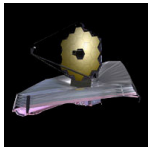

4147 - A Census of High- and Low-Mass Star Formation in a Galactic Center Molecular Cloud

Cycle: 2, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
NIRCam for SOMA sources				
	11	NIRCAM 1 field	NIRCam Imaging	(1) SGR-C
	12	NIRCAM 1 field Repeat of Observation 11	NIRCam Imaging	(1) SGR-C

ABSTRACT

We propose JWST-NIRCam observations of the Galactic Center molecular cloud Sagittarius C, in particular the massive protostar G359.44-0.102 and its surrounding region, in order to take a census of its star formation activity and test theoretical models of massive star formation in this extreme environment. The wider region has already been observed with SOFIA-FORCAST at 25 and 37 microns, as well as Spitzer and Herschel. These data have enabled candidate high-mass protostars to be identified and characterized, but only at quite limited spatial resolution. The proposed JWST observations have three goals: 1) improved characterization of the identified massive protostellar candidates, in particular the main source G359.44-0.102, including outflow cavity geometries, dust content and shock/ionization structures. For example, scattered light from dust is expected to arise from the outflow cavities, thus constraining their structure, illumination and dust content; 2) probe the spatial distribution and number density of the lower-mass YSO populaton to place more direct constraints on the IMF and star formation rate and efficiency in Sgr C. The number of massive protostellar candidates in Sgr C predicts a much larger quantity of lower-mass protostars, which we aim to identify and characterize; 3) study the connection between high- and low-mass protostars to test massive star formation theories.

OBSERVING DESCRIPTION

This programme will observe the Sgr C molecular cloud in the Galactic Center region with NIRCam to characterise the massive protostars, the protocluster environment, and the stellar content down to the substellar regime. It will use a single pointing with a 6 dither pattern and observe in three SW plus LW filters pairs (F162M+F150W2 plus F405N+F444W, F182M plus F470N+F444W, F200W plus F356W). These filters will reveal the stellar population, spatial distribution, and outflow activity in the regions.

No extra special calibrations are needed.

Proposal 4147 - Targets - A Census of High- and Low-Mass Star Formation in a Galactic Center Molecular Cloud

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SGR-C	RA: 17 44 40.2972 (266.1679050d) Dec: -29 28 14.93 (-29.47081d) Equinox: J2000		

Comments:
Category=Star
Description=[Ejecta, Young stellar objects]
Extended=YES

Observation

Proposal 4147, Observation 11: NIRCAM 1 field Sat Sep 09 02:00:16 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Coordinated Parallel Template(s): NIRISS Imaging

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
(1)	SGR-C	RA: 17 44 40.2972 (266.1679050d) Dec: -29 28 14.93 (-29.47081d) Equinox: J2000		

Comments:
Category=Star
Description=[Ejecta, Young stellar objects]
Extended=YES

Template

NIRCam Imaging	NIRISS Imaging
Module: ALL	
Subarray: FULL	
Target Placement: A Short (on A3)	

Dithers

#	Primary Dither Type	Primary Dithers	Dither Size	Subpixel Positions	Coordinated Parallel Subpixel Selector	Dither Direct Images Primes
1	FULLBOX	6TIGHT		1	NIRCam Only	NO_DITHERING

Spectral Elements

NIRCam Imaging	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F212N	F470N+F444W	SHALLOW2	6	1	6	6	1739.357	
2	F162M+F150W2	F405N+F444W	SHALLOW2	6	1	6	6	1739.357	
3	F182M	F480M	SHALLOW2	6	1	6	6	1739.357	
4	F115W	F360M	SHALLOW2	3	1	6	6	773.047	

Spectral Elements

NIRISS Imaging	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F158M		NIS	6	1	6	6	1610.516	
2	F480M		NIS	6	1	6	6	1610.516	
3	F356W		NIS	6	1	6	6	1610.516	
4	F200W		NIS	2	1	6	6	579.786	

Special Requirements	
	Aperture PA Range 80.86947913 to 96.46947913 Degrees (V3 81.0 to 96.6) Aperture PA Range 266.16947913 to 278.66947913 Degrees (V3 266.3 to 278.8) No Parallel Attachments Fiducial Point Override NRCAS_FULL

Observation

Proposal 4147, Observation 12: NIRCAM 1 field Repeat of Observation 11 Sat Sep 09 02:00:16 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Coordinated Parallel Template(s): NIRISS Imaging

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SGR-C	RA: 17 44 40.2972 (266.1679050d) Dec: -29 28 14.93 (-29.47081d) Equinox: J2000		

Comments:
Category=Star
Description=[Ejecta, Young stellar objects]
Extended=YES

Template

NIRCam Imaging	NIRISS Imaging
Module: ALL	
Subarray: FULL	
Target Placement: A Short (on A3)	

Dithers

#	Primary Dither Type	Primary Dithers	Dither Size	Subpixel Positions	Coordinated Parallel Subpixel Selector	Dither Direct Images Primes
1	FULLBOX	6TIGHT		1	NIRCam Only	NO_DITHERING

Spectral Elements

NIRCam Imaging	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F212N	F470N+F444W	SHALLOW2	6	1	6	6	1739.357	
2	F162M+F150W2	F405N+F444W	SHALLOW2	6	1	6	6	1739.357	
3	F182M	F480M	SHALLOW2	6	1	6	6	1739.357	
4	F115W	F360M	SHALLOW2	3	1	6	6	773.047	

Spectral Elements

NIRISS Imaging	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F158M		NIS	6	1	6	6	1610.516	
2	F480M		NIS	6	1	6	6	1610.516	
3	F356W		NIS	6	1	6	6	1610.516	
4	F200W		NIS	2	1	6	6	579.786	

Special Requirements	
	Aperture PA Range 91.36947913 to 91.36947913 Degrees (V3 91.5 to 91.5) Aperture PA Range 266.16947913 to 278.66947913 Degrees (V3 266.3 to 278.8) No Parallel Attachments Fiducial Point Override NRCAS_FULL