C19 Observer: Jenny Power Partner Observer(s): , Dominick Rowan (OSU) Telescope Operator: David Gonzalez Huerta , Riccardo Ansaldi Special Guests: Rick Pogge, Jason Chu

Plan:

Plan for the night:

OSU_FGKBDS, OSU_BHBinaries, UM_Nova, UVa_Multistar Might switch to LBC Monitor program when PEPSI target list is exhausted.

Name	V Inst Fiber BlueArm RedArm Start MST End Duration Phase Moon PID					
TIC 161043618	12.50 PFU 300 CD2 00:03:30 CD6 00:03:30 19:10:00 19:13:49 00:03:49 71 Majewski					
V478 Lyr	7.78 PFU 200 CD3 00:04:10 CD6 2x00:01:40 19:15:49 19:20:42 00:04:53 0.981 121 Phillips					
BD+49 2561	10.13 PFU 200 CD3 00:40:50 CD6 3x00:12:00 19:22:42 20:04:15 00:41:33 89 Phillips					
StKM1-1526	10.41 PFU 200 CD3 01:09:00 CD6 7x00:09:00 20:06:15 21:15:58 01:09:43 103 Phillips					
2MASS J19475213	3+7731445 12.90 PFU 300 CD3 00:10:00 CD5 00:10:00 21:17:58 21:28:17 00:10:19 82					
Rowan						
58 Aql	5.60 PFU 200 CD1 00:05:00 CD4 00:05:00 21:30:17 21:36:00 00:05:43 150 fluxstd					
58 Aql	5.60 PFU 200 CD2 00:05:00 CD5 00:05:00 21:36:00 21:41:43 00:05:43 150 fluxstd					
58 Aql	5.60 PFU 200 CD3 00:05:00 CD6 00:05:00 21:41:43 21:47:26 00:05:43 150 fluxstd					
V1405 Cas	11.80 PFU 200 CD1 00:20:00 CD4 00:20:00 21:49:26 22:10:09 00:20:43 96 Woodward					
V1405 Cas	11.80 PFU 200 CD2 00:20:00 CD5 00:20:00 22:10:09 22:30:52 00:20:43 96 Woodward					
V1405 Cas	11.80 PFU 200 CD3 00:20:00 CD6 00:20:00 22:30:52 22:51:35 00:20:43 96 Woodward					
TIC 89278612	11.23 PFU 300 CD2 00:01:24 CD6 00:01:24 22:53:35 22:55:18 00:01:43 124 Majewski					
J2028+4048	11.69 PFU 300 CD3 00:05:00 CD5 00:05:00 22:57:18 23:02:37 00:05:19 118 Rowan					
TIC 322727163	11.00 PFU 300 CD2 00:01:12 CD6 00:01:12 23:04:37 23:06:08 00:01:31 109 Majewski					
TIC 375325607	12.60 PFU 300 CD2 00:04:48 CD6 00:04:48 23:08:08 23:13:15 00:05:07 105 Majewski					
TYC 5213-545-1	10.89 PFU 200 CD3 01:22:00 CD6 3x00:23:20 23:15:15 00:37:58 01:22:43 164 Phillips					
HN Peg	5.96 PFU 200 CD3 00:00:50 CD6 00:00:20 00:39:58 00:41:31 00:01:33 146 Phillips					
TIC 427092089	12.30 PFU 300 CD2 00:04:00 CD6 00:04:00 00:43:31 00:47:50 00:04:19 97 Majewski					
J0611+0829	12.60 PFU 300 CD3 00:08:20 CD5 00:08:20 00:49:50 00:58:29 00:08:39 134 Rowan					
CD-24_407	9.93 PFU 200 CD3 00:33:20 CD6 3x00:10:00 01:00:29 01:34:32 00:34:03 133 Phillips					
TIC 389836747	10.67 PFU 300 CD2 00:01:00 CD6 00:01:00 01:36:32 01:37:51 00:01:19 87 Majewski					
TIC 307119043	10.00 PFU 300 CD2 00:01:00 CD6 00:01:00 01:39:51 01:41:10 00:01:19 97 Majewski					
TIC 25818450	11.78 PFU 300 CD2 00:01:42 CD6 00:01:42 01:43:10 01:45:11 00:02:01 104 Majewski					
TIC 470710327	9.60 PFU 300 CD2 00:01:00 CD6 00:01:00 01:47:11 01:48:30 00:01:19 95 Majewski					
2MASS J01392887	7-0020281 13.00 PFU 300 CD3 00:17:00 CD5 00:17:00 01:50:30 02:07:49 00:17:19 118					
Rowan						
TIC 283940788	11.70 PFU 300 CD2 00:02:12 CD6 00:02:12 02:09:49 02:12:20 00:02:31 91 Majewski					
TIC 367448265	7.90 PFU 300 CD2 00:01:00 CD6 00:01:00 02:14:20 02:15:39 00:01:19 0.912 60 Majewski					
J0521+0243	12.92 PFU 300 CD3 00:10:00 CD5 00:10:00 02:17:39 02:27:58 00:10:19 65 Rowan					
TIC 336882813	11.79 PFU 300 CD2 00:02:18 CD6 00:02:18 02:29:58 02:32:35 00:02:37 50 Majewski					
J0625+2418	12.33 PFU 300 CD3 00:06:40 CD5 00:06:40 02:34:35 02:41:34 00:06:59 45 Rowan					
TIC 200094011	9.70 PFU 300 CD2 00:01:00 CD6 00:01:00 02:43:34 02:44:53 00:01:19 0.325 60 Majewski					
TIC 438226195	12.80 PFU 300 CD2 00:06:00 CD6 00:06:00 02:46:53 02:53:12 00:06:19 46 Majewski					
J0628+0607	12.48 PFU 300 CD3 00:06:40 CD5 00:06:40 02:55:12 03:02:11 00:06:59 48 Rowan					
J0602-1646	12.91 PFU 300 CD3 00:10:00 CD5 00:10:00 03:04:11 03:14:30 00:10:19 64 Rowan					
J0650+2433	12.58 PFU 300 CD3 00:08:20 CD5 00:08:20 03:16:30 03:25:09 00:08:39 40 Rowan					
J0656+0926	12.50 PFU 300 CD3 00:06:40 CD5 00:06:40 03:27:09 03:34:08 00:06:59 41 Rowan					
2MASS J07415562+3024101 11.51 PFU 300 CD3 00:05:00 CD5 00:05:00 03:36:08 03:41:27 00:05:19 29						
Rowan						

Observed and completed:

Link to PEPSI LOG:

https://drive.google.com/file/d/1mtHYtqMep4OvKzpczuaGPgEYoFII4bRm/view?usp=sharing

Summary:

Overview (times are given in UT): BD+49 2569: OSU FGKHosts StKM1-1526: OSU FGKHosts V478 Lyr: OSU FGKHosts 58 Agl: UM PEPSI-NV DOWNTIME: Guider Issue and Unable to interact with PEPSI Spectrograph GUI. Resume 58 Agl TYC5213-545-1: OSU FGKHosts J1947+7731: OSU BHBinaries J2028+4048: OSU BHBinaries V1405 Cas: UM PEPSI-NV TIC 322727163: UVa Multistar TIC 375325607: UVa Multistar J0139-0020: OSU BHBinaries CD-24 407: OSU FGKHosts Downtime: Target input error TIC 427092089: UVa Multistar J0521+0243: OSU BHBinaries Weather Downtime - Clouds Weather downtime J0625+2418: OSU BHBinaries (not obtained) TIC 470710327: UVa Multistar TIC 307119043: UVa Multistar TIC 389836747: UVa Multistar TIC 283940788: UVa Multistar

Issues:

Nudges continue to be an issue until the new GPS arrives: [lbto@obs1 ObserverSupport]\$./nudgepredict.py -d 20230915 -e 12.5 -b 11 ./nudgepredict.py script version of 31-May-2023 5201539199.0 end MJD sec for the end of this UT day 60202 end MJD day 5201497800.0 end MJD sec corrected for endhour 12.5 5201458200.0 start MJD sec using backhour 11.0 20230915 is the day to be plotted. 1.5 start hour using backhour 11.0 end hour 12.5 These UT start times will have a nudge if the telescope is tracking. 01:46:02 02:20:10 02:54:18 03:28:26 04:02:34 04:36:42 05:10:50 05:44:58 06:19:06 06:53:14 07:27:22 08:01:30 08:35:38 09:09:46 09:43:54 10:18:02 10:52:10 11:26:18 12:00:26

Overview (times are given in UT):

0:45 MODS started up and modsSimSnap taken. LBC's started up and 25x bias taken

1:30 Taking PEPSI calibrations for tonights observations. Because of the 47 degree water look acting at 75% capacity, the cryotigers and water for the PEPSI spectrograph chamber and optical table are seeing some temp variation (warming trend) with full operations at night. Taking calibrations before and after observations to help mitigate impacts.

01:32 Sunset.

1:36 David is opening. PEPSI cals running in parallel. They are enclosed in the spectrograph room so are not impacted by opening.

2:05 David is executing the pointing and collimation check. Non photometric right now, a few light clouds passing through.

2:16 David is struggling with the primary running into limits. He is referring now to Steve's night report to get some initial starting values. Lots of coma to contend with. Seeing is 1.15" on the DIMM.

2:18 46 Telescope appears better range balanced now: SXm1 Y +1mm; Z7 -7000nm SX M2 Y 1mm; Z7 +1000nm DXM1 X-2mm; Z8 +2000nm DXM2 X-2mm; Z8 +4000nm Going to a bright pointing star.

02:21 12 degree twilight.

2:35 We have clouds right on TIC 161043618 : UV-2023A-006, we will have to skip it and move on. Clouds are moving in quickly. Riccardo noted that there appears to be this last wave of clouds that is moving in as seen on the satellite.



BD+49 2569: OSU_FGKHosts

2:47 Preseting to BD+49 2569. We will tune collimation on target.

02:50 18 degree twilight.

2:52 Left side took a bit to fully collimate, but both sides look good now.Starting to take data:D200CD III00:40:50CDVI3x00:12:00200

2:57 Seeing 1.05", SX seeing a bit worse than DX on teh PEPSI WFS: 1.05" on SX and 0.85" on DX

3:22 Conditions are mostly clear sith some clouds along the horizon. Seeing 1.04" on the DIMM



3:29 SX IQ is noticeably worse than DX. The SX glass therm hs a gradient and is a bit warm. Vent doors closed because of winds. Hopefully will even out soon.

StKM1-1526: OSU_FGKHosts

3:34 Sending preset to StKM1-1526.

 3:36 Starting science:

 D200
 CD III
 01:09:00
 CDVI
 7x00:9:00

3:50 Seeing is 0.78" on the left and 0.64" on the right according the the PEPSI WFS. 0.76" according to the DIMM. Conditions mostly clear. We are getting SNR well within spec for the observations as per requests in the readme.

4:14 Seeing is 0.87" on the DIMM, 0.88" on the SX WFS and 0.64" on the DX WFS. Clear.

V478 Lyr: OSU_FGKHosts

4:45 Sending preset to V478 Lyr. Pointing check needed, no star on DX

4:55 Pointing check verified and tunes, presetting back to V478 Lyr

4:56 Starting science D200 CD III 00:04:10 CDVI 2x00:01:40

4:58 Seeing is 0.79" on the DIMM, 0.78" on SX and 0.76" on DX

58 Aql: UM_PEPSI-NV

5:04 We are presetting to 58 Aql. This requires a full unwrap of the AZ so will be about 5 min. Some thin clouds are starting to come in from the south.

5:11 Starting science on 58 Aql. David is now questioning if we grabbed the wrong star and will do a pointing check.

DOWNTIME: Guider Issue and Unable to interact with PEPSI Spectrograph GUI. 5:16 Presetting back to source

5:17 Starting science on 58 Aql for real this time.

DATA taken compromised by jumping SX star. Probably on fiber 50-75% of the time.

5:19 Seeing is 0.74" on SX and 0.8" on DX, 0.8" on teh DIMM. Some clouds off to the soth but mostly clear overhead.

5:20 SX keeps jumping to the right as seen on the guider. This does not correspond to a nudge or anything

5:24 The SX side is oscillating and wreaking havok on the SX WFS

I can't seem to abort. I can move guis by not interact with the PEPSI Spectrograph GUI in any way. There is no popup anywhere. No obvious reason for the issue. Only 2 min left

Resume 58 Aql

5:36 Resending preset to 58 Aql. We saw a few jumps near beginning but seem more stable now. Set up guiding with ND2. This allowed for longer guider exposure time. The cause of the jumps unknown and to be investigated. IT7634 and friends describe the wandering guide star. Leak rate? Set to zero as default so that was no it.

58Aql	19:54:44.79+00:16:25:1	5.6	B9IV	D200/CD1/CD4	300sec
58Aql	19:54:44.79+00:16:25:1	5.6	B9IV	D200/CD2/CD5	300sec

58Aql 19:54:44.79+00:16:25:1 5.6 B9IV D200/CD3/CD6 300sec

TYC5213-545-1: OSU_FGKHosts

5:55 Sending preset to TYC 5213-545-1. Need a pointing check. Grabbing the wrong star on the left.

5:59 David sent to wrong pointing star, correcting and resending.

 6:02 Sending preset back to our source: TYC 5213-545-1

 TYC5213-545-1
 D200
 CD III
 01:22:00
 CDVI
 3x00:23:20

 Seeing 0.51" on SX and 0.71" on DX.
 DIMM 0.89".
 Conditions clear.

6:43 SHARKNIR has started to send alerts that is is warming. We are actively observing so it is not feasible to stop and refill the instrument at this time. David is notifying the team.

6:53 Seeing is 0.45" on the SX side and 0.55" on the DX side. No DIMM measurement at this time. Conditions look clear.

7:11 On the 3rd exposure with CD6 I increased the exposure time from 23:20 to 33:20. This ensured the red side was not idle during the blue exposure. There was no risk of saturation with this exposure time. Seeing is 0.46" on the SX side and 0.52 on the DX side, 0.83" on the DIMM

J1947+7731: OSU BHBinaries

7:26 Preset to 2MASS J19475213+7731445 J1947+7731 19:47:52.13 77:31:44.5 13.10 G8IV D300/CD3/CD5 600

7:28 Pointing check required, star not found on the right. David is executing.

7:31 Presetting back to J1947

7:34 Starting exposure on J1947. I increased guide binning to 3. Seeing is 0.7" on both sides. J1947+7731 19:47:52.13 77:31:44.5 13.10 G8IV D300/CD3/CD5 600

J2028+4048: OSU_BHBinaries

7:45 Presetting to J2028+4048 7:47 The flux on the guiders suggests we may have grabbed the wrong stars. David is executing a pointing check.

7:49 Resending preset J2028+4048 20:28:19.90 40:48:51.19 11.69 G5III D300/CD3/CD5 300 7:50 Starting science

V1405 Cas: UM_PEPSI-NV

7:55 David is starting with a pointing check near the target

7:58 Presetting to V1405 Cas. Pointing is good.

8:00 Starting Science on V1405 Cas V1405Cas 23:24:47.73 +61:11:14.79 12.44 Nova D200/CD1/CD4 1200sec V1405Cas 23:24:47.73 +61:11:14.79 12.44 Nova D200/CD2/CD5 1200sec V1405Cas 23:24:47.73 +61:11:14.79 12.44 Nova D200/CD3/CD6 1200sec

8:13 Seeing 0.88 on SX and 0.92" on DX, 1.07" on the DIMM. Conditions clear.

8:45 Super bright HAlpha

TIC 322727163: UVa_Multistar

9:02 Doing a pointing check, some thin clouds starting to pass through.
9:04 Presetting to TIC 322727163
F300/CDII/CDVI 1x72sec
Seeing 1" on the DIMM, 0.93" on both SX and DX WFS

TIC 375325607: UVa_Multistar

9:08 Preset to TIC 375325607
9:09 Starting Science
F300/CDII/CDVI 1x288sec
Seeing 1.05" on the SX and 1.09" on DX WFS, 1.06 on the DIMM.

J0139-0020: OSU_BHBinaries

9:15 Pointing check near target9:19 Presetting to 2MASS J01392887-00202819:22 Starting science. Seeing 0.89" on the SX side and 1.02" on the DX side.D300/CD3/CD5 1000s

CD-24_407: OSU_FGKHosts

9:40 David is being super awesome and putting in the 26 deg override so that we can execute this target. Sending a preset now to CD-24_407

9:42 Starting science on CD-24_407

D200 CD III 00:33:20 CDVI 3x00:10:00 Seeing is a bit worse down in the muck, at low elevations. Seeing 1.25" on SX and 1.20" on DX.

9:45 There are some thin clouds moving in.

10:11 At 2.03 airmass we have seeing of 0.96" on SX and 1" on DX. Thin cloud passing through.

Downtime: Target input error

10:17 Preset to J0611 J0611+0829 06:11:19.28 08:29:57.55 12.60 G5III D300/CD3/CD5 500 Error in Object input in the PEPSI Objects Catalog. Fixed and will execute later

TIC 427092089: UVa_Multistar

10:23 Preset to TIC 427092089 10:25 Pointing check needed

10:29 Preset back to TIC 42709208910:30 Taking science data on TIC 427092089300/CDII/CDVI 1x240secSeeing 0.9" on SX and 1" on DX. Thin cloud.

J0521+0243: OSU_BHBinaries

10:36 Preset to J0521+0243 10:40 Pointing check needed. We did not grab the same star on the two sides.

10:44 Presetting back to J0521+0243

10:45 Starting science. D300/CD3/CD5 600 Seeing 0.63" on SX and 0.84" on DX, 0.8" on the DIMM

Weather Downtime - Clouds 10:56 Preset to J0625+2418 10:58 Pointing check needed

11:02 and thick clouds have started moving in now:



Target is moving in and out of visibility

11:05 Starting science on J0525 with double the exposure time. The target is fading in and out because of worsening cloud cover.

11:08 Clouds quite thick now. We have lost our stars. Stopping and reading out. This is mostly sky rather than target anyways. SX was completely lost, DX was there at times.



11:18 We are in a holding pattern waiting for clouds. David is hanging out on a nearby bright target to help us monitor the extinction from the clouds.

Weather downtime J0625+2418: OSU_BHBinaries (not obtained)

11:40 18 degree twilight.

11:45 Still quite cloudy, but the reference star that David was pointed at is a bit more stable. We are giving it a shot. Sending a preset to J025+2418. Keeping the exposure time as doubled.

11:49 Starting a science exposure. It looks like we have clouds and that the seeing has deteriorated. About 1.32" on the left and 1.5" on the right, variable.

11:54 David is now telling us he believes we do not have the same target on the two sides. We are now doing a pointing check. It also looked like during a bout of clouds that SX had wondered off and we may have grabbed a different star when clouds cleared. Based on the acquisition image of our previous target, our pointing was good, but we had wondered off during clouds grabbing another star during the exp.

This target is rising and pointing towards the sun. We are going to have to move anyways. And clouds do not want us to get this.

TIC 470710327: UVa_Multistar

12:03 Preset to TIC 470710327. Guider grabbed the wrong star. David is tuning pointing

12:10 Starting science. Seeing is ~2" now. Cloudy but we are in a bit of a sucker hole. F300/CDII/CDVI 1x60sec

12:10 12 degree twilight.

TIC 307119043: UVa_Multistar

12:13 Preset to TIC 307119043.

12:15 Starting science. Seeing variable. 1-1.6" F300/CDII/CDVI 1x60sec

TIC 389836747: UVa_Multistar

12:17 Preset to TIC 389836747. Left side pointing requires some tweaking.12:21 There is still some doubt about pointing so David is going to something bright.

12:24 Presetting back to target12:24 Starting science. Seeing is back down to 1.1" on both sides. We are in a nice sucker hole now.

TIC 283940788: UVa_Multistar 12:26 Preset to TIC 283940788 12:28 Starting science. Sky is getting pretty bright... Last target. Seeing is down to 1" on both sides. Some clouds. Still reaching requested SNR

12:30 Closing up.

12:33 Starting PEPSI calibrations

12:58 Sunrise.