# Night Log for UT 20230709

Partner observers: Donald Terndrup, OSU, Robert Taylor Service Observer: Jenny Power Telescope Operator: Steve Allanson

## Plan:

Start with LBC, end with MODS.

## Summary:

Started with LBC as planned, a few clouds and good <1" seeing to start, but clouds started coming in and seeing degraded. Switched to MODS at moonrise, got one target but first cirrus then thicker clouds increased, eventually shutting down observing at around 8UT. Did closed-dome calibrations to finish out the night.

#### Issues:

Telescope nudges continue to be an issue: [lbto@obs1 ObserverSupport]\$ ./nudgepredict.py -d 20230709 -e 12 -b 9 ./nudgepredict.py script version of 31-May-2023 5195663999.0 end MJD sec for the end of this UT day 60134 end MJD day 5195620800.0 end MJD sec corrected for endhour 12.0 5195588400.0 start MJD sec using backhour 9.0 20230709 is the day to be plotted. 3.0 start hour using backhour 9.0 end hour 12.0 These UT start times will have a nudge if the telescope is tracking. 03:19:54 03:54:02 04:28:10 05:02:18 05:36:26 06:10:34 06:44:42 07:18:50 07:52:58 08:27:06 09:01:14 09:35:22 10:09:30 10:43:38 11:17:46 11:51:54

### Overview:

1:00 Set TMS reference to 20230629 to start. Powering up the LBCs. Steve has reconfigured for LBC's to start.

Bad bias voltages on LBCs when powering up but they powered up ok in the end.

1:18 No License available error when bringing up TMS lasers, restarting the computer.

1:25 TMS lasers on. Steve is executing his test preset.

1:41 Running tms loop closed dome. Group rotations and optics look good at zenith with the Jun29th reference. Slewing to 60deg to verify we aren't near limits.Looks ok. We might run into trouble if we need a ton of positive z7 or negative z8.

1:52 Taking some LBC biases (25 bias)

2:00 MODS is awake and simSnap taken. Starting up LUCI DX WFS just in case.

- Time out on FW2 power up on DX WFS, manually powered up and retry success
- Noisy OCAM. Cycle of BCU2K and looks good.

2:09 Field stops aligned on LUCI1 and LUCI2.

#### 2:36 Sunset

2:41 We are open. We will start with some sky flats. There are some clouds on the southern horizon but mostly clear overhead. Slewing to Blank14+17

2:47 Starting skyflats with USpec and YFan at PA 0 and PA180 Lbcb.20230709.24751 high but coming down quickly Lbcr.20230709.24743 high but coming down quickly.

3:02 Starting test flats with BR at PA180. Adjusted the time between B & R to be 3, 2 to help keep the flats at around the same level

3:06 Starting flats with BR at PA180. First 2 are saturated and the 3rd is too bright.

3:17 Starting flats with BR PA 0. Too low to start adjusting. Did not get a great set at PA0, but got a few good ones

3:33 12 degree evening twilight

OSU delvedwarf - Delve5

3:34 Sending Preset to delve5.

3:36 TMS stopped and running dofpia

3:44 Converged with dofpia. TMS reference set and TMS started. Copointing.

Radial star offsets from rotator centers: BLUE 33.8" and RED 29.6"

lbcrangebal:

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COPOINTING: B=34446 R=34442 Pointing updates: delta\_IE = -23.60", delta\_CA = -4.13" Mirror updates: dX(mm) dY(mm) dRX(") dRY("). SX: 1.06 -0.21 -4.58 -22.79 DX: -1.03 0.46 9.86 22.05

3:50 The IQ looks a little poor on the red side. We will run dofpia once more. The mirrors are a touch cold (0.5deg)TMS is stopped. Rerunning dofpia

3:55 Reference set. Taking a verification image before we start science. Red still looks bad. Re did the lbcrangebal took another frame (optics may have been moving) and IQ looks great. Seeing 0.75 on the red image and 0.9" on the blue

4:06 Starting science on delve5. Seeing 0.96" on the DIMM. Conditions mostly clear, with some cirrus along the horizon.

4:10 18 degree evening twilight

4:14 Seeing 1.04" on the blue, 0.96" on the red 0.98" on the DIMM.

4:18 Seeing seems to be quite consistent image to image and IQ looks good on the LBC images. Some clouds are popping up to the south and east.

4:32 Clouds are getting worse quickly, but not where we are pointed yet



4:37 Starting to see some astigmatism in the red images (slight). We will recollimate after this pass

4:41 First pass on Delve 5 complete. Running dofpia

4:51 Red needed some work, mostly focus and astigmatism. Converged. Starting second pass on delve5.

5:00 0.63" on the red, 0.76" on the blue. DIMM reporting 0.85". Clouds are sticking to the north but temps are starting to drop rapidly.

5:15 Clouds have improved:



Blue images are starting to look a touch soft. 0.8" on the red, 0.9" on the blue

OSU\_delvedwarf - Virgoii

5:27 Sending preset to Virgoii for copointing and coollimation Radial star offsets from rotator centers: BLUE 6.2" and RED 10.8"

lbcrangebal:

COPOINTING: B=52830 R=52826 Pointing updates: delta\_IE = -13.16", delta\_CA = 2.18" Mirror updates: dX(mm) dY(mm) dRX(") dRY(") SX: 0.19 0.58 12.46 -4.01 DX: 0.00 0.12 2.59 -0.01

Spherical (Z22) and focus on both sides needed.

5:37 Setting TMS reference. Starting TMS and starting Virgoii science script. Seeing 0.8" on the DIMM. Some clouds forming overhead



5:49 1.05" on the red and blue images, red looks a little soft. Will wait to see the next image.

6:00 Red doesn't look good now. We will collimate after this image and resume the script on the 3rd dither point.

6:04 Running dofpia. Z11 and z22 needed

6:13 Running a script that starts at the 3rd dither point and reruns through all 3 dither positions.

 $6:22 \sim 1.1$  on the blue and red.

6:34 Seeing degrading. 1.4" on the images now

6:52 IQ degrading again and we are down at 1.8 airmass now. We will wrap up after this exposure leaving one exp incomplete on this second pass.

6:33 Moon rise

6:55 Reconfiguring to MODS. Turning off TMS lasers.

7:13 Steve is pointing and collimating near our first target. Some clouds are still hanging around. Seeing 0.75" on the guiders.



## OSU\_XMDs\_MODS - WD1713

7:20 Preset to WD1713 for acquisition. Seeing 1" on the guiders.

MODS1 Computed Slit Alignment Offset: dX = -0.848 arcsec dY = 12.057 arcsec

MODS1 Offset Command: offsetxy -0.848 12.057 rel

MODS2: Computed Slit Alignment Offset: dX = 2.941 arcsec dY = 8.666 arcsec

MODS2 Offset Command: offsetxy 2.941 8.666 rel Additional: MODS2 Offset Command: offsetxy 0.380 -0.260 rel offsetxy 0.194 0.170 rel

7:30 Starting science on WD1713. Seeing 1" on the guiders and DIMM.

Red Only: mods[½]r.20230709.0007-0009

7:44 Starting blue only exposures ong WD1713 seeing 0.9" on the guider. Some cirrus. Blue only Mods[½]b.20230709.0003-0005

7:56: Mods2 blue readout delay. Seeing is bouncing between 1-1.25". More cirrus is moving in.

#### Weather loss

8:03 Sending preset to WD1911 for acquisition. MODS2 timed out on Set Partner, then MODS1 timed out on clear stars. Cancel and resend from scratch

8:06 Resending preset for WD1911. Steve needs to do a pointing check. No start on the right side.

8:10 Sending again for acquisition for WD1911 And the target is lost. Thick clouds. Weather downtime.



8:21Clouds:

8:49 The clouds are just getting worse and threatening. Steve is closing.

#### MODS closed-dome calibrations

8:56 Taking some calibrations while we are closed

MODS red grating arcs mods[1/2]r.20230709.0010-12

MODS blue grating arcs Mods[½]b.20230709.0006-8

MODS red grating slitless mods[<sup>1</sup>/<sub>2</sub>]r.20230709.0013-17

MODS blue grating slitless Mods[½]b.20230709.0009-18

MODS red grating 5" Longslit flats mods[½]r.20230709.0018-20

MODS blue grating 5" Longslit Flats Mods[1/2]b.20230709.0019-24

10:25 We had precipitation about 45 min ago, thick clouds continue. We are calling it a night with 18 degree twilight approaching.

10:31 MODS put to bed, LBCs off, WFS powered off. 10:39 18 degree morning twilight

11:16 12 degree evening twilight

12:14 Sunrise