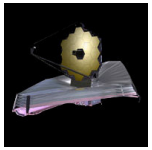

5017 - AGN and their outflows: probing fragmentation and survival of polycyclic aromatic hydrocarbons

Cycle: 3, Proposal Category: GO

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OBSERVATIONS

Folder	***Observation***	***Label***	***Observing Template***	***Science Target***
Observation Folder				
	1	NGC5506_NIRSpec	NIRSpec IFU Spectroscopy	(1) NGC-5506
	2	ESO137_NIRSpec	NIRSpec IFU Spectroscopy	(2) ESO-137-34
	3	NGC5728_NIRSpec	NIRSpec IFU Spectroscopy	(3) NGC-5728
	4	IC5063_NIRSpec	NIRSpec IFU Spectroscopy	(4) IC-5063
	5	NGC3081_NIRSpec	NIRSpec IFU Spectroscopy	(5) NGC-3081
	6	NGC7172_NIRSpec	NIRSpec IFU Spectroscopy	(6) NGC-7172
	7	MCG05_NIRSpec	NIRSpec IFU Spectroscopy	(7) MCG-05-23-016
	8	ESO420_NIRSpec	NIRSpec IFU Spectroscopy	(8) ESO-420-13

ABSTRACT

It is widely accepted that the short-lived phase of active galactic nuclei (AGN) and their winds can have a drastic impact on the interstellar medium of most galaxies. Large amounts of dust and gas are located at the central regions of AGN, where optical wavelengths are heavily affected by extinction making the mid-infrared (MIR) the ideal spectral range to investigate these inner regions. Polycyclic Aromatic Hydrocarbons (PAHs) are carbon-based molecules, which are responsible for strong MIR emission features. PAH emission is potentially one of the best tools to trace star-forming (SF) activity in the heavily dust-extinguished and hostile environments of AGN. However, our limited knowledge of the effect of the radiation field, outflows and shocks on them is a shortcoming of this approach. AGN and their winds offer unique environments to investigate not

only the fragmentation/survival of PAHs but also the mechanism for transporting them in their winds.

Our proposal builds on targets with existing/scheduled MRS observations and for which we request 3-5 micron NIRSpec observations. NIRSpec+MRS data are essential for reaching our goals. The first goal is to fully characterize the properties of PAHs in AGN and their winds. For this, the 3.3+3.4 micron PAH proposed observations are crucial to put strong constraints on the fragmentation and survival of PAHs. The second goal is to understand AGN feedback mechanisms. To do so, once the PAH propesties are fully characterize, we will establish which PAHs are best to trace SFR activity in active galaxies. The proposed study is fundamental since PAH bands are routinely used to measure SF activity in near and far SF galaxies and AGN.

OBSERVING DESCRIPTION

We request 3-5 micron NIRSpec/IFU observations of the central ~6’’x6’’ of a sample of 8 Seyfert galaxies with existing/scheduled MIRI/MRS observations. We use a 4-point cycling dither to achieve accurate PSF sampling and bad pixel and cosmic rays corrections. In addition, the area covered by NIRSpec is 3"x3, thus, for four sources we use mapping using various pointing to sample the same region as JWST/MRS ch3 (~5.2’’x6.2’’) where the longest wavelength PAH band is for our targets. For one of the sources (NGC5506), two pointing are sufficient, whereas for the remainder two galaxies (ESO 137-G034 and MCG-05-23-016) only one pointing is needed based on their cold molecular gas extent, as explained in the Technical Justification. To avoid saturation, we will use the NIRSpec/NRSIRS2RAPID readout pattern mode. We request the G395H grism to spectrally resolve the 3.3 and 3.4 PAH bands, and the narrow emission lines. Finally, we require one integration of the same number of groups for each observation to take care of leakage corrections.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC-5506	RA: 14 13 14.8780 (213.3119917d) Dec: -03 12 27.66 (-3.20768d) Equinox: J2000	Proper Motion RA: 0.176 mas/yr Proper Motion Dec: -4.879000039181847 mas/yr Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(2)	ESO-137-34	RA: 16 35 13.9960 (248.8083167d) Dec: -58 04 47.77 (-58.07994d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(3)	NGC-5728	RA: 14 42 23.8872 (220.5995300d) Dec: -17 15 11.01 (-17.25306d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(4)	IC-5063	RA: 20 52 2.3670 (313.0098625d) Dec: -57 04 7.46 (-57.06874d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(5)	NGC-3081	RA: 09 59 29.5460 (149.8731083d) Dec: -22 49 34.78 (-22.82633d) Equinox: J2000	Proper Motion RA: 0.269 mas/yr Proper Motion Dec: -0.6239999493118376 mas/yr Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(6)	NGC-7172	RA: 22 02 1.8910 (330.5078792d) Dec: -31 52 10.48 (-31.86958d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(7)	MCG-05-23-016	RA: 09 47 40.1350 (146.9172292d) Dec: -30 56 56.00 (-30.94889d) Equinox: J2000	Proper Motion RA: 1.276 mas/yr Proper Motion Dec: -0.07600008302688366 mas/yr Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(8)	ESO-420-13	RA: 04 13 49.6990 (63.4570792d) Dec: -32 00 25.20 (-32.00700d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				

Observation

Proposal 5017, Observation 1: NGC5506_NIRSpec

Wed Apr 16 19:00:26 GMT 2025

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)	NGC-5506	RA: 14 13 14.8780 (213.3119917d)	Proper Motion RA: 0.176 mas/yr	
		Dec: -03 12 27.66 (-3.20768d)	Proper Motion Dec: -4.879000039181847 mas/yr	
		Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

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

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

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	NRSIRS2RAPID	3	4	false	true	NONE	4	16	933.689	
2	G395H/F290LP	NRSIRS2RAPID	3	1	true	true	NONE	4	4	233.422	

Special Requirements

Aperture PA Range 246.97164917 to 278.97164917 Degrees (V3 108.0 to 140.0)

Observation

Proposal 5017, Observation 2: ESO137_NIRSpec

Wed Apr 16 19:00:26 GMT 2025

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)	ESO-137-34	RA: 16 35 13.9960 (248.8083167d) Dec: -58 04 47.77 (-58.07994d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Dithers

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

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	NRSIRS2RAPID	6	2	false	true	NONE	4	8	816.978	
2	G395H/F290LP	NRSIRS2RAPID	6	2	true	false	NONE	1	2	204.244	

Special Requirements

Aperture PA Range 188.97164917 to 178.97164917 Degrees (V3 50.0 to 40.0)

Observation

Proposal 5017, Observation 3: NGC5728_NIRSpec Wed Apr 16 19:00:26 GMT 2025

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)	NGC-5728	RA: 14 42 23.8872 (220.5995300d) Dec: -17 15 11.01 (-17.25306d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Mosaic

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

Dithers

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

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	NRSIRS2RAPID	8	2	false	true	NONE	4	8	1050.4	
2	G395H/F290LP	NRSIRS2RAPID	8	1	true	true	NONE	4	4	525.2	

Observation

Proposal 5017, Observation 4: IC5063_NIRSpec

Wed Apr 16 19:00:26 GMT 2025

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)	IC-5063	RA: 20 52 2.3670 (313.0098625d) Dec: -57 04 7.46 (-57.06874d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Mosaic

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

Dithers

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

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	NRSRAPID	6	3	false	true	NONE	4	12	901.889	
2	G395H/F290LP	NRSRAPID	6	3	true	false	NONE	1	3	225.472	

Observation

Proposal 5017, Observation 5: NGC3081_NIRSpec Wed Apr 16 19:00:26 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(5)	NGC-3081	RA: 09 59 29.5460 (149.8731083d)	Proper Motion RA: 0.269 mas/yr	
		Dec: -22 49 34.78 (-22.82633d)	Proper Motion Dec: -0.6239999493118376 mas/yr	
		Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Mosaic

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

Dithers

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

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	NRSIRS2RAPID	3	4	false	true	NONE	4	16	933.689	
2	G395H/F290LP	NRSIRS2RAPID	3	1	true	true	NONE	4	4	233.422	

Observation

Proposal 5017, Observation 6: NGC7172_NIRSpec

Wed Apr 16 19:00:26 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(6)	NGC-7172	RA: 22 02 1.8910 (330.5078792d) Dec: -31 52 10.48 (-31.86958d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Mosaic

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

Dithers

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

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	NRSRAPID	6	3	false	true	NONE	4	12	901.889	
2	G395H/F290LP	NRSRAPID	6	1	true	true	NONE	4	4	300.63	

Observation

Proposal 5017, Observation 7: MCG05_NIRSpec Wed Apr 16 19:00:26 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(7)	MCG-05-23-016	RA: 09 47 40.1350 (146.9172292d)	Proper Motion RA: 1.276 mas/yr	
		Dec: -30 56 56.00 (-30.94889d)	Proper Motion Dec: -0.07600008302688366 mas/yr	
		Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Dithers

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

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	NRSRAPID	6	3	false	true	NONE	4	12	901.889	
2	G395H/F290LP	NRSRAPID	6	1	true	false	NONE	1	1	75.157	

Observation

Proposal 5017, Observation 8: ESO420_NIRSpec

Wed Apr 16 19:00:26 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(8)	ESO-420-13	RA: 04 13 49.6990 (63.4570792d) Dec: -32 00 25.20 (-32.00700d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei]

Template

TA Method	HFF Readout Mode
NONE	false

Dithers

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

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	NRSIRS2RAPID	3	4	false	true	NONE	4	16	933.689	
2	G395H/F290LP	NRSIRS2RAPID	3	3	true	false	NONE	1	3	175.067	