



## 1264 - NIRSpec and MIRI IFS of SMGs

Cycle: 1, Proposal Category: GTO

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### OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
MIRI - GN20				
	1	GN20-MRS [WRIGHT_0302]	MIRI Medium Resolution Spectroscopy	(1) GN20-MRS
	2	GN20-Imager [WRIGHT_0301+0305]	MIRI Imaging	(2) GN20-IMAGER
	3	GNz11-Imager	MIRI Imaging	(7) GN-Z11
MIRI - HFLS3				

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	6	HFLS3-MRS [WRIGHT_0401]	MIRI Medium Resolution Spectroscopy	(4) HFLS3-MRS
	7	HFLS3-Imager	MIRI Imaging	(5) HFLS3-IMAGER
MIRI - SPT				
	9	SPT - MRS	MIRI Medium Resolution Spectroscopy	(6) SPT0311
	10	SPT - Imager	MIRI Imaging	(6) SPT0311
NIRSpec - SMGs				
	11	GN20 - NIRSpec	NIRSpec IFU Spectroscopy	(8) GN20-NIRSPEC
	12	HFLS3 - NIRSpec	NIRSpec IFU Spectroscopy	(9) HFLS3-NIRSPEC
	13	SPT0311-58 NIRSpec	NIRSpec IFU Spectroscopy	(10) SPT0311-58-NIRSPEC

## ABSTRACT

The observation IDs for the NIRSpec observations are:

GN20 FERRUIT\_3049

HFLS3 FERRUIT\_3050

And for MIRI:

GN20 MRS and IMAGER WRIGHT\_0301 to 0308

HFLS3 MRS and IMAGER WRIGHT\_0401 to 0403

\* UPDATE JUNE 2019: The galaxy SPT0311-5823 has been added to the original proposal.

This APT is for MIRI and NIRSpec-IFU observations of 3 high-z dusty, infrared luminous galaxies.

The combination of spectral coverage and subarcsec integral field medium resolution spectroscopy (MRS), makes MIRI a unique instrument to peer into the dustenshrouded phase of IRluminous starforming galaxies (DSFG) at high redshifts. MIRI provides the first direct subarcsec view ever at the (restframe) nearinfrared light distribution of the evolved stellar population, ionized and hot molecular gas phase in  $z \sim 26$  massive DSFGs, and therefore will investigate the physical processes of the obscured star formation and black hole growth in massive starforming galaxies (SFR above 100 Msun/yr) in the early universe. MRS spectroscopy of the main near-infrared emission lines (hydrogen Paschen, [FeII], H2 , etc) will be obtained for the currently known highest redshift DSFGs (SPT0311-5823 and HFLS3), and for GN20, a DSFG at  $z \sim 4$  located in GOODS-North. Mid-IR

imaging of the host galaxies and nearby fields will also be obtained with the MIRI imager.

The NIRSpec-IFU observations are part of the NIRSpec GTO Physics of Galaxy Assembly IFS survey. The goal of this program is to characterize the internal structure of distant galaxies and thereby investigate the primary physical processes driving galaxy evolution across cosmic time. The main specific objectives are to: trace the distribution of star formation, map the resolved properties of the stellar populations, trace the gas kinematics (i.e. velocity fields, velocity dispersion) and hence determine dynamical masses and also identify non-virial motions (outflow and inflows), map metallicity gradients and dust extinction. These quantities will be mapped for the brightest and most extended star-forming galaxies and AGN/QSO hosts up to  $z > 8$ .

The NIRSpec-IFU observations are performed at R100 and R2700. The specific band for the high-resolution observations is aimed at including the most important emission lines (from  $\sim$  H-beta to H-alpha).

## **OBSERVING DESCRIPTION**

The original version of the proposal submitted in 2017 included the IFS observations with MIRI and NIRSpec for two IR luminous galaxies, GN20 and HFLS3. The revised version of the proposal includes now an additional source, SPT0311-5823.

In the previous submission to STScI, the proposal included MIRI and NIRSpec-IFS observations of targets HFLS3 and GN20, and only MIRI IFS of targets GN20a+b. The present revised June 2019 submission, includes NIRSpec -IFS and MIRI observations of HFLS3, GN20 and SPT0311, while the MIRI IFS observations of GN20a+b are no longer part of the program. The total time needed for this proposal has increased with respect to the previous submission, but the total times for the "MIRI high-z" and "NIRSpec GA-IFS" GTO programs are within the internally approved ranges.

MIRI IFS and MIRI Imager:

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The purpose of the program is to get a mid-IR spectra of the high-z IR-luminous galaxies GN20, HFLS3 and SPT0311-5823, using 2 MRS configurations with simultaneous Imager observations of nearby fields in two filters (F560W, F1000W). In addition, we request the imaging of the host galaxies and surrounding field at 10 microns (F1000W).

A MIRI F560W image of the  $z \sim 11$  candidate GN-z11 and surrounding area will be taken in the GOODS-N field together with the MRS observations

## JWST Proposal 1264 (Created: Wednesday, June 19, 2019 at 5:00:34 PM Eastern Standard Time) - Overview

of the z~4 DSFG GN20. The MIRIM image of the GN-z11 will take in parallel a NIRCам imaging in two filters of the GN20 host and surrounding area, including GN20a and GN20b. The MIRI and NIRCам images will be combined to explore this region of the GOODS-N field rich in DSFGs. To optimize the overlap region between the MIRI and NIRCам imaging of the GN20 and GN-z11 regions, final adjustments in the position and orientation of the GN-z11 pointing with the MIRI imager by a few arcsec will likely be done once the epoch of the observations is known.

The PAs have been selected to avoid bright stars (which would saturate the detectors) in the MIRI imager fields, and to guarantee low background conditions.

The dithering strategies were selected to optimize the PSF and detector effects for all the MRS channels. HFLS3 have a size of about 1 arcsec, and therefore a point-like dithering strategy is used as most relevant lines are in channels 2 and 3, SPT0311-5823 and GN20 are more extended (sizes of about 1.4 to 2.2 arcsec) and therefore a dithering strategy for extended sources. These strategies could be subject to change without modifying the total charged time.

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### NIRSpec-IFU:

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These two sub-millimeter galaxies will be observed using the NIRSpec-IFU as part of the “Physics of Galaxy Assembly IFU survey” program. Observations will be performed with grating/filters PRISM (R100) and G395H/F290LP (R2700). By combining with the MIRI observations, we take advantage of the "smart accounting" option to save slew overheads.

For NIRSpec, the allowed PA range is defined such that contamination in the R100 spectra due to nearby sources leaking through the MSA is minimized. For the emission line high-resolution (R2700) spectra this is not so critical, but still we have checked for very bright sources in the MSA quadrants.

The PA restrictions of PA\_V3 = 300-310 degrees for GN20 is free of bright sources which could contaminate the NIRSpec-IFU observations, and is limited by constraints for the MIRI observations.

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The strict PA\_V3 = 287 degrees for HFLS3 is free of bright sources which could contaminate the NIRSpec-IFU observations, and is limited by two very bright stars at both ends of the FoV for the MIRI observations.

A 4-point dither pattern will be used, where the first 4 points of the "medium" cycling pattern provide a good compromise between an amplitude (~0.5") large enough to "jump" the failed open microswitches and to deal with other sources of background, while keeping a large FoV with complete exposure time (~2.5"x2.5"). This dither pattern also allows a good sub-pixel sampling.

No extra background exposures are included. For R100 it was considered that there will be a relatively large number of spaxels free from galaxy emission to derive the background. For the R2700, in addition, the goal is to study the emission lines and therefore the background should be less relevant.

Even though the contamination by bright targets leaking through the MSA is expected to be small for the PAs selected (see above), we take an extra leakage exposure for R100 in one pointing in order to be able to understand the effects of the surrounding field.

The IRS2RAPID reading mode was selected to maximise S/N and optimise the detection and removal of cosmic rays .

The exposure times used were computed using JWST ETC (v1.1.1). A maximum duration of 3ksec was considered when arranging the number of groups and integrations.

# Proposal 1264 - Targets - NIRSpec and MIRI IFS of SMGs

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	GN20-MRS	RA: 12 37 11.8885 (189.2995354d) Dec: +62 22 12.10 (62.37003d) Equinox: J2000  <i>Comments: This object was generated by the target selector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei]</i>		
	(2)	GN20-IMAGER	RA: 12 37 17.3468 (189.3222783d) Dec: +62 21 44.69 (62.36241d) Equinox: J2000  <i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Starburst galaxies]</i>		
	(4)	HFLS3-MRS	RA: 17 06 47.8000 (256.6991667d) Dec: +58 46 23.51 (58.77320d) Equinox: J2000  <i>Comments: This object was generated by the target selector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, High-redshift galaxies, Starburst galaxies]</i>		
	(5)	HFLS3-IMAGER	RA: 17 06 48.5975 (256.7024896d) Dec: +58 46 8.98 (58.76916d) Equinox: J2000  <i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei]</i>		
	(6)	SPT0311	RA: 03 11 33.2000 (47.8883333d) Dec: -58 23 33.40 (-58.39261d) Equinox: J2000  <i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies]</i> <i>Extended=YES</i>		
	(7)	GN-Z11	RA: 12 36 23.1175 (189.0963229d) Dec: +62 14 53.46 (62.24818d) Equinox: J2000  <i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, High-redshift galaxies]</i> <i>Extended=NO</i>		
	(8)	GN20-NIRSPEC	RA: 12 37 11.8999 (189.2995829d) Dec: +62 22 12.10 (62.37003d) Equinox: J2000  <i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[High-redshift galaxies, Starburst galaxies]</i> <i>Extended=YES</i>		

## Proposal 1264 - Targets - NIRSpec and MIRI IFS of SMGs

(9)	HFLS3-NIRSPEC	RA: 17 06 47.8000 (256.6991667d) Dec: +58 46 23.51 (58.77320d) Equinox: J2000  <i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[High-redshift galaxies, Starburst galaxies]</i> <i>Extended=YES</i>
(10)	SPT0311-58-NIRSPEC	RA: 03 11 33.2600 (47.8885833d) Dec: -58 23 33.50 (-58.39264d) Equinox: J2000  <i>Comments: Coordinates from Figure 1 in Marrone+18 adjusting FoV</i> <i>Category=Galaxy</i> <i>Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies]</i> <i>Extended=YES</i>

# Proposal 1264 - Observation 1 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 1: GN20-MRS [WRIGHT_0302]												Wed Jun 19 22:00:34 GMT 2019	
	Diagnostic Status: Warning													
	Observing Template: MIRI Medium Resolution Spectroscopy													
Diagnostics	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.													
Fixed Targets	#	Name	Target Coordinates					Targ. Coord. Corrections				Miscellaneous		
	(1)	GN20-MRS	RA: 12 37 11.8885 (189.2995354d) Dec: +62 22 12.10 (62.37003d) Equinox: J2000											
	Comments: This object was generated by the target selector and retrieved from the NED database.													
	Category=Galaxy Description=[Active galactic nuclei]													
Acquisition	#	Target												
	1	NONE												
Template	AcqFilter	Primary Channel					Simultaneous Imaging				Imager Subarray			
	F560W	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	F560W	FAST	120	6	1	Dither 1	4	24	7992.115		
	1	MEDIUM(B)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013		
	1	MEDIUM(B)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013		
	2		IMAGER	F770W	FAST	120	6	1	Dither 1	4	24	7992.115		
	2	LONG(C)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013		
	2	LONG(C)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013		



Proposal 1264 - Observation 1 - NIRSpec and MIRI IFS of SMGs

Special Requirements	Aperture PA Range 300 to 310 Degrees (V3 300.0 to 310.0) Group Observations 1, 2, Non-interruptible
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# Proposal 1264 - Observation 2 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 2: GN20-Imager [WRIGHT_0301+0305]										Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning										
	Observing Template: MIRI Imaging										
Diagnostics	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(2)	GN20-IMAGER	RA: 12 37 17.3468 (189.3222783d) Dec: +62 21 44.69 (62.36241d) Equinox: J2000								
	Comments: This object was generated by the targetselector and retrieved from the NED database.										
	Category=Galaxy Description=[Active galactic nuclei, Starburst galaxies]										
Template	Subarray										
	FULL										
Dithers	#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	
	1	4-Point-Sets	1	5		2	1	POINT SOURCE	POSITIVE	DEFAULT	
Spectral Elements	#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F1000W	FAST	90	1	1	Dither 1	4	4	999.014	
Special Requirements	Aperture PA Range 304.449705 to 314.449705 Degrees (V3 300.0 to 310.0)										
	Group Observations 1, 2, Non-interruptible										

# Proposal 1264 - Observation 3 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 3: GNz11-Imager										Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning										
	Observing Template: MIRI Imaging										
	Coordinated Parallel Template(s): NIRCam Imaging										
Diagnostics	(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(7)	GN-Z11	RA: 12 36 23.1175 (189.0963229d)								
			Dec: +62 14 53.46 (62.24818d)								
			Equinox: J2000								
		<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, High-redshift galaxies]</i> <i>Extended=NO</i>									
Template	MIRI Imaging					NIRCam Imaging					
	Subarray: FULL					Module: ALL Subarray: FULL					
Dithers	#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	
	1	4-Point-Sets	1	5		2	1	POINT SOURCE	POSITIVE	DEFAULT	
Spectral Elements	MIRI Imaging	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F560W	FAST	81	2	1	Dither 1	4	8	1798.226	
Spectral Elements	NIRCam Imaging	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID	
	1	F115W	F277W	MEDIUM8	4	1	4	4	1631.989		

Proposal 1264 - Observation 3 - NIRSpec and MIRI IFS of SMGs

Special Requirements	Aperture PA Range 304.449705 to 305.449705 Degrees (V3 300.0 to 301.0) No Parallel
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# Proposal 1264 - Observation 6 - NIRSPEC and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 6: HFLS3-MRS [WRIGHT_0401]												Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning												
	Observing Template: MIRI Medium Resolution Spectroscopy												
Diagnostics	(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
Fixed Targets	#	Name	Target Coordinates					Targ. Coord. Corrections			Miscellaneous		
	(4)	HFLS3-MRS	RA: 17 06 47.8000 (256.6991667d)										
			Dec: +58 46 23.51 (58.77320d)										
			Equinox: J2000										
			Comments: This object was generated by the target selector and retrieved from the NED database. Category=Galaxy Description=[Active galactic nuclei, High-redshift galaxies, Starburst galaxies]										
Acquisition	#	Target											
	1	NONE											
Template	AcqFilter	Primary Channel					Simultaneous Imaging			Imager Subarray			
	F560W	ALL					YES			FULL			
Dithers	#	Dither Type					Optimized For			Direction			
	1	4-Point					POINT SOURCE			POSITIVE			
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	FAST	120	6	1	Dither 1	4	24	7992.115	
	1	MEDIUM(B)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013	
	1	MEDIUM(B)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013	
	2		IMAGER	F1000W	FAST	120	6	1	Dither 1	4	24	7992.115	
	2	LONG(C)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013	
	2	LONG(C)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013	

Proposal 1264 - Observation 6 - NIRSpec and MIRI IFS of SMGs

Special Requirements	Aperture PA Range 287.0 to 287.0 Degrees (V3 287.0 to 287.0) Group Observations 6, 7, Non-interruptible
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# Proposal 1264 - Observation 7 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 7: HFLS3-Imager										Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning										
	Observing Template: MIRI Imaging										
Diagnostics	(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(5)	HFLS3-IMAGER	RA: 17 06 48.5975 (256.7024896d) Dec: +58 46 8.98 (58.76916d) Equinox: J2000								
	Comments: This object was generated by the targetselector and retrieved from the NED database. Category=Galaxy Description=[Active galactic nuclei]										
Template	Subarray										
	FULL										
Dithers	#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	
	1	4-Point-Sets	1	5		7	1	POINT SOURCE	POSITIVE	SMALL	
Spectral Elements	#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F1000W	FAST	90	1	1	Dither 1	4	4	999.014	
Special Requirements	Aperture PA Range 292.015224 to 292.015224 Degrees (V3 287.565519 to 287.565519)										
	Group Observations 6, 7, Non-interruptible										

# Proposal 1264 - Observation 9 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 9: SPT - MRS												Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning												
Diagnostics	Observing Template: MIRI Medium Resolution Spectroscopy												
	(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.												
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections				Miscellaneous		
	(6)	SPT0311	RA: 03 11 33.2000 (47.8883333d) Dec: -58 23 33.40 (-58.39261d) Equinox: J2000 <i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> <i>Category=Galaxy</i> <i>Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies]</i> <i>Extended=YES</i>										
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	FAST	120	6	1	Dither 1	4	24	7992.115	
	1	SHORT(A)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013	
	1	SHORT(A)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013	
	2		IMAGER	F1000W	FAST	120	6	1	Dither 1	4	24	7992.115	
	2	MEDIUM(B)	MRSLONG		SLOW	42	2	1	Dither 1	4	8	8027.013	
	2	MEDIUM(B)	MRSSHORT		SLOW	42	2	1	Dither 1	4	8	8027.013	



Proposal 1264 - Observation 9 - NIRSpec and MIRI IFS of SMGs

Special Requirements	Aperture PA Range 42.0 to 60.0 Degrees (V3 42.0 to 60.0) Aperture PA Range 200.0 to 358.0 Degrees (V3 200.0 to 358.0)  Group Observations 9, 10, Non-interruptible
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# Proposal 1264 - Observation 10 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 10: SPT - Imager										Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning										
	Observing Template: MIRI Imaging										
Diagnostics	(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(6)	SPT0311	RA: 03 11 33.2000 (47.8883333d) Dec: -58 23 33.40 (-58.39261d) Equinox: J2000								
	Comments: This object was generated by the targetselector and retrieved from the NED database.										
	Category=Galaxy										
	Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies] Extended=YES										
Template	Subarray										
	FULL										
Dithers	#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	
	1	4-Point-Sets				1	1	POINT SOURCE	POSITIVE	DEFAULT	
Spectral Elements	#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F1000W	FAST	90	3	1	Dither 1	4	12	2997.043	
Special Requirements	Group Observations 9, 10, Non-interruptible										

# Proposal 1264 - Observation 11 - NIRSpec and MIRI IFS of SMGs

Observation	<b>Proposal 1264, Observation 11: GN20 - NIRSpec</b> <span style="float: right;">Wed Jun 19 22:00:34 GMT 2019</span>											
	<b>Diagnostic Status: Warning</b> Observing Template: NIRSpec IFU Spectroscopy											
Diagnostics	(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections		Miscellaneous			
	(8)	GN20-NIRSPEC	RA: 12 37 11.8999 (189.2995829d) Dec: +62 22 12.10 (62.37003d) Equinox: J2000									
Template	<i>Comments:</i> Category=Galaxy Description=[High-redshift galaxies, Starburst galaxies] Extended=YES											
	<b>TA Method</b> NONE											
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	CYCLING		MEDIUM		1		4				
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	G395H/F290LP	NRSIRS2RAPID	125	1	false	true	NONE	4	4	7352.801	
	2	PRISM/CLEAR	NRSIRS2RAPID	60	1	false	true	NONE	4	4	3559.689	
	3	PRISM/CLEAR	NRSIRS2RAPID	60	1	true	false	NONE	1	1	889.922	
Special Requirements	Aperture PA Range 78.892975 to 88.892975 Degrees (V3 300.0 to 310.0)											

# Proposal 1264 - Observation 12 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 12: HFLS3 - NIRSpec											Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning											
	Observing Template: NIRSpec IFU Spectroscopy											
Diagnostics	(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
	(9)	HFLS3-NIRSPEC	RA: 17 06 47.8000 (256.6991667d) Dec: +58 46 23.51 (58.77320d) Equinox: J2000									
	Comments: Category=Galaxy Description=[High-redshift galaxies, Starburst galaxies] Extended=YES											
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	CYCLING		MEDIUM		1		4				
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	G395H/F290LP	NRSIRS2RAPID	125	1	false	true	NONE	4	4	7352.801	
	2	PRISM/CLEAR	NRSIRS2RAPID	60	1	false	true	NONE	4	4	3559.689	
	3	PRISM/CLEAR	NRSIRS2RAPID	60	1	true	false	NONE	1	1	889.922	
Special Requirements	Aperture PA Range 65.892975 to 65.892975 Degrees (V3 287.0 to 287.0)											

# Proposal 1264 - Observation 13 - NIRSpec and MIRI IFS of SMGs

Observation	Proposal 1264, Observation 13: SPT0311-58 NIRSpec											Wed Jun 19 22:00:34 GMT 2019
	Diagnostic Status: Warning											
	Observing Template: NIRSpec IFU Spectroscopy											
Diagnostics	(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
	(10)	SPT0311-58-NIRSPEC	RA: 03 11 33.2600 (47.8885833d) Dec: -58 23 33.50 (-58.39264d) Equinox: J2000									
	Comments: Coordinates from Figure 1 in Marrone+18 adjusting FoV											
	Category=Galaxy											
	Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies] Extended=YES											
Template	TA Method											
	NONE											
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	CYCLING		MEDIUM		1		4				
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	G395H/F290LP	NRSIRS2RAPID	125	1	false	true	NONE	4	4	7352.801	
	2	PRISM/CLEAR	NRSIRS2RAPID	60	1	false	true	NONE	4	4	3559.689	
	3	PRISM/CLEAR	NRSIRS2RAPID	60	1	true	false	NONE	1	1	889.922	
Special Requirements	Aperture PA Range 353.892975 to 14.892975 Degrees (V3 215.0 to 236.0)											