

LBT Observing Log: 2025 10 20 UT

Observers: Justin Rupert, Jon Rees, Doug Miller (AO)

Partner Observer: Yifan Zhou, Mark Whittle

Telescope Operator: Josh Williams

Plan:

UM SWAN, as soon as possible

If Seeing is as good as ALTA prediction, switch to LBC

N6503, OSU Monitoring (done)

N6946, OSU Monitoring (done)

Gaia21akb, ND Nebula (done)

J0053, ND Nebula (done)

N628, OSU Monitoring (done)

N672, OSU Monitoring (done)

N925, OSU Monitoring (done)

N2403, OSU Monitoring (done)

Ideally, we should return to LBC during twilight for flat field.

If seeing is not good, stick with Pepsi: BHB and MWA

PEPSI target list:

GAIA333 + HIP24555 OSU_MPMdwarf (done)

2M0521 OSU_BHBinaries 2MASSJ05214968+0243217 (done)

2M0351+0857 OSU_MWAbundDisp (done)

2M0523+4835 OSU_MWAbundDisp (done)

2M0556+3202 OSU_MWAbundDisp (done)

2M0653-0126 OSU_MWAbundDisp (done)

2M0630-1345 OSU_BHBinaries (done)

2M0651-1329 OSU_BHBinaries (done)

2M0700-1226 OSU_BHBinaries (done)

LBC twilight flat

Summary:

[Overview:](#)

[UM](#)

Swan

[C/2025 R2 \(01:33-02:51\)](#)

OSU

Monitor

[N6503 \(03:17-04:08\)](#)

[N6946 \(04:08-05:05\)](#)

ND

Nebula

[Gaia21akb \(05:05-06:00\)](#)

[J0053 \(06:00-07:08\)](#)

OSU

Monitor

[N628 \(07:08-07:56\)](#)

[N672 \(07:56-08:40\)](#)

[N925 \(08:40-09:14\)](#)

[N2403 \(09:14-09:39\)](#)

[Reconfig \(09:39-10:18\)](#)

OSU

MPMDwarf

[HIP24555\(10:18-10:23\)](#)

[GAIA3337581255650683904 \(10:23-10:45\)](#)

BHBin

[2MASSJ05214968+0243217 \(GAIA DR3 3234582511052921088\) \(10:45-10:57\)](#)

MWAbund

[2M0351+0857 \(10:57-11:04\)](#)

[2M0523+4835 \(11:04-11:11\)](#)

[2M0556+3202 \(11:11-11:19\)](#)

[2M0653-0126 \(11:19-11:24\)](#)

BHBin

[2M0630-1345 \(GAIA DR3 2951458442999834368\) \(11:24-11:37\)](#)

[2M0651-1329 \(GAIA DR3 2949272716964862720\) \(11:37-11:57\)](#)

[Reconfig \(12:06-12:31\)](#)

PEPSI log:

<https://docs.google.com/document/d/10jHeVjXubVFeLVuso-C0wGM3mUIQX2LS5yvBo-pZcU8/edit?usp=sharing>

Issues:

Couldn't seem to guide on the non-sidereal target using either PEPSI or the NSIGUI. Track rates were well within the telescope's capabilities.

LBC Plot still not updating under the "Current" png link.

The --redonly parameter for dohybrid executed the script on both sides (before TMS loop started).

Weather:

Clear skies all night.

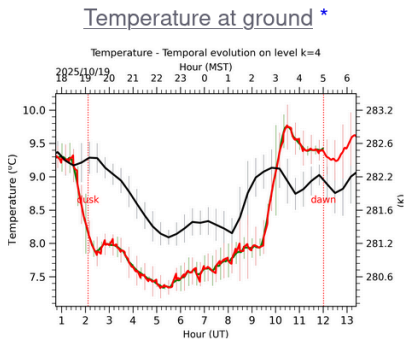


Fig. 4: Absolute temperature temporal evolution between the sunset and the sunrise at [38-62]m.

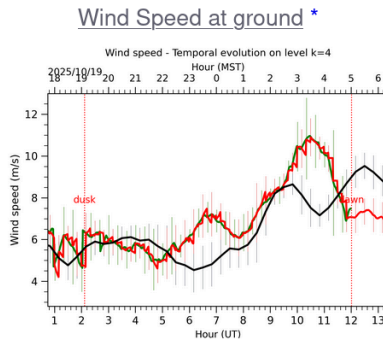


Fig. 5: Wind speed temporal evolution between the sunset and the sunrise at [38-62]m.

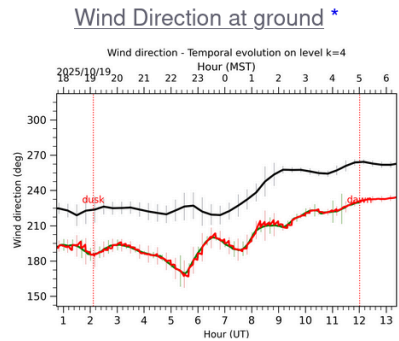
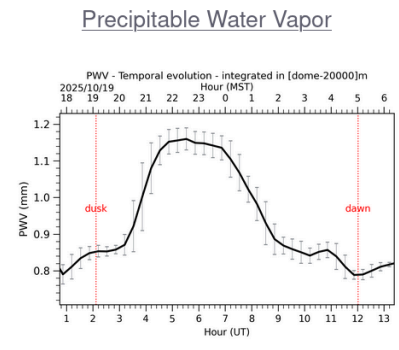
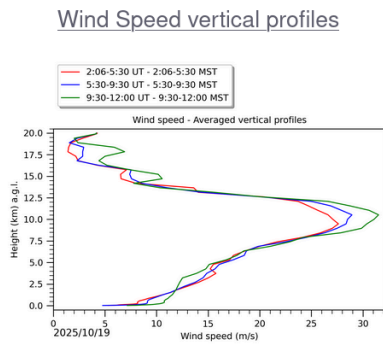
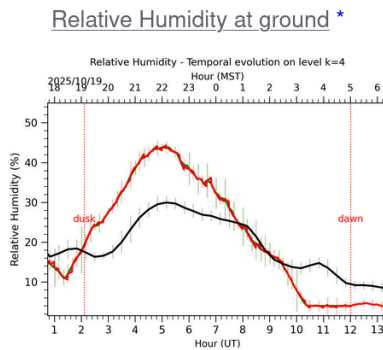
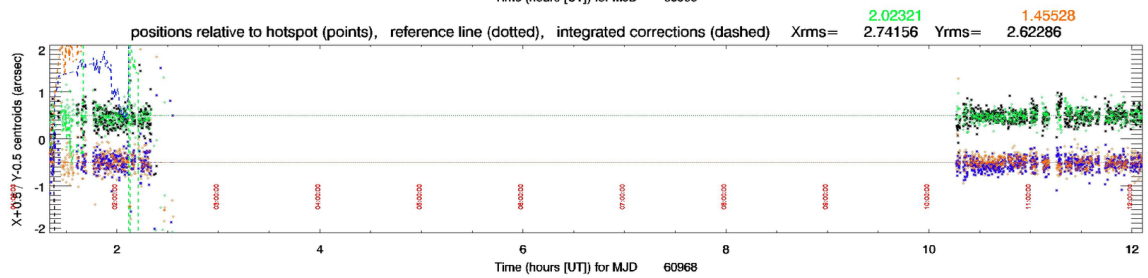
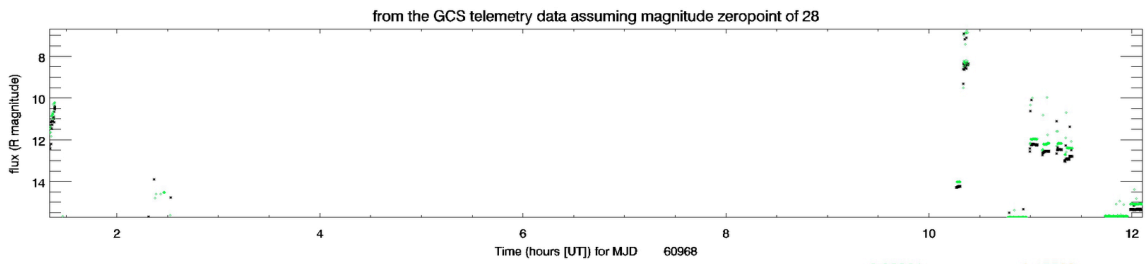
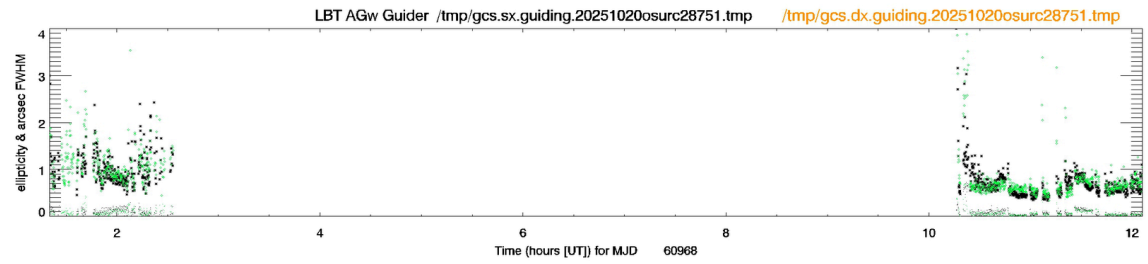
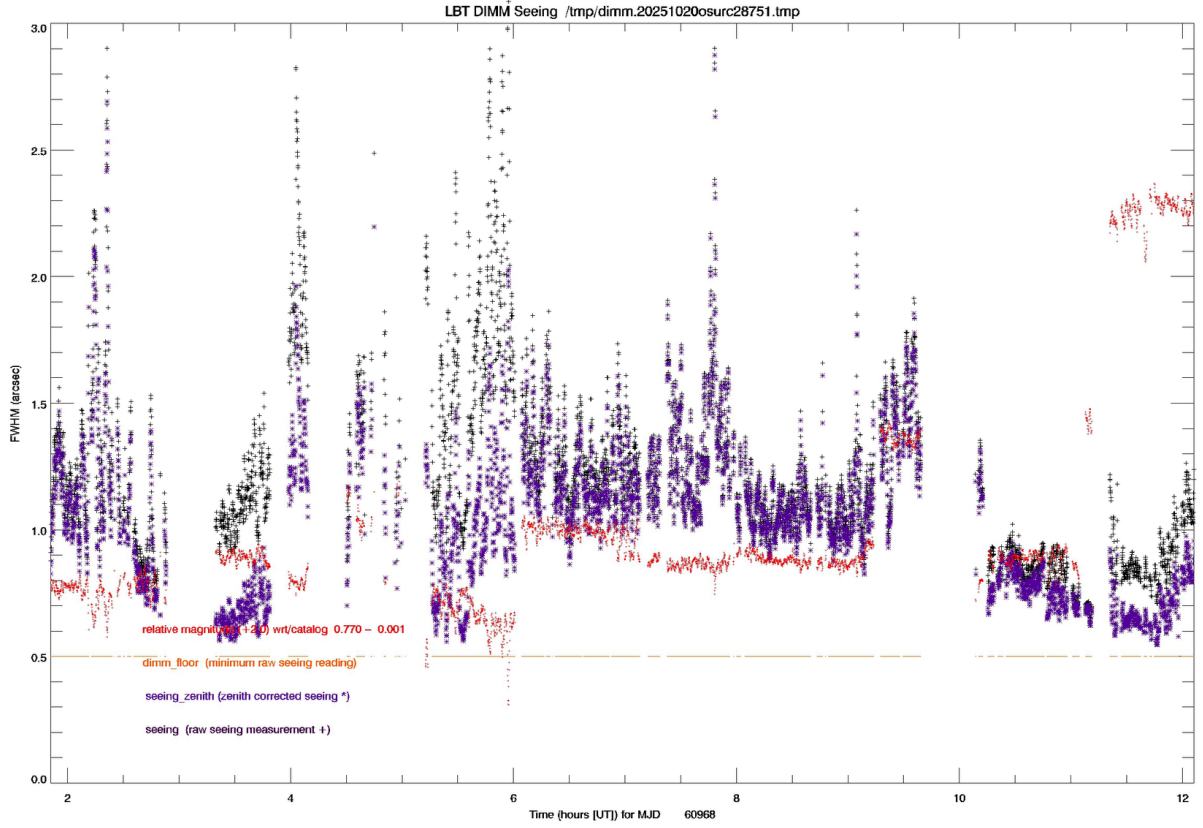
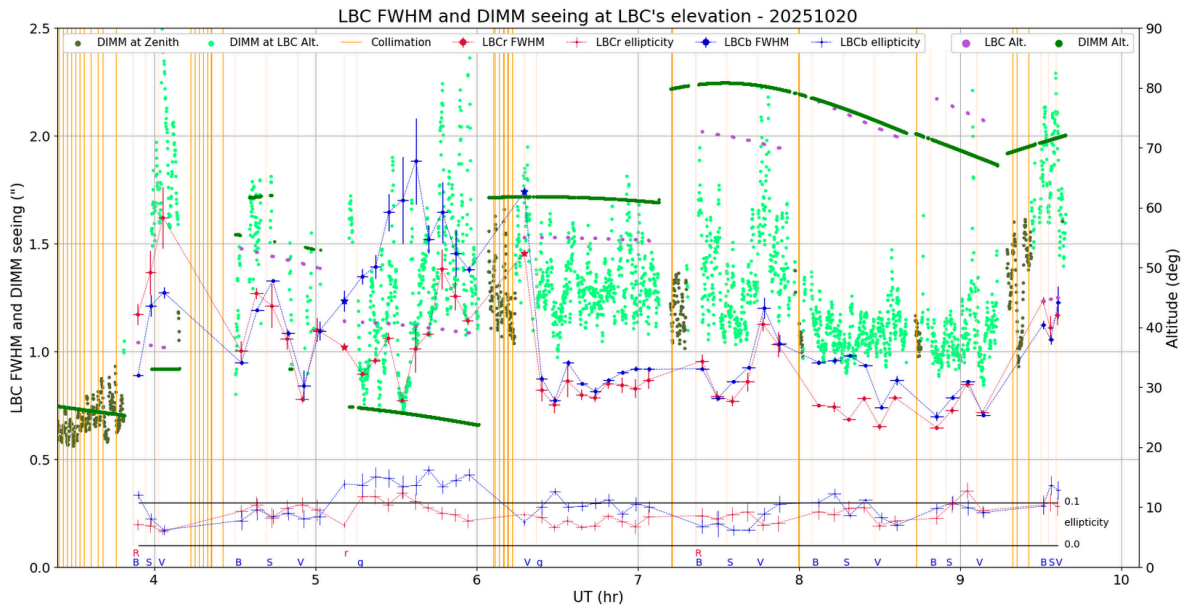


Fig. 6: Wind direction temporal evolution between the sunset and the sunrise at [38-62]m.







Overview:

23:49 UT The center NUC in the remote room is now making a periodic hum of decent volume (the fan, likely). It seems to otherwise function alright and it goes away on its own after six minutes. There doesn't seem to be any wiggle in the wall mount.

00:46 UT Opening.

01:06 UT Pointing preset - M5 star

01:14 UT Pointing check - M7.4 star

01:19 UT Matthieu has updated chromium on the center NUC of the remote room and switched to FacsumLite.

01:19 UT Collimation preset

01:22 UT Science preset sent

01:24 UT Nothing on either guider. Ilya resending preset.

01:26 UT Barely there on left guider. Looks like sky background is still a little high.

01:30 UT Waiting until 12 degree to let the background come down.

UM

Swan

C/2025 R2 (01:33-02:51)

01:33 UT Ilya resending preset

01:34 UT 12-degree twilight.

01:39 UT Crowded field. Josh running a pointing check

01:44 UT Presetting

01:47 UT Looks like we got it this time. Starting exposure. FWHM SX:1.3" DX:1.4"

01:51 UT DIMM 0.92"

02:03 UT 18-degree twilight.

02:11 UT Resending the preset, we're not convinced we're on the right object, we'll see how much the field changes.

02:20 UT No motion evident in field. Hijacking via NSI. Resending preset.

02:27 UT Object is off to the right of the guider. Pointing preset, then we'll try again.

02:30 UT NSI hijacked again. Preset sent. We see it on one side, but not the other. Even then, the guider doesn't grab it before it moves out of the FOV. This target has a differential rate of 699"/hr in RA, 133"/hr in Dec. Differential rates in PCSGUI are as expected based on JPL.

02:40 UT Sending a sidereal preset to a point where we expect the target to be.

02:43 UT Target did not appear as expected.

02:45 UT Sending a NSI preset to the same spot. Field objects are moving as expected.

02:48 UT Pointing check. Pointing is fine.

02:49 UT NSI preset to target.

02:51 UT Still no dice. We're giving up on this one.

02:52 UT **Reconfiguring to LBCs.**

02:53 LBCs powered on

02:58 UT TMS lasers on

OSU

Monitor

N6503 (03:17-04:08)

03:17 UT Preset sent

03:19 UT dohybrid

03:36 UT Blue collimated nicely. Red was unable to converge, eventually spherical ran away. Rerunning with --askme --redonly.

03:38 Both sides executed dohybrid.

---	-1050	0	0	0	0	600	0	----	----	dofpia_sph3_adjustment
●	-10852	0	0	164	5	0	0	0.50	4.28	lbc.20251020.032103.fits
●	3720	-65	173	1573	271	-495	-100	0.57	1.66	lbc.20251020.032250.fits
●	76	-45	-257	104	25	-41	-81	0.60	0.13	lbc.20251020.032433.fits
●	560	44	-170	-43	-88	-125	-76	0.65	0.26	lbc.20251020.032607.fits
●	208	40	58	44	21	-63	-51	0.55	0.12	lbc.20251020.032738.fits
●	97	48	-83	-23	-1	-28	-31	0.52	0.09	lbc.20251020.032911.fits
●	323	-59	47	84	-61	-123	-45	0.58	0.18	lbc.20251020.033044.fits
●	140	-74	12	80	73	-57	-42	0.52	0.12	lbc.20251020.033218.fits
●	341	103	-63	-45	-33	-65	-50	0.51	0.17	lbc.20251020.033354.fits
---	485	0	0	0	0	-277	0	----	----	dofpia_sph3_adjustment
---	-1050	0	0	0	0	600	0	----	----	dofpia_sph3_adjustment

?	Computed Aberrations (nm)							(arcsec)		red2025-10-20.Log
	Defoc (Z4)	Ast0 (Z5)	AstV (Z6)	ComaV (Z7)	ComaH (Z8)	Sph1 (Z11)	Sph2 (Z22)	Est. seeing	Est. WIQ	Filename
●	397	-68	76	82	-12	-85	-65	0.46	0.19	lbc.20251020.032601.fits
●	7	-144	-16	131	165	21	-62	0.44	0.13	lbc.20251020.032734.fits
●	834	65	43	-256	-54	-257	-72	0.40	0.39	lbc.20251020.032906.fits
●	712	58	82	171	-24	-239	-83	0.39	0.34	lbc.20251020.033039.fits
●	1234	14	93	51	66	-386	-100	0.42	0.55	lbc.20251020.033214.fits
●	-9157	---	---	---	---	---	---	0.70	3.61	lbc.20251020.033347.fits
---	562	0	0	0	0	-321	0	----	----	dofpia_sph3_adjustment
---	-875	0	0	0	0	500	0	----	----	dofpia_sph3_adjustment
●	5371	0	0	635	-447	0	0	0.50	2.15	lbc.20251020.033630.fits
●	3240	-31	-92	-611	336	7	---	0.47	2.04	lbc.20251020.033858.fits
●	35	70	-78	34	113	54	---	0.50	0.68	lbc.20251020.034054.fits
---	436	0	0	0	0	-249	0	----	----	dofpia_sph3_adjustment

03:42 UT TMS reference

03:43 UT starting TMS loop

03:45 UT copointing

```

lbcrangebal:
-----
COPPOINTING: B=34547 R=34547
Pointing updates: delta_IE = -2.78", delta_CA = -0.17"
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")
                SX:    0.71    0.22    4.79   -15.20
                DX:   -0.67   -0.22   -4.63    14.28
-----

```

03:49 UT Preset to target

03:51 UT Starting exposures

03:57 UT IQ FWHM 0.84" blue, 1.1" red, DIMM 1.22"

04:03 UT FWHM 1.09" blue (USpec), 1.3" red. DIMM 1.5". Cyclope 1.1"

04:07 UT FWHM 1.2" blue 1.55" red DIMM 1.4"

N6946 (04:08-05:05)

04:08 UT Preset sent

04:11 UT dof pia

---	-1050	0	0	0	0	600	0	----	----	dof pia_sph3_adjustment
●	-1442	-26	265	-115	-137	-49	56	0.45	0.59	lbc.20251020.041333.fits
●	88	-206	86	-22	103	-14	51	0.71	0.12	lbc.20251020.041510.fits
●	234	-77	-160	102	78	---	---	1.75	0.14	lbc.20251020.041645.fits
●	-552	32	120	11	-29	39	66	0.91	0.24	lbc.20251020.041817.fits
●	-264	88	112	28	-121	11	51	0.85	0.15	lbc.20251020.041949.fits
●	225	76	57	-98	154	-153	-4	0.69	0.18	lbc.20251020.042119.fits
---	596	0	0	0	0	-340	0	----	----	dof pia_sph3_adjustment
---	-875	0	0	0	0	500	0	----	----	dof pia_sph3_adjustment
●	-11194	---	---	---	---	---	---	0.38	4.41	lbc.20251020.041329.fits
●	9198	---	---	---	---	---	---	0.60	3.63	lbc.20251020.041507.fits
●	-1548	47	-244	-52	-21	319	83	1.15	0.65	lbc.20251020.041639.fits
●	609	161	116	60	-5	3	25	0.74	0.26	lbc.20251020.041812.fits
●	-275	123	15	91	30	53	32	0.69	0.15	lbc.20251020.041943.fits
●	-7	76	74	94	-70	-44	0	0.52	0.10	lbc.20251020.042112.fits
---	451	0	0	0	0	-258	0	----	----	dof pia_sph3_adjustment

04:22 UT Co-pointing

lbcrangebal:

```
-----  
COPOINTING: B=42534 R=42530  
Pointing updates: delta_IE = 13.02", delta_CA = -1.82"  
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")  
SX:      0.04   -0.30   -6.42   -0.92  
DX:      0.03    0.30    6.38   -0.60  
-----
```

04:28 UT Science preset

04:29 UT Exposures started

04:36 UT IQ FWHM 0.91" blue, 1.0" red 1.35" DIMM, 1.1" Cyclope

04:50 UT FWHM 1.25" blue(USpec), 1.25" red, 1. DIMM, Cyclope 1.3"

05:00 UT FWHM 0.86" blue, 0.87" red, 1.1" Cyclope

ND

Nebula

Gaia21akb (05:05-06:00)

05:05 UT Preset sent

05:09 UT Copointing

```
lbcrangebal:  
-----  
COPOINTING: B=51037 R=51037  
Pointing updates: delta_IE = -11.96", delta_CA = -7.86"  
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")  
SX:      -0.10    0.10    2.09    2.09  
DX:      0.13   -0.10   -2.15   -2.87  
-----
```

05:14 UT Science preset.

05:14 UT Exposure started

05:22 UT IQ FWHM: 0.96" blue, 0.85" red, 0.86" DIMM, 1.0" Cyclope

05:26 UT We've realized the center NUC has calmed down since Matthieu made those changes.

05:30 UT FWHM 1.1" blue, 0.95" red, 0.62" DIMM, 1.2" cyclope

05:40 UT FWHM 1.1" blue, 0.98" red, 1.09" DIMM, 1.2" cyclope

05:55 UT FWHM 1.2" blue, 1.1" red, 1.17" DIMM, 1.1" cyclope

J0053 (06:00-07:08)

06:00 UT Preset sent

06:01 UT Ellipticity on the blue side was increasing, we'll recollimate.

06:04 UT dof pia

---	-1050	0	0	0	0	600	0	----	----	dof pia_sph3_adjustment
●	449	-35	-44	9	320	-176	16	0.91	0.27	lbc b.20251020.060651.fits
●	-347	87	70	-64	-130	-65	13	0.76	0.18	lbc b.20251020.060829.fits
●	-187	-87	-74	48	-44	-64	2	0.77	0.12	lbc b.20251020.061005.fits
●	271	-37	-131	-89	-6	-157	-12	0.80	0.18	lbc b.20251020.061140.fits
●	52	68	25	183	-94	-113	0	0.76	0.14	lbc b.20251020.061317.fits
---	640	0	0	0	0	-365	0	----	----	dof pia_sph3_adjustment
---	-875	0	0	0	0	500	0	----	----	dof pia_sph3_adjustment
●	-160	111	-62	-156	0	82	53	0.68	0.14	lbc r.20251020.060617.fits
●	-351	132	124	-79	-22	28	33	0.70	0.17	lbc r.20251020.060822.fits
●	-316	197	62	40	-50	94	69	1.10	0.17	lbc r.20251020.060956.fits
●	-585	-74	-15	135	-40	59	28	0.56	0.26	lbc r.20251020.061133.fits
●	-95	-88	-66	-32	30	-3	12	0.53	0.10	lbc r.20251020.061311.fits
---	456	0	0	0	0	-261	0	----	----	dof pia_sph3_adjustment

06:16 UT Copointing

```
lbc range bal:
-----
COPOINTING: B=61746 R=61742
Pointing updates: delta_IE = 10.91", delta_CA = 1.58"
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")
                SX:    0.07   0.01   0.27   -1.52
                DX:    0.01  -0.03  -0.55  -0.21
-----
```

06:19 UT Science preset sent

06:20 UT Exposures started.

06:26 UT IQ FWHM 0.83" blue, 0.882" red, 1.0" DIMM, 1.1" Cyclope

06:36 UT FWHM 0.87" blue, 0.85" red, 1.11" DIMM, 1.15" cyclope.

06:52 UT FWHM 0.79" blue, 0.9" red, 1.2" DIMM, 0.9" cyclope.

07:03 UT FWHM 0.86" blue, 0.80" red, 1.11" DIMM, 1.2" cyclope

OSU

Monitor

N628 (07:08-07:56)

07:08 UT Preset sent

07:11 UT Copointing

```
lbrangebal:
```

```
-----  
COPOINTING: B=71239 R=71234  
Pointing updates: delta_IE = 12.73", delta_CA = -14.79"  
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")  
SX:   -0.11   -0.17   -3.69    2.45  
DX:    0.15    0.14    2.91   -3.21  
-----
```

07:17 UT Left/right preset cancelled when lbrangebal finished up. Unclear why. No error messages in the Log Analyzer. Josh doesn't think anything happened on his end.

07:18 UT Science preset sent.

07:20 UT Exposures started

07:28 UT IQ FWHM 0.85" blue, 1.0" red. 1.35" DIMM, 1.1" cyclope.

07:40 UT FWHM 0.77" blue, 0.70" red, 1.04" DIMM, 1.2" cyclope.

07:50 UT FWHM 1.03" blue, 1.07" red, 1.36" DIMM, 1.3" cyclope

N672 (07:56-08:40)

07:56 UT Preset sent

07:58 UT Copointing

lbcrangebal:

```
-----  
COPOINTING: B=75957 R=75953  
Pointing updates: delta_IE = -0.92", delta_CA = 12.20"  
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")  
SX:      0.04      0.03      0.72     -0.81  
DX:      0.01     -0.10     -2.24     -0.24  
-----
```

08:02 UT Science preset sent

08:04 UT Exposures started.

08:12 UT FWHM 1.00" blue, 0.91" red, 0.99" DIMM, 1.2" cyclope

08:25 UT FWHM 0.99" blue, 0.81" red, 1.07" DIMM, 1.2" cyclope

08:40 UT FWHM 0.80" blue, 1.04" red

N925 (08:40-09:14)

08:40 UT Preset sent

08:42 UT Copointing

```
lbcrangebal:  
-----  
COPOINTING: B=84346 R=84341  
Pointing updates: delta_IE = 6.74", delta_CA = -4.37"  
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")  
SX:      0.08     -0.04     -0.79     -1.78  
DX:     -0.04     -0.03     -0.69      0.76  
-----
```

08:46 UT Science preset sent

08:48 UT Exposures started. DIMM 1.18"

08:55 UT FWHM 0.72" blue, 0.76" red, 1.12" DIMM, 1.25" cyclope.

09:05 UT FWHM 0.73" blue, 0.76" red, 0.98" DIMM, 1.0" cyclope

N2403 (09:14-09:39)

09:14 UT Preset sent

09:17 UT dof pia

---	-1050	0	0	0	0	600	0	----	----	dofpia_sph3_adjustment
●	-1252	304	-293	66	58	221	78	1.31	0.53	lbc.20251020.091934.fits
●	100	-65	-224	12	-84	-47	32	1.06	0.12	lbc.20251020.092100.fits
---	821	0	0	0	0	-469	0	----	----	dofpia_sph3_adjustment
---	-875	0	0	0	0	500	0	----	----	dofpia_sph3_adjustment
●	417	-28	-69	69	104	91	64	0.99	0.20	lbc.20251020.091930.fits
●	-87	-84	-41	-61	-100	-40	47	0.70	0.11	lbc.20251020.092056.fits
---	561	0	0	0	0	-320	0	----	----	dofpia_sph3_adjustment

09:24 UT Copointing

lbcrangebal:

```

-----
COPOINTING: B=92536 R=92531
Pointing updates: delta_IE = -21.72", delta_CA = 4.90"
Mirror updates:  dX(mm)  dY(mm)  dRX(")  dRY(")
                  SX:    0.05   0.13   2.80   -1.07
                  DX:    0.01  -0.14  -2.95   -0.19
-----

```

09:27 UT Science preset sent

09:29 UT Exposures started

09:32 UT FWHM 1.05" blue, 1.10" red, 1.68" DIMM, 1.4" cyclope

Reconfig (09:39-10:18)

09:39 UT **Reconfig BinoPepsi**

09:42 TMS lasers off

10:04 UT First pointing preset - M3.2 star

10:13 UT Second pointing preset - M9.9 star

10:15 UT Collimation preset

OSU

MPMDwarf

HIP24555(10:18-10:23)

10:18 UT Preset sent

10:21 UT Exposure started

10:23 UT SNR CD3:544 CD6:541

GAIA3337581255650683904 (10:23-10:45)

10:23 UT Preset sent

10:25 UT Exposure started

10:44 UT SNR CD3: CD6: 34

BHBin

2MASSJ05214968+0243217 (GAIA DR3 3234582511052921088) (10:45-10:57)

10:45 UT Preset sent

10:47 UT Exposure started

10:57 UT SNR CD3:97 CD5:146

MWAbund

2M0351+0857 (10:57-11:04)

10:57 UT Preset sent

11:00 UT Exposure started. Exptime 2:00

11:03 UT SNR CD2:162 CD4:283 2-min exposure works well for this program. Will stick with it for the remainder of the MWAbund targets tonight.

2M0523+4835 (11:04-11:11)

11:04 UT Preset sent

11:07 UT Exposure started

11:11 UT SNR CD2:146 CD4:263

2M0556+3202 (11:11-11:19)

11:11 UT Preset sent

11:15 UT Exposure started. FWHM SX: 0.49, DX:0.54.

11:19 UT SNR CD2:149 CD4:269

2M0653-0126 (11:19-11:24)

11:19 UT Preset sent

11:21 UT Exposure started. FWHM SX: 0.64, DX: 0.70. DIMM 0.70". Cyclope 1.1"

11:24 UT SNR CD2:132 CD4:247

BHBin

2M0630-1345 (GAIA DR3 2951458442999834368) (11:24-11:37)

11:24 UT Preset sent

11:27 UT Exposure started. FWHM SX: 0.82", DX: 0.73". DIMM 0.66". Cyclope 1.12"

11:35 UT SNR CD3:64 CD5:76. 50 targeted.

2M0651-1329 (GAIA DR3 2949272716964862720) (11:37-11:57)

11:37 UT Preset sent

11:39 UT DX grabbed the wrong object. Resending DX preset.

11:39 UT DX still determined to grab the wrong object. Pointing preset.

11:43 UT Resending science preset.

11:44 UT Exposure started. FWHM SX: 0.57", DX: 0.74". DIMM 0.61". Cyclope 1.5".

11:57 UT SNR CD3:112 CD5:177

2M0700-1226 (11:57-12:06)

11:57 UT Preset sent

11:59 UT Exposure started. FWHM SX: 0.59", DX:0.69". DIMM 0.79". Cyclope 1.3"

12:06 UT SNR CD3:93 CD5:155

12:05 UT 18 deg twilight

Reconfig (12:06-12:31)

12:06 UT Reconfig LBC. We'll go for twilight flats.

12:08 UT Pepsi calcs started - BHBin

12:12 UT Pepsi calcs started - MPMDwarf

12:16 UT Pepsi calcs started - MWAbund

LBC Skyflats

12:31 UT Test skyflat. ~2000 blue, ~5000 red

12:34 UT 12 deg twilight

12:36 UT Starting full-frame flats. PA 0, scale factor 20

12:38 UT B: ~5200 i:13,000

12:40 UT B: 6500 i: 16,000

12:40 UT B: 8000 i: 20,500

12:42 UT B:9700 i: 25,000

12:43 UT B:12,000 i: 33,500

12:44 UT Rerunning, scale factor to 15

12:46 UT B:15,000 i:40000

12:46 UT Switching to PA 180. Scale 10.

12:49 UT B:17,000 i: 47,000

12:49 UT B: 15,000. I: 56,000

12:49 UT Scale to 5.

12:50 UT B: 14,000 i: 36,000

12:52 UT B: 16,000 i:

12:53 UT B:19,500 i:49,000

12:53 UT Switch to VR filters

12:53 UT Scale 2. V:14,000 R:15,000

12:56 UT V:17000 R:17500

12:57 UT V:20000 R:20000

12:57 UT V:24000 R:24000

12:58 UT V:29000 R:28000

12:58 UT PA 180. Scale 1

12:59 UT V:25000 R:21000

13:01 V:31000 R: 26000

13:01 V: 37000 R: 30000

13:01 scale factor 0.5

13:03 V:26000 R:21000

13:0 V:32000 R:25000

13:04 Scale 0.1

13:05 UT V:16000 R: 11500

13:07 UT V: 19000 R: 14500

13:07 UT V:22000 R:16000

13:08 UT V:28000 R:18500

13:09 UT V:33000 R: 21000

13:09 UT Done with sky flats. Closing shutters.

13:37 UT LBC biases.

13:53 UT LBCs powered off