



## 2772 - Galactic Center Astrometry

Cycle: 2, Proposal Category: GTO

### INVESTIGATORS

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### OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
GCe2				
	1	Second visit	NIRCam Imaging	(1) NAME-GAL-CENTER
	101	Second visit	NIRCam Imaging	(1) NAME-GAL-CENTER

### ABSTRACT

We will observe the Galactic Center with NIRCam to study the orbits of stars around the supermassive black hole and the structure of the nuclear star cluster. We will focus on the fainter stars, which are harder to measure from the ground. We will observe through medium-band filters in order to go deep without saturating the bright stars too much. This set of observations will constitute a second epoch. Combined with a first epoch already taken in Cycle 1, and a third epoch, which will be taken in Cycle 3, we will measure proper motions; three epochs are necessary to account for curvature in the orbits so close to the Galactic Center.

## **OBSERVING DESCRIPTION**

We will observe the Galactic center through medium-band filters, which will provide a nice compromise between not missing too many of the bright stars and going deep enough to provide a good complement to ground-based observations. We were able to fit in 7 secondary dithers, which should allow an exquisite reconstruction of the JWST PSF, which is of course critical to high-accuracy astrometry. NIRISS will be observed in parallel so that we can get some additional information for a nearby field.

In Cycle 1, observations were executed at the beginning of August 2022. This was important to maximize the time baseline, and hence proper motion accuracy, when compared to planned follow-up JWST observations in later cycles.

This APT file is used for Cycle 2 observations. The changes with respect to Cycle 1 (GTO 1306 program) strategy are the following:

- Different NIRCcam filters (F140M SW filter to make a CMD with SW data only; F250M LW filter to decrease the number of pixel with hard saturation --no slope-- in the LW data);
- Different NIRISS filter (F200W filter to make a CMD with NIRISS data only).

We ask for the following special requirements:

- V3 PA of 87.032906090762 deg. This is needed to perfectly overlap the Cycle 2 observations with those of Cycle 1 both for NIRCcam and NIRISS detectors;
- Before date 10/31/2023. We need observations taken 1 year apart;
- Offset (X,Y)=(52,34.5) arcsec. This puts the Galactic Center at the center of NIRCcam's SW SCA B3.

## Proposal 2772 - Targets - Galactic Center Astrometry

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	NAME-GAL-CENTER	RA: 17 45 40.0400 (266.4168333d) Dec: -29 00 28.00 (-29.00778d) Equinox: J2000		
<i>Comments: We use an "offset" special requirement to put the Galactic Center at the center of NIRCam's short-wave SCA B3.</i> <i>Category=Stellar Cluster</i> <i>Description=[Stellar associations]</i>					

Proposal 2772 - Observation 1 - Galactic Center Astrometry

Tue Aug 22 23:01:03 GMT 2023

<b>Observation</b>	<p><b>Proposal 2772, Observation 1: Second visit</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Imaging</p> <p>Coordinated Parallel Template(s): NIRISS Imaging</p>									
<b>Diagnostics</b>	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>			<b>Targ. Coord. Corrections</b>		<b>Miscellaneous</b>		
	(1)	NAME-GAL-CENTER	RA: 17 45 40.0400 (266.4168333d) Dec: -29 00 28.00 (-29.00778d) Equinox: J2000							
	<p><i>Comments: We use an "offset" special requirement to put the Galactic Center at the center of NIRCcam's short-wave SCA B3.</i></p> <p><i>Category=Stellar Cluster</i></p> <p><i>Description=Stellar associations</i></p>									
<b>Template</b>	<b>NIRCcam Imaging</b>					<b>NIRISS Imaging</b>				
	<p>Module: ALL</p> <p>Subarray: FULL</p> <p>Target Placement: Module Gap</p>									
<b>Dithers</b>	<b>#</b>	<b>Primary Dither Type</b>		<b>Primary Dithers</b>	<b>Dither Size</b>	<b>Subpixel Positions</b>		<b>Coordinated Parallel Subpixel Selector</b>	<b>Dither Direct Images Primes</b>	
	1	NONE				7		NIRCcam Only	NO_DITHERING	
<b>Spectral Elements</b>	<b>NIRCcam Imaging</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F140M	F250M	SHALLOW2	4	1	7	7	1277.676	
<b>Spectral Elements</b>	<b>NIRISS Imaging</b>	<b>Filter</b>	<b>Grism</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F200W		NISRAPID	16	1	7	7	1277.676	

## Proposal 2772 - Observation 1 - Galactic Center Astrometry

### Special Requirements

Before Date 31-OCT-2023:00:00:00  
Aperture PA Range 86.961552990762 to 86.961552990762 Degrees (V3 87.032906090762 to 87.032906090762)  
Offset 52.0 arcsec, 34.5 arcsec  
No Parallel Attachments

Proposal 2772 - Observation 101 - Galactic Center Astrometry

Tue Aug 22 23:01:03 GMT 2023

<b>Observation</b>	<p><b>Proposal 2772, Observation 101: Second visit</b>  <b>Diagnostic Status: Warning</b>                  Observing Template: NIRCcam Imaging                  Coordinated Parallel Template(s): NIRISS Imaging</p>									
<b>Diagnostics</b>	(Visit 101:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>		<b>Targ. Coord. Corrections</b>			<b>Miscellaneous</b>		
	(1)	NAME-GAL-CENTER	RA: 17 45 40.0400 (266.4168333d) Dec: -29 00 28.00 (-29.00778d) Equinox: J2000							
	<p><i>Comments: We use an "offset" special requirement to put the Galactic Center at the center of NIRCcam's short-wave SCA B3.</i>                  Category=Stellar Cluster                  Description=Stellar associations]</p>									
<b>Template</b>	<b>NIRCcam Imaging</b>					<b>NIRISS Imaging</b>				
	Module: ALL Subarray: FULL Target Placement: Module Gap									
<b>Dithers</b>	<b>#</b>	<b>Primary Dither Type</b>		<b>Primary Dithers</b>	<b>Dither Size</b>	<b>Subpixel Positions</b>		<b>Coordinated Parallel Subpixel Selector</b>	<b>Dither Direct Images Primes</b>	
	1	NONE				7		NIRCcam Only	NO_DITHERING	
<b>Spectral Elements</b>	<b>NIRCcam Imaging</b>	<b>Short Filter</b>	<b>Long Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Dithers</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F140M	F250M	SHALLOW2	4	1	7	7	1277.676	
<b>Spectral Elements</b>	<b>NIRISS Imaging</b>	<b>Filter</b>	<b>Grism</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	F200W		NISRAPID	16	1	7	7	1277.676	

## Proposal 2772 - Observation 101 - Galactic Center Astrometry

### Special Requirements

Before Date 31-OCT-2023:00:00:00  
Aperture PA Range 86.961552990762 to 86.961552990762 Degrees (V3 87.032906090762 to 87.032906090762)  
Offset 52.0 arcsec, 34.5 arcsec  
No Parallel Attachments