

# 1309 - IceAge: Chemical evolution of ices during star formation

Cycle: 1, Proposal Category: ERS

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Name	Institution
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#### **OBSERVATIONS**

Folder	Observation	Label	Observing Template	Science Target
MIRI M	IRS			-
	1	Ced 110 IRS4	MIRI Medium Resolution Spectroscopy	(17) CED110IRS4-MIRI
	27	Ced 110 IRS4	MIRI Medium Resolution Spectroscopy	(18) CED110IRS4-MIRI-copy
	9	HH 48B - MKM	MIRI Medium Resolution Spectroscopy	(16) HH48B-MIRI
	10	HH 48B - Sky - MIRI	MIRI Medium Resolution Spectroscopy	(11) HH48B-SKY-MIRI
NIRCA	M WFSS and im	aging		
	23	high Av field v2 - R H2 O Filter	NIRCam Wide Field Slitless Spectroscopy	(5) CHAMMS1-C2-FIELD
	24	high Av field v2 - C H2 O Filter	NIRCam Wide Field Slitless Spectroscopy	(5) CHAMMS1-C2-FIELD
	25	high Av field v2 - R C O Filter	NIRCam Wide Field Slitless Spectroscopy	(5) CHAMMS1-C2-FIELD
	26	high Av field v2 - C C O Filter	NIRCam Wide Field Slitless Spectroscopy	(5) CHAMMS1-C2-FIELD
NIRSPE	EC IFU	·		
	11	Ced 110 IRS4	NIRSpec IFU Spectroscopy	(2) CED110IRS4
	13	HH48B	NIRSpec IFU Spectroscopy	(1) HH48B
	14	HH48B Sky	NIRSpec IFU Spectroscopy	(4) HH48B-SKY-NIRSPEC
NIRSpe	c fixed slit			
	15	Av=95	NIRSpec Fixed Slit Spectroscopy	(6) AV95SSTSL2J110621.63-772354.1
	22	Av=60	NIRSpec Fixed Slit Spectroscopy	(8) AV60NIR38
MIRI L	RS			
	18	Av=60	MIRI Low Resolution Spectroscopy	(8) AV60NIR38
	19	Av=95	MIRI Low Resolution Spectroscopy	(6) AV95SSTSL2J110621.63-772354.1
	21	Ced 110 IRS 4	MIRI Low Resolution Spectroscopy	(9) CED110IRS4-LRS

ABSTRACT

Icy grain mantles are the main reservoir for volatile elements in star-forming regions across the Universe, as well as the formation site of pre-biotic complex organic molecules (COMs) seen in our Solar System. We propose to trace the evolution of pristine and complex ice chemistry in a representative low-mass star-forming region through observations of a: pre-stellar core, Class 0 protostar, Class I protostar, and protoplanetary disk. Comparing high spectral resolution (R~1500-3000) and sensitivity (S/N~100-300) observations from 3 to 15 um to template spectra, we will map the spatial distribution of ices down to ~20-50 AU in these targets to identify when, and at what visual extinction, the formation of each ice species begins. Such high-resolution spectra will allow us to search for new COMs, as well as distinguish between different ice morphologies, thermal histories, and mixing environments.

The analysis of these data will result in science products beneficial to Cycle 2 proposers. A newly updated public laboratory ice database will provide feature identifications for all of the expected ices, while a chemical model fit to the observed ice abundances will be released publically as a grid, with varied metallicity and UV fields to simulate other environments. We will create improved algorithms to extract NIRCAM WFSS spectra in crowded fields with extended sources as well as optimize the defringing of MIRI LRS spectra in order to recover broad spectral features. We anticipate that these resources will be particularly useful for astrochemistry and spectroscopy of fainter, extended targets like star forming regions of the SMC/LMC or more distant galaxies.

NOI 32

#### **OBSERVING DESCRIPTION**

Our targets are located in the Ced 110 region of the Chameleon I molecular cloud complex, with visibility during the entire 5 month ERS window.

1) Using NIRCam WFSS (R~1500, 2.5-5.0 um), we will observe an ~18 square arcminute field centered on the pre-stellar core, C2, and one of the youngest known Class 0 sources, Cha-MMS1 (Belloche et al. 2011). Using deep JHK and IRAC [3.6um] and [4.5um] photometry from Persi et al. (2001) and the IPAC supermosaic catalog, we have identified ~140 background stars with Av <= 95 magnitudes in this field, including 5 along lines of sight through the Class 0 envelope and pre-stellar core. In order to detect methanol and COMs around 3.6 micron, which have strengths of 3% of the continuum, we require S/N of 100 at 3.6 um.

From the observed photometry, we can achieve this S/N on the known background stars down to  $Av\sim50$  using the grism with a 3221 second exposure in each of the F322W2 and F444W filters. This integration time is well-matched with deep exposures in the short wavelength channel in bands F150W and F200W. We chose to do the required direct imaging in F430M and F410M to image the 4.3 um CO\_2 ice band and adjacent

continuum. The complementary short wavelength channels are F140M and F182M. All of the short wavelength channel images are observed in filters that cannot be done from the ground (except for F150W) and should prove useful for determining the spectral types of particularly late-type background stars.

NIRCam Observational Important Note: Observation #23 ("R H2O Filter") includes a comment to be taken into account for scheduling. The comments reads "Please ensure that, following these observations, NIRCam is NOT scheduled to be used immediately for any observations so that some time is left for any persistence in module B to decay. Multiple bright sources will be observed with module B and potential photon persistence may occur, potentially producing ghosts on any observations which immediately follow this observation."

2) To obtain 2.5-5 um spectra of the highest Av sources in our sample at S/N>100, we must use NIRSpec's Fixed Slit mode, since the required integration time with NIRCam WFSS would be prohibitive and NIRSpec MSA may not achieve S/N>50 due to flatfielding limitations. We selected two of the brightest candidates, one with Av=60 and one with Av=95. The integration times for these sources (1250 and 4000 seconds) were estimated by scaling an ETC model of a reddened K0III star to the observed IRAC [3.6 micron] photometry, using the measured reddening from observed K-[3.6 um] colors.

3) For these two background stars, we also opted for MIRI LRS spectra (R~40-160) to observe the COMs located between 5 and 8um. The integration times (1100 and 2800 seconds, respectively) were chosen to obtain S/N of 300 at 8 microns, where the COMs have strengths of ~1% of the continuum. We will not be able to spectrally disentangle all of the COMs with this spectral resolution, but these will be the highest column densities ( $A_Vs$ ) of interstellar ice observed to date, perhaps revealing new, rare species of COMs. We will use nodding to accomplish the background subtraction.

4) To study how the ice composition and processing changes with time, we will also observe a Class I protostar (Ced 110 IRS4; Manoj et al. 2011) and an edge-on disk (HH48B, slightly offset from field; Stapelfeldt et al. 2014) with the NIRSpec IFU (R~2700). Both objects have JHK and IRAC observations, on which we based the time estimates to reach a S/N of 100 again. The integration times are 1250 and 1100 seconds for the protostar and disk, respectively. These objects are both extended, filling the IFU FOV, so we require separate background observations in regions of clean sky with the same detector settings.

5) To study the 5-8um COMs in these sources, we again need MIRI and a S/N of 300. This time we use the MIRI MRS instrument (R~3000), which is sufficient to spectrally resolve the minor COM species and the gas phase lines in the same wavelength region. The protostar has a full Spitzer IRS

5-40um spectrum, while the edge-on disk is simulated by a model scaled to its observed IRAC photometry. The total exposure times required are 450 seconds for the protostar and 1100 for the disk. Again, we observe clean background regions with the same detector setting for both targets.

6) We will observe the protostar with MIRI LRS as well, which will allow us to optimize fringe removal techniques. Through the MIRI instrument team and our former Spitzer IRS analysts, our team has ample experience with testing de-fringing techniques. It will take an exposure time of 83 seconds to reach S/N of 300. We will use nodding to accomplish the background subtraction.

# Proposal 1309 - Targets - IceAge: Chemical evolution of ices during star formation

	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	HH48B	RA: 11 04 23.3100 (166.0971250d)		
			Dec: -77 18 7.50 (-77.30208d)		
			Equinox: J2000		
	Comments: T	his object was generated by the	targetselector and retrieved from the SIMBAD database	2.	
	The SIMBAD Category=Sta Description= Extended=YE	coordinates are for the photoco ar [T Tauri stars] Sc	enter of HH48AB. I corrected them to the coordinates for	r the B component from Robberto et al. (2012).	
	(2)	CFD110IRS4	RA: 11.06.47.1000 (166.6962500d)		
	(2)	CLDTIONG4	Dec: -77.22.34.00 (-77.37611d)		
			Equinox: 12000		
	Comments: T	his object was generated by the	targetselector and retrieved from the SIMBAD database		
	Category=Sta Description= Extended=YE	ar [Protostars] ES			
	(4)	HH48B-SKY-NIRSPEC	RA: 11 04 55.2883 (166.2303679d)		
			Dec: -77 20 39.22 (-77.34423d)		
			Equinox: J2000		
	Comments: Category=Ca Description=	llibration [Telescope/sky background]			
ŝts	(5)	CHAMMS1-C2-FIELD	RA: 11 06 21.6400 (166.5901667d)		
ğ			Dec: -77 23 54.12 (-77.39837d)		
Ta			Equinox: J2000		
Fixed	Comments: T Category=Sta Description= Extended=YE	his object was generated by the ur [Protostars] 55	targetselector and retrieved from the SIMBAD database		
	(6)	AV95SSTSL2J110621.63-	RA: 11 06 21.6400 (166.5901667d)		
		772354.1	Dec: -77 23 54.12 (-77.39837d)		
			Equinox: J2000		
	Comments: Category=ISI Description= Extended=NO	M [Dense interstellar clouds] )			
	(8)	AV60NIR38	RA: 11 06 25.5700 (166.6065417d)		
			Dec: -77 23 15.86 (-77.38774d)		
			Equinox: J2000		
	Comments: Category=ISI Description= Extended=NO	M [Dense interstellar clouds] Ə			
	(9)	CED110IRS4-LRS	RA: 11 06 47.1000 (166.6962500d)		
			Dec: -77 22 34.00 (-77.37611d)		
			Equinox: J2000		
	Comments: T Category=Sta Description= Extended=YE	his object was generated by the ar [Protostars] SS	targetselector and retrieved from the SIMBAD database		

# Proposal 1309 - Targets - IceAge: Chemical evolution of ices during star formation

(11)	HH48B-SKY-MIRI	RA: 11 04 24.4788 (166.1019950d)	
		Dec: -77 18 38.77 (-77.31077d)	
		Equinox: J2000	
Comments:			
Category=C Description	_alibration =[Telescope/sky background]		
(12)	C2-STARLESS	RA: 11 06 15.5100 (166.5646250d)	
		Dec: -77 24 4.90 (-77.40136d)	
		Equinox: J2000	
Comments:			
Category=1 Description	SM =[Protostars]		
(13)	CHA-MMS1-CLASS0	RA: 11 06 31.9400 (166.6330833d)	
		Dec: -77 23 38.90 (-77.39414d)	
		Equinox: J2000	
Comments:			
Category=I Description	SM =[Protostars]		
(14)	SSTSL2	RA: 11 06 21.6400 (166.5901667d)	
		Dec: -77 23 54.12 (-77.39837d)	
		Equinox: J2000	
Comments:			
Category=I Description	SM =[Protostars]		
(15)	NIR38	RA: 11 06 26.6900 (166.6112083d)	
		Dec: -77 23 18.60 (-77.38850d)	
		Equinox: J2000	
Comments:			
Category=I Description	SM =[Protostars]		
(16)	HH48B-MIRI	RA: 11 04 23.1830 (166.0965958d)	Proper Motion RA: -21.125 mas/yr
		Dec: -77 18 6.75 (-77.30187d)	Proper Motion Dec: 2.822 mas/yr
		Equinox: J2000	Epoch of Position: 2016
Comments:	This object was generated by the	targetselector and retrieved from the SIMBAD database.	
The SIMBA Corrected th using the pr Category=S Description Extended=Y	D coordinates are for the photoco hem again to be the new GAIA D oper motions of the nearby comp Star =[T Tauri stars] YES	enter of HH48AB. I corrected them to the coordinates for the R3 coordinates: 11 04 23.183, -77 18 06.75 in J2016 anion in GAIA: -21.125 mas/yr, 2.822 mas/yr	B component from Robberto et al. (2012).
(17)	CED110IRS4-MIRI	RA: 11 06 46.4461 (166.6935254d)	
		Dec: -77 22 32.93 (-77.37581d)	
		Equinox: J2000	
Comments: Category=S Description Extended=N	The coordinates were set using th Star =[Protostars] NO	he photocenter of the 3-band IRAC 1, 3, 4 SEIP image from E	SASky. No proper motions are available.
1			

#### Proposal 1309 - Targets - IceAge: Chemical evolution of ices during star formation

 

 (18)
 CED110IRS4-MIRI-copy
 RA: 11 06 46.4461 (166.6935254d) Dec: -77 22 32.93 (-77.37581d) Equinox: J2000

 Comments: The coordinates were set using the photocenter of the 3-band IRAC 1, 3, 4 SEIP image from ESASky. No proper motions are available.

 This is a duplication of target 17, to be used with WOPR repeat observation 27:1. Requirement that a background target is needed has been removed. Category=Star Description=[Protostars] Extended=NO

# Proposal 1309 - Observation 1 - IceAge: Chemical evolution of ices during star formation

u	Proposal 1309,	Observation 1	Ced 110 IRS4									Mon May 1	5 14:00:39 GMT 2023
ati	Diagnostic Sta	tus: Warning											
Š	Observing Tem	plate: MIRI Mee	lium Resolution	Spectroscopy									
pse	Background Ob	servations:[HH	48B - Sky - MIF	RI (Obs 10)]									
ō													
cs	(Visit 1:1) War	ning (Form): Ov	erheads are prov	visional until the	Visit Planner ha	s been run.							
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its	# 1 (17) (	TED110IRS4-M	IRI	RA: 11.06.46.4/	161 (166 693525)	1d)	Taig. Co	ora. Correction	8	141	iscentaneous		
ge	(17)			$Dec^{-}$ -77 22 32 (	93 (-77 37581d)	+u)							
Tal			1	Equinox: J2000	( / /.5/501 <b>u</b> )								
Comments: The coordinates were set using the photocenter of the 3-band IRAC 1, 3, 4 SEIP image from ESASky. No proper motions are available.													
Ĭ,ž	Category=Star	)	0 1										
L Description=[Protostars] Extended=NO													
n	#	Target		Filter	Readou	ıt Pattern	Groups/Int	Integration	s/Exp	<b>Total Integrations</b>	Total Expos	ure Time	ETC Wkbk.Calc ID
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ate	Primary Chan	nel			Simult	aneous Imaging	g			Imager Subarray			
d	ALL				YES					FULL			
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۲ S	#			Dither T	vne		Ontim	ized For		Di	rection		
Jer	1			4-Point	<b>, , , , , , , , , , , , , , , , , , , </b>		EXTE	NDED SOURCE		N	EGATIVE		
Ē													
	#	Wavelength	Detector	Filter	Readout	Groups/Int	Integrations/E	Exposures/Dit	Dither	<b>Total Dithers</b>	Total	Total	ETC
<i>"</i>		Range			Pattern	_	xp	h			Integrations	Exposure Time	Wkbk.Calc ID
uts	1	-	IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
ne ne	1	LONG(C)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
<u>e</u>	1	LONG(C)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
	2		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
Ĭï	2	MEDIUM(B)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
ĕ	2	MEDIUM(B)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
Š	3		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
	3	SHORT(A)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
	3	SHORT(A)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	

# Proposal 1309 - Observation 1 - IceAge: Chemical evolution of ices during star formation

Sequence Observations 1, 9, 10, Non-interruptible

# Proposal 1309 - Observation 27 - IceAge: Chemical evolution of ices during star formation

n	Proposal 1309	, Observation 2	7: Ced 110 IRS	4								Mon May 15 1	4:00:39 GMT 2023
ați	Diagnostic Sta	tus: Warning											
Ž	Observing Terr	plate: MIRI Me	dium Resolution	Spectroscopy									
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cs	(Visit 27:1) Wa	arning (Form): O	verheads are pro	ovisional until	the Visit Planner l	nas been run.							
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<b>"</b>	# (18)	Name CED110IRS4-M	IRL-copy	RA: 11.06.46	Inates 1461 (166 693525	4d)	Targ. Co	ora. Correction	18	IVI	Iscenaneous		
ets	(10)	CLD110IR34-M	пачеору	Dec: -77 22 32	93 (-77 37581d)	4u)							
arg				Equinox: J200	0								
ΙË	Comments: The	e coordinates we	re set using the	photocenter of	the 3-band IRAC	1, 3, 4 SEIP ima	age from ESASky. No	proper motions	are availab	le.			
This is a duplication of target 17, to be used with WOPR repeat observation 27:1. Requirement that a background target is needed has been removed.													
Ē	Category=Star	unon oj iurgel I	7, 10 De used Wil	n wor it repet	n observation 27.	1. <i>Ке</i> үштетет	παι α σασκετσαπά π	urger is needed h	us been ten	<i>w</i> vcu.			
	Description=[1 Extended=NO	Protostars]											
۲ ۲	#	Target		Filter	Reado	ut Pattern	Groups/Int	Integration	ıs/Exp	<b>Total Integrations</b>	Total Expos	ure Time ET	C Wkbk.Calc ID
ij	1 SAME			FND	FAST		4	1		1	11.1	113	53
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<b>₹</b>					<i></i>	<b>.</b> .							
ate	Primary Chan	inel			Simult	aneous Imagin	g			Imager Subarray			
<u>م</u>	ALL				YES					FULL			
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v	#			Dither	Туре		Optim	ized For		Di	rection		
her	1			4-Point	JF-		EXTE	NDED SOURCE	,	NE	EGATIVE		
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		Range			Pattern	-	хр	h			Integrations	Exposure Time	Wkbk.Calc ID
nts	1		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
ne	1	SHORT(A)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
le l	1	SHORT(A)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
	2		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
it a	2	MEDIUM(B)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
ĕ	2	MEDIUM(B)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
۵ ۱	3		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
	3	LONG(C)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
I 1	3	LONG(C)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	

# Proposal 1309 - Observation 9 - IceAge: Chemical evolution of ices during star formation

no	Proposal 1309,	, Observation 9	: HH 48B - MKN	M								Mon May 15 14	4:00:39 GMT 2023
atic	Diagnostic Stat	tus: Warning											
iv.	Observing Tem	plate: MIRI Med	lium Resolution	Spectroscopy									
se	Background Ob	oservations:[HH	48B - Sky - MIR	I (Obs 10)]									
oþ													
ics	(Visit 9:1) Warr	ning (Form): Ov	erheads are provi	isional until the	Visit Planner	has been run.							
ost													
gne													
Dia													
	# 1	Name	1	arget Coordi	nates		Targ. Co	oord. Correction	S	М	iscellaneous		
	(16) I	HH48B-MIRI	F	RA: 11 04 23.18	330 (166.09659	958d)	Proper M	Iotion RA: -21.12	25 mas/yr				
<u></u> sts			Ι	Dec: -77 18 6.75	5 (-77.30187d)		Proper M	Iotion Dec: 2.822	mas/yr				
rge			E	Equinox: J2000			Epoch of	Position: 2016					
Та	Comments: This	s object was gen	erated by the tar	getselector and	retrieved from	the SIMBAD datab	pase.						
The SIMBAD coordinates are for the photocenter of HH48AB. I corrected them to the coordinates for the B component from Robberto et al. (2012). Corrected them again to be the new GAIA DR3 coordinates: 11 04 23.183, -77 18 06.75 in J2016 using the proper motions of the nearby companion in GAIA: -21.125 mas/yr, 2.822 mas/yr													
Category=Star Description=[T Tauri stars] Extended=YES													
n	#						Target	t					
itic	1						NONE						
uis													
Acq													
te /	AcqFilter			Primary	Channel		Simult	aneous Imaging		In	ager Subarray		
ola	FND			ALL			YES			FU	JLL		
ame													
Ť													
ers	#			Dither T	уре		Optim	ized For		Di	rection		
ithe	1			4-Point			EXTE	NDED SOURCE		NI	EGATIVE		
	#	Wavelength	Detector	Filton	Deadout	Choung/Int	Integrations/F	Ermogramog/Dit	Dithor	Total Dithong	Total	Total	FTC
s	#	Range	Detector	Filter	Pattern	Groups/Int	xp	h	Dither		Integrations	Exposure Time	Wkbk.Calc ID
snt	1		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
me	1	LONG(C)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
Ele	1	LONG(C)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
alE	2		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
tra	2	MEDIUM(B)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
Sec	2	MEDIUM(B)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
S	3		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
	3	SHORT(A)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
	3	SHORT(A)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	

# Proposal 1309 - Observation 9 - IceAge: Chemical evolution of ices during star formation

Sequence Observations 1, 9, 10, Non-interruptible

#### Proposal 1309 - Observation 10 - IceAge: Chemical evolution of ices during star formation

ч	Proposal 1309	, Observation 1	0: HH 48B - Sky	y - MIRI								Mon May 15 1	4:00:39 GMT 2023
ati	Diagnostic Sta	tus: Warning											
Ž	Observing Tem	plate: MIRI Mee	dium Resolution	Spectroscopy									
SSE	Background Ob	oservation For: [	Ced 110 IRS4 (C	0bs 1), HH 48B	- MKM (Obs 9)]								
ō													
cs	(Visit 10:1) Wa	rning (Form): O	verheads are pro	visional until t	he Visit Planner h	as been run.							
sti													
2													
iag													
ā													
its	# ]	Name		Farget Coordi	nates		Targ. Co	ord. Correction	s	Μ	liscellaneous		
ge	(11)	HH48B-SKY-M	IRI I	RA: 11 04 24.4	788 (166.101995	0d)							
Tal			]	Dec: -77 18 38.	.77 (-77.31077d)								
Ď	6		]	Equinox: J2000	)								
Ĭ.	Comments: Category=Cali	bration											
<u> </u>	Description=[]	Telescope/sky ba	ckground]										
ы В	#						Target						
ŝĖ	1						NONE						
ni;													
2													
6 Þ	AcaFiltor			Primar	v Channal		Simult	anoous Imaging		In	agor Subarray		
lat	FND				y Channel			ancous maging		III FI	II I		
d L	IND			<i>n</i> EE			TES FULL						
E I													
Ś	#			Dither 7	Гуре		Optim	ized For		Di	rection		
hei	1			4-Point			EXTER	NDED SOURCE		N	EGATIVE		
Ĕ													
	#	Wavelength	Detector	Filter	Readout	Groups/Int	Integrations/E	Exposures/Dit	Dither	Total Dithers	Total	Total	ETC
		Range			Pattern	-	хр	h			Integrations	Exposure Time	Wkbk.Calc ID
nts	1		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
ne	1	LONG(C)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
ler	1	LONG(C)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
ш	2		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
tra	2	MEDIUM(B)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
ec ec	2	MEDIUM(B)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
S	3		IMAGER	F770W	FASTR1	5	1	1	Dither 1	4	4	55.501	
	3	SHORT(A)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
	3	SHORT(A)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	

# Proposal 1309 - Observation 10 - IceAge: Chemical evolution of ices during star formation

Sequence Observations 1, 9, 10, Non-interruptible

# Proposal 1309 - Observation 23 - IceAge: Chemical evolution of ices during star formation

uo	Proposal 1309,	Observation 23:	high Av field v2 -	R H2O Filter							Mon May 15 14	:00:39 GMT 2023
ati	Diagnostic State	us: Warning										
≥	Observing Temp	late: NIRCam Wi	ide Field Slitless S	pectroscopy								
ps.	Comments: Plea	se ensure that, fol bserved with mod	llowing these obser Jule B and potentic	rvations, NIRCam	is NOT scheduled	to be used immedia	tely for any obse	ervations so that son	ne time is left for a mediately follow t	ny persistence in n	nodule B to decay.	Multiple bright
ō	sources will be o	bserveu wan mou	une B una porenne	a photon persisten	ee may beear, pore	multy producing g	nosis on any obs	servations which the	neurarery jonow n	us observation.		
CS	(high Av field v2	2 - R H2O Filter (	Obs 23)) Warning	(Form): Use of on	ly one of GRISMF	R or GRISMC may	result in spectral	overlap from multip	ple sources that ca	n't be corrected. U	sers should address	s this issue in
sti	(Visit 22:1) War	(L. Ning (Form): Oue	rhanda ara provisi	anal until the Visit	Diannar has been							
Ē	(Visit 23:1) War	ning (Form): Ove	rheads are provision	onal until the Visit	Planner has been t	uii. 110						
iaç	(visit 25.2) wai	linig (10111). Ove	incads are provise	mar until the visit	T familer has been f	un.						
ŝ	# N	ame	Targ	get Coordinates	C 5001 C (7 1)	1	l'arg. Coord. Co	orrections		Miscellaneous		
ge	(5) C	HAMMS1-C2-FI	ELD RA:	11 06 21.6400 (16	0.5901667d)							
<u>a</u>			Dec:	-// 25 54.12 (-//.	.598570)							
Γ.	Commonts This	abiect was gener	Equi	nox: J2000	ad from the SIMP	AD databasa						
Comments. This object was generated by the targetselector and retrieved from the SIMBAD database. Category=Star												
ш	Description=[Pr Extended=YES	otostars]										
te te	Module				Subarray				Grism (Long W	avelength)		
la	ALL				FULL				GRISMR			
Ē												
μ												
aic	Rows	Co	olumns	Row Ov	verlap %	Column Over	lap %	Row shift	Colum	nn shift	Tile Order	
ő	1	2		87.0		87.0		0.0	0.0		DEFAULT	
Ž												
S	#			Primary Dither	г Туре		Primary Dithe	rs		Subpixel Positio	ons	
the last	1			INTRAMODUI	LE		3			4-Point		
ā												
age	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Ex p	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
<u></u>	1	F140M	F410M	BRIGHT1	3	1	1	53.684		GRISMR	Direct Image	1
ğ												
Dir												
ts	#	Short Filter	Long Filter	Readout	Groups/Int	Integrations/Ex	Total	Total Exposure	ETC	Grism (Long	Exposure Type	Total Dithers
en			-	Pattern	-	<u>р</u>	Integrations	Time	Wkbk.Calc ID	Wavelength)		
e l	1	F150W	F322W2	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12
Ш	2	F140M	F410M	BRIGHT1	3	1	2	107.368			Out of Field	2
ra												
ect												
s b												

#### Proposal 1309 - Observation 23 - IceAge: Chemical evolution of ices during star formation

 St
 Group Visits within 53.0 Days

 Aperture PA Range 107 to 120 Degrees (V3 107.0 to 120.0)

 Aperture PA Range 140 to 150 Degrees (V3 140.0 to 150.0)

 Aperture PA Range 157 to 180 Degrees (V3 157.0 to 180.0)

 Visits Same PA

 Offset -59.0 arcsec, 20.0 arcsec

# Proposal 1309 - Observation 24 - IceAge: Chemical evolution of ices during star formation

tion	Proposal 1309, Diagnostic State	Observation 24: 1	high Av field v2 -	C H2O Filter							Mon May 15 14	:00:39 GMT 2023
rvat	Observing Temp	late: NIRCam Wi	ide Field Slitless S	pectroscopy								
bse												
0			<b>01 0</b> 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					1 0 11				
tics	(high Av field v/ their proposal te:	2 - C H2O Filter ( xt.	Obs 24)) Warning	(Form): Use of on	ly one of GRISME	R or GRISMC may	result in spectral	overlap from multi	ple sources that ca	n't be corrected. U	sers should address	s this issue in
Soc	(Visit 24:1) War	ning (Form): Ove	rheads are provisio	onal until the Visit	Planner has been r	un.						
iagi	(Visit 24:2) War	ning (Form): Ove	rheads are provisio	onal until the Visit	Planner has been r	un.						
Δ												
ts	# N	ame	Targ	et Coordinates	6 5901667d)	1	l'arg. Coord. Co	rrections		Miscellaneous		
rge	(5) C	HAMMINIST-C2-FI	Dec:	-77 23 54.12 (-77.	39837d)							
Ta			Equi	nox: J2000								
(ed	Comments: This	object was genere	ated by the targets	elector and retriev	ed from the SIMBA	AD database.						
Ē	Description=[Pi	rotostars]										
te te	Module				Subarray				Grism (Long W	avelength)		
pla	ALL				FULL				GRISMC			
e												
<u>.</u>	Rows	Co	lumns	Row Ov	erlap %	Column Over	lap %	Row shift	Colun	nn shift	Tile Order	
osa	2	1		76.0	-	10.0		0.0	0.0		DEFAULT	
ž												
ers	#			Primary Dither	Туре		Primary Dithe	rs		Subpixel Positio	ns	
iţ	1			INTRAMODUI	Æ		3			4-Point		
age	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Ex	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
<u> </u>	1	F140M	F410M	BRIGHT1	3	1	1	53.684		GRISMC	Direct Image	1
ect												
Ξ												
ents	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Ex p	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
eme	1	F150W	F322W2	SHALLOW4	5	1	12	3092.19		GRISMC	Grism (Long Wavelength)	12
Ξ	2	F140M	F410M	BRIGHT1	3	1	2	107.368			Out of Field	2
ctra												
) be												
0												

### Proposal 1309 - Observation 24 - IceAge: Chemical evolution of ices during star formation

Group Visits within 53.0 Days Aperture PA Range 107 to 114.5 Degrees (V3 107.0 to 114.5) Visits Same PA Offset -108.0 arcsec, 32.0 arcsec

# Proposal 1309 - Observation 25 - IceAge: Chemical evolution of ices during star formation

uo	Proposal 1309,	Observation 25: I	nigh Av field v2 -	R CO Filter							Mon May 15 14	:00:39 GMT 2023
ati	Diagnostic Statu	is: Warning										
Ž	Observing Temp	late: NIRCam Wi	de Field Slitless S <sub>I</sub>	pectroscopy								
psg												
ō												
cs	(high Av field v2	2 - R CO Filter (O	bs 25)) Warning (H	Form): Use of only	one of GRISMR	or GRISMC may re	esult in spectral o	overlap from multipl	e sources that can'	t be corrected. Use	ers should address	this issue in their
sti	(Visit 25:1) War	ning (Form): Over	heads are provisio	nal until the Visit	Plannar has been r	110						
ğ	(Visit 25:2) War	ning (Form): Over	heads are provisio	nal until the Visit	Planner has been r	un.						
iaç	(visit 25.2) wan	ling (1 0111). Over	incads are provisio	that until the visit	r tanner nas been r	un.						
			T							N.C. 11		
ŝ	# N	ame		et Coordinates	6 50016673)		arg. Coord. Co	rrections		Miscellaneous		
ge	(3)	HAMINIST-C2-FII	DED RA. 1	-77 23 54 12 (-77	39837d)							
a			Equir	177 23 34.12 (777. 10x: J2000	57057 <b>u</b> )							
л М	Comments: This	obiect was genera	ited by the targetse	elector and retriev	ed from the SIMBA	D database.						
Ĭ,Ě	Category=Star	5 0	, ,		5							
	Extended=YES	olosiarsj										
te	Module				Subarray				Grism (Long W	avelength)		
pla	ALL				FULL				GRISMR			
E E												
aic	Rows	Col	lumns		erlap %	Column Over	lap %	Row shift	Colum	ın shift	Tile Order	
los	1	2		10.0		87.0		0.0	0.0		DEFAULT	
2 0	#			Duimour Dithor	Tune		Duimour Ditha			Submissel Desition		
er	# 1				F		3	18		A-Point	118	
Ë	1			INTRAMODUL			5			4-1 Ollit		
]e	#	Short Filter	Long Filter	Readout	Groups/Int	Integrations/Ex	Total	Total Exposure	ETC	Grism (Long	Exposure Type	Total Dithers
Jaç				Pattern	•	р	Integrations	Time	Wkbk.Calc ID	Wavelength		
臣	1	F182M	F430M	BRIGHT1	3	1	1	53.684		GRISMR	Direct Image	1
e G												
ā												
Its	#	Short Filter	Long Filter	Readout	Groups/Int	Integrations/Ex	Total	Total Exposure	ETC	Grism (Long	Exposure Type	Total Dithers
len l	1	F200W	F444337	Pattern		p	Integrations	<u>Time</u>	Wkbk.Calc ID	Wavelength)	<u> </u>	12
en	1	F200W	Г444 W	SHALLOW4	3	1	12	3092.19		GRISNIK	Wavelength)	12
Ξ	2	F182M	F430M	BRIGHT1	3	1	2	107.368			Out of Field	2
tra												
ec												
ŝ												

#### Proposal 1309 - Observation 25 - IceAge: Chemical evolution of ices during star formation

Group Visits within 53.0 Days Aperture PA Range 142 to 150 Degrees (V3 142.0 to 150.0) Aperture PA Range 157 to 180.0 Degrees (V3 157.0 to 180.0) Visits Same PA Offset 120.0 arcsec, 25.0 arcsec

#### Proposal 1309, Observation 26: high Av field v2 - C CO Filter Observation Mon May 15 14:00:39 GMT 2023 **Diagnostic Status: Warning** Observing Template: NIRCam Wide Field Slitless Spectroscopy Diagnostics (high Av field v2 - C CO Filter (Obs 26)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text. (Visit 26:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. **Target Coordinates** Targ. Coord. Corrections Name Miscellaneous **Fixed Targets** (5) CHAMMS1-C2-FIELD RA: 11 06 21.6400 (166.5901667d) Dec: -77 23 54.12 (-77.39837d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=Star Description=[Protostars] Extended = YESTemplate Module Subarray Grism (Long Wavelength) ALL FULL GRISMC Mosaic Rows **Row Overlap % Column Overlap %** Row shift Column shift **Tile Order** Columns 100.0 10.0 0.0 0.0 DEFAULT 1 Dithers **Primary Dither Type Primary Dithers Subpixel Positions** 3 INTRAMODULE 4-Point Direct Image Short Filter Readout Integrations/Ex Total **Total Exposure ETC** Grism (Long Exposure Type Total Dithers Long Filter Groups/Int Pattern Integrations Time Wkbk.Calc ID Wavelength F182M F430M BRIGHT1 3 1 1 53.684 GRISMC Direct Image 1 **Spectral Elements** Short Filter Long Filter Readout Groups/Int Integrations/Ex Total **Total Exposure ETC** Grism (Long **Exposure Type** Total Dithers Wkbk.Calc ID Pattern Integrations Time Wavelength) p F200W F444W SHALLOW4 5 1 12 3092.19 GRISMC Grism (Long 12 Wavelength) F182M F430M BRIGHT1 3 1 2 107.368 Out of Field 2

#### Proposal 1309 - Observation 26 - IceAge: Chemical evolution of ices during star formation

# Proposal 1309 - Observation 26 - IceAge: Chemical evolution of ices during star formation

Aperture PA Range 159.5 to 180.0 Degrees (V3 159.5 to 180.0) Offset 100.0 arcsec, -8.2 arcsec

#### Proposal 1309 - Observation 11 - IceAge: Chemical evolution of ices during star formation

tion	F	Proposal 1309, Observation 11: C Diagnostic Status: Warning	ed 110 IRS4								Mon May 15 14	:00:39 GMT 2023
N S	C	Observing Template: NIRSpec IFU	Spectroscopy									
bse	E	Background Observations:[HH48B	Sky (Obs 14)]									
0												
Diagnostics	(	Visit 11:1) Warning (Form): Overl	ieads are provision	nal until the Visit	Planner has been ru	in.						
s	#	# Name	Targe	et Coordinates			Targ. Coord.	Corrections		Miscellaneous		
get	(	(2) CED110IRS4	RA: 1	1 06 47.1000 (16	6.6962500d)							
[ar			Dec: -	·77 22 34.00 (-77	.37611d)							
ed	0	Comments: This object was general	Equin ted by the targetse	ox: J2000 lector and retriev	ved from the SIMBA	D database.						
Ξ	C L E	Category=Star Description=[Protostars] Extended=YES										
te	]	TA Method										
pla	N	NONE										
lem												
S	#	<b>#</b>	Dither Type		Size		Starting Poi	nt	Number of Poin	nts	Points	
the	1	1	4-POINT-DITH	ER								
ā												
ents	#	# Grating/Filter	Readout Pattern	Groups/Int	Integrations/Ex p	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
em	1	1 G395H/F290LP	NRSIRS2RAPI D	20	1	false	true	NONE	4	4	1225.467	
alE	2	2 G395H/F290LP	NRSIRS2RAPI D	20	1	true	true	NONE	4	4	1225.467	
sctr												
¥ .												
р В												
its Sp	S	Sequence Observations 11, 13, 14,	Non-interruptible									
nents Sp	s	Sequence Observations 11, 13, 14,	Non-interruptible									
irements Sp	S	Sequence Observations 11, 13, 14,	Non-interruptible									
equirements Sp	S	Sequence Observations 11, 13, 14,	Non-interruptible									
I Requirements Sp	S	Sequence Observations 11, 13, 14,	Non-interruptible									
cial Requirements Sp	s	Sequence Observations 11, 13, 14, 7	Non-interruptible									
Special Requirements Sp	. 5	Sequence Observations 11, 13, 14,	Non-interruptible									

#### Proposal 1309 - Observation 13 - IceAge: Chemical evolution of ices during star formation

Ч	Proposal 1309, Observation 13: H	IH48B								Mon May 15 14	:00:39 GMT 2023
ati	Diagnostic Status: Warning										
Ž	Observing Template: NIRSpec IFU	Spectroscopy									
SS.	Background Observations:[HH48B	Sky (Obs 14)]									
ð											
cs	(Visit 13:1) Warning (Form): Over	heads are provisio	nal until the Visi	t Planner has been ru	un.						
sti											
laç											
	# Name	Targ	et Coordinates			Targ. Coord.	Corrections		Miscellaneous		
6	(1) HH48B	RA: 1	1 04 23 3100 (16	66 0971250d)		Targ. Coord.	corrections		Wilsteinaneous		
et	()	Dec:	-77 18 7.50 (-77.)	30208d)							
arç		Equir	nox: J2000	,							
ΕË.	Comments: This object was general	ted by the targetse	elector and retrie	ved from the SIMBA	D database.						
ě	The SIMPAD as and in star and found	a nhata a sutan af i	IIIIAOAD I como	at a d the sure to the a sec	udinataa fan d	Decomposite out for	Dobbouto et al (	2012)			
iÊ	Category=Star	ie photocenter of I	пп40AD. I corre	ciea inem io ine coo	rainales for in	е в сотронені јго	m Kobberio ei al. (	2012).			
	Description=[T Tauri stars]										
e	TA Method										
lat	NONE										
d L											
۴											
ers	#	Dither Type		Size		Starting Poi	nt	Number of Poin	nts	Points	
ithe	1	4-POINT-DITH	ER								
s S	# Crating/Filtor	Pandout	Croups/Int	Integrations/Fx	Lookcol	Dithor	Autocal	Total Dithors	Total	Total Exposura	FTC
ent	# Grating/Filter	Pattern	Groups/Int	p	Leakcai	Dittiel	Autocai	Total Dittlers	Integrations	Time	Wkbk.Calc ID
em	1 G395H/F290LP	NRSIRS2RAPI D	20	1	false	true	NONE	4	4	1225.467	
Ш	2 G395H/F290LP	NRSIRS2RAPI	20	1	true	true	NONE	4	4	1225.467	
Ľ.		D									
be											
ŝ											
n <u>t</u> s	Sequence Observations 11, 13, 14,	Non-interruptible									
a B											
Ie											
du i											
Å.											
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eci											
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	-										

#### Proposal 1309 - Observation 14 - IceAge: Chemical evolution of ices during star formation

tion	Proposal 1309 Diagnostic Sta	), Observation 14: H atus: Warning	IH48B Sky								Mon May 15 14	:00:39 GMT 2023
Za	Observing Ter	nplate: NIRSpec IFU	Spectroscopy									
ose	Background O	bservation For: [Ced	110 IRS4 (Obs 11	1), HH48B (Obs	13)]							
ō												
tics	(Visit 14:1) W	arning (Form): Over	heads are provision	onal until the Visi	t Planner has been r	un.						
lost												
agr												
ã												
ŝts	#	Name	Targ	et Coordinates			Targ. Coord. (	Corrections		Miscellaneous		
Ir ge	(4)	HH48B-SKY-NIRS	PEC RA: 1	11 04 55.2883 (16	66.2303679d)							
Ξa			Equin	-77 20 39.22 (-77 10x: J2000	(.54423u)							
Xed	Comments:		-1									
ï	Category=Cal Description=[	ibration Telescope/sky backg	round]									
ate	TA Method											
đ	NONE											
Ten												
- 10												
5	#		Dither Type		Size		Starting Poin	nt	Number of Poin	nts	Points	
ithers	# 1		Dither Type 4-POINT-DITHI	ER	Size		Starting Poin	nt	Number of Poin	nts	Points	
Dithers	<u>#</u> 1		Dither Type 4-POINT-DITHI	ER	Size		Starting Poin	nt	Number of Poin	nts	Points	
ents Dithers	#1 #	Grating/Filter	Dither Type 4-POINT-DITHI Readout Pattern	ER Groups/Int	Size Integrations/Ex p	Leakcal	Starting Poin	nt Autocal	Number of Poin	nts Total Integrations	Points Total Exposure Time	ETC Wkbk.Calc ID
lements Dithers	#1 #1	<b>Grating/Filter</b> G395H/F290LP	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D	ER Groups/Int 20	Size Integrations/Ex p 1	<b>Leakcal</b> false	Starting Poin	Autocal NONE	Number of Poin	nts Total Integrations 4	Points Total Exposure Time 1225.467	ETC Wkbk.Calc ID
al Elements Dithers	# 1 # 1 2	Grating/Filter G395H/F290LP G395H/F290LP	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	<b>Leakcal</b> false true	Starting Poin	nt Autocal NONE NONE	Number of Poin Total Dithers 4 4	nts Total Integrations 4 4	Total Exposure Time           1225.467           1225.467	ETC Wkbk.Calc ID
ctral Elements Dithers	#1 #1 2	<b>Grating/Filter</b> G395H/F290LP G395H/F290LP	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	Leakcal false true	Starting Poin	Autocal NONE NONE	Number of Poin Total Dithers 4 4	nts Total Integrations 4 4	Total Exposure Time           1225.467           1225.467	ETC Wkbk.Calc ID
Spectral Elements Dithers	# 1 1 2	Grating/Filter G395H/F290LP G395H/F290LP	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	<b>Leakcal</b> false true	Starting Poin	nt Autocal NONE NONE	Number of Poin Total Dithers 4 4	nts Total Integrations 4 4	Total Exposure Time           1225.467           1225.467	ETC Wkbk.Calc ID
ts Spectral Elements Dithers	# 1 # 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	<b>Leakcal</b> false true	Starting Poin	Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Total Exposure Time           1225.467           1225.467	ETC Wkbk.Calc ID
nents Spectral Elements Dithers	# 1 # 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D NRSIRS2RAPI	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	Leakcal false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Points Total Exposure Time 1225.467 1225.467	ETC Wkbk.Calc ID
rements Spectral Elements Dithers	# 1 # 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	<b>Leakcal</b> false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	Total Integrations 4 4	Total Exposure Time           1225.467           1225.467	ETC Wkbk.Calc ID
quirements Spectral Elements Dithers	# 1 1 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D Non-interruptible	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	<b>Leakcal</b> false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Points Total Exposure Time 1225.467 1225.467	ETC Wkbk.Calc ID
Requirements Spectral Elements Dithers	# 1 # 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D NRSIRS2RAPI D	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	Leakcal false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Points Total Exposure Time 1225.467 1225.467	ETC Wkbk.Calc ID
al Requirements Spectral Elements Dithers	# 1 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D Non-interruptible	ER Groups/Int 20 20	Size Integrations/Ex p 1 1	Leakcal false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Points Total Exposure Time 1225.467 1225.467	ETC Wkbk.Calc ID
pecial Requirements Spectral Elements Dithers	# 1 # 1 2 Sequence Obs	Grating/Filter G395H/F290LP G395H/F290LP ervations 11, 13, 14,	Dither Type 4-POINT-DITHI Readout Pattern NRSIRS2RAPI D NRSIRS2RAPI D Non-interruptible	ER Groups/Int 20 20	Size Integrations/Exp 1 1	Leakcal false true	Starting Poin	nt Autocal NONE NONE	Number of Poin	nts Total Integrations 4 4	Points Total Exposure Time 1225.467 1225.467	ETC Wkbk.Calc ID

# Proposal 1309 - Observation 15 - IceAge: Chemical evolution of ices during star formation

L C	Proposal 1309,	Observation 15: A	Av=95								Mon May 15 14	4:00:39 GMT 2023
Ĕ	Diagnostic Statu	is: Warning										
Ž	Observing Temp	late: NIRSpec Fix	ed Slit Spectroscop	у								
se												
lg												
ŝ	(Visit 15:1) War	ning (Form): Over	heads are provision	nal until the Visit	Planner has been r	un.						
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	# N	ame	Targe	et Coordinates		Т	`arg. Coo	rd. Corrections		Miscellaneou	15	
ets	(6) A	V95SSTSL2J1106	521.63- RA: 1	1 06 21.6400 (166	6.5901667d)							
l g	77	72354.1	Dec: -	77 23 54.12 (-77.	39837d)							
μË			Equin	ox: J2000								
eq	Comments:											
i.	Category=ISM	onse intersteller cl	oudsl									
	Extended=NO	ense interstettar ci	ouasj									
ion	#	Target	TA Method	Subarray	Filter	Readout	Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc
isit	1	SAME	WATA	SUB2048	CLEAR	NRSRAF	PIDD6	3	1	1	14.452	11353
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ate	Slit						Subarra	У				
Ъ	S200A2						ALLSLI	TS				
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ers	#				Primary Dither	Positions			Sub-Pixel P	attern		
ţ	1				2				SPATIAL			
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ents	#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Ex p	#	Autocal	Total Dithe	rs Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
Ĩ	1	G395H/F290LP	S200A2	NRSRAPID	265	1	1	NONE	4	4	5845.698	
Ш												
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# Proposal 1309 - Observation 22 - IceAge: Chemical evolution of ices during star formation

Ľ	Proposal 1309,	Observation 22: A	Av=60								Mon May 15 14	4:00:39 GMT 2023
ğ	Diagnostic Statu	is: Warning										
Ž	Observing Temp	late: NIRSpec Fix	ed Slit Spectroscop	у								
se												
ð												
ŝ	(Visit 22:1) Warr	ning (Form): Over	heads are provision	al until the Visit	Planner has been r	un.						
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ğ												
l De												
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<i>"</i>	# Name Target Coordinates Targ. Coord. Corrections						rd. Corrections		Miscellaneou	15		
ets	(8) AV60NIR38 RA: 11 06 25.5700 (166.6065417d)											
l g	Dec: -77 23 15.86 (-77.38774d)											
ΗË			Equin	ox: J2000								
ed	Comments:											
Ē	Category=ISM Description=[De	ense interstellar cl	ouds1									
	Extended=NO	nise interstentar et	onabj									
tion	#	Target	TA Method	Subarray	Filter	Readout	Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
isi	1	SAME	WATA	SUB2048	CLEAR	NRSRAF	PIDD6	3	1	1	14.452	11353
D D												
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ate	Slit						Subarra	у				
Ъ	S200A2						ALLSLI	TS				
E E												
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ŝrs	#				Primary Dither	Positions			Sub-Pixel P	attern		
ţ	1				2				SPATIAL			
ā												
ents	#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Ex p	#	Autocal	Total Dithe	rs Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
Ĕ	1	G395H/F290LP	S200A2	NRSRAPID	57	1	1	NONE	4	4	1274.69	
Шщ												
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t l												
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# Proposal 1309 - Observation 18 - IceAge: Chemical evolution of ices during star formation

Ч	Proposal 1309, Observation 18: Av=60						Mon May	15 14:00:39 GMT 2023
ĭ,	Diagnostic Status: Warning							
Ž	Observing Template: MIRI Low Resolution S	Spectroscopy						
se								
ð								
ŝ	(Visit 18:1) Warning (Form): Overheads are	provisional until the Visi	t Planner has been run.					
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s	# Name	Target Coordinates		Targ. Coor	rd. Corrections	Mis	scellaneous	
jet	(8) AV60NIR38	RA: 11 06 25.5700 (1	56.6065417d)					
arc	Dec: -77 23 15.86 (-77.38774d)							
		Equinox: J2000						
ĕ	Comments: Category–ISM							
ΪÊ	Description=[Dense interstellar clouds]							
	Extended=NO		D. L. (D. (	<u>О</u>	I de di de			
ō	#   Target     1   SAME	Filter	<b>Keadout Pattern</b>	Groups/Int	Integrations/Exp	1 Total Integrations	11 1	ETC Wkbk.Calc ID
isit	I SAME	F300W	FA51	4	1	1	11.1	11555
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ite	Subarray			Obtain V	verification Image?			
pla	FULL			false				
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Sis	# Dither 1	Гуре	No. Spectral Steps	Spectral	Step Offset	No. Spatial Steps	Spatial Ste	p Offset
Ę	1 ALONG	SLIT NOD						
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lts	# Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
je l	1 FASTR1	40	5	10	1	2	1132.216	
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tra								
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# Proposal 1309 - Observation 19 - IceAge: Chemical evolution of ices during star formation

Ľ	Proposal 1309, Observation 19: Av=95						Mon May	15 14:00:39 GMT 2023
ğ	Diagnostic Status: Warning							
Ž	Observing Template: MIRI Low Resolution	Spectroscopy						
se								
8								
ŝ	(Visit 19:1) Warning (Form): Overheads are	provisional until the Vis	it Planner has been run.					
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l Dg								
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6	# Name	Target Coordinates		Targ. Coo	rd. Corrections	Mi	iscellaneous	
et:	(6) AV95SSTSL2J110621.63-	RA: 11 06 21.6400 (1	166.5901667d)					
arg	772354.1	Dec: -77 23 54.12 (-7	7.39837d)					
ΗË		Equinox: J2000						
ed	Comments:							
ιč	Category=ISM Description=[Dense interstellar clouds]							
_	Extended=NO							
ы Б	# Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
ŝĖ	1 SAME	F560W	FAST	4	1	1	11.1	11353
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6 Þ	Subarray			Obtain V	Varification Imaga?			
lat				false	erincation inlage:			
d L				Taise				
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rs	# Dither	Гуре	No. Spectral Steps	Spectral	Step Offset	No. Spatial Steps	Spatial St	ep Offset
he	1 ALONG	SLIT NOD						
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ts	# Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
en	1 FASTR1	104	5	10	1	2	2908.242	
em 1								
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# Proposal 1309 - Observation 21 - IceAge: Chemical evolution of ices during star formation

۲ ۲	Proposal 1309, Observation 21: Ced 110 I	RS 4					Mon May	15 14:00:39 GMT 2023			
Ĕ	Diagnostic Status: Warning										
Ž	Observing Template: MIRI Low Resolution	Spectroscopy									
se											
ð											
ŝ	(Visit 21:1) Warning (Form): Overheads are	provisional until the Visi	it Planner has been run.								
sti.											
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ß	# Name	Target Coordinates		Targ. Cool	rd. Corrections	Mi	Miscellaneous				
let l	(9) CED110IRS4-LRS	RA: 11 06 47.1000 (1	66.6962500d)								
arg		Dec: -77 22 34.00 (-7	7.37611d)								
Ë		Equinox: J2000									
e e	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=Star										
iÊ	Description=[Protostars]										
	Extended=YES										
<u></u>	# Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID			
Sit	1 SAME	FND	FAST	4	1	1	11.1	11353			
Ţ,											
Ă											
fe	Subarray			Obtain V	verification Image?						
pla	FULL			false							
Ĕ											
S	# Dither	Гуре	No. Spectral Steps	Spectral	Step Offset	No. Spatial Steps	Spatial Ste	ep Offset			
Ę	1 ALONG	SLIT NOD									
ā											
ts	# Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID			
en le	1 FASTR1	5	3	6	1	2	94.351				
e a											
Ξ											
ra											
SC 1											
s S D											