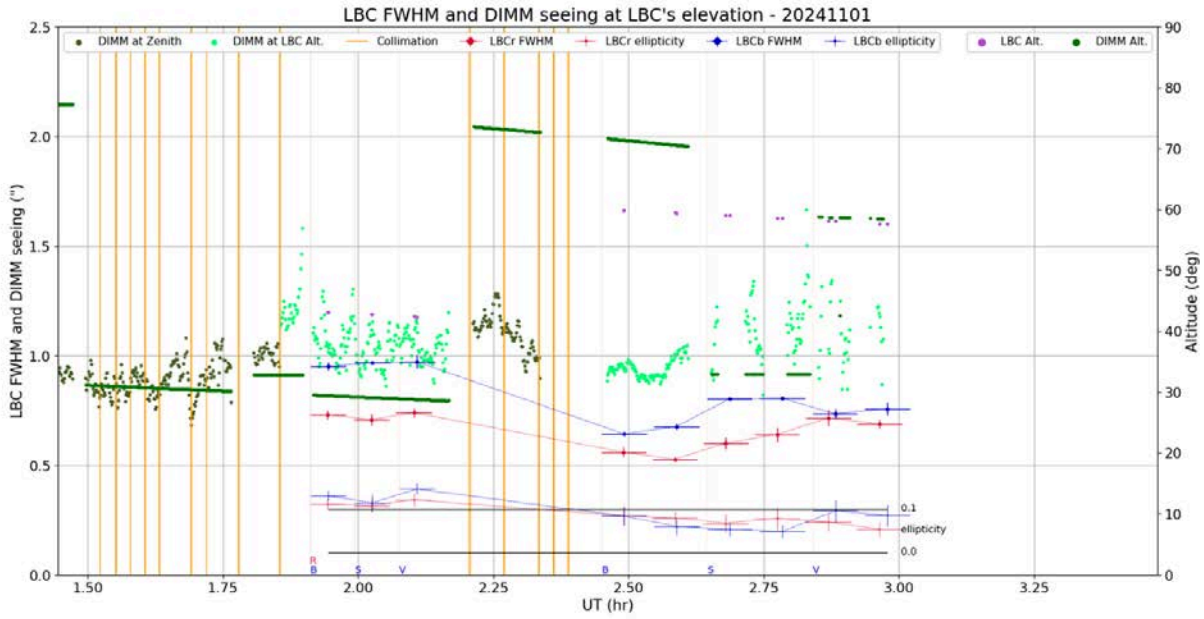
Issues:

Noisy MODS1r images (IT9205)

Weather:

Conditions clear to start but they are expected to cloud over during the second half tonight.

LBC conditions and IQ:



Overview (times are given in UT):

23:10 UT Setting up instruments. We will start with LBC's, then move to MODS.
MODS awake, SimSnap taken
LBC's powered up
LUCIs up and field stop aligned

23:30 UT Josh has completed his test preset. Telescope is set and ready for LBC's to start tonight.

Calibrations

Taking MODS cals:

execMODS --mods1 bias3K.txt
mods1[r/b].20241101.0003-7

execMODS --mods1 bias8K.txt
mods1[r/b].20241101.0008-12

execMODS --mods1 grslitflats_1.2_m1.txt
mods1[r/b].20241101.0013-18

Taking 25xbias for LBC.

Taking zJSpec G200@1.17 1" Longslit arcs and Flats

luci1.20241101.0006-23

For records, LBC Skyflats:
B-Bessell: taken lbcb.20241013 ** Priority to get
USpec: taken lbcb.20241029
V-Bessel: Taken lbcb.20241028

R-Bessel: lbcr.20241028
I-Bessel: Not within past month ** priority to get.

00:04 UT TMS lasers on

Plan: LBC targets NGC 6503 followed by NGC 6946

Sky Flats

00:37 UT Josh has us open. We are slewing to our skyflat field: Blank 19+59. B & I flats are our priority, but we will start with a partial set of USpec and YFan while we wait for skies to darken.

00:48 UT Starting Uspec and YFan Twilight flats at PA0. Got distracted and didn't take very good Uspec and Y fan flats, maybe a couple useful USpec

00:54 UT Taking test B & I

Too few downloaded pixels on LBCR flat
I was struggling with the offset between B & I. Looks like I was adjusting scripts in the wrong dir. Updating now. B was too low but I-Bessel has looked good.

01:14 UT Taken a few good in each, moving to PA 180 in B & I

01:23 12 degree twilight

OSU_monitor NGC 6503

01:28 UT Preset to NGC6503 and running dohybrid. DIMM is reporting 0.9".

01:39 UT Blue has obvious spherical but because dohybrid thinks the seeing is worse than it is, dohybrid is not addressing it. Josh is manually putting +1000 z11 in for blue. Running dofpia again and things look much better on blue.

Radial star offsets from rotator centers: BLUE 9.0" and RED 28.5"

lbcrangebal:

```
------------------------------------------------------------------------
COPOINTING: B=14642 R=14637
Pointing updates: delta_IE = -16.25", delta_CA = 1.72"
  Mirror updates:   dX(mm)   dY(mm)   dRX(")   dRY(")
          SX:      0.31     0.59     12.58   -6.55
          DX:   -0.26       -0.56   -11.96   5.66
------------------------------------------------------------------------
```

01:52 18 degree twilight

01:54 UT Starting science on NCG6503. Guiders are reporting 1-1.1" seeing.

02:07 UT About 3-3.1 pixels on the red and 3.7-4 pixels on the blue

Cmu crashed.

OSU_monitor NGC 6946

02:10 UT Sending copointing scripts for NGC 6946.

02:15 UTCopointing offset did not appear to go through to the telescope. Resending. This time the M1 received it.

Radial star offsets from rotator centers: BLUE 5.9" and RED 12.1"

lbcrangebal:

COPOINTING: B=21611 R=21606
Pointing updates: delta_IE = 7.36", delta_CA = -3.08"
  Mirror updates: dX(mm)   dY(mm)   dRX(")   dRY(")
          SX: -0.07   -0.17   -3.61   1.49
          DX: 0.10   0.22   4.70   -2.22

02:18 UT Opted to run fpia although we expect it not to need much if anything. TMS is doing its job.
Nevermind, some spherical but in the opposite direction from before (on both red and blue)

02:24 UT Seeing looks better. Starting science. DIMM is reporting 0.84”. Clear.

02:36 UT 2.8 pixels in the red and blue images.

02:58 UT 3.2-3.4 pixels on both sides.

Reconfig MODS

03:02 UT High priority LBC completed, moving on to MODS.
03:10 UT TMS lasers off.

03:20 UT Pointing and collimating preset.

SpecPhot - Feige 110

03:27 UT Sending acquisition preset to feige110. Seeing is 0.56” on the WFS. Conditions remain clear.

Computed Slit Alignment Offset:
  dX = -1.428 arcsec

dY = 12.279 arcsec

MODS1 Offset Command:
offsetxy -1.428 12.279 rel

03:32 UT Starting science on Feige110 in dual grating.

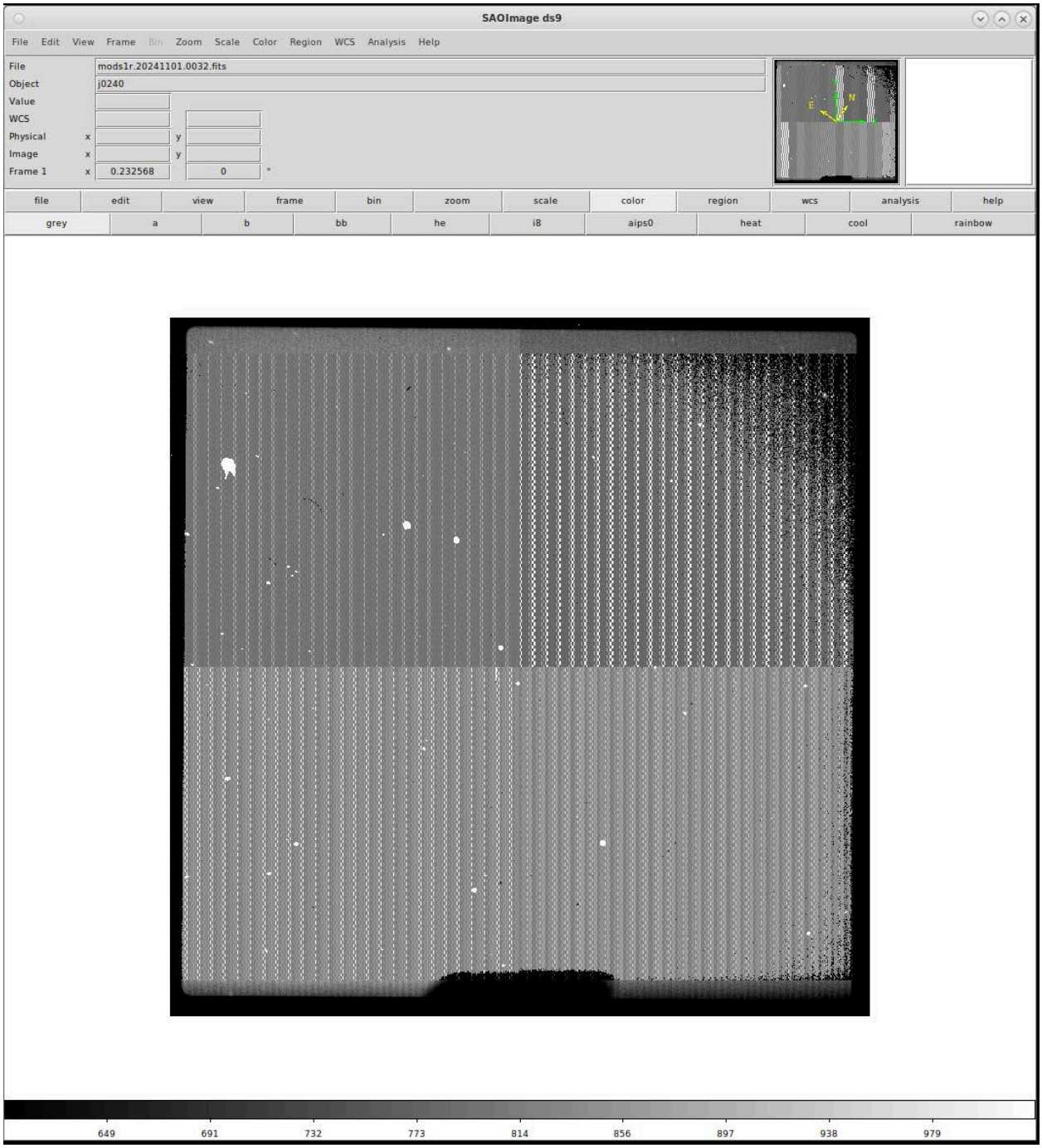
ND_blobs

Dual imaging dome flats taken yesterday.
03:44 UT Preset to ND_blobs for imaging. Conditions remain clear. Seeing is 0.72” on the DIMM, 0.8-0.9” on the WFS.

Error when running scripts: ** ERROR: BLUE EXTPTIME Didn't understand extptime 400 ?
** Abort, Retry, or Ignore? >
Hand editing error.
Blobs_fix.img contains the typos fixed.

After talking with Peter, this script was designed for biocular operations and particularly because of MODS1’s lower efficiency, this script will be run twice.

04:28 UT mods1r.20241101.0032 something wrong, very noisy. Background bouncing from 800-1000. Next image looked fine.



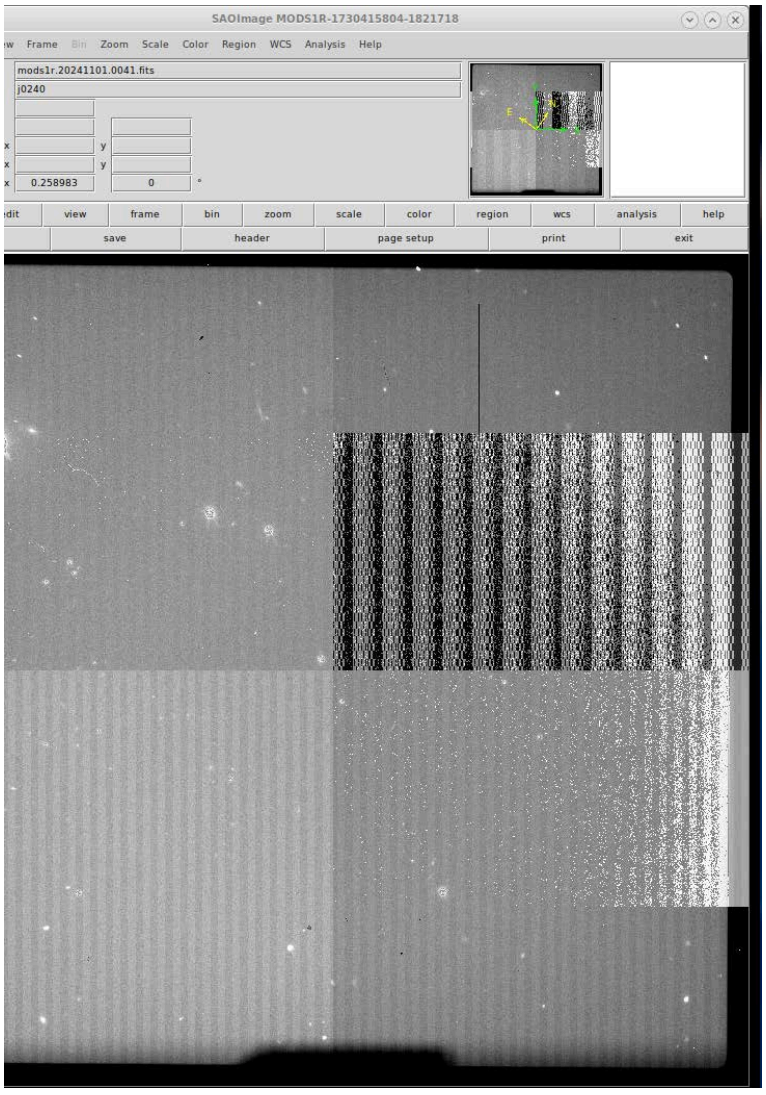
04:43 UT 6.6 pixels in blue u-sdss image (0.8”). The original script had an update pointing.
New script to run exec block only:
Exec:

Object j0240
red exptime 120
red nimgs 8
blue exptime 400

blue nimgs 3
blue filter u_sdss
red filter r_sdss
OFFSETXY 5.000 -5.000 abs
WFSWait
GO
#
OFFSETXY -0.00 +0.00 abs
GO
#

04:47 UT Starting second pass.

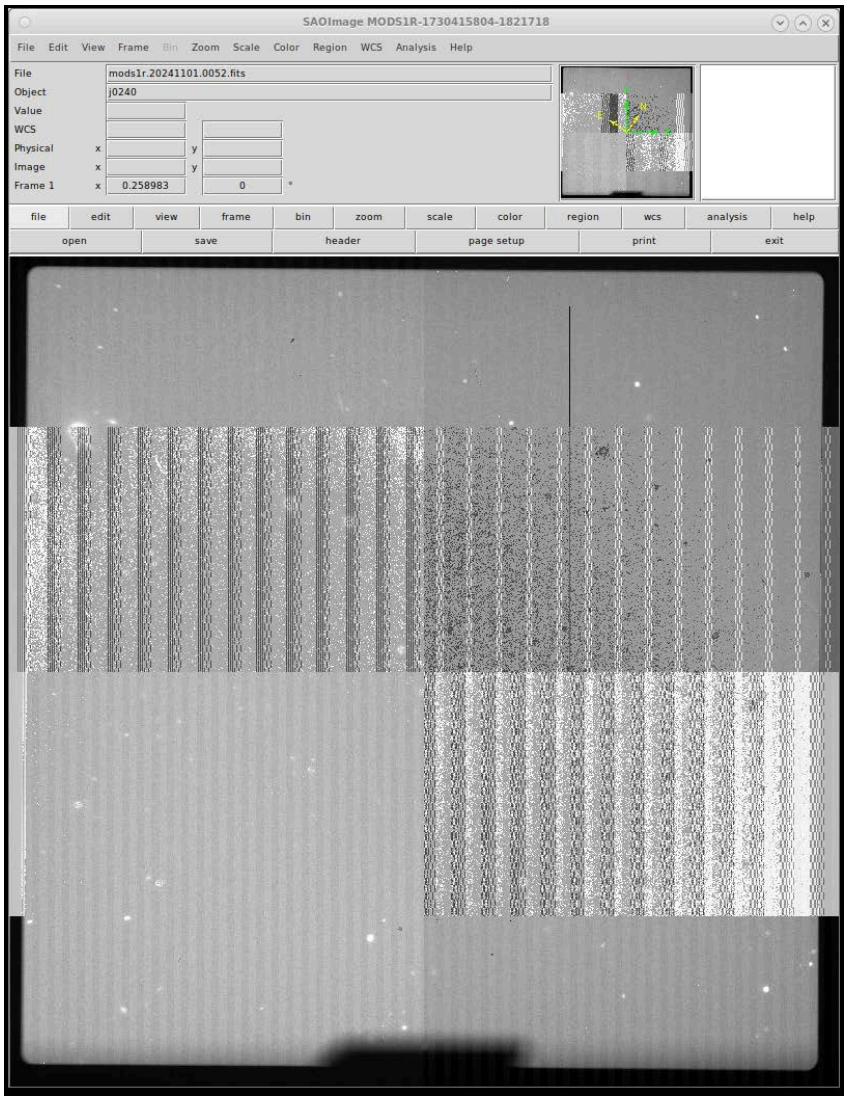
04:55 UT Another noisy mods1 red image: mods1r.20241101.0041



The noise pattern is about 150 counts above the background. Next image was normal.

05:23 UT Seeing is starting to go a bit soft with flares up to 1.7” on the DIMM. Guider is averaging 1.1-1.2” Last image mods1b.29241101.0031 1.16” in u-sdss.

05:27 UT Another bad image from mods1 red 0052



Switching to PEPSI

05:37 UT Seeing has deteriorated and clouds are inbound on the satellite. Also we are concerned by the odd images. We are switching to PEPSI.

05:52 UT Pointing and collimation presets near our first target.

05:59 UT Seeing is 1.75” on the DIMM and 1.58” on the guider. Still clear overhead.

UVa_Multistar/TIC52856877A

06:00 UT Sending preset to TIC 52856877, SNR req 100

06:02 UT Starting science. 2.2” on the DIMM, 1.2-1.9” on the guider.

SNR CD3: 145, CD6 163. Req 100, Ok

OSU_BHBinaries/ GAIA 5237719489453304 32

AKA 2MJ00525502+6335152, SNR req 100
06:11 UT Preset to GAIA 523771948945330432

06:12 UT Starting science. Seeing 1.48” on the guider.

SNR CD3 107, CD 5 202

OSU_LiDwarf/2MJ03413908+2359163

06:40 UT Preset to 2MASS J03413908+2359163, SNR req 100

06:44 UT Starting science. Seeing is 0.71” on the guider.

06:52 UT DIMM reporting 0.86” Guider showing 0.5”

SNR CD3 83 CD5 113, confirmed with PI ok.

OSU_BHBinaries/ GAIA 3425577610762832384

AKA 2MJ06170689+2343487, SNR req 50
07:11 UT Preset to Gaia DR3 3425577610762832384

07:14 UT Starting science, seeing 0.52” on the guider. Continues to be clear overhead.

SNR CD3 74, CD5 107

OSU_BHBinaries/207293229287136000

AKA 2MJ05170078 4256457

07:25 UT Preset to Gaia DR3 207293229287136000, SNR req 50

07:26 UT Starting science.

OSU_BHBinaries/3381217539262727936

AKA 2MJ06502446+2433129

07:33 UT Sending preset to Gaia DR3 3381217539262727936, SNR req 100

07:36 UT Starting science. Seeing is 0.73” on the guider. We are still clear overhead, but clouds are on their way!

SNR CD3 116, CD5 180

OSU_LiDwarf 2MASSJ03435417+1719250

AKA Gaia DR3 44497171153467008

07:55 UT Preset to target

07:57 UT Not confident in the pointing

08:00 UT Preset to target. Taking 4 min on source

SNR CD3 124, CD5 149

OSU_LiDwarf 2MASSJ04134178+2305579

AKA Gaia DR3 52899054897701888

08:07 UT Presetting to target 2MASS J04134178+2305579

08:09 UT Starting science. Seeing 0.53” on the guider. Still clear overhead. Exposure time set to 16min.

SNR CD3 111 CD5 144

OSU_BHBinaries/34050459190373704 96

AKA 2MASSJ04505979+1538374

08:29 UT Preset to next target Gaia DR3 3405045919037370496, SNR req 50. Seeing 0.5” on the guider.

SNR CD3 65 CD5 117

OSU_BHBinaries/2991347071288585472

AKA 2MJ06024026-1646042

08:54 UT Preset to Gaia DR3 2991347071288585472. Req SNR 100

08:56 UT Starting science. 0.56” on the guider.

SNR CD3 113, CD5 196

OSU_BHBinaries/32345825110529210 88

AKA 2MASSJ05214968+0243217
09:18 UT Preset to Gaia DR3 3234582511052921088, Req SNR 100

09:20 UT Starting science. Guider reporting 0.57”. Still clear, but satellite shows the clouds are imminent.

SNR CD3 116 CD5 183

OSU_LiDwarf 2MASSJ08280198+1913343

09:46 UT Preset to 2MASS J08280198+1913343. Req SNR 100

09:49 UT Starting science, seeing 0.58” on the guider. Distant clouds visible on teh south western horizon, but clear overhead.

SNR CD3 83 CD5 92, verified with PI this is good.

OSU_BHBinaries/29492727169648627 20

AKA 2MASSJ06514318-1329502
10:01 UT Preset to Gaia DR3 2949272716964862720, SNR req 100

10:04 UT Starting science. Seeing 0.69” on the guider. Some thin cirrus overhead now.

SNR CD3 117 CD5 190

OSU_BHBinaries/30484361201833834 24

AKA OSU_BHBinaries/2MJ07202130-0856427

10:33 UT Preset to GaiaDR3 3048436120183383424, SNR req 100

10:35 UT Starting science, seeing 0.48” on the guider.

SNR CD3 123 CD5 155

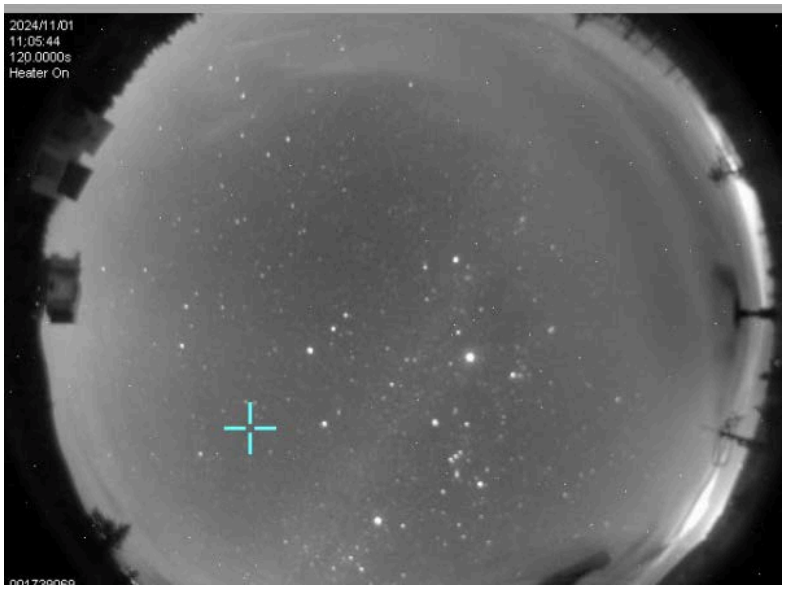
OSU_BHBinaries/3072979835351666304

AKA 2MJ08301619-0204550

10:49 UT Preset to Gaia DR3 3072979835351666304, Req SNR 100

10:51 UT Starting science. Thicker clouds moving in, clear where we are pointed. Seeing 0.55” on the guider.

11:10 UT Clouding over, our pointing still seems ok, no significant flux loss yet.

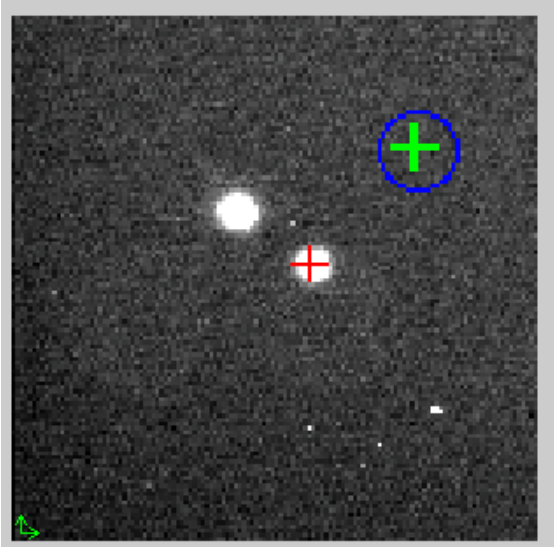


SNR CD3 122 CD5 184

OSU_BHBinaries/3314905481891113088

2MASSJ06034274+0126562
11:18 UT Presetting to Gaia DR3 3314905481891113088, SNR req 50

11:21 UT There are two sources of comparable brightness in the acquisition image. Josh is doing a pointing check.



Nevermind, brain fart. That is just the reflected fiber image. Pointing check was still good.

11:25 UT Resending preset.

11:26 UT Starting science. Seeing 0.53” on the guider. Clouded over to the north. Our pointing is still relatively ok.

11:37 UT Seeing some dips in flux now.

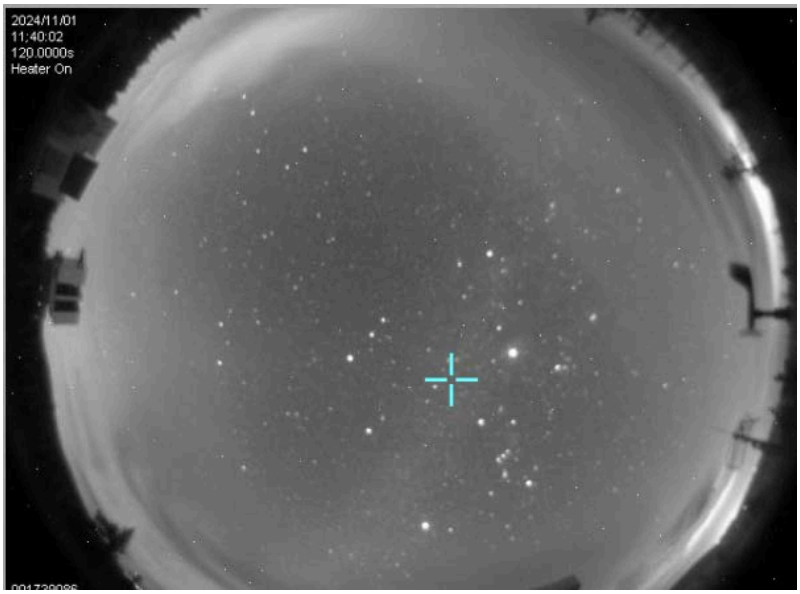
SNR CD3 72 CD5 94

OSU_BHBinaries/3425577610762832384

2MASSJ06170689+2343487

11:38 UT Preset to Gaia DR3 3425577610762832384, Req SNR 50
11:40 UT We grabbed the wrong star in this field. Josh is sending a pointing check.

11:43 UT Preset back to target.
11:43 UT Starting science. Seeing 0.53” on the guider.



SNR CD3 72 CD5 101

OSU_BHBinaries/3123854268434443648

2MASSJ06302736+0144062
11:51 UT Preset to Gaia DR3 3123854268434443648, req SNR 50.

11:54 UT Starting science. Seeing 0.62” on the guider.

12:04 UT Seeing some dips in flux but overall ok.

SNR CD3 61 CD5 89, super bright emission line Halpha?

OSU_BHBinaries/3112097229257687680 - NOT COMPLETE

2MASSJ06563181-0134570
12:07 UTPreset to Gaia DR3 3112097229257687680, req SNR 50

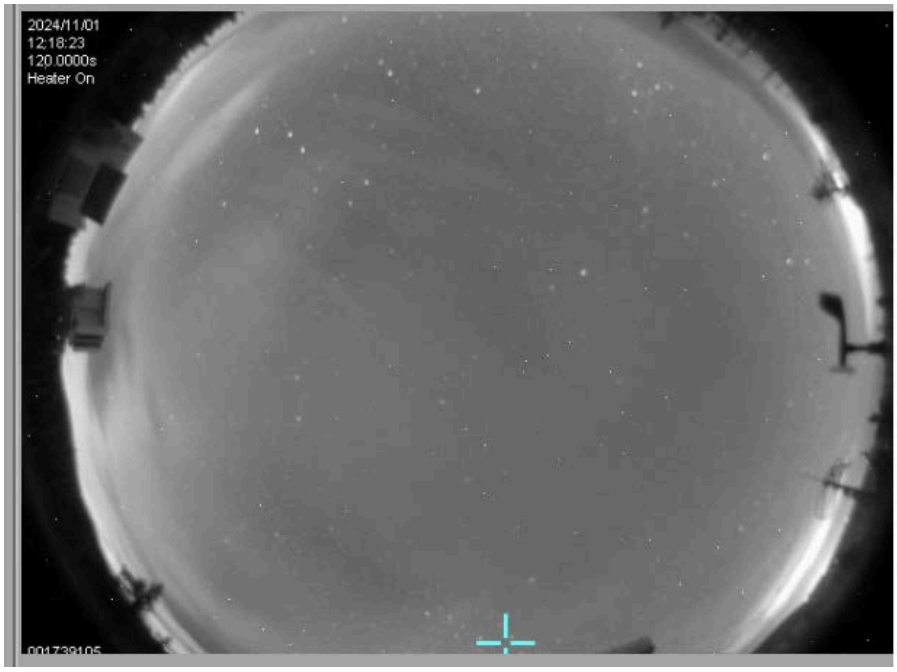
12:10 UT Starting science. Variable cloud cover. Seeing 0.42” on the gudier.

12:12 UT Big drop in flux just after starting. We are hanging in there, but clouds are getting thicker.

12:15 18 degree morning twilight

12:17 UT Star is lost. No flux any more. But SNR is not achieved and we can’t repeat.

SNR CD3 52 CD5 35



12:20 UT Clouds are too thick to continue. We are opting to call it a night.

Calibrations

12:23 UT Starting PEPSI Cals.
LBC 25xBias

MODS:
3Kx3K bias
execMODS --mods1 dualimflats_ur_m1.txt

12:44 12 degree morning twilight
13:34 Sunrise