LBT Observing Log for 2023 Oct 21/22

C19 Observer: Alex Becker
Partner Observer(s): Mark Whittle (UVa, remote)
Telescope Operator: Steve Allanson

Plan:

We will start with PEPSI and switch over to LBC or MODS after the moon has set around 06UT. Here's our plan:

        OSU_BHB_J1833 10m (if we can start near 12 deg twilight).
        OSU_BHB_J1947 10m
        OSU_BHB_J2020 18m
        OSU_FGK_HD20 12m
        OSU_FGK_HNPeg 6m
        OSU_FGK_StKM 30m
        OSU_FGK_BD+2155 20m
        OSU_FGK_4Psc 6m
        OSU_FGK_HIP92 8m

If going well, insert two short UVa high-priority targets:
        UVa_Multistar_T8927
        UVa_Multistar_T2581

Then LBC
        OSU_Monitor_N6946 40m
        OSU_Monitor_N672 40m
        OSU_Monitor_N628 40m
        OSU_sbf 2hr
        OSU_Monitor_N925 30m
        OSU_Monitor_N2403 12m

If time, go to MODS and try
        OSU_2023ufx 2x50min.

Summary:

The following targets were observed:
        OSU_BHB_J1833 (started ~10 min before 12 degree – OK).
        OSU_BHB_J1947
        OSU_BHB_J2020

OSU_FGK_HD20
OSU_FGK_HNPeg
UVa_Multistar TIC 8927
UVa_Multistar_T2581
OSU_FGK_StKM
OSU_FGK_BD+2155
OSU_FGK_4Psc   [great progress, so we are able to squeeze in UM_Nova].
UM_58Aql (standard for Nova)
UM_V1405Cas
OSU_FGK_HIP9269

PEPSI-LOG:

https://drive.google.com/file/d/1YkCpCu817B3MvNjNhTPU9fVIxV1jh7el

Change to LBC at UT 5:31
Start first object at UT 6:05 (Moon still up for another 30 mins).
OSU_Monitor N6946
OSU_Monitor N672
OSU_Monitor N628
OSU_sbf blobby2 (twilight flats for g & i on Oct 15&16)
OSU_Monitor N925
OSU_Monitor N2403   (the last LBC target with 60 mins before 12 degree)

Change to MODS at UT 11:30
OSU_2023ufx 1200 seconds
G191b2b standard

Note: we could not get twilight flats for LBC; but most recently g&i on Oct 15&16.
Recent skyflats: https://wiki.lbto.org/Instrumentation/LogOfLBCTwilightSkyFlats

Issues:

Pepsi software

Weather:

Start of the night: Temp: 10.8°C, Humidity: 28.6%, Wind: ~2m/s @300°, partly cloudy
Note: the DIMMs are down, so all seeing estimates are from the guide star FWHM.
Seeing was excellent for first half (~0.6" from pepsi) then more like 0.9-1.0 from LBC images.
From the All-Sky-Camera animation one can see light cirrus moving through for most of the night.

Overview (times are given in UT):

00:30 MODS and LBCs checked out.
00:39 Open

OSU_BHB

J1833

01:08 Preset and waiting for twilight
Some clouds are also passing through. Moon is 50% illuminated and only 25deg from target, giving sky brightness of 20/arcsec^2 in V. Should be ok with target mag 12.6.

01:18 Starting exposure, Seeing ~0.9"

S/N blue/red =124/225 (request for 50 – so maybe used old ETC, which was updated last week for the new CCDs).

J1947

01:30 Preset
01:34 Starting exposure, Seeing 0.8", 100 deg from moon, better (21.4 m/asec2).
SN blue/red: 98/157

J2020

01:45 Preset
01:48 Pointing check
01:53 Starting exposure
01:54 PEPSI software crashed.
01:55 Resending preset
01:57 Starting exposure
SN blue/red 164/193

OSU_FGKHosts

HD 203030

02:10 Sending Preset
02:12 Starting exposure, Seeing 0.7"
SN blue/red: 442/(283, 291)

HNPeg

02:20 Preset
02:24 Starting exposure, Seeing 0.9"
SN blue/red 361, 244

UVa_Multistar

TIC 8927

02:25 Preset
02:30 Another pointing check as the target is on the other side of the sky and in a crowded field
02:32 Preset
02:33 Starting exposure, Seeing 0.7"
S/N blue/red = 89, 105

TIC 2581

02:35 Preset
02:39 Starting exposure, Seeing 0.6"
S/N blue/red 78, 94

OSU_FGKHosts

StKM2

02:41 Preset
02:43 Starting exposure, Seeing 0.4" - 0.6" (! perhaps PEPSI is optimistic?).
    S/N blue/red: 518/(317, 323, 309, 303, 312, 297)
02:50 Sky is mostly clear, some clouds visible on the horizon but flux is fairly stable

BD +2155

03:09 Preset, we have to unwrap azimuth
03:15 Starting exposure, Seeing 0.6"

S/N blue/red: 479/(290, 300, 301)

4Psc

03:34 Preset
03:37 Starting exposure, Seeing 0.8" - 0.6"
S/N blue/red: 987/418

We are progressing faster than I expected, so we'll try to get UM_Nova done before the moon sets and we go to LBC.

UM_Nova

58 Aql

03:39 Preset
03:41 Pointing check
03:46 Preset
03:48 Starting exposure
S/N blue/red:
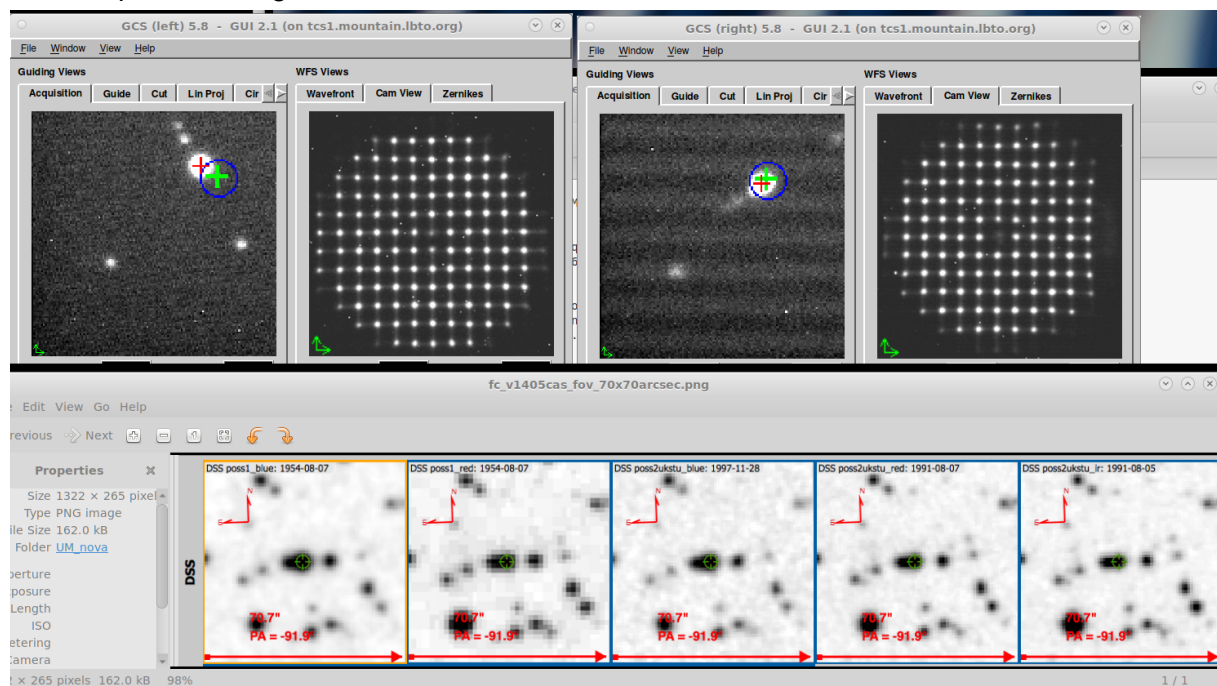   CD1/4: 539/1282
      CD2/5: 955/1271
      CD3/6: 1242/1037

V1405Cas

04:04 Pointing check

We took a short 1 minute exposure in CD3+CD5 to confirm what we are seeing broad emission lines. You can't miss that Halpha line

GCS acquisition images and finder chart:

04:20 Starting science exposure

Seeing ~0.65"
S/N blue/red
        CD1/CD4: 53/118
        CD2/CD5: 78/126
        CD3/CD6: 102/113

OSU_FGKHosts

HIP 9269

05:24 Preset
05:27 Starting exposure
S/N blue/red: 511/(324, 306)

05:31 Reconfiguring for LBC

LBC

OSU_Monitor

N6946

05:52 Preset to copointing/collimation field
05:53 running dohybrid
06:01 copointing check
        IQ: lbcb 0.85, lbcr: 0.80
06:05 Starting science script

First exposure:
  lbcb: 1.1" (Stars are a bit elongated E ~0.1
  lbcr: 0.9"
IQ fairly stable throughout the series. lbcb got a little bit worse towards the end.

N672

06:42 Preset to focus field
06:46 dofpia
06:51 copointing check
06:55 Starting science script IQ ~1.2 for both sides
Second image pair: lbcb: 0.95", lbcr: 1.25" Might just have been a seeing bubble.
Towards the end ~1" on both sides.
Collimation for LBCR went soft on last exposure (1.3"-1.4") while blue was still ~1".

N628

07:32 Preset to focus field
07:33 dofpia
07:44 Starting science script
First image
　lbcb: 0.95
　lbcr: 1.1"-1.2" - but it is hard to find a non-saturated star
07:57 obs1 is awfully slow now… I guess it is RB_Science.
It stayed slow for a bit after killing RB_Science. But now it's much better. Will kill modsDisp as well, just to be on the safer side

8:05 IQ on lbcr about 1px worse than lbcb. Seeing seems to be about 0.9"-1", but the temperature dropped by ~1.5 °C during the last hour. So,

OSU_sbf

We meet the conditions specified in the readme: dark sky, clear, lbcb consistently ~0.9 arcsec and lbcr ~1.0-1.1 arcsec.

blobby2

08:20 Preset to focus field
08:30 Starting science script
08:50 Seeing blue/red 1.0/1.1
09:29 IQ is consistently below 5 pixel. Usually around 4.5 pixel (1"). PSF is still fairly circular on both sides. We keep on going without re-collimating.
Pointing also seems to be ok.

09:49 lbcred tracker stopped working properly "image data is zero". So, we stopped tracking.
Stopping script @ 86/120 exposures. The last 2 images were out of spec anyway.
I will cycle the systems and recollimated before continuing with the script.

09:55 dofpia
09:59 Starting science exposure again
38 images to go (19 on blue and 19 on red)
10:02 IQ between 0.9" (blue) and 1" (red)
10:04 obs1 is slooooooow again
10:10 I can use obs1 now, but I wouldn't call it responsive. Still slow to a crawl
　　　I could paint the images faster by hand…
10:14 IQ still good < 4px (0.9")

10:17 Killing RB_Science a couple of times seems to be the solution in >90% of the cases.
Well, until you bring it up again. It gets really challenging measuring the image quality with 60s exposure time. obs1 isn't a fast zoomer and scroller and key stroke register…

10:34 Stopping at 38/120

OSU_Monitor

N925

10:36 Preset
10:37 dofpia + copointing check
  Every mouse click takes about 5 seconds to be registered
10:48 Starting science script
10:09 Found it! It was the IRAF plotting window showing the radial fit from imexam…
  There is a python version of imexam. Couldn't that be built into RB_Science?

N2401

11:12 Preset
11:15 dofpia
  Ugly reflection on lbcr
11:18 copointing check
11:21 Starting science script

No more LBC targets; about 1 hour dark remaining. So…

11:33 Reconfiguring for MODS

MODS

OSU_SCAT

AT2023ufx

Just enough time to get 1200 seconds spectrum (no time for imaging).

11:55 Preset, Seeing ~0.8"
 mods1: offsetxy -0.667 12.067 rel
 mods2: offsetxy 3.921 7.027 rel
Target looks quite bright (use acquisition image in g to get magnitude?)

11:05 Starting science script
 We took a single 1200s exposure. Spectrum clearly visible (no obvious emission lines).
Rushing for std star

G191b2b

12:35 Copointing check
12:36 Preset

13:00 Turning LBCs off, putting MODS to sleep