



1247 - Saturn

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Prof. Leigh Fletcher (PI) (ESA Member)	University of Leicester
Matthew Tiscareno (CoI)	SETI Institute
Dr. Stefanie N. Milam (CoI) (US Admin CoI)	NASA Goddard Space Flight Center

OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Saturn Observations				
	301	System NIRCcam 1	NIRCcam Imaging	(637) SATURN-CENTRE
	312	Pandora NIRSpec	NIRSpec IFU Spectroscopy	(617) PANDORA
	314	Epimetheus NIRSpec	NIRSpec IFU Spectroscopy	(611) EPIMETHEUS
	414	Epimetheus NIRSpec Repeat of 314	NIRSpec IFU Spectroscopy	(611) EPIMETHEUS
	318	Pallene NIRSpec	NIRSpec IFU Spectroscopy	(633) PALLENE
	319	Teleso NIRSpec	NIRSpec IFU Spectroscopy	(613) TELESTO
	341	System NIRCcam 2	NIRCcam Imaging	(637) SATURN-CENTRE
	665	Saturn Background MIRI	MIRI Medium Resolution Spectroscopy	(2) SATURN-OFFSET
	330	Saturn Rings MIRI	MIRI Medium Resolution Spectroscopy	(600) SATURN-RINGS
	666	Saturn North Pole MIRI	MIRI Medium Resolution Spectroscopy	(634) SATURN-75N
	667	Saturn 45N MIRI	MIRI Medium Resolution Spectroscopy	(635) SATURN-45N
	668	Saturn 15N MIRI	MIRI Medium Resolution Spectroscopy	(636) SATURN-15N
	766	Saturn North Pole MIRI	MIRI Medium Resolution Spectroscopy	(634) SATURN-75N

ABSTRACT

Reconnaissance of the Saturn system with NIRCcam will test the capacity of JWST to detect faint moons around bright planets, via comparison to the faint targets already detected by Cassini, which will be useful for ERS and GO observers of other planetary systems. Furthermore, the NIRCcam images should be sensitive to discovering new moons significantly fainter than any that Cassini has discovered. Any such newly discovered moons would be important dynamical tracers of the current operations and past history of Saturn's planetary system. The NIRCcam observations will also establish a baseline for continuing time-domain observations of the planet, rings, and satellites following the 2017 conclusion of the Cassini orbiter mission.

Deep spectra of selected small moons of Saturn (Epimetheus, Pandora, Pallene, and Telesto) with NIRSpec IFU will test the capacity of JWST to take deep spectra of faint targets near bright planets, which will be useful for ERS and GO observers of other planetary systems. The NIRSpec IFU spectra will enable cross-calibration with Cassini VIMS, and may improve on its signal-to-noise and spectral resolution (which would enable searches for finer spectral features).

Spectra of Saturn's main rings with MIRI MRS will test the capacity of JWST to take spatially resolved thermal spectra of icy ring systems, will enable cross-calibration with Cassini VIMS and CIRS, will fill a wavelength gap between those two instruments, and may improve on Cassini's signal-to-noise and spectral resolution.

A mosaic of Saturn's north polar region using MIRI spectro-spatial imaging (5-16 μm) will explore the continued evolution of the polar temperatures, aerosols, and composition, including (i) the expected growth of a wide, hot summer vortex in the stratosphere; (ii) variability within the polar cyclones associated with ammonia, phosphine and aerosols; and (iii) identification of any unique polar chemicals/haze species inaccessible to Cassini in the 5.5-7.5 μm region. These observations will establish a baseline for continuing time-domain observations of Saturn's seasonal atmosphere following the 2017 conclusion of the Cassini orbiter mission at northern summer solstice.

OBSERVING DESCRIPTION

Observations of the Saturn system - its atmosphere, rings and satellites.

Notes:

JWST Proposal 1247 (Created: Friday, June 16, 2023 at 6:00:26 PM Eastern Standard Time) - Overview

1. MIRI Saturn Scan: three overlapping footprints (based on the smallest MRS FOV) targetting the northern summer hemisphere. Top priority is a direct view of the northern summer pole and hexagon; secondary priority is to step along the prime meridian towards the equator. We originally intended for this to be a mosaic, but given that each MIRI disperser (SHORT/MEDIUM/LONG) would be seperated by too long for each tile, we had to specify each tile as a separate observation without interruption. The TORUS technique is used to ensure that the observations are pointing at the central meridian.
2. MIRI Saturation: The SHORT detectors (Channel 1 and 2) only saturate with $n_{groups} > 4$, so we have specified 4 groups. For the LONG detectors (Channels 3 and 4), saturation can only be avoided with 2 groups.
3. MIRI dithering: A 4-point dither pattern has been used based on advice from STScI, but this should be optimised for image sampling in Channels 1 and 2, where the observations are least likely to saturate. If a the MIRI team assess that a 2-point dither would be preferred, then we request that this technique can be applied to increase the individual exposure times.
4. MIRI background: A single background exposure will be performed 90" to the north of Saturn, ensuring that no planetary satellites are present within the field of view.
5. Observations 301 (System NIRCcam 1) and 341 (System NIRCcam 2) would be best if a few hours apart. A natural way to do this is for the NIRSpec observations to be between them.
6. We want Titan to be far out of the FOV for the NIRCcam and MIRI observations, thus the Orbital Longitude constraints.
7. We want all the bright moons to be at least 7 arcsec (in the case of Titan, 15 arcsec) from the FOV for the NIRSpec observations, thus the Separation constraints.

Proposal 1247 - Targets - Saturn

#	Name	Level 1	Level 2	Level 3
(2)	SATURN-OFFSET	STD=SATURN	TYPE=POS_ANGLE,RAD=60,ANG=0,REF=NORTH	
<i>Comments: Extended=YES</i>				
(600)	SATURN-RINGS	STD=SATURN	TYPE=TORUS, LONG=90, LAT=0, RAD=105000, POLE_LONG=0, POLE_LAT=+90, O_LONG=0, O_LAT=0, O_RAD=0	
<i>Comments: Torus technique, 90 degrees for the west ring ansa. Extended=Unknown</i>				
(611)	EPIMETHEUS	STD=SATURN	STD=EPIMETHEUS	
<i>Comments: Extended=Unknown</i>				
(613)	TELESTO	STD=SATURN	STD=TELESTO	
<i>Comments: Extended=Unknown</i>				
(617)	PANDORA	STD=SATURN	STD=PANDORA	
<i>Comments: Extended=Unknown</i>				
(633)	PALLENE	STD=SATURN	STD=PALLENE	
<i>Comments: Extended=Unknown</i>				
(634)	SATURN-75N	STD=SATURN	TYPE=TORUS, LONG=0, LAT=75, RAD=54706, POLE_LONG=0, POLE_LAT=90, O_LONG=0, O_LAT=0, O_RAD=0	
<i>Comments: Mosaic MIRI MRS observation of Saturn's north pole. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>				
(635)	SATURN-45N	STD=SATURN	TYPE=TORUS, LONG=0, LAT=45, RAD=57088, POLE_LONG=0, POLE_LAT=90, O_LONG=0, O_LAT=0, O_RAD=0	
<i>Comments: Second step in MIRI central-meridian scan. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>				
(636)	SATURN-15N	STD=SATURN	TYPE=TORUS, LONG=0, LAT=15, RAD=59811, POLE_LONG=0, POLE_LAT=90, O_LONG=0, O_LAT=0, O_RAD=0	
<i>Comments: Third step in MIRI MRS central-meridian scan. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>				
(637)	SATURN-CENTRE	STD=SATURN		
<i>Comments: Extended=YES</i>				

Proposal 1247 - Observation 301 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	Proposal 1247, Observation 301: System NIRCam 1 Diagnostic Status: Warning Observing Template: NIRCcam Imaging									
	(Visit 301:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (System NIRCcam 1 (Obs 301)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.									
Diagnosics										
Solar System Targets	#	Name	Level 1	Level 2	Level 3					
	(637)	SATURN-CENTRE	STD=SATURN							
<i>Comments: Extended=YES</i>										
Template	Module	Subarray			Target Placement					
	B	FULL			Module Gap					
Dithers	#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions				
	1	NONE		STANDARD		2				
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F150W2	F322W2	BRIGHT1	6	10	20	2	2555.351	
	2	F212N	F323N+F322W2	BRIGHT1	2	4	8	2	322.103	
Special Requirements	After Date 24-JUN-2023:17:29:05 Offset 4.6 arcsec, 4.5 arcsec									
	DEFAULT WINDOW: ANGULAR RATE SATURN-CENTRE FROM JWST LESS THAN 0.03 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 0 70 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 110 250 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 290 360 DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-CENTRE BY TITAN FROM JWST DEFAULT WINDOW: SEPARATION OF SATURN-CENTRE RHEA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF SATURN-CENTRE TITAN FROM JWST GREATER THAN 10"									

Proposal 1247 - Observation 312 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	<p>Proposal 1247, Observation 312: Pandora NIRSpec</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p> <p><i>Comments: The orbital longitude constraint is dependent on whether the IFU will be on the left-hand or the right-hand edge of the MSA, as seen on the image plane, which means it is depending on the epoch of the observation. Once the latter has been determined, we will need to revisit this constraint.</i></p>																																			
Diagnostics	<p>(Visit 312:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Pandora NIRSpec (Obs 312)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>																																			
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Template	<p>TA Method</p> <p>NONE</p>																																			
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Special Requirements	<p>DEFAULT WINDOW: ANGULAR RATE PANDORA FROM JWST LESS THAN 0.03</p> <p>SEPARATION OF PANDORA MIMAS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PANDORA ENCELADUS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PANDORA TETHYS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PANDORA DIONE FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PANDORA RHEA FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PANDORA TITAN FROM JWST GREATER THAN 15"</p> <p>SEPARATION OF PANDORA IAPETUS FROM JWST GREATER THAN 7"</p> <p>DEFAULT WINDOW: NOT OCCULTATION OF PANDORA BY SATURN FROM JWST</p> <p>ORBITAL LONGITUDE OF PANDORA FROM JWST BETWEEN 245 295</p>																																			

Proposal 1247 - Observation 314 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	<p>Proposal 1247, Observation 314: Epimetheus NIRSpec</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p> <p><i>Comments: The orbital longitude constraint is dependent on whether the IFU will be on the left-hand or the right-hand edge of the MSA, as seen on the image plane, which means it is depending on the epoch of the observation. Once the latter has been determined, we will need to revisit this constraint.</i></p>																																			
Diagnostics	<p>(Visit 314:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Epimetheus NIRSpec (Obs 314)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>																																			
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Proposal 1247 - Observation 414 - Saturn

Observation	<p>Proposal 1247, Observation 414: Epimetheus NIRSpec Repeat of 314 Fri Jun 16 23:00:26 GMT 2023</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p> <p><i>Comments: The orbital longitude constraint is dependent on whether the IFU will be on the left-hand or the right-hand edge of the MSA, as seen on the image plane, which means it is depending on the epoch of the observation. Once the latter has been determined, we will need to revisit this constraint.</i></p>																																		
Diagnostics	<p>(Visit 414:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Epimetheus NIRSpec Repeat of 314 (Obs 414)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>																																		
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Special Requirements	<p>DEFAULT WINDOW: ANGULAR RATE EPIMETHEUS FROM JWST LESS THAN 0.03</p> <p>DEFAULT WINDOW: NOT OCCULTATION OF EPIMETHEUS BY SATURN FROM JWST</p> <p>SEPARATION OF EPIMETHEUS MIMAS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF EPIMETHEUS ENCELADUS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF EPIMETHEUS TETHYS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF EPIMETHEUS DIONE FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF EPIMETHEUS RHEA FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF EPIMETHEUS TITAN FROM JWST GREATER THAN 15"</p> <p>SEPARATION OF EPIMETHEUS IAPETUS FROM JWST GREATER THAN 7"</p> <p>ORBITAL LONGITUDE OF EPIMETHEUS FROM JWST BETWEEN 245 295</p>																																		

Proposal 1247 - Observation 318 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	<p>Proposal 1247, Observation 318: Pallene NIRSpec</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p> <p><i>Comments: The orbital longitude constraint is dependent on whether the IFU will be on the left-hand or the right-hand edge of the MSA, as seen on the image plane, which means it is depending on the epoch of the observation. Once the latter has been determined, we will need to revisit this constraint.</i></p>																																			
Diagnostics	<p>(Visit 318:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Pallene NIRSpec (Obs 318)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>																																			
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#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID																									
1	PRISM/CLEAR	NRSIRS2RAPID	44	1	false	true	NONE	2	2	1313.0																										
Special Requirements	<p>DEFAULT WINDOW: ANGULAR RATE PALLENE FROM JWST LESS THAN 0.03</p> <p>DEFAULT WINDOW: NOT OCCULTATION OF PALLENE BY SATURN FROM JWST</p> <p>SEPARATION OF PALLENE MIMAS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PALLENE ENCELADUS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PALLENE TETHYS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PALLENE DIONE FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PALLENE RHEA FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF PALLENE TITAN FROM JWST GREATER THAN 15"</p> <p>SEPARATION OF PALLENE IAPETUS FROM JWST GREATER THAN 7"</p> <p>ORBITAL LONGITUDE OF PALLENE FROM JWST BETWEEN 75 105</p>																																			

Proposal 1247 - Observation 319 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	<p>Proposal 1247, Observation 319: Teleso NIRSpec</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p> <p><i>Comments: The orbital longitude constraint is dependent on whether the IFU will be on the left-hand or the right-hand edge of the MSA, as seen on the image plane, which means it is depending on the epoch of the observation. Once the latter has been determined, we will need to revisit this constraint.</i></p>																																			
Diagnostics	<p>(Visit 319:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Teleso NIRSpec (Obs 319)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>																																			
Solar System Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> </tr> </thead> <tbody> <tr> <td>(613)</td> <td>TELESTO</td> <td>STD=SATURN</td> <td>STD=TELESTO</td> <td></td> </tr> </tbody> </table> <p><i>Comments: Extended=Unknown</i></p>												#	Name	Level 1	Level 2	Level 3	(613)	TELESTO	STD=SATURN	STD=TELESTO															
#	Name	Level 1	Level 2	Level 3																																
(613)	TELESTO	STD=SATURN	STD=TELESTO																																	
Template	<p>TA Method</p> <p>NONE</p>																																			
Dithers	<table border="1"> <thead> <tr> <th>#</th> <th>Dither Type</th> <th>Size</th> <th>Starting Point</th> <th>Number of Points</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2-POINT-NOD</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												#	Dither Type	Size	Starting Point	Number of Points	Points	1	2-POINT-NOD																
#	Dither Type	Size	Starting Point	Number of Points	Points																															
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Spectral Elements	<table border="1"> <thead> <tr> <th>#</th> <th>Grating/Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Leakcal</th> <th>Dither</th> <th>Autocal</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>PRISM/CLEAR</td> <td>NRSIRS2RAPID</td> <td>15</td> <td>1</td> <td>false</td> <td>true</td> <td>NONE</td> <td>2</td> <td>2</td> <td>466.844</td> <td></td> </tr> </tbody> </table>												#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	1	PRISM/CLEAR	NRSIRS2RAPID	15	1	false	true	NONE	2	2	466.844	
#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID																									
1	PRISM/CLEAR	NRSIRS2RAPID	15	1	false	true	NONE	2	2	466.844																										
Special Requirements	<p>DEFAULT WINDOW: ANGULAR RATE TELESTO FROM JWST LESS THAN 0.03</p> <p>DEFAULT WINDOW: NOT OCCULTATION OF TELESTO BY SATURN FROM JWST</p> <p>SEPARATION OF TELESTO MIMAS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF TELESTO ENCELADUS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF TELESTO TETHYS FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF TELESTO DIONE FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF TELESTO RHEA FROM JWST GREATER THAN 7"</p> <p>SEPARATION OF TELESTO TITAN FROM JWST GREATER THAN 15"</p> <p>SEPARATION OF TELESTO IAPETUS FROM JWST GREATER THAN 7"</p> <p>ORBITAL LONGITUDE OF TELESTO FROM JWST BETWEEN 260 280</p>																																			

Proposal 1247 - Observation 341 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	Proposal 1247, Observation 341: System NIRCcam 2 Diagnostic Status: Warning Observing Template: NIRCcam Imaging									
Diagnostics	(Visit 341:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (System NIRCcam 2 (Obs 341)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.									
Solar System Targets	#	Name	Level 1	Level 2			Level 3			
	(637)	SATURN-CENTRE	STD=SATURN							
	<i>Comments: Extended=YES</i>									
Template	Module		Subarray				Target Placement			
	B		FULL				Module Gap			
Dithers	#	Primary Dither Type		Primary Dithers		Subpixel Dither Type		Dither Size	Subpixel Positions	
	1	NONE				STANDARD			2	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F150W2	F322W2	BRIGHT1	6	10	20	2	2555.351	
	2	F212N	F323N+F322W2	BRIGHT1	2	4	8	2	322.103	
Special Requirements	After Date 24-JUN-2023:22:46:32 Offset 4.6 arcsec, 4.5 arcsec DEFAULT WINDOW: ANGULAR RATE SATURN-CENTRE FROM JWST LESS THAN 0.03 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 0 70 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 110 250 NOT ORBITAL LONGITUDE OF TITAN FROM JWST BETWEEN 290 360 DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-CENTRE BY TITAN FROM JWST DEFAULT WINDOW: SEPARATION OF SATURN-CENTRE RHEA FROM JWST GREATER THAN 10" DEFAULT WINDOW: SEPARATION OF SATURN-CENTRE TITAN FROM JWST GREATER THAN 10"									

Proposal 1247 - Observation 665 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	Proposal 1247, Observation 665: Saturn Background MIRI Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy												
	(Visit 665:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn Background MIRI (Obs 665)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.												
Diagnosics													
Solar System Targets	#	Name	Level 1				Level 2				Level 3		
	(2)	SATURN-OFFSET	STD=SATURN				TYPE=POS_ANGLE,RAD=60,ANG=0,REF=NORTH						
<i>Comments: Extended=YES</i>													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel				Simultaneous Imaging			Imager Subarray		Grating Wheel Direction		
	F1000W	ALL				NO			FULL		NEUTRAL		
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	LONG(C)	MRSLONG		FASTR1	5	8	1	None	1	8	130.427	
	1	LONG(C)	MRSSHORT		FASTR1	5	8	1	None	1	8	130.427	
	2	MEDIUM(B)	MRSLONG		FASTR1	5	8	1	None	1	8	130.427	
	2	MEDIUM(B)	MRSSHORT		FASTR1	5	8	1	None	1	8	130.427	
	3	SHORT(A)	MRSLONG		FASTR1	5	8	1	None	1	8	130.427	
	3	SHORT(A)	MRSSHORT		FASTR1	5	8	1	None	1	8	130.427	

Proposal 1247 - Observation 665 - Saturn

Special Requirements

Group Observations 330, 665, 666, 667, 668, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE SATURN-OFFSET FROM JWST LESS THAN 0.03

DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-OFFSET BY TITAN FROM JWST

NOT TRANSIT OF TITAN ACROSS SATURN-OFFSET FROM JWST

Proposal 1247 - Observation 330 - Saturn

Observation	Proposal 1247, Observation 330: Saturn Rings MIRI Fri Jun 16 23:00:26 GMT 2023 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy												
	(Visit 330:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn Rings MIRI (Obs 330)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.												
Diagnosics													
Solar System Targets	#	Name	Level 1			Level 2			Level 3				
	(600)	SATURN-RINGS	STD=SATURN			TYPE=TORUS, LONG=90, LAT=0, RAD=105000, POL			E_LONG=0, POLE_LAT=+90, O_LONG=0, O_LAT=0, O_RAD=0				
Comments: Torus technique, 90 degrees for the west ring ansa. Extended=Unknown													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray		Grating Wheel Direction			
	F1000W	ALL			NO			FULL		NEUTRAL			
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	LONG(C)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
	1	LONG(C)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	
	2	MEDIUM(B)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
	2	MEDIUM(B)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	
	3	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708	
	3	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	

Proposal 1247 - Observation 330 - Saturn

Special Requirements

Group Observations 330, 665, 666, 667, 668, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE SATURN-RINGS FROM JWST LESS THAN 0.03

DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-RINGS BY TITAN FROM JWST

SEPARATION OF SATURN-RINGS TITAN FROM JWST GREATER THAN 10"

Proposal 1247 - Observation 666 - Saturn

Observation	Proposal 1247, Observation 666: Saturn North Pole MIRI Fri Jun 16 23:00:26 GMT 2023 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy <i>Comments: The targetted longitude can take any value - there is no requirement for a specific longitude, provided it is observed as close as possible to the central meridian.</i>																																																																																																						
	(Visit 666:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn North Pole MIRI (Obs 666)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.																																																																																																						
Diagnosics																																																																																																							
Solar System Targets	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> </tr> </thead> <tbody> <tr> <td>(634)</td> <td>SATURN-75N</td> <td>STD=SATURN</td> <td>TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0</td> <td></td> </tr> </tbody> </table>												#	Name	Level 1	Level 2	Level 3	(634)	SATURN-75N	STD=SATURN	TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0																																																																																		
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(634)	SATURN-75N	STD=SATURN	TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0																																																																																																				
<i>Comments: Mosaic MIRI MRS observation of Saturn's north pole. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>																																																																																																							
Acquisition	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NONE</td> </tr> </tbody> </table>												#	Target	1	NONE																																																																																							
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Proposal 1247 - Observation 666 - Saturn

Special Requirements

Group Observations 330, 665, 666, 667, 668, Non-interruptible

NOT TRANSIT OF TITAN ACROSS SATURN FROM JWST

DEFAULT WINDOW: NOT OCCULTATION OF SATURN-75N BY SATURN FROM JWST

DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-75N BY TITAN FROM JWST

DEFAULT WINDOW: SEPARATION OF SATURN-75N RHEA FROM JWST GREATER THAN 10"

DEFAULT WINDOW: SEPARATION OF SATURN-75N TITAN FROM JWST GREATER THAN 10"

DEFAULT WINDOW: ANGULAR RATE SATURN-75N FROM JWST LESS THAN 0.03

Proposal 1247 - Observation 667 - Saturn

Observation	Proposal 1247, Observation 667: Saturn 45N MIRI Fri Jun 16 23:00:26 GMT 2023 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy <i>Comments: The targetted longitude can take any value - there is no requirement for a specific longitude, provided it is observed as close as possible to the central meridian.</i>																																																																																																						
Diagnostics	(Visit 667:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn 45N MIRI (Obs 667)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.																																																																																																						
Solar System Targets	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> </tr> </thead> <tbody> <tr> <td>(635)</td> <td>SATURN-45N</td> <td>STD=SATURN</td> <td>TYPE=TORUS.LONG=0,LAT=45,RAD=57088,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0</td> <td></td> </tr> </tbody> </table> <p><i>Comments: Second step in MIRI central-meridian scan. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i></p>												#	Name	Level 1	Level 2	Level 3	(635)	SATURN-45N	STD=SATURN	TYPE=TORUS.LONG=0,LAT=45,RAD=57088,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0																																																																																		
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Spectral Elements	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>Wavelength Range</th> <th>Detector</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Dither</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LONG(C)</td> <td>MRSLONG</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> <tr> <td>1</td> <td>LONG(C)</td> <td>MRSSHORT</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> <tr> <td>2</td> <td>MEDIUM(B)</td> <td>MRSLONG</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> <tr> <td>2</td> <td>MEDIUM(B)</td> <td>MRSSHORT</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> <tr> <td>3</td> <td>SHORT(A)</td> <td>MRSLONG</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> <tr> <td>3</td> <td>SHORT(A)</td> <td>MRSSHORT</td> <td></td> <td>FASTR1</td> <td>5</td> <td>8</td> <td>1</td> <td>Dither 1</td> <td>4</td> <td>32</td> <td>521.708</td> <td></td> </tr> </tbody> </table>												#	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	LONG(C)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708		1	LONG(C)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708		2	MEDIUM(B)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708		2	MEDIUM(B)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708		3	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708		3	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708	
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Proposal 1247 - Observation 667 - Saturn

Special Requirements

Group Observations 330, 665, 666, 667, 668, Non-interruptible

NOT TRANSIT OF TITAN ACROSS SATURN FROM JWST

DEFAULT WINDOW: NOT OCCULTATION OF SATURN-45N BY SATURN FROM JWST

DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-45N BY TITAN FROM JWST

DEFAULT WINDOW: SEPARATION OF SATURN-45N RHEA FROM JWST GREATER THAN 10"

DEFAULT WINDOW: SEPARATION OF SATURN-45N TITAN FROM JWST GREATER THAN 10"

DEFAULT WINDOW: ANGULAR RATE SATURN-45N FROM JWST LESS THAN 0.03

Proposal 1247 - Observation 668 - Saturn

Fri Jun 16 23:00:26 GMT 2023

Observation	Proposal 1247, Observation 668: Saturn 15N MIRI Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy <i>Comments: The targetted longitude can take any value - there is no requirement for a specific longitude, provided it is observed as close as possible to the central meridian.</i>												
Diagnostics	(Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Saturn 15N MIRI (Obs 668)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended. (Visit 668:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn 15N MIRI (Obs 668)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.												
Solar System Targets	#	Name	Level 1	Level 2				Level 3					
(636)	SATURN-15N	STD=SATURN	TYPE=TORUS, LONG=0, LAT=15, RAD=59811, POLE_LONG=0, POLE_LAT=90, O_LONG=0, O_LAT=0, RAD=0										
<i>Comments: Third step in MIRI MRS central-meridian scan. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>													
Acquisition	#	Target											
1	NONE												
Template	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray		Grating Wheel Direction			
F1000W	ALL			NO			FULL		NEUTRAL				
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	LONG(C)	MRSLONG		FASTR1	4	10	1	Dither 1	4	40	543.908	
	1	LONG(C)	MRSSHORT		FASTR1	4	10	1	Dither 1	4	40	543.908	
	2	MEDIUM(B)	MRSLONG		FASTR1	4	10	1	Dither 1	4	40	543.908	
	2	MEDIUM(B)	MRSSHORT		FASTR1	4	10	1	Dither 1	4	40	543.908	
	3	SHORT(A)	MRSLONG		FASTR1	4	10	1	Dither 1	4	40	543.908	
	3	SHORT(A)	MRSSHORT		FASTR1	4	10	1	Dither 1	4	40	543.908	

Proposal 1247 - Observation 668 - Saturn

Special Requirements

Group Observations 330, 665, 666, 667, 668, Non-interruptible

NOT TRANSIT OF TITAN ACROSS SATURN FROM JWST
DEFAULT WINDOW: NOT OCCULTATION OF SATURN-15N BY SATURN FROM JWST
DEFAULT WINDOW: NOT ECLIPSE PENUMBRAL PARTIAL OF SATURN-15N BY TITAN FROM JWST
DEFAULT WINDOW: SEPARATION OF SATURN-15N RHEA FROM JWST GREATER THAN 10"
DEFAULT WINDOW: SEPARATION OF SATURN-15N TITAN FROM JWST GREATER THAN 10"
DEFAULT WINDOW: ANGULAR RATE SATURN-15N FROM JWST LESS THAN 0.03

Proposal 1247 - Observation 766 - Saturn

Observation	Proposal 1247, Observation 766: Saturn North Pole MIRI Fri Jun 16 23:00:26 GMT 2023 Diagnostic Status: Warning Observing Template: MIRI Medium Resolution Spectroscopy <i>Comments: The targetted longitude can take any value - there is no requirement for a specific longitude, provided it is observed as close as possible to the central meridian.</i> <i>This is a repeat of failed visit 666.</i>																					
	(Visit 766:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Saturn North Pole MIRI (Obs 766)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.																					
Diagnosics																						
Solar System Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> </tr> </thead> <tbody> <tr> <td>(634)</td> <td>SATURN-75N</td> <td>STD=SATURN</td> <td>TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0</td> <td></td> </tr> </tbody> </table>	#	Name	Level 1	Level 2	Level 3	(634)	SATURN-75N	STD=SATURN	TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0		<i>Comments: Mosaic MIRI MRS observation of Saturn's north pole. The longitude is not important, so we have used the TORUS technique (with the radius for a specific latitude) to ensure pointing at the central meridian. Extended=YES</i>										
	#	Name	Level 1	Level 2	Level 3																	
(634)	SATURN-75N	STD=SATURN	TYPE=TORUS.LONG=0,LAT=75,RAD=54706,POLE_LONG=0,POLE_LAT=90,O_LONG=0,O_LAT=0,O_RAD=0																			
Acquisition	#	Target																				
	1	NONE																				
Template	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray		Grating Wheel Direction												
	F1000W	ALL			NO			FULL		NEUTRAL												
Dithers	#	Dither Type				Optimized For				Direction												
	1	4-Point				EXTENDED SOURCE				NEGATIVE												
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	2	MEDIUM(B)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708										
	3	SHORT(A)	MRSLONG		FASTR1	5	8	1	Dither 1	4	32	521.708										
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	3	SHORT(A)	MRSSHORT		FASTR1	5	8	1	Dither 1	4	32	521.708										

Proposal 1247 - Observation 766 - Saturn

Special Requirements

NOT TRANSIT OF TITAN ACROSS SATURN FROM JWST
DEFAULT WINDOW: NOT OCCULTATION OF SATURN-75N BY SATURN FROM JWST
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