

# LBT Observing Log: 2025 10 18 UT

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Telescope Operator: Josh Williams

## Plan:

Start with UM\_SWAN (PEPSI), [Closed due to high humidity]

Other PEPSI targets for first part of the night:

### **UVa\_Multistar program:**

TIC 2783 <6:30UT (done)

TIC 4140 <4:30UT (done)

TIC 3071 >2:30 <10UT (done)

TIC 2864 >5UT (done)

[ TIC 2600 >6:30UT ] Later? (done)

HIP 112051 (RV standard for TIC 4140, 2864) (done)

TIC 4541 >UT7 (done)

### **OSU\_mpmddwarf program:**

Gaia 181 + HIP 101716 ← too faint for poor seeing

Gaia 217 + HIP 105282 ← too faint for poor seeing

### **OSU\_BHBinaries:**

2M 1821+50

2M 2051+00

2M 2106+32 done

2M 2117+33 done

2M 0016+51 done

2M 0001+21 done

2M 0022+54 done

2M 0521+02 ← only on UT 21 or 22, so skipped

2M 0650+24 done

### **ND\_CEMPG4:**

Gaia 918 done

Gaia 945 done

Gaia 322

## Summary:

[Overview \(times are given in UT\):](#)

[Setup/Cals](#)

[UVa Disks - LUCI Darks](#)

UVa

Multistar

[TIC 278352276 \(04:19-04:33\)](#)

[TIC 414026507 \(04:33-04:50\)](#)

[TIC 307119043 \(04:50-05:04\)](#)

[TIC 286470992 \(05:04-05:19\)](#)

[HIP 112051 \(05:19-05:29\)](#)

OSU

BHBin

[2M 2106+32 \(Gaia DR3 186510649\) \(05:32-05:52\)](#)

[2M 2117+33 \(Gaia DR3 1854840\) \(05:52-06:19\)](#)

[2M 0016+51 \(Gaia DR3 3950304\) \(06:19-06:43\)](#)

UVa

Multistar

[TIC 260056937 \(06:43-06:54\)](#)

OSU

BHBin

[2M 0001+2156 \(Gaia DR3 284719755\) \(06:54-07:20\)](#)

UVa

Multistar

[TIC 454140642 \(07:20-07:31\)](#)

OSU

BHBin

[2M 0022+54 \(Gaia DR3 4195353\) \(07:31-08:10\)](#)

[2M 0650+24 \(Gaia DR3 33812175\) \(08:10-08:36\)](#)

ND

CEMPG4

[Gaia DR3 9455179](#)

OSU

HIPS

[HIP 20430 \(08:58-09:57\)](#)

ND

CEMPG4

[Gaia DR3 918137\(10:18-10:51\)](#)

[Gaia DR3 945517984 \(10:51-11:47\)](#)

[Gaia DR3 32213666 \(11:47 -](#)

Morning Cals

Lost about 2.5 hours to humidity at the start of night. Seeing was poor for much of the night, so we stayed with PEPSI, increasing exposure times to achieve requested S/N. Six targets and one standard from UVa\_Multistar; Six targets from OSU\_BHBinararies; (skipped

OSU\_mpmddwarfs: too faint for poor seeing). Seeing finally settled down to about 1 arcsec, so we tried SHARK-VIS on brightest high priority OSU\_HIPS\_SHARK target (HIP 20430). Setup went smoothly but took about 35 mins to achieve closed loops and then another 15 before exposures started. Completed V and R exposures. Seeing poorer towards end, so we stopped SHARK-VIS and returned to PEPSI, finishing the night with the three targets in ND\_CEMPG4. Despite good conditions for these, the requested exposures yielded somewhat lower S/N than stated in the readme.

Hope the next nights have good seeing, allowing LBC/LUCI/SHARK programs, because PEPSI targets are getting thin across the middle of the night.

PEPSI Log:

<https://drive.google.com/file/d/1NiVgjOqOdXbYMbqTxTessMdyclHbMyJz/view?usp=sharing>

AO Log:

 AO Nightlog UT20251018

## Issues:

9418: GCSL hang causes IIF hang on "Moving probe (GCS)". Final target of the night, SX hung during GCS moving probe. Aborted GCS to return to operation.

No data from DX guider. AzCam server required a couple of restarts to restore communications.

Pepsi DX guider statistics stale. Required restart of Pepsi GUIs to restore operation. No impact to guiding/WFS operations, but information is useful for observers.

## Weather:

High humidity at beginning of the night. Finally dropped at 3:44UT allowing us to open. Poor seeing (~2") for initial portion of the night, coupled with humidity skirting around the limit. Humidity eventually dropped to single digits around 6UT and stayed there for remainder of night. Seeing improved somewhat, eventually settling around 1" but continued to be variable.

### Temperature at ground \*

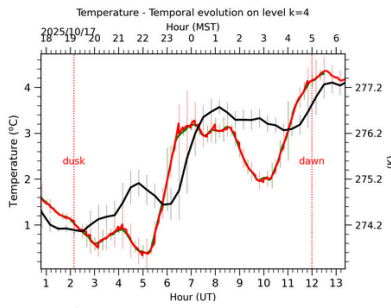


Fig. 4: Absolute temperature temporal evolution between the sunset and the sunrise at [38-62]m.

### Wind Speed at ground \*

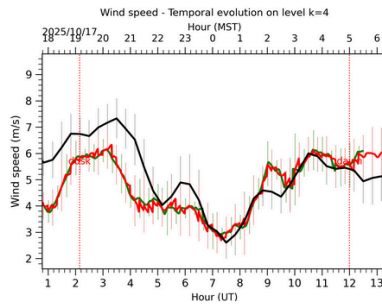


Fig. 5: Wind speed temporal evolution between the sunset and the sunrise at [38-62]m.

### Wind Direction at ground \*

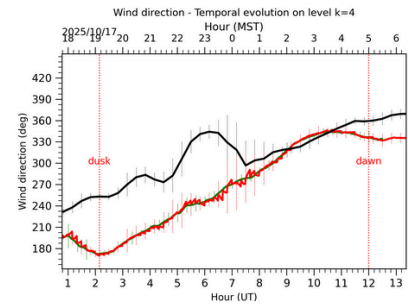
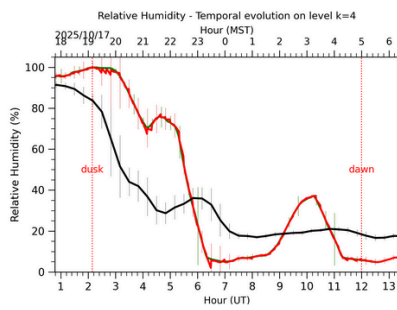
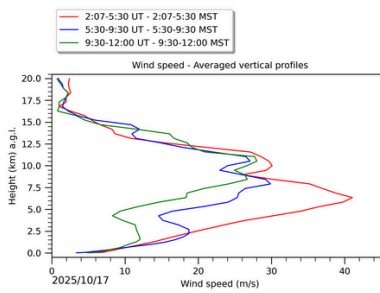


Fig. 6: Wind direction temporal evolution between the sunset and the sunrise at [38-62]m.

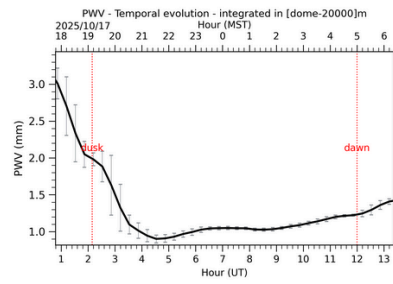
### Relative Humidity at ground \*



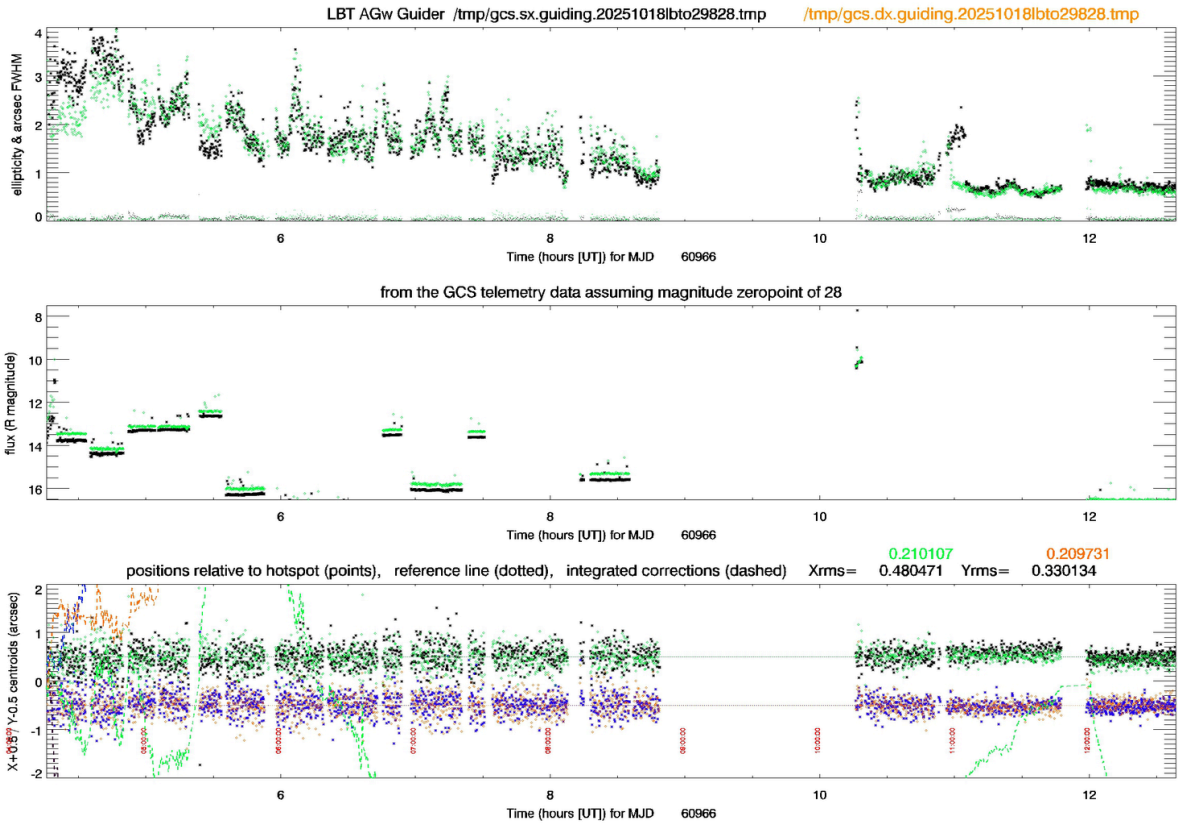
### Wind Speed vertical profiles

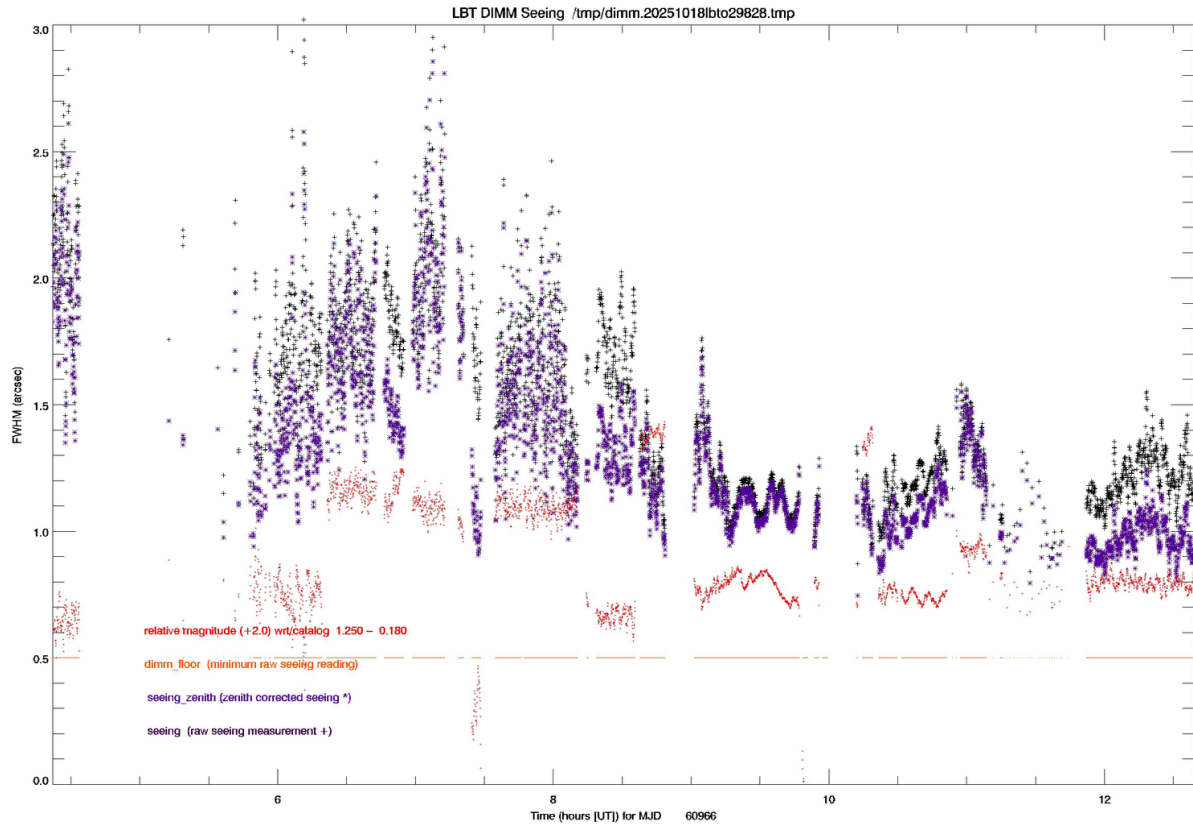


### Precipitable Water Vapor



O





## Overview (times are given in UT):

### Setup/Cals

00:13 Initializing LUCIs.

### UVa Disks - LUCI Darks

00:24 UT Started LUCI darks, UVa\_Disks\_Darks\_fraternal.xml

00:41 UT LUCI Darks complete

00:42 UT 96% humidity, thick clouds over most of the sky



00:49 UT Sunset

00:51 Remaining closed for high humidity and clouds.

01:27 UT Humidity continues to oscillate around 92-98%.

01:37 UT 12 degree twilight

01:43 UT Clouds have cleared out nicely, humidity has hit 100%

03:12 UT Humidity still stuck at 100%

03:42 UT Humidity finally fallen to a reasonable level. We'll give it a shot. Humidity 76%, ~4m/s wind, cyclope seeing monitor ~1.5"

03:44 UT Opening shutters

03:50 UT Pointing preset

04:00 UT no data from DX guider:

```
17/10/2025 19:45:02 PFU.DX.WFS ERROR processing command:invalid literal for int() with
base 10: 'controller server not opened: [Errno 10061] No connection could be made because
the target machine actively refused it'
```

```
17/10/2025 19:45:06 PFU.DX.WFS ERROR processing command:invalid literal for int() with
base 10: 'controller server not opened: [Errno 10061] No connection could be made because
the target machine actively refused it'
```

```
17/10/2025 19:45:10 PFU.DX.WFS ERROR processing command:invalid literal for int() with
base 10: 'controller server not opened: [Errno 10061] No connection could be made because
the target machine actively refused it'
```

```
/usr/bin/net rpc shutdown -r -I 192.168.2.38 -U azcam%azcam
```

Shutdown of remote machine succeeded

17/10/2025 19:45:15: waiting to start rebooting AzCam PFU.DX  
17/10/2025 19:45:20: waiting to start rebooting AzCam PFU.DX  
17/10/2025 19:45:25: waiting to start rebooting AzCam PFU.DX  
17/10/2025 19:45:30: waiting to start rebooting AzCam PFU.DX  
17/10/2025 19:45:35: waiting to start rebooting AzCam PFU.DX  
17/10/2025 19:45:40 Connection refused in connect to agw8-cam.mountain.lbto.org:2402 -- 1  
17/10/2025 19:45:45 Connection refused in connect to agw8-cam.mountain.lbto.org:2402 -- 2  
17/10/2025 19:45:53 Connection timed out in connect to agw8-cam.mountain.lbto.org:2402 -- 3  
17/10/2025 19:46:01 Connection timed out in connect to agw8-cam.mountain.lbto.org:2402 -- 4  
17/10/2025 19:46:09 Connection timed out in connect to agw8-cam.mountain.lbto.org:2402 -- 5  
17/10/2025 19:46:17 Connection timed out in connect to agw8-cam.mountain.lbto.org:2402 -- 6  
17/10/2025 19:46:25 Connection timed out in connect to agw8-cam.mountain.lbto.org:2402 -- 7  
17/10/2025 19:46:30 Connection refused in connect to agw8-cam.mountain.lbto.org:2402 -- 8  
17/10/2025 19:46:35: AzCam PFU.DX is ready to connect after reboot

17/10/2025 19:46:35: AzCam PFU.DX restarting VM command server service: this requires to restart GCS

- cmd\_server\_agw8g.service - AZCAM Command Server agw8g  
Loaded: loaded (/etc/systemd/system/cmd\_server\_agw8g.service; disabled; preset: disabled)  
Active: active (exited) since Sat 2025-10-18 02:46:36 UTC; 2s ago  
Process: 4015 ExecStart=screen -L -dmS agw8g -t agw8g  
/usr/local/share/conda\_envs/current/bin/python -i -m server -system 8g (code=exited, status=0/SUCCESS)  
Main PID: 4015 (code=exited, status=0/SUCCESS)  
Tasks: 2 (limit: 23176)  
Memory: 54.8M  
CPU: 1.517s  
CGroup: /system.slice/cmd\_server\_agw8g.service  
├─4016 SCREEN -L -dmS agw8g -t agw8g  
/usr/local/share/conda\_envs/current/bin/python -i -m server -system 8g  
└─4017 /usr/local/share/conda\_envs/current/bin/python -i -m server -system 8g

Oct 18 02:46:36 azcamsrv-test-alma9.mountain.lbto.org systemd[1]: Started AZCAM Command Server agw8g.

- cmd\_server\_agw8w.service - AZCAM Command Server agw8w  
Loaded: loaded (/etc/systemd/system/cmd\_server\_agw8w.service; disabled; preset: disabled)  
Active: active (exited) since Sat 2025-10-18 02:46:37 UTC; 1s ago

```
Process: 4049 ExecStart=screen -L -dmS agw8w -t agw8w
/usr/local/share/conda_envs/current/bin/python -i -m server -system 8w (code=exited,
status=0/SUCCESS)
Main PID: 4049 (code=exited, status=0/SUCCESS)
Tasks: 2 (limit: 23176)
Memory: 68.8M
CPU: 1.644s
CGroup: /system.slice/cmd_server_agw8w.service
├─4051 SCREEN -L -dmS agw8w -t agw8w
/usr/local/share/conda_envs/current/bin/python -i -m server -system 8w
└─4052 /usr/local/share/conda_envs/current/bin/python -i -m server -system 8w
```

Oct 18 02:46:37 azcamsrv-test-alma9.mountain.lbto.org systemd[1]: Started AZCAM Command Server agw8w.

Restarting GCS failed to resolve

04:07 UT AGW8 AzCam server needed a restart (as well as another GCS restart). It's now communicating.

04:10 UT Another pointing preset, to a less bright star.

## UVa

### Multistar

TIC 278352276 (04:19-04:33)

04:19 UT Preset sent

04:25 UT Science exposure started. FWHM 3.1" SX, 2.2" DX. Increased exposure time from 1m34s to 4m34s to account for poor seeing. Looking for SNR 100.

04:33 UT SNR CD3:122 CD6: 103

TIC 414026507 (04:33-04:50)

04:33 UT Preset sent

04:39 UT Exposure started. ~Tripled exposure again (2:17->6:17) since that worked well last time.

04:40 UT FWHM SX:3.5" DX: 2.8".

04:40 UT SNR CD3:76 CD6:99

TIC 307119043 (04:50-05:04)

04:50 UT Preset sent

04:57 UT Exposure started FWHM 2.4" SX, 2.4" DX. Exposure increased 1:01->5:01

05:03 SNR CD3:187 CD6:171

TIC 286470992 (05:04-05:19)

05:04 UT Preset sent

05:07 UT Exposure started. FWHM SX:2.2" DX: 2.4". Exposure time ~x4 1:21->5:21

05:12 UT Blue side exposure increase did not take. Ended red side early (~3:08). Retaking both blue/red side exposures.

05:18 UT SNR CD3:147 CD6:207

HIP 112051 (05:19-05:29)

05:19 UT Preset sent

05:26 UT Exposure started. Exptime x3 (1:00->3:00) FWHM SX:2.2" DX:2.3"

05:29 UT SNR CD3:1973 CD6:1544

OSU

BHBin

2M 2106+32 (Gaia DR3 186510649) (05:32-05:52)

05:32 UT Preset sent

05:40 UT Exposure started. Exptime 03:20->09:20. FWHM SX:2.2, DX 2.3. Cyclope monitor ~1.6-2.0" variable.

05:49 UT SNR CD3:68 CD5:86 (target 50)

2M 2117+33 (Gaia DR3 1854840) (05:52-06:19)

05:52 UT Preset sent

05:54 UT Missed it on SX. Pointing preset.

05:56 UT Resending preset

05:59 UT Got it this time. Waiting for WFS to settle

06:03 UT Exposure started. exptime x2 (6:40->13:30). FWHM SX: 1.6" DX: 1.6". DIMM 1.44". Cyclope 2.1"

06:09 UT Seeing worsening, FWHM SX: 2.4" DX: 2.5".

06:15 UT Humidity plummeted, currently ~8%.

06:17 UT SNR CD3:47 CD5:75

2M 0016+51 (Gaia DR3 3950304) (06:19-06:43)

06:19 UT Preset sent

06:27 UT Exposure started, FWHM SX:1.6" DX:1.5". DIMM 1.99" Cyclope ~2"

06:42 UT SNR CD3:61 CD5:66

UVa

Multistar

TIC 260056937 (06:43-06:54)

06:43 UT Preset sent

06:46 UT Exposure started exptime 1:21->4:00. FWHM SX:1.9", DX 2.0". DIMM 1.6" Cyclope 2.2-2.5".

06:46 UT Another SIGILL crash on remote room NUC.

06:51 UT SNR CD3: 161 CD6: 181

OSU

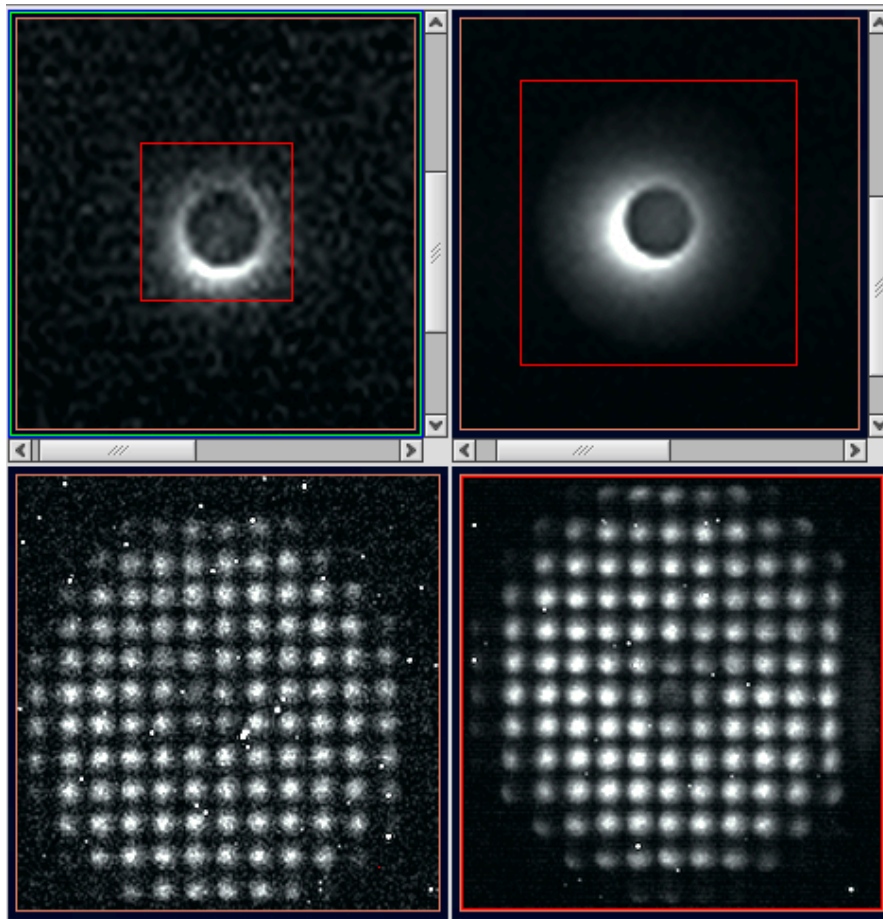
BHBin

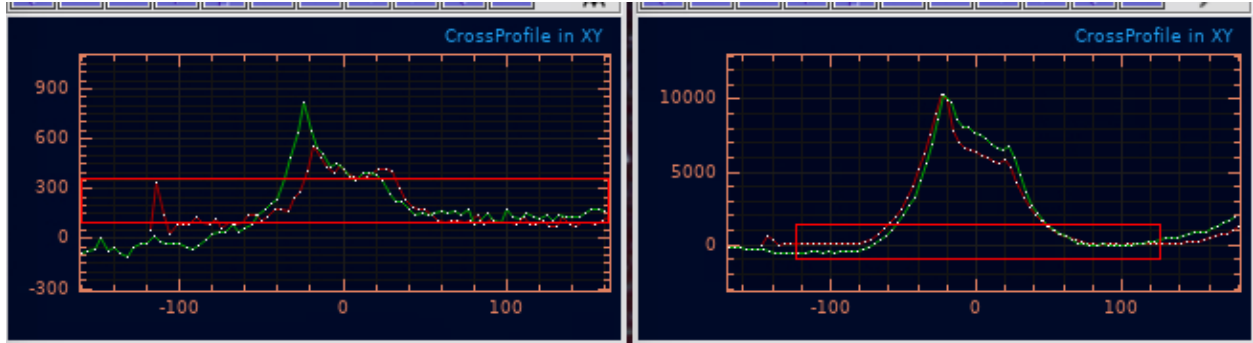
2M 0001+2156 (Gaia DR3 284719755) (06:54-07:20)

06:54 UT Preset sent

07:00 UT Exposure started. FWHM SX: 1.6" DX: 1.6", DIMM 1.94". Cyclope 1.9"

07:16 Noticing significant performance difference between the SX and DX AGWs. The SX is noticeably noisier in the guider and WFS images. There is also a significant difference (an order of magnitude on the y-axis) in the CrossProfile plot:





We've realized that the DX PFU GUI hasn't updated since ~21:30 MST, hence the order of magnitude difference between SX and DX.

07:18 UT SNR CD3: 94 CD5:124

UVa

Multistar

TIC 454140642 (07:20-07:31)

07:20 UT Preset sent

07:24 UT Exposure started. Exptime x2. FWHM SX: 1.7" DX: 1.7". DIMM 1.00". Cyclope 1.1"

07:29 UT SNR CD3: 146 CD6: 155

OSU

BHBin

2M 0022+54 (Gaia DR3 4195353) (07:31-08:10)

07:31 UT Preset sent

07:39 UT DX guider images have stopped updating in the Pepsi GUIs. Restarting pepsi software. Success.

07:41 UT Exposure started, exptime x1.5 (20:00 total). FWHM SX: 1.4, DX 1.6. DIMM 1.56. Cyclope 1.8".

07:42 UT Just kidding, spectrograph control GUI frozen/unresponsive. Cannot start exposure. Restarting pepsi GUIs again.

07:45 UT This restart was successful. Exposure started. FWHM SX 1.3" DX 1.5", DIMM 1.67" Cyclope 1.5".

08:06 UT SNR CD3: 36 CD5:49

2M 0650+24 (Gaia DR3 33812175) (08:10-08:36)

08:10 UT Preset sent

08:13 UT DX missed it. Pointing check.

08:17 UT Preset resent

08:19 UT Exposure started. exptime x1.5 (10:00 total). FWHM SX:1.2" DX:1.2". DIMM 1.48". Cyclope 1.4".

08:32 UT SNR CD3:90 CD5:157

ND

CEMPG4

Gaia DR3 9455179

08:36 UT Preset sent

08:44 UT Seeing has improved, and been somewhat stable. We're punting to Shark-Vis instead.

OSU

HIPS

08:48 UT Reconfiguring to Mono Shark-VIS

HIP 20430 (08:58-09:57)

08:58 UT Preset sent

09:34 UT Loops closed, optimising gains

09:46 UT Exposure started - R

09:51 UT Exposure started - V

09:57 UT Conditions are not optimal, seeing has degraded since the switch to Shark. Opting to return to Pepsi.

09:59 UT Slewing to zenith, reconfig Pepsi.

ND

CEMPG4

Gaia DR3 918137(10:18-10:51)

10:07 UT 1st pointing preset

10:12 UT 2nd pointing preset, initial collimation.

10:18 UT Science preset sent.

10:21 UT DX failed to acquire. Resending preset.

10:24 UT Exposure started. FWHM SX: 0.87 DX: 0.93. DIMM 1.06" Cyclope 1.1"

10:34 UT SNR CD2:46 CD4:55

10:45 UT SNR CD3:56 CD5:69

Gaia DR3 945517984 (10:51-11:47)

10:51 UT Preset sent

10:52 UT Missed it on DX. Pointing preset.

10:56 UT Preset resent

10:58 UT Exposure started. FWHM SX: 1.2" DX: 1.2". DIMM 1.45". Cyclope 1.6".

11:23 UT SNR CD2: 50 CD4: 83

11:27 UT FWHM SX: 0.75", DX 0.7".

11:47 UT SNR CD3:65 CD5:94

Gaia DR3 32213666 (11:47 -

11:47 Preset sent

11:53 UT of Issue: SX stuck on "moving probe...OK" DX stuck on "initializing guide thread". See IT9418

11:55 UT Aborting GCS left/right.

11:58 UT Preset resent

11:59 UT DX failed to acquire. Resending DX.

12:01 UT Exposure started. FWHM SX: 0.78", DX: 1.4". DIMM 0.94". 1.5" Cyclope.

12:04 UT 18 deg twilight

12:25 UT SNR CD2:69 CD4:146

12:25 UT Shortened CD3/CD5 exposure to 15m due to approaching 12deg twilight.

12:33 UT 12 deg twilight

12:38 UT SNR CD3:75 CD5:131

## Morning Cals

Multistar/CEMPG4 will cover CD pairs used tonight.

12:53 UT LUCI safed