

# LBT Observing Log: 2025 10 21 UT

Observers: Alex Becker, Jon Rees, Doug Miller (AO)

Partner Observer: Michael Tucker

Telescope Operator: Josh Williams

## Plan:

Open: Try comet SWAN one more time  
PEPSI until midnight-ish, check seeing  
If seeing is good, switch to SHARK-VIS  
If not, stay with PEPSI

LBC Flats (Sloan g,r, Bessel U\_spec) tonight or tomorrow

PEPSI targets:

### UT 02-03

~~OSU\_BHBinaries/2MJ1814-0120 (0.42hr)~~

~~OSU\_BHBinaries/2MJ1916+3828 (0.20hr)~~

### UT 03-04

~~OSU\_mpmddwarf/HIP105282 (0.12hr)~~

~~OSU\_mpmddwarf/GaiaDR32171877657803030144 (0.39hr)~~

~~OSU\_mpmddwarf/HIP101716 (0.12hr)~~

~~OSU\_mpmddwarf/GaiaDR31812832784277454848 (0.39hr)~~

### UT 04-05

~~OSU\_MWAbundDisp/2MJ2315+1112 (0.20hr)~~

~~OSU\_MWAbundDisp/2MJ2132-0108 (0.28hr)~~

~~OSU\_MWAbundDisp/2MJ2113-0636 (0.24hr)~~

~~OSU\_MWAbundDisp/2MJ2059+0000 (0.24hr)~~

~~OSU\_MWAbundDisp/2MJ2036-0639 (0.28hr)~~

~~OSU\_MWAbundDisp/2MJ2001+0434 (0.28hr)~~

~~OSU\_MWAbundDisp/2MJ0012+1407 (0.20hr)~~

~~OSU\_MWAbundDisp/2MJ0023+7117 (0.20hr)~~

~~OSU\_MWAbundDisp/2MJ0027+0123 (0.20hr)~~

~~OSU\_MWAbundDisp/2MJ0032+5054 (0.20hr)~~

~~OSU\_MWAbundDisp/2MJ0038+1718 (0.28hr)~~  
~~OSU\_MWAbundDisp/2MJ0046+1418 (0.20hr)~~  
~~OSU\_MWAbundDisp/2MJ0046+1853 (0.20hr)~~  
~~OSU\_MWAbundDisp/2MJ0051+0016 (0.28hr)~~  
~~OSU\_MWAbundDisp/2MJ0151+0049 (0.20hr)~~  
~~OSU\_MWAbundDisp/2MJ0159+0108 (0.20hr)~~  
~~OSU\_MWAbundDisp/2MJ0259-0805 (0.20hr)~~

## **UT 05-06**

~~OSU\_BHBinaries/2MJ0018+5912 (0.64hr) — long expo~~

OSU\_BHBinaries/2MJ1034+6038 (0.20hr)  
OSU\_BHBinaries/2MJ0939+0037 (0.17hr)  
OSU\_BHBinaries/2MJ0919+2719 (0.26hr)  
OSU\_BHBinaries/2MJ0856-0945 (0.26hr)  
OSU\_BHBinaries/2MJ0853-1237 (0.20hr)

## Summary:

Pepsi log:

<https://drive.google.com/file/d/1itnvSbebKIASkxNN2Zgscia7ajHaMeVu/view?usp=sharing>

Plan:

Summary:

Issues:

Weather:

Overview:

UM

Swan

C/2025 R2 (01:29-01:50)

OSU

BHBin

2MJ1814-0120 (GAIA DR3 4274086268821409664)(01:50-02:23)

2MJ1916+3828 (GAIA DR3 2099410530033714560) (02:23-02:35)

MPMDwarf

HIP105282 (02:35-02:45)

GaiaDR3 2171877657803030144 (02:45-03:15)

HIP101716 (03:15-03:20)

GaiaDR31812832784277454848 (03:20-03:43)

MWAbund

MJ2315+1112 (03:43-03:50)

2MJ2132-0108 (03:50-04:05)

[2MJ2113-0636 \(04:05-04:24\)](#)  
[2MJ2059+0000 \(04:24-04:31\)](#)  
[2MJ2036-0639 \(04:31-04:42\)](#)  
[2MJ2001+0434 \(04:42-04:52\)](#)  
[2MJ0012+1407 \(04:52-05:04\)](#)  
[2MJ0023+7117 \(05:04-05:11\)](#)  
[2MJ0027+0123 \(05:11-05:18\)](#)  
[2MJ0032+5054 \(05:18-05:26\)](#)  
[2MJ0038+1718 \(05:26-05:37\)](#)  
[2MJ0046+1418\(05:37-05:43\)](#)  
[2MJ0046+1853 \(05:43-05:49\)](#)  
[2MJ0051+0016 \(05:49-05:59\)](#)  
[2MJ0151+0049 \(05:59-06:04\)](#)  
[2MJ0159+0108 \(06:04-06:09\)](#)  
[2MJ0259-0805 \(06:09-06:22\)](#)

#### BHBin

[2MJ0018+5912 \(06:22-06:54\)](#)

[Reconfig for SHARK-Vis \(06:58-07:06\)](#)

#### HIPS Shark

[HD12871 \(07:15-08:44\)](#)

[HIP20430 \(08:44-10:21\)](#)

[HIP 20713 \(10:21-10:56\)](#)

[HD 291625 \(10:56-11:19\)](#)

[Reconfig for PEPSI \(11:22-11:42\)](#)

#### OSU

##### BHBin

[2MJ1034+6038 \(11:42-11:52\)](#)

[2MJ0939+0037 \(11:52-12:00\)](#)

[J0919+2719 \(12:00-](#)

[Reconfig for LBC Cals \(12:09-12:31\)](#)

[LBC Skyflats](#)

## Issues:

Center NUC crashed once at beginning of night, otherwise well behaved.

Preset hung in GCS twice. Restarted GCS to clear it.

# Weather:

Clear skies all night. Seeing remained below 1" all night. Humidity ~15%, winds <10m/s all night. Great conditions.

## Seeing \*

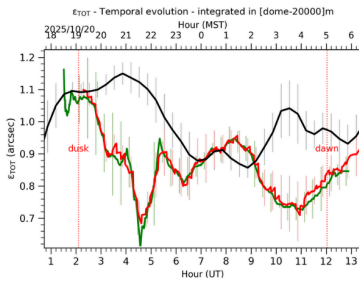


Fig. 1: Temporal evolution of  $\epsilon_{TOT}$  ([dome-20km]) between the sunset and the sunrise.

## Isoplanatic Angle

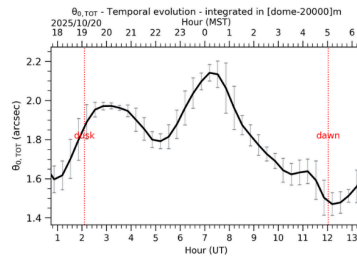


Fig. 2: Temporal evolution of  $\theta_{0,TOT}$  ([dome-20km]) between the sunset and the sunrise.

## Wavefront Coherence Time

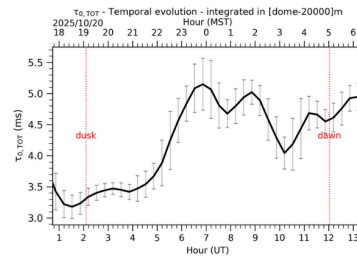
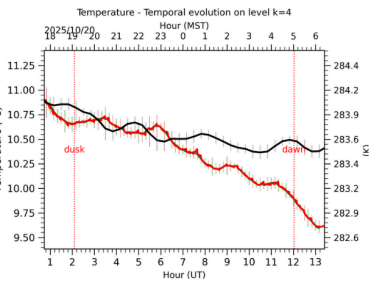
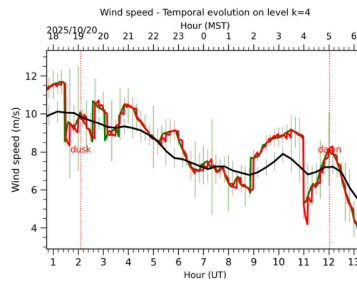


Fig. 3: Temporal evolution of  $\tau_{0,TOT}$  ([dome-20km]) between the sunset and the sunrise.

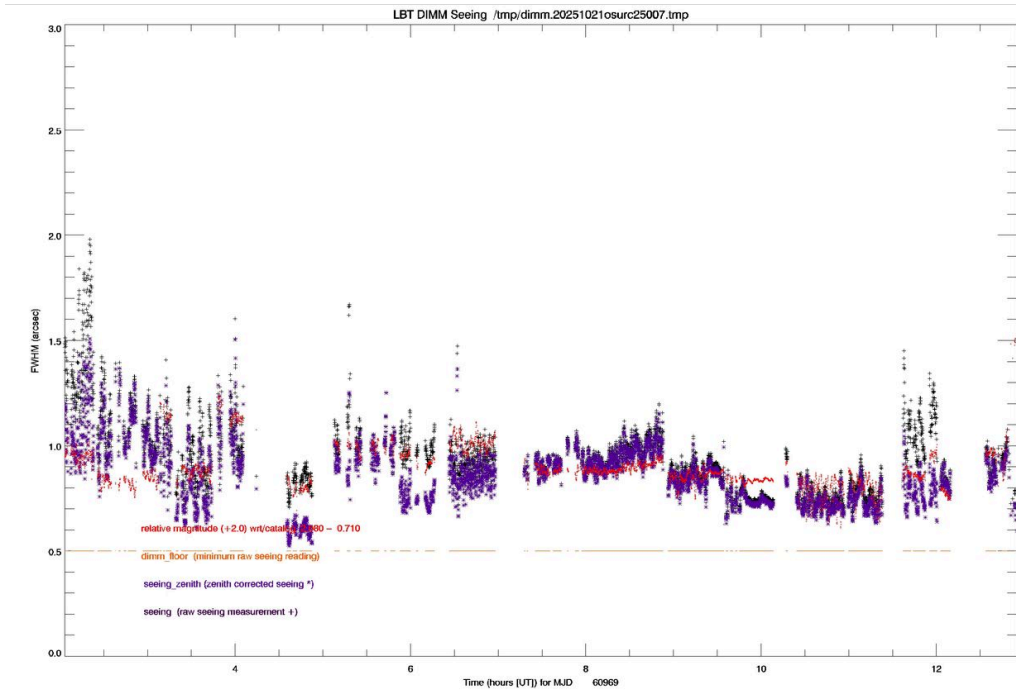
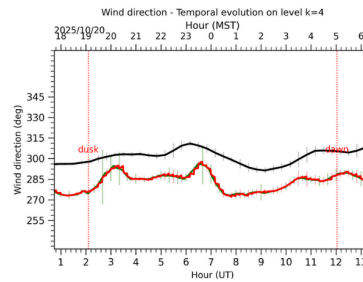
## Temperature at ground \*



## Wind Speed at ground \*



## Wind Direction at ground \*



## Overview:

00:20 UT Shark fills took longer than expected, ran in to handover.

00:23 UT Fills complete. Josh starting checkout

00:45 UT Sunset

00:51 UT Slewing to horizon for shutter opening.

00:53 UT opening shutters.

01:04 UT First pointing preset - M3.4 star

01:14 UT Second pointing preset - M7.5 star

01:17 UT Collimation preset.

01:23 UT Previous star too bright. Moved to fainter collimation target.

## UM

Swan

C/2025 R2 (01:29-01:50)

01:29 UT Acquire preset sent

01:34 UT 12 deg twilight

01:35 UT Spiral search for comet

01:50 UT Spiral search out ~1.5' from target position, no luck. Moving on to other science programs.

OSU

BHBin

2MJ1814-0120 (GAIA DR3 4274086268821409664)(01:50-02:23)

01:50 UT Preset sent

01:56 UT Restored IE/CA values. Resending preset.

02:01 UT Exposures started. FWHM SX: 0.82, DX: 0.84, DIMM 1.02", Cyclope 0.75"

02:03 UT 18 deg twilight

02:21 UT SNR CD3:50 CD5:80. Aiming for at least 45.

2MJ1916+3828 (GAIA DR3 2099410530033714560) (02:23-02:35)

02:23 UT Preset sent

02:27 UT Exposure started. FWHM SX:1.1" DX:0.86" DIMM:1.04". Cyclope 1.0"

02:34 UT SNR CD3:87 CD5:115

MPMDwarf

HIP105282 (02:35-02:45)

02:35 UT Preset sent

02:37 UT Missed it on DX. Pointing preset.

02:41 UT Resending preset

02:43 UT Exposure started FWHM SX:0.94" DX:1.4". DIMM 1.06". Cyclope 0.9". Sky clear.  
Humidity 11%.

02:44 UT SNR CD3:493 CD6:415

GaiaDR3 2171877657803030144 (02:45-03:15)

02:45 Preset sent

02:48 UT Exposure started. FWHM SX: 1.1" DX: 1.4". DIMM 1.23". Cyclope 1.25"

02:50 UT SX hotspot grabbed a brighter target. Aborting.

02:51 UT Pointing check.

02:54 UT Resending preset

02:57 UT Exposure started. FWHM SX: 0.8", DX:1.1". DIMM 0.91". Cyclope 1.1"

03:14 UT SNR CD6:37 (no signal on blue, as expected for Mdwarf)

HIP101716 (03:15-03:20)

03:15 UT Preset sent

03:19 UT Exposure started. FWHM SX: 0.82 DX: 0.68. DIMM 0.65" Cyclope 0.61"

03:20 UT SNR CD3:583 CD6: 449

GaiaDR31812832784277454848 (03:20-03:43)

03:20 UT Preset sent

03:23 UT Exposure started. FWHM SX:0.55 DX: 0.61. DIMM 0.82" Cyclope 0.7"

03:42 UT SNR CD6:34

MWAbund

MJ2315+1112 (03:43-03:50)

03:43 UT Preset sent

03:46 UT exposure started. Exptime 2:00 as with previous nights for this program.  
FWHM SX: 0.94" DX: 0.67".DIMM 0.9". Cyclope 0.84"

03:49 UT SNR CD2:151 CD4:250

2MJ2132-0108 (03:50-04:05)

03:50 UT Preset sent

03:53 UT Exposure started. FWHM SX: 0.62" DX: 0.70". DIMM 1.26". Cyclope 0.80"

03:58 UT FWHM SX:0.62" DX: 0.64". DIMM 0.89". Cyclope 1.0".

04:05 UT SNR CD2:192 CD4:330

2MJ2113-0636 (04:05-04:24)

04:05 UT Preset sent.

04:06 UT DX missed it. Pointing preset

04:10 UT DX pointing preset hung at "moving probe...OK". Restarting GCS.

04:15 UT Resending science preset

04:17 UT Exposure started. Exptime 5:00 (c.f. 7:30 original)  
FWHM SX: 0.56" DX: 0.6". DIMM . Cyclope 0.85"

04:23 UT SNR CD2:168 CD4:309

2MJ2059+0000 (04:24-04:31)

04:24 UT Preset sent

04:25 UT Exposure started. FWHM SX: 0.54" DX:0.58". Cyclope 0.8"

04:31 UT SNR CD2:172 CD4:279

2MJ2036-0639 (04:31-04:42)

04:31 UT Preset sent

04:33 UT Exposure started. FWHM SX:0.47" DX:0.5" Cyclope:0.77"

04:37 UT FWHM SX:0.48" DX: 0.47". DIMM: 0.56". Cyclope:0.8"

04:41 UT SNR CD2:172 CD4:311

2MJ2001+0434 (04:42-04:52)

04:42 UT Preset sent

04:43 UT Exposure started. FWHM SX:0.45" DX:0.53" DIMM: 0.57" Cyclope:0.83"

04:52 UT SNR CD2:158 CD4:272

2MJ0012+1407 (04:52-05:04)

04:52 UT Preset sent

04:55 UT That was a large slew. Missed the object on DX. Pointing preset.

04:58 UT Resending science preset.

05:00 UT Exposure started. FWHM SX: 0.51" DX:0.69". DIMM:. Cyclope:0.82"

05:03 UT SNR CD2:149 CD4:250

2MJ0023+7117 (05:04-05:11)

05:04 UT Preset sent

05:07 UT Exposure started. FWHM SX: 0.45", DX:0.52". DIMM 1.0". Cyclope 0.9"

05:11 UT SNR CD2:131 CD4: 225

2MJ0027+0123 (05:11-05:18)

05:11 UT Preset sent

05:15 UT Exposure started. FWHM SX: 0.48" DX:0.54".DIMM: 0.89" Cyclope:0.75"

05:18 UT SNR CD2:177 CD4:282

2MJ0032+5054 (05:18-05:26)

05:18 UT Preset sent

05:22 UT Exposure started. FWHM SX:0.61" DX:0.56". DIMM 0.90" Cyclope 0.65".

05:26 UT SNR CD2:158 CD4:262

2MJ0038+1718 (05:26-05:37)

05:26 UT Preset sent

05:29 UT Exposure started. FWHM SX:0.43" DX:0.45" DIMM: Cyclope:0.85"

05:37 UT SNR CD2:176 CD4:308)

2MJ0046+1418(05:37-05:43)

05:37 UT Preset sent

05:39 UT Exposure started. FWHM SX:0.44" DX:0.47". Cyclope:0.55"

05:43 UT SNR CD2:163 CD4:277

2MJ0046+1853 (05:43-05:49)

05:43 UT Preset sent

05:44 UT Exposure started. FWHM SX:0.46" DX:0.48". DIMM:0.97" Cyclope:0.65"

05:49 UT Exptime 2:00 blue. Red did not take updated exposure time. Read out at exptime 3:51.

05:49 UT SNR CD2:151 CD4:366

2MJ0051+0016 (05:49-05:59)

05:47 UT Preset sent

05:51 UT Exposure started. FWHM SX: 0.48" DX:0.45". DIMM:0.85" Cyclope:0.59"

05:59 UT SNR CD2:155 CD4:265

2MJ0151+0049 (05:59-06:04)

05:59 UT Preset sent

06:01 UT Exposure started. FWHM SX: 0.51" DX: 0.44". DIMM: Cyclope:0.75"

06:04 UT SNR CD2:160 CD4:275

2MJ0159+0108 (06:04-06:09)

06:04 UT Preset sent

06:06 UT Exposure started. FWHM SX:0.49" DX:0.52". Cyclope:0.8"

06:09 UT SNR CD2:128 CD4:236

2MJ0259-0805 (06:09-06:22)

06:09 UT Preset sent

06:11 UT Preset hung? This time SX is "sending target" DX "Stopping guiding" Not GCS this time, PCS?

06:13 UT Josh is aborting DX preset.

06:16 UT Josh killed SX GCS. DX PCS. Resent preset.

06:18 UT Got it this time.

06:19 UT Exposure started. FWHM SX: 0.49" DX: 0.54". Cyclope:0.8"

06:22 UT SNR CD2:134 CD4:232

BHBin

2MJ0018+5912 (06:22-06:54)

06:22 UT Preset sent

06:27 UT Exposure started. FWHM SX: 0.60" DX: 0.74". DIMM: 0.87". Cyclope:0,85"

06:40 UT FWHM SX: 0.55" DX" 0.42". DIMM: 0.77". Cyclope:0.71"

06:49 UT FWHM SX: 0.57" DX: 0.47". DIMM 0.78". Cyclope: 0.85"

06:54 UT SNR CD3:42 CD5:74 Target SNR 30

06:54 UT Next target not in list, adding.

06:57 UT Shark team are ready a little early, so we're going to skip this target and reconfigure for Shark instead.

### Reconfig for SHARK-Vis (06:58-07:06)

06:58 UT Reconfig Shark

07:06 UT Reconfig complete

HIPS\_Shark

HD12871 (07:15-08:44)

07:15 UT Preset sent

07:21 UT Couldn't find star. Resetting IA/CE

07:22 UT resending preset

07:41 UT Still no luck finding the object. Slewing to a bright Mag3 star.

07:51 UT Got the pointing star in the acquisition camera (after defocusing and slewing around).

07:52 UT Doug doing some by-eye active optics corrections

07:55 UT Science preset sent

08:04 UT OCAM goes not-live when closing loops. Doug is cycling power to controller.

08:06 UT Science preset sent

08:09 UT OCAM still goes not-live. Doug cycling more power/processes.

08:15 UT Resending science preset again

08:17 UT Loops closed successfully.

08:22 UT NCPA corrections applied. Over to the Shark team.

08:29 UT DIMM steady around 0.9". Cyclope 0.8-0.9"

08:32 UT Integrating. R filter.

08:36 UT Switching to V. Integrating.

HIP20430 (08:44-10:21)

08:44 UT Sending preset

08:51 UT Loops closed. NCPA applied. Target has companion in same location as previous target.

08:52 UT Turns out the preset sent us back to the previous target. Trying again.

08:52 UT Preset resent. Slewing for real this time.

09:01 UT Target on acquisition cam.

09:01 UT 0.81" DIMM. 0.9" Cyclope. Wind ~9m/s.

09:05 UT AO loop closed, NCPA applied.

09:06 UT Shark team optimising

09:11 UT Still strong trefoil. Would make it impossible to spot a companion. Shark team running an NCPA script.

09:29 UT DIMM: 0.88" Cyclope:0.90". Shark team still running through the NCPA optimization.

09:50 UT Done with NCPA optimisation. Starting integration.

10:00 UT Zero counts on OCAM. Re-binning.

10:11 UT Resuming

HIP 20713 (10:21-10:56)

10:21 UT Sending preset

10:27 UT DIMM: 0.83". Cyclope: 0.75"

10:28 UT Loops closed, over to Shark

10:30 UT Clear companion

10:55 UT Done with this target. Opening AO loop

HD 291625 (10:56-11:19)

10:56 UT Sending preset.

10:59 UT Acquired. Closing AO loop.

11:01 UT DIMM 0.77". Cyclope 0.75".

11:02 UT AO optimised. NCPA applied.

11:18 UT DIMM 0.70". Cyclope 0.73"

11:19 UT Target finished. No companion (or unresolved)

Reconfig for PEPSI (11:22-11:42)

11:22 UT Reconfig Pepsi

11:33 UT Pointing preset

11:39 UT Collimation preset

OSU

BHBin

2MJ1034+6038 (11:42-11:52)

11:42 UT Preset sent

11:44 UT Exposure, FWHM SX:1.1" DX:1.5" DIMM 0.77". Cyclope 1.0"

11:47 UT SNR CD3:39 CD5:38. Aiming for 50. Repeating exposure.

11:51 UT SNR CD3:46 CD5:40

2MJ0939+0037 (11:52-12:00)

11:52 UT Preset sent

11:55 UT Exposure started. FWHM SX:0.7" DX:0.7". DIMM 0.72". Cyclope 0.9"

11:59 UT SNR CD3:50 CD5:67

J0919+2719 (12:00-

12:00 UT Preset sent

12:02 UT Exposure started. FWHM SX:0.98" DX: 0.78". DIMM:0.79" Cyclope:0.9"

12:06 UT 18 deg twilight

12:09 UT SNR CD3:54 CD5: 66

Reconfig for LBC Cals (12:09-12:31)

12:09 UT **Reconfig BinoLBC**

12:12 UT Pepsi cals - BHBin

12:14 UT Pepsi cals - MWabund

12:20 UT Pepsi cals - MPMdwarfs

LBC Skyflats

12:31 UT Test preset, g/r

12:33 UT Test: g:4000 r:7000 Scale 20

12:35 UT Starting flat script, PA 0. Scale 40.

12:35 12 deg twilight

12:36 UT g:13,500 r:25,000

12:39 UT Scale 20

12:41 UT g:12,000 r:22,000

12:41 UT Scale 10

12:43 UT g:8700 r:15,000

12:43 Scale 7

12:44 g: 8000, r:14,000

12:45 g:9500 r:17,000

12:46 g:13,000 r:23,000

12:47 UT g,r PA 180. Scale 6

12:48 UT g:16,000 r:30,000

12:48 UT Scale 4.

12:49 UT g:14,000 r:25,000

12:50 Scale 3

12:51 UT g:14,000 r:23,000

Scale 2.5

12:52 UT g:15,000 r:25,000

Scale 2

12:54 UT g: 15,000 r:25,000

USpec, i PA180, Scale 1:

12:55 UTU: 6500, 15,000

12:56 UT U: 7500, 16,000

12:57 UT Scale 1.5

12:57 UT U:9,000 i:19,000

12:58 UT U:17,000 i: 34,000

12:59 UT U:22:000 i:40,000

13:01 UT PA 0. Scale 0.3

13:02 U:11,000 i:22,000

Scale 0.1

13:03 U:6,000 i:14,000

13:04 U:7500 i:17,000

13:06 U:9,000 i:26,000

13:06 One more iteration, 0.1 scale. Get more USpec.

U: 10,500 i: 27,000

U: 15,000 i:40,000

### **Reconfig BG**

13:38 UT LBC Biases started

13:55 UT LBCs powered off