



1558 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiation fields

Cycle: 1, Proposal Category: GO

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OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
NGC 6720	MIRI			

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	1	NGC 6720 MIRI Imaging	MIRI Imaging	(1) NGC6720
	2	NGC 6720 MRS Position 1	MIRI Medium Resolution Spectroscopy	(4) NGC6720-MRS-POSITION-1
	3	NGC 6720 MRS off position	MIRI Medium Resolution Spectroscopy	(2) NGC6720-MRS-OFF
	4	NGC 6720 MRS Position 2	MIRI Medium Resolution Spectroscopy	(6) NGC6720-MRS-POSITION-2
NGC 6720 NIRCam				
	5	NGC 6720 NIRCam Imaging	NIRCam Imaging	(1) NGC6720
NGC 6720 NIRSpec IFU				
	6	NGC 6720 Position 1	NIRSpec IFU Spectroscopy	(5) NGC6720-NIRSPEC-POSITION-1
	56	NGC 6720 Position 1 Repeat Obs 6	NIRSpec IFU Spectroscopy	(5) NGC6720-NIRSPEC-POSITION-1
	7	NGC 6720 off position	NIRSpec IFU Spectroscopy	(3) NGC6720-NIRSPEC-OFF
	8	NGC 6720 Position 2	NIRSpec IFU Spectroscopy	(7) NGC6720-NIRSPEC-POSITION-2

ABSTRACT

We propose to observe the Ring Nebula, NGC 6720, at unprecedented spatial resolution and spectral sensitivity using MIRI, NIRSpec and NIRCam, with the aim of measuring and analyzing the emission from a range of atomic, molecular and particulate components commonly found in astrophysical environments. We will use this planetary nebula (PN) as an astrophysical laboratory, with a well-defined geometry and a single exciting central star. With Spitzer, PAH emission and strong mid-IR molecular H₂ emission have already been detected from the O-rich PN NGC 6720. We will image the entire nebula in multiple NIRCAM and MIRI filters to enable us to spatially resolve the different gas and PAH components, combining these with high spatial and spectral resolution NIRSpec and MIRI IFU spectroscopy at two positions, one on an isolated clump at the inner edge of the bright ring and the other on the main ring itself. We will use the data to analyze and model the physical conditions in the ionized and molecular gas in order to probe how these, together with the radiation field, influence spatial variations of the PAH charge balance, size and structures deduced from the observed PAH band ratios. This will allow us to investigate how PAHs and other molecules form, evolve and survive in clumpy, irradiated environments.

OBSERVING DESCRIPTION

JWST Proposal 1558 (Created: Wednesday, September 7, 2022 at 12:00:33 PM Eastern Standard Time) - Overview

We will observe the old, high-excitation PN NGC 6720 and its knots and PDR as a laboratory to (i) map out the poorly understood physical conditions and chemical pathways that lead to the formation of large organics such as PAHs, and (ii) understand the puzzling survival of molecules (including PAHs) in strongly UV-irradiated environments.

To spatially and spectrally resolve the distribution of the ionized gas, molecules and dust in this object, our observations will include a combination of IFU spectroscopy at selected positions and imaging of larger areas.

NGC 6720 NIRCAM:

- Module B only (to limit data rate). Coverage includes entire nebula.
- FULL array.
- Primary dithers: 3 INTRAMODULE to cover the short-wave detector gaps.
- Subpixel dithers: 3 for Nyquist sampling.
- 2 filter pairs, each with RAPID readout, 5 groups, and 1 integration.
- Total depth provides adequate signal to noise of faint diffuse regions around the ring (as estimated in ETC) even for regions that fall within short-wave gaps where the depth is lower.
- Bright spots on the ring are not in danger of saturating before the end of a ramp.
- Special Requirement: small offset to center the nebula in the array.

NGC 6720 MIRI Imaging:

- 1x2 mosaic to cover entire nebula (~square coverage).
- 9 MIRI filters with 20 groups & 1 integration each.
- 4-point dither pattern ensures good PSF sampling at all wavelengths.
- Total depth provides adequate S/N of >50 at 25 um and >100 in all other filters for the weak diffuse dust continuum. The S/N will be higher for emission features.
- No saturation is anticipated.
- Special Requirements: Small offset so that nebula is centered in the 1x2 mosaic.

NGC 6720 MIRI MRS:

- 2 on- positions (an isolated knot and bright region of the PDR) and 1 off- position. The targets of these positions are linked under 'Fixed Targets'

for background subtraction.

- All three targets use the same setup.
- No need for Target Acq.
- 4-point dither for good PSF sampling.
- Simultaneous imaging with the FULL array for ALL (short, medium, and long).
- 80 groups, 1 integration, 1 exposure.
- Total depth provides adequate S/N of 10 or greater in the continuum of interest. Expected S/N for the 11.3 um PAH emission feature will be > 50 .
- No saturation is anticipated.
- Special Requirements: The two 'on' positions and the 'off' position are linked in an uninterruptible sequence for background subtraction.

NGC 6720 NIRSpec IFU:

- Same targets as NGC 6720 MRS. Duplicated under "Fixed Targets" because the detector setup for the OFF position only includes one grating/filter setting (others don't need background subtraction). Since settings are different, we couldn't link the targets explicitly. We will do background subtraction manually.
- Standard 4-point dither for spatial sampling
- We use the R=1000 mode and cover the full wavelength range, hence we need 4 settings of grating/blocking filters.
- The exposure is set to provide peak S/N of order 100 in the brighter emission lines within the 1 to 5 micron wavelength range for the smallest sky resolution element (about 3 spaxels). This will allow detection of other lines at a signal level of 1% or less compared to the hydrogen recombination lines.
- We need the leakcal observations because other parts of the nebula will fall within the MSA field of view depending on the orientation angle. This is the case for both the on-source and the off nebula position.
- The off-source exposure only needs to cover the 3.3 micron feature that will be present from the diffuse ISM. Hence that observation only has one grating setting.
- Special Requirements: All three put in an uninterruptible sequence for background subtraction.

Proposal 1558 - Targets - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiation fields

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC6720	RA: 18 53 35.0790 (283.3961625d) Dec: +33 01 45.03 (33.02918d) Equinox: J2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=Star Description=[Planetary nebulae nuclei] Extended=YES</i>				
(2)	NGC6720-MRS-OFF	RA: 18 53 8.8379 (283.2868246d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		
<i>Comments: Category=Star Description=[Planetary nebulae nuclei] Extended=YES</i>				
(3)	NGC6720-NIRSPEC-OFF	RA: 18 53 8.8379 (283.2868246d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		
<i>Comments: Category=Star Description=[Planetary nebulae nuclei]</i>				
(4)	NGC6720-MRS-POSITION-1	RA: 18 53 34.5100 (283.3937917d) Dec: +33 02 9.11 (33.03586d) Equinox: J2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae] Extended=YES</i>				
(5)	NGC6720-NIRSPEC- POSITION-1	RA: 18 53 34.5100 (283.3937917d) Dec: +33 02 9.11 (33.03586d) Equinox: J2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae]</i>				
(6)	NGC6720-MRS-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae] Extended=YES</i>				
(7)	NGC6720-NIRSPEC- POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae]</i>				

Fixed Targets

Proposal 1558 - Observation 1 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 1: NGC 6720 MIRI Imaging Diagnostic Status: Warning Observing Template: MIRI Imaging										
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)	NGC6720	RA: 18 53 35.0790 (283.3961625d) Dec: +33 01 45.03 (33.02918d) Equinox: J2000								
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=Star Description=[Planetary nebulae nuclei] Extended=YES										
Template	Subarray FULL										
Mosaic	Rows	Columns	Row Overlap %	Column Overlap %	Row shift	Column shift	Tile Order				
	1	2	10.0	10.0	0.0	0.0	DEFAULT				
Dithers	#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	
	1	CYCLING	8	4		6	1			SMALL	
Spectral Elements	#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F560W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.2
	2	F770W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.3
	3	F1000W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.4
	4	F1130W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.5
	5	F1280W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.6
	6	F1500W	FASTR1	20	1	1	Dither 1	4	4	222.003	86777.7
	7	F1800W	FASTR1	20	1	1	Dither 1	4	4	222.003	53912.8
	8	F2100W	FASTR1	20	1	1	Dither 1	4	4	222.003	53912.9
	9	F2550W	FASTR1	20	1	1	Dither 1	4	4	222.003	53912.10

Proposal 1558 - Observation 2 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 2: NGC 6720 MRS Position 1 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy Background Observations:[NGC 6720 MRS off position (Obs 3)]												
	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous				
	(4)	NGC6720-MRS-POSITION-1	RA: 18 53 34.5100 (283.3937917d) Dec: +33 02 9.11 (33.03586d) Equinox: J2000										
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae] Extended=YES													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray					
	F1000W	ALL			YES			FULL					
Dithers	#	Dither Type			Optimized For			Direction					
	1	4-Point			EXTENDED SOURCE			NEGATIVE					
Spectral Elements	#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/E xp	Exposures/Dit h	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1		IMAGER	F770W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	1	SHORT(A)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.17
	1	SHORT(A)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.11
	2		IMAGER	F1000W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	2	MEDIUM(B)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.18
	2	MEDIUM(B)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.12
	3		IMAGER	F1130W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	3	LONG(C)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.19
	3	LONG(C)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.13

Special Requirements

Sequence Observations 2, 3, 4, Non-interruptible

Proposal 1558 - Observation 3 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 3: NGC 6720 MRS off position Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy Background Observation For: [NGC 6720 MRS Position 1 (Obs 2), NGC 6720 MRS Position 2 (Obs 4)]												
	(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)	NGC6720-MRS-OFF	RA: 18 53 8.8379 (283.2868246d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000										
<i>Comments:</i> <i>Category=Star</i> <i>Description=[Planetary nebulae nuclei]</i> <i>Extended=YES</i>													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel				Simultaneous Imaging			Imager Subarray				
	F1000W	ALL				YES			FULL				
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	F770W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	1	SHORT(A)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.17
	1	SHORT(A)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.11
	2		IMAGER	F1000W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	2	MEDIUM(B)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.18
	2	MEDIUM(B)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.12
	3		IMAGER	F1130W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	3	LONG(C)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.19
	3	LONG(C)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.13

Special Requirements

Sequence Observations 2, 3, 4, Non-interruptible

Proposal 1558 - Observation 4 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 4: NGC 6720 MRS Position 2 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy Background Observations:[NGC 6720 MRS off position (Obs 3)]												
	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous				
	(6)	NGC6720-MRS-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000										
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Planetary nebulae] Extended=YES													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray					
	F1000W	ALL			YES			FULL					
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	F770W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	1	SHORT(A)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.17
	1	SHORT(A)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.11
	2		IMAGER	F1000W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	2	MEDIUM(B)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.18
	2	MEDIUM(B)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.12
	3		IMAGER	F1130W	FASTR1	20	4	1	Dither 1	4	16	921.313	
	3	LONG(C)	MRSLONG		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.19
	3	LONG(C)	MRSSHORT		FASTR1	83	1	1	Dither 1	4	4	921.313	86777.13

Special Requirements

Sequence Observations 2, 3, 4, Non-interruptible

Proposal 1558 - Observation 5 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	<p>Proposal 1558, Observation 5: NGC 6720 NIRCam Imaging</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
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		
	(1)	NGC6720	RA: 18 53 35.0790 (283.3961625d) Dec: +33 01 45.03 (33.02918d) Equinox: J2000							
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=Star</i></p> <p><i>Description=[Planetary nebulae nuclei]</i></p> <p><i>Extended=YES</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULE		3	STANDARD			3		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F212N	F335M	RAPID	5	1	9	9	483.155	
	2	F162M+F150W2	F300M	RAPID	5	1	9	9	483.155	
Special Requirements	<p>Aperture PA Range 18 to 63 Degrees (V3 17.97427728 to 62.97427728)</p> <p>Aperture PA Range 95 to 96 Degrees (V3 94.97427728 to 95.97427728)</p> <p>Aperture PA Range 134 to 156 Degrees (V3 133.97427728 to 155.97427728)</p> <p>Aperture PA Range 189 to 260 Degrees (V3 188.97427728 to 259.97427728)</p> <p>Aperture PA Range 273 to 346 Degrees (V3 272.97427728 to 345.97427728)</p> <p>Offset 3.158824547506675 arcsec, 10.145504083264637 arcsec</p>									

Proposal 1558 - Observation 6 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 6: NGC 6720 Position 1 Diagnostic Status: Warning Observing Template: NIRSPEC IFU Spectroscopy											
	(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Diagnosics												
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
	(5)	NGC6720-NIRSPEC-POSITION-1	RA: 18 53 34.5100 (283.3937917d) Dec: +33 02 9.11 (33.03586d) Equinox: J2000									
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=ISM</i> <i>Description= Planetary nebulae </i>												
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size	Starting Point			Number of Points	Points			
	1	4-POINT-DITHER										
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	G140M/F070LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.8
	2	G140M/F070LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	3	G140M/F100LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.5
	4	G140M/F100LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	5	G235M/F170LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.6
	6	G235M/F170LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	7	G395M/F290LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.7
	8	G395M/F290LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	

Special Requirements

Sequence Observations 6, 7, 8, Non-interruptible

Proposal 1558 - Observation 56 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiati...

Wed Sep 07 17:00:33 GMT 2022

Observation	<p>Proposal 1558, Observation 56: NGC 6720 Position 1 Repeat Obs 6</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSPEC IFU Spectroscopy</p> <p><i>Comments: Repeat of observation 6.</i></p>											
	<p>(Visit 56:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>											
Diagnostics												
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
	(5)	NGC6720-NIRSPEC-POSITION-1	RA: 18 53 34.5100 (283.3937917d) Dec: +33 02 9.11 (33.03586d) Equinox: J2000									
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=ISM</i></p> <p><i>Description= Planetary nebulae </i></p>												
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size	Starting Point			Number of Points	Points			
	1	4-POINT-DITHER										
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	G140M/F070LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.8
	2	G140M/F070LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	3	G140M/F100LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.5
	4	G140M/F100LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	5	G235M/F170LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.6
	6	G235M/F170LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	7	G395M/F290LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.7
	8	G395M/F290LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	

Proposal 1558 - Observation 7 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	<p>Proposal 1558, Observation 7: NGC 6720 off position</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p>											
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			
	(3)	NGC6720-NIRSPEC-OFF	RA: 18 53 8.8379 (283.2868246d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000									
	<p><i>Comments:</i> <i>Category=Star</i> <i>Description=[Planetary nebulae nuclei]</i></p>											
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size	Starting Point			Number of Points	Points			
	1	4-POINT-DITHER										
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	G395M/F290LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	
	2	G395M/F290LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
Special Requirements	Sequence Observations 6, 7, 8, Non-interruptible											

Proposal 1558 - Observation 8 - The Ring Nebula as a laboratory for the interaction of molecules, PAHs and dust in strong UV radiatio...

Wed Sep 07 17:00:33 GMT 2022

Observation	Proposal 1558, Observation 8: NGC 6720 Position 2 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous			
	(7)	NGC6720-NIRSPEC-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000									
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=ISM</i> <i>Description= Planetary nebulae </i>												
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size	Starting Point			Number of Points	Points			
	1	4-POINT-DITHER										
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	G140M/F070LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.8
	2	G140M/F070LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	3	G140M/F100LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.5
	4	G140M/F100LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	5	G235M/F170LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.6
	6	G235M/F170LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	
	7	G395M/F290LP	NRSIRS2RAPID	10	1	false	true	NONE	4	4	641.911	57104.7
	8	G395M/F290LP	NRSIRS2RAPID	10	1	true	true	NONE	4	4	641.911	

Special Requirements

Sequence Observations 6, 7, 8, Non-interruptible