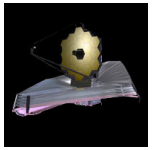

1269 - NIRSpec Observations of Centaurus-A: a GTO program proposal

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

Name	*Institution*
Nora Luetzgendorf (PI)	**Space Telescope Science Institute - ESA - JWST**
Dr. Pierre Ferruit (CoI) (ESA Member)	ESA-European Space Astronomy Centre
Dr. Torsten Boeker (CoI) (Contact)	Space Telescope Science Institute - ESA - JWST
Macarena Garcia Marin (CoI) (CoPI) (Contact)	Space Telescope Science Institute - ESA - JWST
Gillian Wright (CoI) (ESA Member)	United Kingdom Astronomy Technology Centre

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	CenA - NIRSpec	NIRSpec IFU Spectroscopy	(3) CENA-NUC-NIRSPEC
	2	CenA-MIRI	MIRI Medium Resolution Spectroscopy	(1) CENA-NUC
	3	CenA-backgr-MIRI	MIRI Medium Resolution Spectroscopy	(2) CENA-BACKGR

ABSTRACT

At less than 4 Mpc distance the radio galaxy NGC 5128 (Centaurus A) is the prime example to study the supermassive black hole and its influence on the environment in great detail. This peculiar, edge-on elliptical galaxy is well known by its dust lane, wrapped disk and powerful jets and lobes that extend quite far our of the central region. Furthermore it is the closest radio galaxy and a perfect example of the need of multi-wavelength observations to properly understand the underlying physical processes at play in galaxies.

OBS ID:

FERRUIT_4520 NIRSpec IFU CenA_nuc

WRIGHT_7507 MIRI MRS Cen A_Nuc

WRIGHT_7508 MIRI MRS Cen A_bg

OBSERVING DESCRIPTION

This is a GTO proposal to observe the nuclear region of Centaurus A, the closest radio galaxy and uniquely suited for a detailed study of the influence of a supermassive black hole on its environment.

We will obtain a 2x1 mosaic of the central region of CenA with the MIRI MRS, using all spectral settings to cover the entire 5-28micron spectral range. We will also take a background observation with the MIRI MRS. Additionally, we will use the MIRI imager in parallel to obtain observations in the F560W filter (to be revised in future APT versions).

The NIRSpec IFU observations include the two reddest high resolution gratings to cover the wavelength range from 1.8 to 5.3 microns. We will obtain a 'partial' leakage correction by adding a single exposure with each grating that has the IFU aperture closed. We consider WATA for acquiring the CenA nucleus, but for the moment, the TA exposure parameters are only placeholders.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	CENA-NUC	RA: 13 25 27.6151 (201.3650629d) Dec: -43 01 8.81 (-43.01911d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				
(2)	CENA-BACKGR	RA: 13 26 1.8000 (201.5075000d) Dec: -43 00 45.00 (-43.01250d) Equinox: J2000		
Comments: *Category=Calibration* *Description=[Telescope/sky background]*				
(3)	CENA-NUC-NIRSPEC	RA: 13 25 27.6151 (201.3650629d) Dec: -43 01 8.81 (-43.01911d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei]*				

Observation

Proposal 1269, Observation 1: CenA - NIRSpec Fri Mar 03 00:01:03 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Comments: MIRI and NIRSpec observations should be scheduled within 30 days to account for AGN variablitiy

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
(3)	CENA-NUC-NIRSPEC	RA: 13 25 27.6151 (201.3650629d) Dec: -43 01 8.81 (-43.01911d) Equinox: J2000		

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

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	SMALL	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	G235H/F170LP	NRSIRS2RAPID	15	1	false	true	NONE	4	4	933.689	
2	G235H/F170LP	NRSIRS2RAPID	15	1	true	false	NONE	1	1	233.422	
3	G395H/F290LP	NRSIRS2RAPID	15	1	false	true	NONE	4	4	933.689	
4	G395H/F290LP	NRSIRS2RAPID	15	1	true	false	NONE	1	1	233.422	

Special Requirements

Group Observations 1, 2, 3 within 30 Days

Observation

Proposal 1269, Observation 2: CenA-MIRI Fri Mar 03 00:01:03 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Background Observations:[CenA-backgr-MIRI (Obs 3)]

Comments: MIRI and NIRSpec observations should be scheduled within 30 days to account for AGN variablitiy
The PA restriction is there to optimise the alignment of the MRS and NIRSPEC FOV with the CenA jet.
MIRI observations and background observations have too happen in an uniterruptable sequence for best result.

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
(1)	CENA-NUC	RA: 13 25 27.6151 (201.3650629d) Dec: -43 01 8.81 (-43.01911d) Equinox: J2000		

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

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray
F560W	ALL	YES	FULL

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift	Column shift	Tile Order
2	1	30.0	30.0	0.0	0.0	DEFAULT

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1		IMAGER	F1130W	FASTR1	25	2	1	Dither 1	4	8	566.108	
1	LONG(C)	MRSLONG		FASTR1	10	5	1	Dither 1	4	20	599.409	
1	LONG(C)	MRSSHORT		FASTR1	10	5	1	Dither 1	4	20	599.409	
2		IMAGER	F770W	FASTR1	25	2	1	Dither 1	4	8	566.108	
2	MEDIUM(B)	MRSLONG		FASTR1	10	5	1	Dither 1	4	20	599.409	
2	MEDIUM(B)	MRSSHORT		FASTR1	10	5	1	Dither 1	4	20	599.409	
3		IMAGER	F560W	FASTR1	25	2	1	Dither 1	4	8	566.108	
3	SHORT(A)	MRSLONG		FASTR1	10	5	1	Dither 1	4	20	599.409	
3	SHORT(A)	MRSSHORT		FASTR1	10	5	1	Dither 1	4	20	599.409	

Special Requirements

Aperture PA Range 23 to 345 Degrees (V3 23.0 to 345.0)

Sequence Observations 2, 3, Non-interruptible
Group Observations 1, 2, 3 within 30 Days

Observation

Proposal 1269, Observation 3: CenA-backgr-MIRI Fri Mar 03 00:01:03 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Background Observation For: [CenA-MIRI (Obs 2)]

Comments: MIRI and NIRSpec observations should be scheduled within 30 days to account for AGN variablitiy
The PA restriction is there to optimise the alignment of the MRS and NIRSPEC FOV with the CenA jet.
MIRI observations and background observations have too happen in an uniterruptable sequence for best result.

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
(2)	CENA-BACKGR	RA: 13 26 1.8000 (201.5075000d) Dec: -43 00 45.00 (-43.01250d) Equinox: J2000		

Comments:
Category=Calibration
Description=[Telescope/sky background]

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray
F560W	ALL	YES	FULL

Dithers

#	Dither Type	Optimized For	Direction
1	2-Point	EXTENDED SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1		IMAGER	F1130W	FASTR1	25	2	1	Dither 1	2	4	283.054	
1	LONG(C)	MRSLONG		FASTR1	10	5	1	Dither 1	2	10	299.704	
1	LONG(C)	MRSSHORT		FASTR1	10	5	1	Dither 1	2	10	299.704	
2		IMAGER	F770W	FASTR1	25	2	1	Dither 1	2	4	283.054	
2	MEDIUM(B)	MRSLONG		FASTR1	10	5	1	Dither 1	2	10	299.704	
2	MEDIUM(B)	MRSSHORT		FASTR1	10	5	1	Dither 1	2	10	299.704	
3		IMAGER	F560W	FASTR1	25	2	1	Dither 1	2	4	283.054	
3	SHORT(A)	MRSLONG		FASTR1	10	5	1	Dither 1	2	10	299.704	
3	SHORT(A)	MRSSHORT		FASTR1	10	5	1	Dither 1	2	10	299.704	

Special Requirements	Sequence Observations 2, 3, Non-interruptible Group Observations 1, 2, 3 within 30 Days