



## 2151 - Blazing the trail of COMs from ice to gas

Cycle: 1, Proposal Category: GO

### INVESTIGATORS

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Mr. Chul-Hwan Kim M.D. (CoI)	Seoul National University

### OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
B335				
	1	MIRI-b335-on-source	MIRI Medium Resolution Spectroscopy	(1) B335
	11	MIRI-b335-bkg	MIRI Medium Resolution Spectroscopy	(2) B335-BKG
L483				
	3	MIRI-l483-on-source	MIRI Medium Resolution Spectroscopy	(3) LDN-483

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	5	MIRI-l483-bkg	MIRI Medium Resolution Spectroscopy	(4) LDN-483-BKG
IRAS15398-3359				
	6	MIRI-iras15398-on-source	MIRI Medium Resolution Spectroscopy	(5) IRAS-15398-3359
	7	MIRI-iras15398-bkg	MIRI Medium Resolution Spectroscopy	(7) IRAS-15398-3359-BKG
Ser-emb-7				
	8	MIRI-ser7-on-source	MIRI Medium Resolution Spectroscopy	(6) SER-EMB-7
	9	MIRI-ser7-bkg	MIRI Medium Resolution Spectroscopy	(8) SER-EMB-7-BKG

## ABSTRACT

Complex organic molecules (COMs) are precursors of pre-biotic molecules. The discovery of COMs in protostellar cores indicates an extensive chemical evolution took place in the first million years of star formation. The chemistry of COMs in the protostellar phase may directly link to the COMs in comets and the eventual planetary system. Gas-grain chemistry on the ice mantles of dust grains at warm temperature (20-40 K) has been successful to explain the abundance of COMs in the gas phase. However, observational constraints on ice composition at such temperatures have been inaccessible until JWST. Moreover, not all protostars show evidence of gaseous COMs in their spectra, suggesting either a different chemical evolution of ices or inefficient desorption that keeps most COMs on grains. Does the formation pathway of COMs proceed according to existing models? Is the chemical diversity in the gas phase rooted in ices? To answer these two questions, we will use JWST to measure the ice composition, particularly from warm temperatures (20-40 K) to the desorption temperature. The MIRI MRS observations will probe the ice composition around the protostar at 20 K or higher temperature to (1) measure the ice composition at warm temperatures (>20 K) to test chemical models of COMs, (2) spatially resolve the ice variation at the same scale where gaseous COMs are detected, and (3) determine the origin of chemical diversity from the ice composition of both COM-rich and COM-poor protostars within similar properties.

## OBSERVING DESCRIPTION

The proposed observations aim to spatially resolve the ice features at the vicinity of embedded protostars to (1) provide observational constraints on the chemical pathways of complex organic molecules (COMs) and (2) study the evolution of ice chemistry as the temperature increases toward the protostar. To test the chemical model of COMs, we select two well-known isolated embedded protostars with rich spectra of COMs, B335 and L483; we also select two embedded protostars, IRAS 15398-3359 and Ser-emb 7, which have similar protostellar properties without rich spectra of COMs as the control sample. We will use MIRI MRS to measure the ice composition at COM-rich and COM-poor protostars, testing the paradigm of the gas-grain chemistry. The MIRI MRS observations will cover the entire MIRI wavelengths from 5-28  $\mu\text{m}$ . The group of each integration for each wavelength range is set up independently to detect known ice species, such as H<sub>2</sub>O, CO<sub>2</sub>, and CH<sub>3</sub>OH, with high S/N. We also request dedicated

## JWST Proposal 2151 (Created: Wednesday, April 12, 2023 at 1:01:32 PM Eastern Standard Time) - Overview

background observations to isolate the scattered and thermal emission in the inner envelope from the cloud emission. All observations will use the 4-point dither and the SLOW readout pattern.

# Proposal 2151 - Targets - Blazing the trail of COMs from ice to gas

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	B335	RA: 19 37 0.9200 (294.2538333d) Dec: +07 34 9.49 (7.56930d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=ISM Description=[Protostars] Extended=YES				
(2)	B335-BKG	RA: 19 37 4.4300 (294.2684583d) Dec: +07 34 51.90 (7.58108d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=Calibration Description=[Telescope/sky background] Extended=YES				
(3)	LDN-483	RA: 18 17 29.9390 (274.3747458d) Dec: -04 39 39.62 (-4.66101d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=ISM Description=[Protostars] Extended=YES				
(4)	LDN-483-BKG	RA: 18 17 34.0000 (274.3916667d) Dec: -04 38 23.00 (-4.63972d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=Calibration Description=[Telescope/sky background] Extended=YES				
(5)	IRAS-15398-3359	RA: 15 43 2.2400 (235.7593333d) Dec: -34 09 6.70 (-34.15186d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=ISM Description=[Protostars] Extended=YES				
(6)	SER-EMB-7	RA: 18 28 54.0640 (277.2252667d) Dec: +00 29 29.29 (.49147d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> This object was generated by the targetselector and retrieved from the SIMBAD database. Category=ISM Description=[Protostars] Extended=YES				
(7)	IRAS-15398-3359-BKG	RA: 15 43 7.9390 (235.7830792d) Dec: -34 09 1.14 (-34.15032d) Equinox: J2000	Epoch of Position: 2015.5	
<i>Comments:</i> Category=Calibration Description=[Telescope/sky background] Extended=YES				

Fixed Targets

## Proposal 2151 - Targets - Blazing the trail of COMs from ice to gas

(8)	SER-EMB-7-BKG	RA: 18 28 56.7232 (277.2363467d)	Epoch of Position: 2015.5
		Dec: +00 30 24.62 (.50684d)	
		Equinox: J2000	

*Comments:*

*Category=Calibration*

*Description=[Telescope/sky background]*

*Extended=YES*

Proposal 2151 - Observation 1 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

<b>Observation</b>	<b>Proposal 2151, Observation 1: MIRI-b335-on-source</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observations:[MIRI-b335-bkg (Obs 11)]												
	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Fixed Targets</b>	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous			
	(1)	B335	RA: 19 37 0.9200 (294.2538333d) Dec: +07 34 9.49 (7.56930d) Equinox: J2000				Epoch of Position: 2015.5						
<i>Comments:</i> <i>Category=ISM</i> <i>Description=[Protostars]</i> <i>Extended=YES</i>													
<b>Acquisition</b>	#	Target											
	1	NONE											
<b>Template</b>	AcqFilter	Primary Channel				Simultaneous Imaging				Imager Subarray			
	F1500W	ALL				YES				FULL			
<b>Dithers</b>	#	Dither Type				Optimized For				Direction			
	1	4-Point				EXTENDED SOURCE				NEGATIVE			
<b>Spectral Elements</b>	#	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	5	21	1	Dither 1	4	84	1387.52	83015
	1	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	1	LONG(C)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	2		IMAGER	F1000W	FASTR1	31	10	1	Dither 1	4	40	3540.951	83015
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	2	MEDIUM(B)	MRSSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	3		IMAGER	F560W	FASTR1	15	8	1	Dither 1	4	32	1409.72	83015
	3	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	3	SHORT(A)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979

Proposal 2151 - Observation 1 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 1, 11, Non-interruptible

Proposal 2151 - Observation 11 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

Observation	<b>Proposal 2151, Observation 11: MIRI-b335-bkg</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observation For: [MIRI-b335-on-source (Obs 1)]												
	(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections				Miscellaneous				
	(2)	B335-BKG	RA: 19 37 4.4300 (294.2684583d) Dec: +07 34 51.90 (7.58108d) Equinox: J2000		Epoch of Position: 2015.5								
Comments: Category=Calibration Description=[Telescope/sky background] Extended=YES													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel			Simultaneous Imaging				Imager Subarray				
	F1500W	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	5	21	1	Dither 1	4	84	1387.52	
	1	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	1	LONG(C)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	2		IMAGER	F1000W	FASTR1	31	10	1	Dither 1	4	40	3540.951	
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	2	MEDIUM(B)	MRSSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	3		IMAGER	F560W	FASTR1	15	8	1	Dither 1	4	32	1409.72	
	3	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	3	SHORT(A)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	

Proposal 2151 - Observation 11 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 1, 11, Non-interruptible

Proposal 2151 - Observation 3 - Blazing the trail of COMs from ice to gas

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<b>Observation</b>	<b>Proposal 2151, Observation 3: MIRI-I483-on-source</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observations:[MIRI-I483-bkg (Obs 5)]												
	(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>				<b>Targ. Coord. Corrections</b>			<b>Miscellaneous</b>			
	(3)	LDN-483	RA: 18 17 29.9390 (274.3747458d) Dec: -04 39 39.62 (-4.66101d) Equinox: J2000				Epoch of Position: 2015.5						
<i>Comments:</i> <i>Category=ISM</i> <i>Description=[Protostars]</i> <i>Extended=YES</i>													
<b>Acquisition</b>	<b>#</b>	<b>Target</b>											
	1	NONE											
<b>Template</b>	<b>AcqFilter</b>	<b>Primary Channel</b>				<b>Simultaneous Imaging</b>			<b>Imager Subarray</b>				
		ALL				YES			FULL				
<b>Dithers</b>	<b>#</b>	<b>Dither Type</b>				<b>Optimized For</b>			<b>Direction</b>				
	1	4-Point				EXTENDED SOURCE			NEGATIVE				
<b>Spectral Elements</b>	<b>#</b>	<b>Wavelength Range</b>	<b>Detector</b>	<b>Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/E xp</b>	<b>Exposures/Dit h</b>	<b>Dither</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1		IMAGER	F560W	FASTR1	25	5	1	Dither 1	4	20	1431.921	83015
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	1	SHORT(A)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	2		IMAGER	F1000W	FASTR1	160	2	1	Dither 1	4	8	3563.151	83015
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	2	MEDIUM(B)	MRSSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	3		IMAGER	F770W	FASTR1	12	10	1	Dither 1	4	40	1431.921	83015
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	3	LONG(C)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979

Proposal 2151 - Observation 3 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 3, 5, Non-interruptible

Proposal 2151 - Observation 5 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

<b>Observation</b>	<b>Proposal 2151, Observation 5: MIRI-I483-bkg</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observation For: [MIRI-I483-on-source (Obs 3)]												
	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Diagnosics</b>													
<b>Fixed Targets</b>	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous				
	(4)	LDN-483-BKG	RA: 18 17 34.0000 (274.3916667d) Dec: -04 38 23.00 (-4.63972d) Equinox: J2000			Epoch of Position: 2015.5							
Comments: Category=Calibration Description=[Telescope/sky background] Extended=YES													
<b>Acquisition</b>	#	Target											
	1	NONE											
<b>Template</b>	AcqFilter	Primary Channel			Simultaneous Imaging			Imager Subarray					
		ALL			YES			FULL					
<b>Dithers</b>	#	Dither Type			Optimized For			Direction					
	1	4-Point			EXTENDED SOURCE			NEGATIVE					
<b>Spectral Elements</b>	#	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	F560W	FASTR1	25	5	1	Dither 1	4	20	1431.921	
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	1	SHORT(A)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	2		IMAGER	F1000W	FASTR1	160	2	1	Dither 1	4	8	3563.151	
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	2	MEDIUM(B)	MRSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	3		IMAGER	F770W	FASTR1	12	10	1	Dither 1	4	40	1431.921	
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	3	LONG(C)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	

Proposal 2151 - Observation 5 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 3, 5, Non-interruptible

Proposal 2151 - Observation 6 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

<b>Observation</b>	<b>Proposal 2151, Observation 6: MIRI-iras15398-on-source</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observations:[MIRI-iras15398-bkg (Obs 7)]												
	(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Diagnosics</b>													
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>				<b>Targ. Coord. Corrections</b>			<b>Miscellaneous</b>			
	(5)	IRAS-15398-3359	RA: 15 43 2.2400 (235.7593333d) Dec: -34 09 6.70 (-34.15186d) Equinox: J2000				Epoch of Position: 2015.5						
<i>Comments:</i> Category=ISM Description=[Protostars] Extended=YES													
<b>Acquisition</b>	<b>#</b>	<b>Target</b>											
	1	NONE											
<b>Template</b>	<b>AcqFilter</b>	<b>Primary Channel</b>				<b>Simultaneous Imaging</b>			<b>Imager Subarray</b>				
		ALL				YES			FULL				
<b>Dithers</b>	<b>#</b>	<b>Dither Type</b>				<b>Optimized For</b>			<b>Direction</b>				
	1	4-Point				EXTENDED SOURCE			NEGATIVE				
<b>Spectral Elements</b>	<b>#</b>	<b>Wavelength Range</b>	<b>Detector</b>	<b>Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/E xp</b>	<b>Exposures/Dit h</b>	<b>Dither</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1		IMAGER	F560W	FASTR1	15	8	1	Dither 1	4	32	1409.72	83015
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	1	SHORT(A)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	2		IMAGER	F1000W	FASTR1	15	20	1	Dither 1	4	80	3540.951	83015
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	2	MEDIUM(B)	MRSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	3		IMAGER	F770W	FASTR1	5	21	1	Dither 1	4	84	1387.52	83015
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	3	LONG(C)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979

Proposal 2151 - Observation 6 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 6, 7, Non-interruptible

Proposal 2151 - Observation 7 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

<b>Observation</b>	<b>Proposal 2151, Observation 7: MIRI-iras15398-bkg</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observation For: [MIRI-iras15398-on-source (Obs 6)]												
	(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Diagnosics</b>													
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>				<b>Targ. Coord. Corrections</b>			<b>Miscellaneous</b>			
	(7)	IRAS-15398-3359-BKG	RA: 15 43 7.9390 (235.7830792d) Dec: -34 09 1.14 (-34.15032d) Equinox: J2000				Epoch of Position: 2015.5						
<i>Comments:</i> Category=Calibration Description=[Telescope/sky background] Extended=YES													
<b>Acquisition</b>	<b>#</b>											<b>Target</b>	
	1											NONE	
<b>Template</b>	<b>AcqFilter</b>	<b>Primary Channel</b>				<b>Simultaneous Imaging</b>			<b>Imager Subarray</b>				
		ALL				YES			FULL				
<b>Dithers</b>	<b>#</b>	<b>Dither Type</b>				<b>Optimized For</b>				<b>Direction</b>			
	1	4-Point				EXTENDED SOURCE				NEGATIVE			
<b>Spectral Elements</b>	<b>#</b>	<b>Wavelength Range</b>	<b>Detector</b>	<b>Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/E xp</b>	<b>Exposures/Dit h</b>	<b>Dither</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1		IMAGER	F560W	FASTR1	15	8	1	Dither 1	4	32	1409.72	
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	1	SHORT(A)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	2		IMAGER	F1000W	FASTR1	15	20	1	Dither 1	4	80	3540.951	
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	2	MEDIUM(B)	MRSSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	3		IMAGER	F770W	FASTR1	5	21	1	Dither 1	4	84	1387.52	
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	3	LONG(C)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	

Proposal 2151 - Observation 7 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 6, 7, Non-interruptible

Proposal 2151 - Observation 8 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

Observation	<p><b>Proposal 2151, Observation 8: MIRI-ser7-on-source</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Medium Resolution Spectroscopy</p> <p>Background Observations:[MIRI-ser7-bkg (Obs 9)]</p>												
	<p>(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>												
Diagnostics													
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous			
	(6)	SER-EMB-7	RA: 18 28 54.0640 (277.2252667d) Dec: +00 29 29.29 (.49147d) Equinox: J2000				Epoch of Position: 2015.5						
<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=[Protostars]</i></p> <p><i>Extended=YES</i></p>													
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel				Simultaneous Imaging			Imager Subarray				
		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	F560W	FASTR1	30	4	1	Dither 1	4	16	1365.32	83015
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	1	SHORT(A)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	2		IMAGER	F1000W	FASTR1	10	29	1	Dither 1	4	116	3529.851	83015
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	2	MEDIUM(B)	MRSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	60979
	3		IMAGER	F770W	FASTR1	5	21	1	Dither 1	4	84	1387.52	83015
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979
	3	LONG(C)	MRSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	60979

Proposal 2151 - Observation 8 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 8, 9, Non-interruptible

Proposal 2151 - Observation 9 - Blazing the trail of COMs from ice to gas

Wed Apr 12 18:01:32 GMT 2023

<b>Observation</b>	<b>Proposal 2151, Observation 9: MIRI-ser7-bkg</b> <b>Diagnostic Status: Warning</b> Observing Template: MIRI Medium Resolution Spectroscopy Background Observation For: [MIRI-ser7-on-source (Obs 8)]												
	(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
<b>Diagnosics</b>													
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>				<b>Targ. Coord. Corrections</b>			<b>Miscellaneous</b>			
	(8)	SER-EMB-7-BKG	RA: 18 28 56.7232 (277.2363467d) Dec: +00 30 24.62 (.50684d) Equinox: J2000				Epoch of Position: 2015.5						
<i>Comments:</i> Category=Calibration Description=[Telescope/sky background] Extended=YES													
<b>Acquisition</b>	<b>#</b>	<b>Target</b>											
	1	NONE											
<b>Template</b>	<b>AcqFilter</b>	<b>Primary Channel</b>				<b>Simultaneous Imaging</b>			<b>Imager Subarray</b>				
		ALL				YES			FULL				
<b>Dithers</b>	<b>#</b>	<b>Dither Type</b>				<b>Optimized For</b>			<b>Direction</b>				
	1	4-Point				EXTENDED SOURCE			NEGATIVE				
<b>Spectral Elements</b>	<b>#</b>	<b>Wavelength Range</b>	<b>Detector</b>	<b>Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/E xp</b>	<b>Exposures/Dit h</b>	<b>Dither</b>	<b>Total Dithers</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1		IMAGER	F560W	FASTR1	30	4	1	Dither 1	4	16	1365.32	
	1	SHORT(A)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	1	SHORT(A)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	2		IMAGER	F1000W	FASTR1	10	29	1	Dither 1	4	116	3529.851	
	2	MEDIUM(B)	MRSLONG		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	2	MEDIUM(B)	MRSSSHORT		SLOWR1	38	1	1	Dither 1	4	4	3631.268	
	3		IMAGER	F770W	FASTR1	5	21	1	Dither 1	4	84	1387.52	
	3	LONG(C)	MRSLONG		SLOWR1	15	1	1	Dither 1	4	4	1433.395	
	3	LONG(C)	MRSSSHORT		SLOWR1	15	1	1	Dither 1	4	4	1433.395	

Proposal 2151 - Observation 9 - Blazing the trail of COMs from ice to gas

Special Requirements

Sequence Observations 8, 9, Non-interruptible