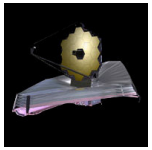

1238 - Sparse Spectral Mapping of NGC 1514

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

Name	***Institution***
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OBSERVATIONS

Folder	***Observation***	***Label***	***Observing Template***	***Science Target***
Spectral Sampling				
	11	Rings-5-W	MIRI Medium Resolution Spectroscopy	(17) NGC-1514-RINGS5-W
	12	Shell-2-NW	MIRI Medium Resolution Spectroscopy	(19) NGC-1514-SHELL2-NW
	13	Equator-SW	MIRI Medium Resolution Spectroscopy	(11) NGC-1514-EQUATOR-SW
	14	CSPN	MIRI Medium Resolution Spectroscopy	(12) NGC-1514-CSPN
	15	Rings-1-NE	MIRI Medium Resolution Spectroscopy	(13) NGC-1514-RINGS1-NE
	16	Shell-1-SE	MIRI Medium Resolution Spectroscopy	(18) NGC-1514-SHELL1-SE
	17	Rings-2-SSE	MIRI Medium Resolution Spectroscopy	(14) NGC-1514-RINGS2-SSE
	18	Background-1-SSW	MIRI Medium Resolution Spectroscopy	(21) NGC-1514-BKGND1-SSW
	19	Rings-3-S	MIRI Medium Resolution Spectroscopy	(15) NGC-1514-RINGS3-S
	20	Rings-4-SW	MIRI Medium Resolution Spectroscopy	(16) NGC-1514-RINGS4-SW
	21	Background-2-SW	MIRI Medium Resolution Spectroscopy	(22) NGC-1514-BKGND2-SW
Imaging				
	1	Image1-BKGND	MIRI Imaging	(1) NGC-1514-IMAGE-BKGNG

ABSTRACT

We wish to obtain simultaneous MIRI imaging and spectroscopy on the 3-arcminute-diameter planetary nebula NGC 1514. The primary science driver is the spectroscopy of nine specially selected areas of the nebula that will be used to gain information on the temperature, composition, and kinematics of the rings, comparing them against the properties of the more classical, optically visible nebula. However, we also wish to obtain serendipitous imaging on a best effort basis. The imaging will help us better understand the structure of the nebula as well as understand what is filling the MRS field of view since the best mid-infrared images of NGC 1514 are from the WISE all-sky survey which has a spatial resolution roughly equal to the MRS FOV. Our intent is to get images at 3 different wavelengths --- 7.7, 12.8, and 25.5 μm --- one for each of the 3 grating positions.

If we require the V3 position angle to be 258° ± 1°, we can build a very interesting mapping of nearly all of the nebula with the target positions we have chosen. (Angles a bit farther off are also acceptable, but 258 seems to be optimal angle for getting our spectral positions while maximizing the imaging coverage.) We therefore require a V3PA of 257° to 259° for the first target (the imager background field), then require all targets to have a same PA link. The background field lies a few arcminutes away from the nebula and will be used for background subtraction for all the subsequent images. We require the observations to be taken within a 24 hr window in order to best preserve the position angle for each image for the map reconstruction and well as make best use of non-changing conditions in the background spectra.

Because these spectral pointings are entirely within nebulosity, we will not do a target acquisitions at any point; the blind pointing capability of JWST is entirely adequate. While the imaging strategy (including the background field) will leave us with somewhat "dirty" images (essentially single image per position), they will be adequate to help us understand the finer structure of the nebula.

OBSERVING DESCRIPTION

Observations of the planetary nebula (PN) now known as NGC 1514 convinced William Herschel that not all nebulous sources he observed could be resolved into clusters of stars as he had thought; some were indeed surrounded by a “shining fluid” (Herschel, 1791). In modern terms, NGC 1514 is a moderately high excitation PN in Taurus, whose central source has recently been proven to be a binary star with a 9.1 yr period (Jones et al., 2017), the longest period measured spectroscopically for any PN, which only adds to the mystery of the evolutionary status of the pair (e.g. Aller et al., 2015). The overall appearance of the nebula at visible wavelengths is that of a round, lumpy, double-shelled PN composed of numerous small bubbles (Chu et al., 1987; Hajian et al., 1997). However, the WISE survey showed that it is surrounded by two large axisymmetric rings (Ressler et al., 2010). While other planetary and symbiotic nebulae have similar looking structures at visible wavelengths (e. g. MyCn 18, Hen 2-104, Abell 14),

NGC 1514 is unique in that the rings are brightly visible only in the mid-infrared. A survey of all 3000+ PN in the HASH PN database (http://hashpn.space) using the WISE image catalog service showed no other resolved sources with a similar infrared ring structure.

We wish to understand the nature of these rings. What is the composition of the rings? How does it compare to the inner shell? An expansion velocity of 23 km s-1 was measured in the inner shell by Muthu & Anandarao (2003); can we measure similar velocities in the rings? Because of the large spatial extent of the nebula, ~ 3 arcminutes in diameter, we will obtain MIRI MRS spectra at 9 locations on the nebula itself, chosen to sample important features: on the central source, on two of the brighter bubbles in the inner shell, on the equatorial plane, and on several locations around the rings; we will also measure two positions on the background to the south of the nebula. Furthermore, despite the offset between the MIRI imager and the MRS fields-of-view, we can take advantage of the nebula's size to perform simultaneous imaging that will cover nearly all of the nebula. These images will give us more than 15 times the spatial resolution of WISE. The imaging data will allow better understanding of the relationship between the rings and the inner and outer shells; additionally, it will enable determination of the precise location of the MRS data in relation to the larger scale nebular features.

References:

Aller A., Montesinos, B., Miranda, L. F., Solano, E., & Ulla, A. 2015, MNRAS, 448, 2822
Chu, Y.-H., Jacoby, G. H., & Arendt, R. 1987, ApJS, 64, 529
Hajian, A. R., Frank, A., Balick, B., & Terzian, Y. 1997, ApJ, 477, 226
Herschel, W. 1791, Phil. Trans., 81, 71
Jones, D., Van Winckel, H., Aller, A., et al. 2017, A&A Lett., 600, L9
Muthu, C. & Anandarao, B. G. 2003, AJ, 126, 2963
Ressler, M. E., Cohen, M., Wachter, S., et al. 2010, AJ, 140, 1882

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC-1514-IMAGE-BKGNG	RA: 04 08 58.1819 (62.2424246d) Dec: +30 49 41.40 (30.82817d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				
(11)	NGC-1514-EQUATOR-SW	RA: 04 09 15.8731 (62.3161379d) Dec: +30 46 20.95 (30.77249d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				
(12)	NGC-1514-CSPN	RA: 04 09 16.9780 (62.3207417d) Dec: +30 46 33.53 (30.77598d) Equinox: J2000	Proper Motion RA: -4.959799692703209E-4 sec of time/yr Proper Motion Dec: 0.0037949999999999998 arcsec/yr Epoch of Position: 2015.5	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Star* *Description=[Planetary nebulae nuclei]*				
(13)	NGC-1514-RINGS1-NE	RA: 04 09 23.2257 (62.3467737d) Dec: +30 47 16.27 (30.78785d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				
(14)	NGC-1514-RINGS2-SSE	RA: 04 09 18.2174 (62.3259058d) Dec: +30 45 0.57 (30.75016d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				
(15)	NGC-1514-RINGS3-S	RA: 04 09 14.6312 (62.3109633d) Dec: +30 45 3.79 (30.75105d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				
(16)	NGC-1514-RINGS4-SW	RA: 04 09 10.7429 (62.2947621d) Dec: +30 45 44.84 (30.76246d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*				

(17)	NGC-1514-RINGS5-W	RA: 04 09 10.2282 (62.2926175d) Dec: +30 46 37.36 (30.77704d) Equinox: J2000
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*		
(18)	NGC-1514-SHELL1-SE	RA: 04 09 18.8901 (62.3287088d) Dec: +30 45 58.34 (30.76621d) Equinox: J2000
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*		
(19)	NGC-1514-SHELL2-NW	RA: 04 09 13.8191 (62.3075796d) Dec: +30 46 52.06 (30.78113d) Equinox: J2000
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*		
(21)	NGC-1514-BKGND1-SSW	RA: 04 09 15.1380 (62.3130750d) Dec: +30 43 53.34 (30.73148d) Equinox: J2000
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*		
(22)	NGC-1514-BKGND2-SW	RA: 04 09 6.3715 (62.2765479d) Dec: +30 44 28.50 (30.74125d) Equinox: J2000
Comments: *Category=ISM* *Description=[Planetary nebulae]* *Extended=YES*		

Observation

Proposal 1238, Observation 11: Rings-5-W Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Rings-5-W (Obs 11)) Warning (Form): Imager Filter overlap.

(Rings-5-W (Obs 11)) Warning (Form): Imager Filter overlap.

(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Rings-5-W (Obs 11)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(17)	NGC-1514-RINGS5-W	RA: 04 09 10.2282 (62.2926175d) Dec: +30 46 37.36 (30.77704d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 12: Shell-2-NW Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Shell-2-NW (Obs 12)) Warning (Form): Imager Filter overlap.

(Shell-2-NW (Obs 12)) Warning (Form): Imager Filter overlap.

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

(Shell-2-NW (Obs 12)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(19)	NGC-1514-SHELL2-NW	RA: 04 09 13.8191 (62.3075796d) Dec: +30 46 52.06 (30.78113d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24736
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 13: Equator-SW Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Equator-SW (Obs 13)) Warning (Form): Imager Filter overlap.

(Equator-SW (Obs 13)) Warning (Form): Imager Filter overlap.

(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Equator-SW (Obs 13)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(11)	NGC-1514-EQUATOR-SW	RA: 04 09 15.8731 (62.3161379d) Dec: +30 46 20.95 (30.77249d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24734
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 14: CSPN Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(CSPN (Obs 14)) Warning (Form): Imager Filter overlap.

(CSPN (Obs 14)) Warning (Form): Imager Filter overlap.

(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(CSPN (Obs 14)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(12)	NGC-1514-CSPN	RA: 04 09 16.9780 (62.3207417d) Dec: +30 46 33.53 (30.77598d) Equinox: J2000	Proper Motion RA: -4.959799692703209E-4 sec of time/yr Proper Motion Dec: 0.0037949999999999998 arcsec/yr Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Planetary nebulae nuclei]

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24734
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 15: Rings-1-NE Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Rings-1-NE (Obs 15)) Warning (Form): Imager Filter overlap.

(Rings-1-NE (Obs 15)) Warning (Form): Imager Filter overlap.

(Visit 15:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Rings-1-NE (Obs 15)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(13)	NGC-1514-RINGS1-NE	RA: 04 09 23.2257 (62.3467737d) Dec: +30 47 16.27 (30.78785d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24735
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 16: Shell-1-SE Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Shell-1-SE (Obs 16)) Warning (Form): Imager Filter overlap.

(Shell-1-SE (Obs 16)) Warning (Form): Imager Filter overlap.

(Visit 16:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Shell-1-SE (Obs 16)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(18)	NGC-1514-SHELL1-SE	RA: 04 09 18.8901 (62.3287088d) Dec: +30 45 58.34 (30.76621d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 17: Rings-2-SSE Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Rings-2-SSE (Obs 17)) Warning (Form): Imager Filter overlap.

(Rings-2-SSE (Obs 17)) Warning (Form): Imager Filter overlap.

(Visit 17:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Rings-2-SSE (Obs 17)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(14)	NGC-1514-RINGS2-SSE	RA: 04 09 18.2174 (62.3259058d) Dec: +30 45 0.57 (30.75016d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 18: Background-1-SSW Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Background-1-SSW (Obs 18)) Warning (Form): Imager Filter overlap.

(Background-1-SSW (Obs 18)) Warning (Form): Imager Filter overlap.

(Visit 18:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Background-1-SSW (Obs 18)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(21)	NGC-1514-BKGND1-SSW	RA: 04 09 15.1380 (62.3130750d) Dec: +30 43 53.34 (30.73148d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 19: Rings-3-S Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The imager in this position contains the CSPN, so reduce the 7.7 and 12.8 micron images to 21x2 rather than 43x1.

Diagnostics

(Rings-3-S (Obs 19)) Warning (Form): Imager Filter overlap.

(Rings-3-S (Obs 19)) Warning (Form): Imager Filter overlap.

(Visit 19:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Rings-3-S (Obs 19)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(15)	NGC-1514-RINGS3-S	RA: 04 09 14.6312 (62.3109633d) Dec: +30 45 3.79 (30.75105d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	21	2	1	Dither 1	2	4	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	21	2	1	Dither 1	2	4	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 20: Rings-4-SW Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Comments: The imager in this position contains the CSPN, so reduce the 7.7 and 12.8 micron images to 21x2 rather than 43x1.

Diagnostics

(Rings-4-SW (Obs 20)) Warning (Form): Imager Filter overlap.

(Rings-4-SW (Obs 20)) Warning (Form): Imager Filter overlap.

(Visit 20:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Rings-4-SW (Obs 20)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(16)	NGC-1514-RINGS4-SW	RA: 04 09 10.7429 (62.2947621d) Dec: +30 45 44.84 (30.76246d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	21	2	1	Dither 1	2	4	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24735
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	21	2	1	Dither 1	2	4	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 21: Background-2-SW Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Background-2-SW (Obs 21)) Warning (Form): Imager Filter overlap.

(Background-2-SW (Obs 21)) Warning (Form): Imager Filter overlap.

(Visit 21:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Background-2-SW (Obs 21)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(22)	NGC-1514-BKGND2-SW	RA: 04 09 6.3715 (62.2765479d) Dec: +30 44 28.50 (30.74125d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	ALL	YES	FULL	NEUTRAL

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	F770W	FASTR1	43	1	1	Dither 1	2	2	238.653	
1	SHORT(A)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	24735
1	SHORT(A)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
2		IMAGER	F1280W	FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
2	MEDIUM(B)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	
3		IMAGER	F2550W	FASTR1	21	2	1	Dither 1	2	4	238.653	
3	LONG(C)	MRSLONG		FASTR1	43	1	1	Dither 1	2	2	238.653	
3	LONG(C)	MRSSHORT		FASTR1	43	1	1	Dither 1	2	2	238.653	

Special Requirements	
	Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)

Observation

Proposal 1238, Observation 1: Image1-BKGND Wed Jul 19 17:01:37 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

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

(Image1-BKGND (Obs 1)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

(Visit 1:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC-1514-IMAGE-BKGNG	RA: 04 08 58.1819 (62.2424246d) Dec: +30 49 41.40 (30.82817d) Equinox: J2000		

Comments:
Category=ISM
Description=[Planetary nebulae]
Extended=YES

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	CYCLING	4	3		5	1			LARGE

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F770W	FASTR1	43	1	1	Dither 1	3	3	357.98	
2	F1280W	FASTR1	43	1	1	Dither 1	3	3	357.98	
3	F2550W	FASTR1	21	2	1	Dither 1	3	6	357.98	

Special Requirements

Aperture PA Range 261.83425324 to 263.83425324 Degrees (V3 256.99880427 to 258.99880427)

Group Observations 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 within 24 Hours
Same V3 PA 1, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 (Aperture PAs differ)