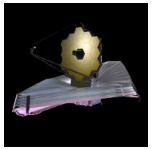

2080 - Exploration of the Nuclear Jet Impact on the Interstellar Medium in Seyfert Galaxy NGC 4258

Cycle: 1, Proposal Category: GO

INVESTIGATORS

Name	*Institution*
Dr. Jason Glenn (PI)	**NASA Goddard Space Flight Center**
Dr. Travis C Fischer (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Erin Smith (CoI)	NASA Goddard Space Flight Center
Dr. Henrique R. Schmitt (CoI)	Naval Research Laboratory

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
NGC 4258				
	1		NIRCam Imaging	(1) M-106
	2		NIRCam Imaging	(1) M-106

ABSTRACT

Shocks from nuclear jets in galaxies have profound effects on their interstellar medium, injecting energy from the central Active Galactic Nucleus (AGN) which excites and ionizes gas, dissociates molecules, and ablates dust grains. Tracers of the shocked gas used to quantify this energy injection can track the response of the interstellar medium to specific forms of feedback. We propose NIRCam observations of nearby Seyfert galaxy NGC 4258 to map these tracers of ionized gas, neutral gas, molecular gas, and dust in the nucleus and inner galactic disk to quantify the impact of the observed ‘anomalous’ jet on the interstellar medium. JWST and NIRCam provide a first-ever opportunity to observe the impacts of a nuclear jet through the disk of a galaxy at parsec-scale resolution using infrared diagnostics with little extinction by dust. The comprehensive set of tracers obtained in this program probing the physics of the jet / interstellar medium interaction will provide a detailed picture of feedback in a nearby AGN-hosting galaxy and will inform observations of more distant, high-redshift galaxies whose disks even JWST will be unable to resolve. Early cycle

JWST imaging of NGC 4258 also provides excellent archival value to the astronomical community, providing a ‘finder-chart’ for specific dynamic regions to be followed-up with future JWST spectroscopic observations.

OBSERVING DESCRIPTION

NGC 4258 will be imaged with NIRCam in filters corresponding to six spectral features and associated filters for continuum subtraction. [Fe II] (1.644 um), Paschen-alpha (1.875 um), H_2 (2.12 um), Paschen-beta (4.05 um), and molecular CO (4.66 um) will be observed with narrowband filters F164N, F87N, F212N, F405N, F466N and the broad polycyclic aromatic hydrocarbon (PAH) 3.3 um emission line will be observed with the medium F335M filter. Medium-band filters F162M, F182M, and F210M will be used for the continuum subtraction of short wavelength narrow-band filters and F300M, F360M, and F430M will be used for continuum subtraction of the long wavelength filters. Three dither positions in a 2 row x 1 column mosaic will be used to image the extent of the anomalous jet and adjacent unimpacted regions of the galactic disk at any scheduable position angle. The integration times are designed to obtain sufficient signal-to-noise ratios to detect lines in the faintest portions of the inner disk while not saturating in the nucleus, resulting in a total charged time of 24 hours.

Proposal 2080 - Targets - Exploration of the Nuclear Jet Impact on the Interstellar Medium in Seyfert Galaxy NGC 4258

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	M-106	RA: 12 18 57.6200 (184.7400833d) Dec: +47 18 13.39 (47.30372d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei, Radio jets, Seyfert galaxies]
Extended=YES

Observation	**Proposal 2080, Observation 1** Tue Sep 26 17:00:50 GMT 2023 **Diagnostic Status: Warning** Observing Template: NIRCam Imaging
Diagnostics	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:2) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:3) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:4) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:5) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:6) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:7) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:8) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:9) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:10) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:11) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:12) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:13) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:14) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:15) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:16) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:17) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:18) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:19) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:20) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:21) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:22) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:23) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:24) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:25) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:26) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:27) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:28) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:29) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:30) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:31) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:32) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:33) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:34) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:35) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 1:36) Warning (Form): Overheads are provisional until the Visit Planner has been run.

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Category=Galaxy
Description=[Active galactic nuclei, Radio jets, Seyfert galaxies]
Extended=YES

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
2	1	10.0	10.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	FULL	3	STANDARD		1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F164N+F150W2	F405N+F444W	MEDIUM8	6	4	12	3	7569.423	
2	F187N	F466N+F444W	MEDIUM8	6	4	12	3	7569.423	
3	F212N	F430M	MEDIUM8	6	4	12	3	7569.423	
4	F162M+F150W2	F300M	SHALLOW4	6	1	3	3	934.099	
5	F182M	F335M	SHALLOW4	6	1	3	3	934.099	
6	F210M	F360M	SHALLOW4	6	1	3	3	934.099	

Special Requirements

Group Visits within 53.0 Days
Aperture PA Range 170 to 190 Degrees (V3 170.0713531 to 190.0713531)
Visits Same PA

Observation

Proposal 2080, Observation 2 Tue Sep 26 17:00:50 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

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