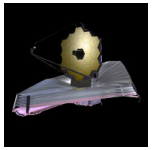

1970 - Zooming into the monster's mouth: tracing feedback from their hosts to circumgalactic medium in z=3.5 radio-loud AGN

Cycle: 1, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	NIRSpec_TNJ0205	NIRSpec IFU Spectroscopy	(1) TNJ0205+2242
	2	NIRSpec_TNJ0121	NIRSpec IFU Spectroscopy	(2) TNJ0121+1320
	3	NIRSpec_4C03	NIRSpec IFU Spectroscopy	(3) 4C03.24
	4	NIRSpec_4C19	NIRSpec IFU Spectroscopy	(4) 4C19.71

ABSTRACT

Actively accreting supermassive black holes (AGN) can have significant impact on the evolution of their host galaxies through feedback in the form of gas winds and radio jets which can be seen on kpc scale, encompassing the entire galaxy. We propose here to determine the impact of powerful AGN on their host galaxies at Cosmic Noon where the co-moving density of luminous AGN is at its peak. Our sample consists of high-redshift radio galaxies (HzRGs), the only AGN population, in which quasar-mode feedback, radio-mode feedback and the host galaxies can be characterised simultaneously. We will use the JWST to 'zoom into' some of the most massive and active galaxies at the onset of the peak of star-formation and AGN activity to address the long-standing question on how exactly AGN-driven outflows propagate into the host galaxy and how small-scale phenomena close to the central engine reflect on the large-scale jet and gas characteristics. The diffraction-limited resolution of JWST and two-dimensional coverage with NIRSpec IFU will provide a 10-fold improvement in resolution over existing observations and will allow us to map the stellar, gas, and excitation components of distant HzRGs all at once for the first time. It is critically important to compare local AGN with what happens near the start of the peak of the cosmic star formation rate density at comparable sub-kpc scale resolution, and with exactly the same diagnostics. Our sample at the “sweet spot” redshift ~3.5 is uniquely suited to do this, covering the critical wavelength regime between [OII] and H-alpha even including [SII] in just one spectral setting with the NIRSpec G235H/F170LP.

OBSERVING DESCRIPTION

We will be observing four high-redshift radio galaxies at z ~ 3.5 using the NIRSpec IFUs. The main goal is to spatially map the emission lines from [OII] to H-alpha and [SII] that are all covered in just one spectral setting (G235H/170LP).

The following observing modes per object are:

TNJ0205+2242 -- acquisition: point & shoot for NIRSpec

- NIRSpec IFU with G235H/F170LP:
  - 9-point "small cycling" dither pattern
  - 22 groups and 1 integration per dither position
  - Readout mode: NRSIRS2
  - --> total exposure time on source: 4.04 hours
  - 1 position verification exposure: 233s

TNJ0121+1320 -- acquisition: point & shoot for NIRSpec
- NIRSpec IFU with G235H/F170LP:
    9-point "small cycling" dither pattern
    22 groups and 1 integration per dither position
    Readout mode: NRSIRS2
    --> total exposure time on source: 4.04 hours
    1 position verification exposure: 233s

4C03.24 -- acquisition: point & shoot for NIRSpec
- NIRSpec IFU with G235H/F170LP:
    9-point "small cycling" dither pattern
    22 groups and 1 integration per dither position
    Readout mode: NRSIRS2
    --> total exposure time on source: 4.05 hours
    1 leakage exposure at on dither potition: 0.45 hours

4C19.71 -- acquisition: point & shoot for NIRSpec
- NIRSpec IFU with G235H/F170LP:
    9-point "small cycling" dither pattern
    20 groups and 1 integration per dither position
    Readout mode: NRSIRS2
    --> total exposure time on source: 3.68 hours
    1 leakage exposure at on dither potition: 0.41 hours

Total request: 16.62 hours science time, 7.89 hours overhead

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TNJ0205+2242	RA: 02 05 10.6800 (31.2945000d) Dec: +22 42 50.62 (22.71406d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]*				
(2)	TNJ0121+1320	RA: 01 21 42.7296 (20.4280400d) Dec: +13 20 58.09 (13.34947d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]*				
(3)	4C03.24	RA: 12 45 38.3943 (191.4099762d) Dec: +03 23 20.69 (3.38908d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]*				
(4)	4C19.71	RA: 21 44 7.4808 (326.0311700d) Dec: +19 29 15.43 (19.48762d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]*				

Observation

Proposal 1970, Observation 1: NIRSpec_TNJ0205 Fri Jun 30 19:01:25 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TNJ0205+2242	RA: 02 05 10.6800 (31.2945000d) Dec: +22 42 50.62 (22.71406d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]

Template

TA Method
VERIFY_ONLY

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	SMALL	1	9	

Pointing Verification

#	PV MSA Configuration	Filter	PV Readout Pattern	PV Groups/Int	PV Integrations/Exp	PV Total Dithers	PV Total Integrations	PV Total Exposure Time
1	ALLOPEN	CLEAR	NRSIRS2	3	1	1	1	233.422

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	G235H/F170LP	NRSIRS2	22	1	false	true	NONE	9	9	14574.301	81751

Observation

Proposal 1970, Observation 2: NIRSpec_TNJ0121 Fri Jun 30 19:01:25 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	TNJ0121+1320	RA: 01 21 42.7296 (20.4280400d) Dec: +13 20 58.09 (13.34947d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]

Template

TA Method
VERIFY_ONLY

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	SMALL	1	9	

Pointing Verification

#	PV MSA Configuration	Filter	PV Readout Pattern	PV Groups/Int	PV Integrations/Exp	PV Total Dithers	PV Total Integrations	PV Total Exposure Time
1	ALLOPEN	CLEAR	NRSIRS2	3	1	1	1	233.422

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	G235H/F170LP	NRSIRS2	22	1	false	true	NONE	9	9	14574.301	81754

Observation

Proposal 1970, Observation 3: NIRSpec_4C03 Fri Jun 30 19:01:25 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)	4C03.24	RA: 12 45 38.3943 (191.4099762d) Dec: +03 23 20.69 (3.38908d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	SMALL	1	9	

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	G235H/F170LP	NRSIRS2	22	1	false	true	NONE	9	9	14574.301	81752
2	G235H/F170LP	NRSIRS2	22	1	true	false	NONE	1	1	1619.367	

Observation

Proposal 1970, Observation 4: NIRSpec_4C19 Fri Jun 30 19:01:25 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)	4C19.71	RA: 21 44 7.4808 (326.0311700d) Dec: +19 29 15.43 (19.48762d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Active galactic nuclei, Active galaxies, High-redshift galaxies, Radio galaxies]

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	SMALL	1	9	

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	G235H/F170LP	NRSIRS2	20	1	false	true	NONE	9	9	13261.301	81753
2	G235H/F170LP	NRSIRS2	20	1	true	false	NONE	1	1	1473.478	