C19 Observer: Andrew Cardwell (From obs1, x2go session 51) Partner Observer(s): Peter Garnavich, Subhash Bose. Telescope Operator: Steve Allanson

Plan: Weather permitting we start with MODS and switch to LUCI later for AO obs.

# Summary:

Clear conditions all night, but poor and variable seeing. All 4 main instruments used! MODS: ND\_V808, G191B2B LUCI AO: UVa\_nirjets (but issues) LUCI Binocular: UVa\_BCD\_LUCI - failed target acquire (see notes) PEPSI: BD +60 1417, HD46588, HD126053, 2MASSJ0822, G0028, 2MASSJ0816, GJ417, 2MASSJ1549, 2MASSJ1552, HD116012, CM Dra LBC: attempt OSU\_monitor NGC4236 at the end

Issues:

## PEPSI LOG

Overview (times are given in UT):

22:00 Daily telescope planning meeting.

00:05 Bringing up MODS. Steve is working to thermalize the enclosure and mirrors, but we have a large temperature difference to work off.

00:38 Test presets completed. Waking MODS and running simSnap.

00:44 MODS looks good. Switched to observing mode, AFws homed. Checking out LUCI.

00:51 LUCIs are good, LUCI2 field stop adjustment performed.

00:57 Enclosure open.

01:02 Sunset.

01:07 We will point and get our initial collimation near the first target, **g191b2b.** 

01:32 Waiting for the sky to get dark enough for good collimation. Initial seeing estimate from SX guider is 1.2".

01:39 Preset to g191b2b, MODS specphot.

01:42 Slight glitch, the mods tcs service wasn't up on either side. I've started it.

01:45 Guiders report 1.4" on SX and 1.6" on DX. The discrepancy is most likely due to the differing thermal environment on each side. Acquisition begins with mods[1|2].20230208.0003. Sky appears to be clear.

01:50 Acquisition os off in -x on mods1. Correcting by +0.75".

01:52 12 degree twilight.

01:53 Starting science exposures. DIMM reports 1.3". Science exposures are mods[1|2]b.0003-0005, mods[1|2]r.0007-0009.

02:07 Preset to ND\_V808, MODS LS.

02:21 18 degree twilight.

02:23 Several manual adjustments required, the narrow slit, 0.8", and poor seeing, 1.6" are not helping.

02:25 Starting science. mods[1|2]b.0006-00??, mods[1|2]r.0016-00??.

02:33 Clear continuum trace in the initial spectra.

02:48 80% humidity, -8.9C. Guiders report ~ 1.3".

03:47 Conditions unchanged, observations running smoothly.

04:46 mods2r has run ahead of everything else, adding an extra 3 exposures.

05:57 Finished, reconfiguring to LUCI1 only for AO.

### LUCI AO

05:57 Humidity 83%, temperature -9C. 3C temp difference between primaries and external temperature. We seem to have a little frost building up on the allsky camera.

05:19 Preset to IRAS07299-1651 (UVa nirjets.)

05:45 AO error. We need to send the preset again.

05:52 Back in action, moving on to the Br\_gamma.

05:57 Same error again, resending the preset to recover.

06:06 Another AO error, negative counts. Hardware issue, possibly related to the low temperature in the enclosure. (-8.5C)

06:08 Sending the preset again.

06:26 We are out of range on the AO derotator. Unwrapping the LUCI rotator and trying again.

06:28 Sending the preset again.

06:29 No GS found. LUCI patrol field issue? Steve is recording the details and will then make a pointing correction to rule that out.

06:34 Remade the script with a new GS, but the program would not load. The following error message was given.

		N	130			
	Error					
Error loading XML file. SAXParseException: External DTD: Failed to read external DTD 'SpXML2.dtd', because 'http' access is not allowed due to restriction set by the accessExternalDTD prop						riction set by the accessExternalDTD property.
						▼

06:36 Recreated the script with a different name and everything was fine. Found the GS with no issue this time.

06:41 I understand the previous script error, apparently I exported the OT program rather than the script and then tried to load that in the LUCI interface.

06:45 I estimate the seeing to be no worse than 0.3". It's not clear that there are any point sources in the science field.

07:11 We are now at low elevation, 35 degrees, and seeing is degrading again. Putting a pause in the script before the H2 exposures and moving on.

07:15 Loops opened mid exposure due to a seeing spike Exposure luci1.20230208.0046 impacted.

07:19 Finished here, changing over to LUCI bino. Next target will be J1004, we will start with the telluric for it, BDp30d2047.

### LUCI Binocular

07:37 Preset to **UVa\_BCD\_LUCI BDp30d2047**. Luci1 FW2 did not reach position on the first attempt, resending the configuration was enough to fix it. Acquisition will begin with luci1.0048, luci2.0007.

07:46 Starting science luci1.0051-0052, luci2.0010-0011.

07:49 Preset to science target J1004. LUCI LS.

07:51 **Oops!** Target should have been **UVa\_BCD\_LUCI J1046**. Presetting to that target. We will take the telluric for it after the science observation.

08:04 **J1046** was set up with the guide probe heavily vignetting the slit. I have changed the PA from 0 to 180 and selected another guide star. Sending the preset again. Acquisition begins with luci1.0056, luci2.0015. Guiders report 1".

08:17 We are giving up on this target. The target is faint and the finding chart is not good enough to unambiguously identify it. A deeper finding chart should be provided, and / or this should be set up as a blind offset acquisition. Reconfiguring to PEPSI. LUCIs have been safed.

PEPSI

08:36 Preset to **BD +60 1417**, PEPSI, Phillips.

08:38 Starting science.

08:57 DIMM and guiders report 1.9"!

S/N of 491 in the blue and 575 in the red.

09:01 Preset to **HD46588**.

09:04 Steve is adjusting the range balancing on the primaries.

09:06 Sending the preset again. Target is at 37 degrees in elevation, but it's a very short target.

S/N of 618 in the blue and 619 in the red.

09:12 Preset to **HD126053**.

09:16 Starting science.

S/N of 436 in the blue and 423 in the red.

09:22 Preset to 2MASS J08225304+3922336.

09:25 No GS found on SX. Steve is making a pointing correction.

09:28 Returning to science target.

09:32 Starting science.

S/N of 90 in the blue and 116 in the red.

09:40 DX Adsec failure. Steve is recovering it.

09:48 Preset to **G0028**.

09:52 Starting science.

S/N of 430 in the blue and 416 in the red.

09:57 Preset to 2MASS J08165827+7942469.

10:01 Starting science.

S/N of 62 in the blue and 111 in the red.

10:16 Preset to GJ417

10:21 No GS found on DX. Steve is making a pointing check.

10:28 Back on target, starting science.

S/N of 796 in the blue and 868 in the red.

10:34 Preset to 2MASS J15494343+5723409. (Also observed on the UT night of 20230206).

10:36 GS was just off on DX, Steve is nudging it in. Sending the preset again.DIMM reports 0.75".

10:38. Starting science.

10:47 Preset to 2MASS J15522891+2450436. Long slew as AZ needs to unwrap.

10:53 Starting science.

11:04 Mirror panic on SX. Stopping exposures at 10mins 19s.

S/N of 48 in the blue and 99 in the red.

11:17 Preset to **HD116012**.

11:19 GS not found on SX, Steve is nudging it in.

11:20 Got it!

11:22 Starting science.

S/N of 645 in the blue and 862 in the red.

11:34 Preset to CM Dra.

11:40 Starting science.

S/N of 63 in the blue and 162 in the red.

## LBC

11:49 Reconfiguring to LBC. Running PEPSI cals.

12:10 Reconfigured. Copointing limit violation error message on first preset.

12:11 Steve cleared it. Preset sent.

12:13 "Warning, problem with PSF tip/tilt request for" both sides.

12:22 Errors continue.

12:31 We can't resolve this, calling John Hill.

12:46 18 degree twilight. Still struggling.

12:47 The last preset went through, but we are very short of time. Moving to a shorter observation. Preset to **NGC4236** collimation field.

12:49 Starting collimation, dohybrid, /X2.

13:01 Collimated! Moving on to copointing.

13:04 Moving on to science. Preset sent. 1" measured on copointing exposures.

13:10 Bad read on lbcb.20230208.130533. Too few pixels error. Satellite trail in lbcb.20230208.130532. 0.85" measured on this red exposure.

13:15 12 degree twilight.

13:17 End of observing. Final exposures are close to saturated.

13:20 Putting MODS to sleep. Closing the enclosure.

13:46 Taking LBC biases.

14:05 Sunrise