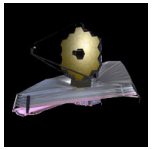

# 1222 - Cosmic reionization, metal enrichment and host galaxies from quasar spectroscopy

Cycle: 1, Proposal Category: GTO

**INVESTIGATORS**

| *Name* | *Institution* |
|---|---|
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**OBSERVATIONS**

| *Folder* | *Observation* | *Label* | *Observing Template* | *Science Target* |
|---|---|---|---|---|
| NIRSpec FSS of J0020 | | | | |
| | 1 | FSS observation of J0020-3653 | NIRSpec Fixed Slit Spectroscopy | (3) VDESJ0020-3653 |
| NIRSpec FSS of J0020 | | | | |
| | 12 | FSS observation of J0020-3653 | NIRSpec Fixed Slit Spectroscopy | (3) VDESJ0020-3653 |
| NIRSpec FSS of J0411 | | | | |
| | 2 | FSS observation of J0411-0907 | NIRSpec Fixed Slit Spectroscopy | (4) DELSJ0411-0907 |
| NIRSpec FSS of J0439 | | | | |
| | 11 | FSS observation of J0439+1634 | NIRSpec Fixed Slit Spectroscopy | (6) UHSJ0439+1634 |
| NIRSpec MSA of J1120 | | | | |

| *Folder* | *Observation* | *Label* | *Observing Template* | *Science Target* |
|---|---|---|---|---|
| | 5 | Plan_A1_J1120, Plan_A2_J1120 | NIRSpec MultiObject Spectroscopy | (9) eiger_prioritized_20231103 |
| NIRSpec IFU of J0020, J0411 and J0439 | | | | |
| | 3 | IFU observation of J0020-3653 | NIRSpec IFU Spectroscopy | (3) VDESJ0020-3653 |
| | 10 | IFU observation of J0020-3653 | NIRSpec IFU Spectroscopy | (3) VDESJ0020-3653 |
| | 4 | IFU observation of J0411-0907 | NIRSpec IFU Spectroscopy | (4) DELSJ0411-0907 |
| | 7 | IFU observation of J0439+1634 | NIRSpec IFU Spectroscopy | (6) UHSJ0439+1634 |
| | 9 | IFU PSF observation for J0439+1634 | NIRSpec IFU Spectroscopy | (8) PSFSTARUHSJ0439 |

**ABSTRACT**

**Cosmic reionization and metal enrichment from quasar spectroscopy**

Cosmic reionization is one of the key frontiers in astrophysics. The re-ionization process informs on the properties of the ionizing sources in the early epoch of galaxy formation. We will carry out ‘blue extended’ F070LP/G140H (0.7 to 1.8 microns) and F170LP/G235H (1.7 to 3.1 microns) R = 2700 NIRSpec fixed-slit spectroscopy of quasars at z > 6.5. These spectra will be free from the atmospheric absorption and sky emission that hampers ground-based observations.

**NIRSpec Galaxy Assembly IFS Survey**

NIRSpec 3 to 5 microns IFU spectroscopy of z > 6.5 quasar hosts: The primary goal is investigating the physics of AGN-driven outflows, as well as the effects onto their host galaxies. These observations will also enable us to investigate more broadly the properties of high-z AGN host galaxies.

**OBSERVING DESCRIPTION**

This program combines observations for two NIRSpec GTO team science programs that target some of the same high-redshift quasars.

**Observations 1 and 2  - NIRSpec FSS observations of J0020-3653 and J0411-0907**

These are Fixed Slit Spectroscopy observations of two quasars observing for 9 exposures in each of the S200A1 and S200A2 fixed slits. Full-frame NRSIRS2 readout is used. If enabled in time for Cycle 1 we would also like to be able to configure the MSA to carry out a pseudo-slitless survey for high-redshift Lyman alpha emitters.

We use the G140H/F070LP and G235H/F170LP grating and filter combinations to do spectroscopy at 0.7 to 3.1 microns. We realise there will be some spectral overlap with G140H at >1.4 microns but our prime targets have almost zero flux below 0.9 microns so this will not strongly affect the spectra.

**Observation 5 - NIRSpec MSA observation of ULAS J1120+0641**

This is NIRSpec MSA follow-up of NIRCam pre-imaging in Simon Lilly's GTO Program 1243. This observation should not be scheduled until > 60 days after the pre-imaging is obtained. Since ULAS J1120+0641 is close to the ecliptic there are two well separated visibility windows per year. The pre-imaging should be in the first window and the MSA spectroscopy in the second.

The quasar will be placed in the fixed slits S200A1 and S200A2 whilst simultaneously configuring MSA shutters to target other galaxies identified in HST imaging. We use NIRSpec team software to design the MSA configurations and ensure they agree with positions in the APT MPT software.

We use the G140H/F070LP and G235H/F170LP grating and filter combinations to do spectroscopy at 0.7 to 3.1 microns. We realise there will be some spectral overlap at >1.4 microns but our prime targets have almost zero flux below 0.9 microns so this will not strongly affect the spectra.

**Observation 8 - NIRSpec MSA observation of UHS J0439+1634**

The quasar will be placed in the fixed slit S200A2 whilst simultaneously configuring MSA shutters to target other galaxies identified in HST imaging. We use NIRSpec team software to design the MSA configurations and ensure they agree with positions in the APT MPT software.

We use the G140H/F070LP and G235H/F170LP grating and filter combinations to do spectroscopy at 0.7 to 3.1 microns. We realise there will be

some spectral overlap at >1.4 microns but our prime targets have almost zero flux below 0.9 microns so this will not strongly affect the spectra.

This quasar is gravitationally lensed and the flux is dominated by two images (A and B in Fan et al. 2019ApJ...870L..11) separated by 0.22 arcsec at a PA of +9 degrees. In order to maximize flux in the NIRSpec slit and separate the spectra of the two images we request an ORIENT closest possible to the axis defined by A & B. This is possible with V3PA in the range 70 to 72 degrees (NIRSpec Aperture PA 208.49 to 210.49) where the angular offset from ideal is only 20 degrees. This PA range also gives the lowest background for the observations.

**Observations 3 and 4 - NIRSpec IFU observations of J0020-3653 and J0411-0907

These are G395H/F290LP observations with the NIRSpec IFU. Each target is observed with 6 exposures in a cycling dither pattern.
We are not using TA as Gaia GS are available for any orientation hence ensuring a pointing accuracy good enough for our purposes.
Optimal ORIENT V3PA ranges to avoid bright star leakage through the MSA are 0-30 and 273-285 for J0020, and 65-84 and 283-299 for J0411.
For J0020 both these ranges can be set simultaneously in APT, whereas for J0411 only the 283-299 range has been applied.

**Observation 7 - NIRSpec IFU observations of UHS J0439+1634**

These are G395H/F290LP observations with the NIRSpec IFU. The target is observed with 8 exposures in a cycling dither pattern.
Because this quasar is bright, the exposures are shorter to limit saturation.
J0439 is also observed using the R=100 PRISM with the IFU. There is a single dither position leakcal exposure to measure leakage through the MSA.
We are not using TA as Gaia GS are available for any orientation hence ensuring a pointing accuracy good enough for our purposes.
NRSIRS2RAPID has been selected for a better identification and removal of cosmic rays glitches for the shorter PRISM observations only. For the longer grating observation we use NRSIRS2 to reduce data volume.
The ORIENT for J0439 has been restricted to avoid a bright star to be located inside the MSA footprint. This ORIENT range is compatible with that required for Observation 8 and has the lowest background.

**Observation 9 - NIRSpec IFU observation of PSF calibration star for UHS J0439+1634**

We observe a PSF calibration standard star at R100 (PRISM) only. This observation should be done as a non-interruptible sequence with Observation 7 with no change of telescope roll angle.

**Fixed Targets**

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (3) | VDESJ0020-3653 | RA: 00 20 31.4720 (5.1311333d)<br>Dec: -36 53 41.82 (-36.89495d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |
| *Comments:*<br>*Category=Galaxy*<br>*Description=[High-redshift galaxies, Quasars]*<br>*Extended=YES* | | | | |
| (4) | DELSJ0411-0907 | RA: 04 11 28.6300 (62.8692917d)<br>Dec: -09 07 49.80 (-9.13050d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |
| *Comments:*<br>*Category=Galaxy*<br>*Description=[High-redshift galaxies, Quasars]*<br>*Extended=YES* | | | | |
| (5) | ULASJ1120-REV | RA: 11 20 1.4611 (170.0060879d)<br>Dec: +06 41 30.77 (6.69188d)<br>Equinox: J2000 | | |
| *Comments: This target was generated automatically for MSA Observation 5*<br>*Description=[]* | | | | |
| (6) | UHSJ0439+1634 | RA: 04 39 47.0920 (69.9462167d)<br>Dec: +16 34 15.72 (16.57103d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |
| *Comments:*<br>*Category=Galaxy*<br>*Description=[High-redshift galaxies, Quasars]*<br>*Extended=YES* | | | | |
| (7) | DUMMY-FOR-J0439 | RA: 04 39 51.3272 (69.9638633d)<br>Dec: +16 33 50.19 (16.56394d)<br>Equinox: J2000 | | |
| *Comments: This target was generated automatically for MSA Observation 8*<br>*Description=[]* | | | | |
| (8) | PSFSTARUHSJ0439 | RA: 04 39 45.2169 (69.9384038d)<br>Dec: +16 32 53.12 (16.54809d)<br>Equinox: J2000 | Proper Motion RA: 3.6683 mas/yr<br>Proper Motion Dec: 0.3838 mas/yr<br>Parallax: 0.00152504"<br>Epoch of Position: 2016.0 | |
| *Comments: PSF star. Isolated in Gaia and HST 782nm imaging. Spectral type M2I.*<br>*2MASS magnitudes: Jmag=14.855 Hmag=14.050 Kmag=13.954*<br>*Category=Calibration*<br>*Description=[Point spread function]*<br>*Extended=NO* | | | | |
| (9) | eiger_prioritized_20231103 | RA: 11 20 2.1202 (170.0088342d)<br>Dec: +06 41 33.43 (6.69262d)<br>Equinox: J2000 | | |
| *Comments:*<br>*Description=[]* | | | | |

## Observation

**Proposal 1222, Observation 1: FSS observation of J0020-3653**

Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec Fixed Slit Spectroscopy

## Diagnostics

(Visit 1:1) Warning (Form): Data Excess over lower threshold

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (3) | VDESJ0020-3653 | RA: 00 20 31.4720 (5.1311333d)<br>Dec: -36 53 41.82 (-36.89495d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Acquisition

| # | Target | TA Method | Subarray | Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SAME | WATA | FULL | F110W | NRSRAPID | 3 | 1 | 1 | 42.947 | 12649.2 |

## Template

| Slit | Subarray |
|---|---|
| S200A1 and S200A2 | FULL |

## Dithers

| # | Primary Dither Positions | Sub-Pixel Pattern |
|---|---|---|
| 1 | 3 | NONE |

## Spectral Elements

| # | Grating/Filter | Slit | Readout Pattern | Groups/Int | Integrations/Exp | # | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G140H/F070LP | S200A1 | NRSIRS2RAPID | 65 | 2 | 1 | NONE | 3 | 6 | 5777.2 | |
| 2 | G140H/F070LP | S200A2 | NRSIRS2RAPID | 65 | 2 | 2 | NONE | 3 | 6 | 5777.2 | |
| 3 | G235H/F170LP | S200A2 | NRSIRS2RAPID | 65 | 1 | 3 | NONE | 3 | 3 | 2888.6 | |
| 4 | G235H/F170LP | S200A1 | NRSIRS2RAPID | 65 | 1 | 4 | NONE | 3 | 3 | 2888.6 | |

## Observation

**Proposal 1222, Observation 12: FSS observation of J0020-3653** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec Fixed Slit Spectroscopy

## Diagnostics

(Visit 12:1) Warning (Form): Data Excess over lower threshold

(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (3) | VDESJ0020-3653 | RA: 00 20 31.4720 (5.1311333d)<br>Dec: -36 53 41.82 (-36.89495d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Acquisition

| # | Target | TA Method | Subarray | Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SAME | WATA | FULL | F110W | NRSRAPID | 3 | 1 | 1 | 42.947 | 12649.2 |

## Template

| Slit | Subarray |
|---|---|
| S200A1 and S200A2 | FULL |

## Dithers

| # | Primary Dither Positions | Sub-Pixel Pattern |
|---|---|---|
| 1 | 3 | NONE |

## Spectral Elements

| # | Grating/Filter | Slit | Readout Pattern | Groups/Int | Integrations/Exp | # | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G140H/F070LP | S200A1 | NRSIRS2RAPID | 65 | 2 | 1 | NONE | 3 | 6 | 5777.2 | |
| 2 | G140H/F070LP | S200A2 | NRSIRS2RAPID | 65 | 2 | 2 | NONE | 3 | 6 | 5777.2 | |
| 3 | G235H/F170LP | S200A2 | NRSIRS2RAPID | 65 | 1 | 3 | NONE | 3 | 3 | 2888.6 | |
| 4 | G235H/F170LP | S200A1 | NRSIRS2RAPID | 65 | 1 | 4 | NONE | 3 | 3 | 2888.6 | |

## Observation

**Proposal 1222, Observation 2: FSS observation of J0411-0907** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec Fixed Slit Spectroscopy

## Diagnostics

(Visit 2:1) Warning (Form): Data Excess over lower threshold

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (4) | DELSJ0411-0907 | RA: 04 11 28.6300 (62.8692917d)<br>Dec: -09 07 49.80 (-9.13050d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Acquisition

| # | Target | TA Method | Subarray | Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SAME | WATA | FULL | F110W | NRSRAPID | 3 | 1 | 1 | 42.947 | 12649.2 |

## Template

| Slit | Subarray |
|---|---|
| S200A1 and S200A2 | FULL |

## Dithers

| # | Primary Dither Positions | Sub-Pixel Pattern |
|---|---|---|
| 1 | 3 | NONE |

## Spectral Elements

| # | Grating/Filter | Slit | Readout Pattern | Groups/Int | Integrations/Exp | # | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G140H/F070LP | S200A1 | NRSIRS2RAPID | 65 | 2 | 1 | NONE | 3 | 6 | 5777.2 | |
| 2 | G140H/F070LP | S200A2 | NRSIRS2RAPID | 65 | 2 | 2 | NONE | 3 | 6 | 5777.2 | |
| 3 | G235H/F170LP | S200A2 | NRSIRS2RAPID | 65 | 1 | 3 | NONE | 3 | 3 | 2888.6 | |
| 4 | G235H/F170LP | S200A1 | NRSIRS2RAPID | 65 | 1 | 4 | NONE | 3 | 3 | 2888.6 | |

## Observation

**Proposal 1222, Observation 11: FSS observation of J0439+1634** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec Fixed Slit Spectroscopy

## Diagnostics

(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (6) | UHSJ0439+1634 | RA: 04 39 47.0920 (69.9462167d)<br>Dec: +16 34 15.72 (16.57103d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Acquisition

| # | Target | TA Method | Subarray | Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SAME | WATA | SUB2048 | F110W | NRSRAPID | 3 | 1 | 1 | 3.628 | 12649.2 |

## Template

| Slit | Subarray |
|---|---|
| S200A1 | FULL |

## Dithers

| # | Primary Dither Positions | Sub-Pixel Pattern |
|---|---|---|
| 1 | 3 | NONE |

## Spectral Elements

| # | Grating/Filter | Slit | Readout Pattern | Groups/Int | Integrations/Exp | # | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G140H/F070LP | S200A1 | NRSIRS2RAPID | 65 | 1 | 1 | NONE | 3 | 3 | 2888.6 | |
| 2 | G235H/F170LP | S200A1 | NRSIRS2RAPID | 65 | 1 | 2 | NONE | 3 | 3 | 2888.6 | |

| Special Requirements | Aperture PA Range 208.84190369 to 210.84190369 Degrees (V3 70.0 to 72.0) |
|---|---|

## Observation

**Proposal 1222, Observation 5: Plan_A1_J1120, Plan_A2_J1120** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec MultiObject Spectroscopy

## Diagnostics

(Plan_A1_J1120, Plan_A2_J1120 (Obs 5)) Warning (Form): Config c1 : Plan_A1_J1120 (#1) has 1 primary slit traces affected by failed open shutters.

(Plan_A1_J1120, Plan_A2_J1120 (Obs 5)) Warning (Form): Config c1 : Plan_A1_J1120 (#2) has 1 primary slit traces affected by failed open shutters.

(Visit 5:1) Warning (Form): Data Excess over lower threshold

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (9) | eiger_prioritized_20231103 | RA: 11 20 2.1202 (170.0088342d)<br>Dec: +06 41 33.43 (6.69262d)<br>Equinox: J2000 | | |

*Comments:*
*Description=[]*

## Acquisition

| # | Reference Star Bin | Target | Filter | MSA Configuration | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Filter: CLEAR; Readout: NRSRAPIDD6; 8 sources in 3 quads; [ Optimal TA Accuracy ] | SAME | CLEAR | Auto Acq MSA Config | NRSRAPIDD6 | 3 | 1 | 4 | 687.153 | |

## Template

| TA Method | Obtain Confirmation Images | Science Aperture | Primary Candidate List | Filler Candidate List | Spectral Overlap Map | Spectral Overlap Threshold |
|---|---|---|---|---|---|---|
| MSATA | No | MSA Center | eiger_prioritized_20231103 (15822 sources) | | jwst-nirspec-hr | 1.5 |

## Reference Stars

| Visit | ID | RA | Dec | Magnitude | Visit | ID | RA | Dec | Magnitude |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4770 | 170.019470 | 6.686607 | 24.49 | 1 | 9479 | 170.018471 | 6.700610 | 23.87 |
| 1 | 5715 | 170.019356 | 6.696859 | 24.83 | 1 | 13364 | 169.987549 | 6.687246 | 23.65 |
| 1 | 7765 | 170.012985 | 6.703256 | 24.9 | 1 | 13481 | 170.007766 | 6.730439 | 23.96 |
| 1 | 9115 | 170.020498 | 6.708331 | 24.8 | 1 | 13693 | 170.009110 | 6.731463 | 23.67 |

**Spectral Elements**

| # | Exposure Specification | MSA Configuration | Nod Pattern | Pointing | Aperture PA | Dispersion Offset (Shutters) | Cross-Dispersion Offset (Shutters) | Total Dithers | Total Integrations | Total Exposure Time |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 (G140H/F070LP) | c1 : Plan_A1_J1120 | 3 Shutter Slitlet | 169.99769041666664 Degrees 6.707244444444 45 Degrees | 70.34512085870806 | | | 3 | 6 | 5777.2 |
| 2 | 2 (G235H/F170LP) | c1 : Plan_A1_J1120 | 3 Shutter Slitlet | 169.99769041666664 Degrees 6.707244444444 45 Degrees | 70.34512085870806 | | | 3 | 3 | 2888.6 |
| 3 | 2 (G235H/F170LP) | c1 : Plan_A2_J1120 | 3 Shutter Slitlet | 169.99682249999998 Degrees 6.712725 Degrees | 70.3450299415466 | | | 3 | 3 | 2888.6 |
| 4 | 1 (G140H/F070LP) | c1 : Plan_A2_J1120 | 3 Shutter Slitlet | 169.99682249999998 Degrees 6.712725 Degrees | 70.3450299415466 | | | 3 | 6 | 5777.2 |

**Special Requirements**

MSA Scheduled Aperture PA 70.3464 to 70.3464 Degrees (V3 291.7718 to 291.7718)

## Observation

**Proposal 1222, Observation 3: IFU observation of J0020-3653** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec IFU Spectroscopy

## Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (3) | VDESJ0020-3653 | RA: 00 20 31.4720 (5.1311333d)<br>Dec: -36 53 41.82 (-36.89495d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Template

| TA Method |
|---|
| NONE |

## Dithers

| # | Dither Type | Size | Starting Point | Number of Points | Points |
|---|---|---|---|---|---|
| 1 | CYCLING | MEDIUM | 1 | 6 | |

## Spectral Elements

| # | Grating/Filter | Readout Pattern | Groups/Int | Integrations/Exp | Leakcal | Dither | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G395H/F290LP | NRSIRS2 | 25 | 1 | false | true | NONE | 6 | 6 | 11029.201 | |

## Special Requirements

Aperture PA Range 51.892975 to 168.892975 Degrees (V3 272.92044082 to 29.92044082)

## Observation

**Proposal 1222, Observation 10: IFU observation of J0020-3653**

Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec IFU Spectroscopy

## Diagnostics

(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (3) | VDESJ0020-3653 | RA: 00 20 31.4720 (5.1311333d)<br>Dec: -36 53 41.82 (-36.89495d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Template

| TA Method |
|---|
| NONE |

## Dithers

| # | Dither Type | Size | Starting Point | Number of Points | Points |
|---|---|---|---|---|---|
| 1 | CYCLING | MEDIUM | 4 | 3 | |

## Spectral Elements

| # | Grating/Filter | Readout Pattern | Groups/Int | Integrations/Exp | Leakcal | Dither | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G395H/F290LP | NRSIRS2 | 25 | 1 | false | true | NONE | 3 | 3 | 5514.6 | |

## Special Requirements

Aperture PA Range 51.892975 to 188.892975 Degrees (V3 272.92044082 to 49.92044082)

## Observation

**Proposal 1222, Observation 4: IFU observation of J0411-0907**

Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec IFU Spectroscopy

## Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (4) | DELSJ0411-0907 | RA: 04 11 28.6300 (62.8692917d)<br>Dec: -09 07 49.80 (-9.13050d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Template

| TA Method |
|---|
| NONE |

## Dithers

| # | Dither Type | Size | Starting Point | Number of Points | Points |
|---|---|---|---|---|---|
| 1 | CYCLING | MEDIUM | 1 | 6 | |

## Spectral Elements

| # | Grating/Filter | Readout Pattern | Groups/Int | Integrations/Exp | Leakcal | Dither | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G395H/F290LP | NRSIRS2 | 25 | 1 | false | true | NONE | 6 | 6 | 11029.201 | |

## Special Requirements

Aperture PA Range 61.892975 to 77.892975 Degrees (V3 282.92044082 to 298.92044082)

## Observation

**Proposal 1222, Observation 7: IFU observation of J0439+1634** Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec IFU Spectroscopy

## Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(IFU observation of J0439+1634 (Obs 7)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (6) | UHSJ0439+1634 | RA: 04 39 47.0920 (69.9462167d)<br>Dec: +16 34 15.72 (16.57103d)<br>Equinox: J2000 | Proper Motion RA: 0<br>Proper Motion Dec: 0<br>Parallax: 0"<br>Epoch of Position: 2000 | |

*Comments:*
*Category=Galaxy*
*Description=[High-redshift galaxies, Quasars]*
*Extended=YES*

## Template

| TA Method |
|---|
| NONE |

## Dithers

| # | Dither Type | Size | Starting Point | Number of Points | Points |
|---|---|---|---|---|---|
| 1 | CYCLING | MEDIUM | 1 | 8 | |

## Spectral Elements

| # | Grating/Filter | Readout Pattern | Groups/Int | Integrations/Exp | Leakcal | Dither | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G395H/F290LP | NRSIRS2 | 18 | 1 | false | true | NONE | 8 | 8 | 10620.712 | |
| 2 | PRISM/CLEAR | NRSIRS2RAPID | 31 | 1 | false | true | NONE | 8 | 8 | 3734.756 | |
| 3 | PRISM/CLEAR | NRSIRS2RAPID | 31 | 1 | true | false | NONE | 1 | 1 | 466.844 | |

## Special Requirements

Aperture PA Range 208.892975 to 210.392975 Degrees (V3 69.92044082 to 71.42044082)

Sequence Observations 7, 9, Non-interruptible
Same Aperture PA 7, 9

## Observation

**Proposal 1222, Observation 9: IFU PSF observation for J0439+1634**

Tue Nov 07 21:03:00 GMT 2023

**Diagnostic Status: Warning**

Observing Template: NIRSpec IFU Spectroscopy

## Diagnostics

(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(IFU PSF observation for J0439+1634 (Obs 9)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---|---|---|---|---|
| (8) | PSFSTARUHSJ0439 | RA: 04 39 45.2169 (69.9384038d)<br>Dec: +16 32 53.12 (16.54809d)<br>Equinox: J2000 | Proper Motion RA: 3.6683 mas/yr<br>Proper Motion Dec: 0.3838 mas/yr<br>Parallax: 0.00152504"<br>Epoch of Position: 2016.0 | |

*Comments: PSF star. Isolated in Gaia and HST 782nm imaging. Spectral type M2I.*
*2MASS magnitudes: Jmag=14.855 Hmag=14.050 Kmag=13.954*
*Category=Calibration*
*Description=[Point spread function]*
*Extended=NO*

## Template

| TA Method |
|---|
| NONE |

## Dithers

| # | Dither Type | Size | Starting Point | Number of Points | Points |
|---|---|---|---|---|---|
| 1 | CYCLING | MEDIUM | 1 | 12 | |

## Spectral Elements

| # | Grating/Filter | Readout Pattern | Groups/Int | Integrations/Exp | Leakcal | Dither | Autocal | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PRISM/CLEAR | NRSIRS2RAPID | 3 | 2 | false | true | NONE | 12 | 24 | 1400.533 | |

## Special Requirements

Sequence Observations 7, 9, Non-interruptible
Same Aperture PA 7, 9