



6827 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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Dr. Jinyi Yang (CoI)	University of Michigan
Dr. John David Silverman (CoI)	The Johns Hopkins University
Dr. Ruari Mackenzie (CoI) (ESA Member)	Ecole Polytechnique Federale de Lausanne
Prof. Xiaohui Fan (CoI)	University of Arizona

OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
MIRI Imaging				
	1	J0100+2802	MIRI Imaging	(1) J0100+2802

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	2	J0148+0600	MIRI Imaging	(2) J0148+0600
	3	J1030+0524	MIRI Imaging	(3) J1030+0524
	4	J1120+0641	MIRI Imaging	(4) J1120+0641
	5	J1148+5251	MIRI Imaging	(5) J1148+5251
NIRCam WFSS				
	6	J0100+2802	NIRCam Wide Field Slitless Spectroscopy	(1) J0100+2802
	7	J0148+0600	NIRCam Wide Field Slitless Spectroscopy	(2) J0148+0600
	8	J1030+0524	NIRCam Wide Field Slitless Spectroscopy	(3) J1030+0524
	9	J1120+0641	NIRCam Wide Field Slitless Spectroscopy	(4) J1120+0641
	10	J1148+5251	NIRCam Wide Field Slitless Spectroscopy	(5) J1148+5251

ABSTRACT

The formation and growth of supermassive black holes (SMBHs) in the early universe represents one of the major unsolved mysteries of modern astronomy. While in the latter half of cosmic history a self-consistent narrative of SMBH growth has emerged, the presence of luminous quasars powered by billion solar mass black holes at Cosmic Dawn poses significant challenges to our understanding. To grow the observed masses of SMBHs within short amounts of cosmic time, it is necessary to modify our standard picture and invoke either very rapid “super-Eddington” accretion, or alternatively, highly dust-obscured black hole growth phases. With this proposal we aim to trace the formation and growth of SMBHs across billions of years of cosmic history and connect the yet-to-be-understood mysteries at Cosmic Dawn to the decade-old and seemingly well-understood results at Cosmic Noon.

JWST’s unique new observing capabilities allow us to address some of the major open questions in astronomy and motivate our proposal to study both luminous, unobscured AGN, as well as heavily dust-enshrouded, obscured objects and their respective environments. Using NIRCam in wide-field slitless mode as well as deep MIRI imaging in five quasar fields we propose to observe >80 (>200) unobscured (obscured) AGN and quasars across a wide range of halo mass, black hole mass, stellar mass, luminosity and redshift, in order to determine (#1) their dark matter halo masses and duty cycles, (#2) their obscuration fraction, (#3) the initial seed black hole masses, (#4) the merger rate, and (#5) their accretion rates to paint the first coherent picture of SMBH growth across cosmic time - from Cosmic Dawn to Cosmic Noon.

OBSERVING DESCRIPTION

We target five high-redshift quasar fields with NIRCam WFSS in F444W, and simultaneous SW imaging in F140M and F200W, as well as MIRI imaging in F1280W and F1800W. The quasar fields were previously observed with NIRCam WFSS in F356W and represent some of the deepest extragalactic fields in terms of available NIRCam imaging and unprecedented depth in WFSS observations.

All fields will be targeted with a 1x2 mosaic in NIRCam WFSS in F444W. The tiles will overlap such that they cover the central 2.2'x2.4' around the quasar. Combined with the previous F356W WFSS observations, this data will enable a continuous wavelength coverage for the majority of objects in the field between 3.135-4.982 microns. The spectral coverage will enable us to identify AGN by means of the broad Balmer or Paschen lines between $0.7 < z < 9.2$. The wide spectral range covers at least two emission lines for most galaxies in the field, which serves two purposes: Firstly, multiple lines enables a secure spectroscopic redshift determination, and secondly, it is crucial to differentiate between broadening of lines due to accreting SMBHs or galactic outflows.

Following on the successful strategy of previous teams, we choose to use only GrismR, with two position angles (PAs) rotated by 180 degrees to avoid source confusion.

We split the exposure time into 5 groups per integration and choose 12 dithers (INTRAMODULEX dither pattern, three primary dither positions, four subpixel dithers) to mitigate the influence of cosmic rays. The total NIRCam observing time per quasar field is 14.2ks, 12.4ks of which are taken in WFSS mode.

Deep MIRI observations will be obtained in two filters (F1280W and F1800W) in a 2x2 mosaic. We use the recommended 4-Point-Sets dither pattern, which we repeat twice. The exposures are split into 50 groups/integration and 4 integrations/exposure, resulting in a total of 4500s per filter and mosaic tile. The total exposure time is 35.5ks per quasar field.

Proposal 6827 - Targets - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	J0100+2802	RA: 01 00 13.0160 (15.0542333d) Dec: +28 02 25.80 (28.04050d) Equinox: J2000		
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>				
(2)	J0148+0600	RA: 01 48 37.6390 (27.1568292d) Dec: +06 00 20.01 (6.00556d) Equinox: J2000		
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>				
(3)	J1030+0524	RA: 10 30 27.0910 (157.6128792d) Dec: +05 24 55.10 (5.41531d) Equinox: J2000		
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>				
(4)	J1120+0641	RA: 11 20 1.4800 (170.0061667d) Dec: +06 41 24.30 (6.69008d) Equinox: J2000		
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Quasars]</i>				
(5)	J1148+5251	RA: 11 48 16.6000 (177.0691667d) Dec: +52 51 50.00 (52.86389d) Equinox: J2000		
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>				

Fixed Targets

Proposal 6827 - Observation 1 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 1: J0100+2802 Diagnostic Status: Warning Observing Template: MIRI Imaging																																										
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Proposal 6827 - Observation 2 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

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Proposal 6827 - Observation 5 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 5: J1148+5251 Diagnostic Status: Warning Observing Template: MIRI Imaging																																										
Diagnostics	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 5:2) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 5:3) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 5:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.																																										
Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="3">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(5)</td> <td>J1148+5251</td> <td>RA: 11 48 16.6000 (177.0691667d) Dec: +52 51 50.00 (52.86389d) Equinox: J2000</td> <td colspan="3"></td> <td colspan="4"></td> </tr> <tr> <td colspan="10"> Comments: Category=Galaxy Description=[Active galactic nuclei, Quasars] </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections			Miscellaneous				(5)	J1148+5251	RA: 11 48 16.6000 (177.0691667d) Dec: +52 51 50.00 (52.86389d) Equinox: J2000								Comments: Category=Galaxy Description=[Active galactic nuclei, Quasars]												
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Dithers	<table border="1"> <thead> <tr> <th>#</th> <th>Dither Type</th> <th>Starting Point</th> <th>Number of Points</th> <th>Points</th> <th>Starting Set</th> <th>Number of Sets</th> <th>Optimized For</th> <th>Direction</th> <th>Pattern Size</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CYCLING</td> <td>2</td> <td>8</td> <td></td> <td>1</td> <td>2</td> <td></td> <td></td> <td>MEDIUM</td> </tr> </tbody> </table>										#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size	1	CYCLING	2	8		1	2			MEDIUM													
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Spectral Elements	<table border="1"> <thead> <tr> <th>#</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Dither</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>Optional ETC ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>F1280W</td> <td>FASTR1</td> <td>50</td> <td>4</td> <td>1</td> <td>Dither 1</td> <td>8</td> <td>32</td> <td>4506.665</td> <td></td> </tr> <tr> <td>2</td> <td>F1800W</td> <td>FASTR1</td> <td>50</td> <td>4</td> <td>1</td> <td>Dither 1</td> <td>8</td> <td>32</td> <td>4506.665</td> <td></td> </tr> </tbody> </table>										#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID	1	F1280W	FASTR1	50	4	1	Dither 1	8	32	4506.665		2	F1800W	FASTR1	50	4	1	Dither 1	8	32	4506.665	
#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID																																	
1	F1280W	FASTR1	50	4	1	Dither 1	8	32	4506.665																																		
2	F1800W	FASTR1	50	4	1	Dither 1	8	32	4506.665																																		
Special Requirements	Group Visits within 53.0 Days Visits Same PA																																										

Proposal 6827 - Observation 6 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 6: J0100+2802 Diagnostic Status: Warning Observing Template: NIRCam Wide Field Slitless Spectroscopy											
Diagnostics	(J0100+2802 (Obs 6)) Warning (Form): By selecting Target Placement = Module Gap the target coordinates will not fall on any detector unless an appropriate Mosaic, set of Dithers or Offset Special Requirement is specified. (J0100+2802 (Obs 6)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended. (J0100+2802 (Obs 6)) 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 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 6:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections		Miscellaneous			
(1)	J0100+2802	RA: 01 00 13.0160 (15.0542333d) Dec: +28 02 25.80 (28.04050d) Equinox: J2000										
	<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>											
Template	Module		Subarray				Grism (Long Wavelength)		Target Placement			
ALL		FULL				GRISMR		Module gap (large extended source)				
Mosaic	Rows	Columns	Row Overlap %		Column Overlap %		Row shift (deg)	Column shift (deg)		Tile Order		
1	2	0.0		45.0		0.0	0.0		DEFAULT			
Dithers	#	Primary Dither Type				Primary Dithers		Subpixel Positions				
1	INTRAMODULEX				3		4-Point					
Direct Image	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F444W	SHALLOW4	6	1	1	311.366		GRISMR	Direct Image	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
2	F200W	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
3	F200W	F444W	SHALLOW4	6	1	2	622.733			Out of Field	2	

Proposal 6827 - Observation 6 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Special Requirements

Group Visits within 53.0 Days
Visits Same PA

Proposal 6827 - Observation 7 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 7: J0148+0600 Diagnostic Status: Warning Observing Template: NIRCam Wide Field Slitless Spectroscopy											
Diagnostics	(J0148+0600 (Obs 7)) Warning (Form): By selecting Target Placement = Module Gap the target coordinates will not fall on any detector unless an appropriate Mosaic, set of Dithers or Offset Special Requirement is specified. (J0148+0600 (Obs 7)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended. (J0148+0600 (Obs 7)) 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 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 7:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
(2)	J0148+0600	RA: 01 48 37.6390 (27.1568292d) Dec: +06 00 20.01 (6.00556d) Equinox: J2000										
<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>												
Template	Module		Subarray				Grism (Long Wavelength)			Target Placement		
ALL		FULL				GRISMR			Module gap (large extended source)			
Mosaic	Rows	Columns	Row Overlap %		Column Overlap %		Row shift (deg)		Column shift (deg)		Tile Order	
1	2	0.0		45.0		0.0		0.0		DEFAULT		
Dithers	#	Primary Dither Type				Primary Dithers			Subpixel Positions			
1	INTRAMODULEX				3			4-Point				
Direct Image	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F444W	SHALLOW4	6	1	1	311.366		GRISMR	Direct Image	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
2	F200W	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
3	F200W	F444W	SHALLOW4	6	1	2	622.733			Out of Field	2	

Proposal 6827 - Observation 7 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Special Requirements

Group Visits within 53.0 Days
Aperture PA Range 52.61 to 82.61 Degrees (V3 52.61 to 82.61)
Aperture PA Range 232.61 to 262.61 Degrees (V3 232.61 to 262.61)
Visits Same PA

Proposal 6827 - Observation 8 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 8: J1030+0524 Diagnostic Status: Warning Observing Template: NIRCam Wide Field Slitless Spectroscopy											
Diagnostics	(J1030+0524 (Obs 8)) Warning (Form): By selecting Target Placement = Module Gap the target coordinates will not fall on any detector unless an appropriate Mosaic, set of Dithers or Offset Special Requirement is specified. (J1030+0524 (Obs 8)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended. (J1030+0524 (Obs 8)) 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 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 8:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
(3)	J1030+0524	RA: 10 30 27.0910 (157.6128792d) Dec: +05 24 55.10 (5.41531d) Equinox: J2000										
	<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>											
Template	Module		Subarray				Grism (Long Wavelength)			Target Placement		
ALL		FULL				GRISMR			Module gap (large extended source)			
Mosaic	Rows	Columns	Row Overlap %		Column Overlap %		Row shift (deg)		Column shift (deg)		Tile Order	
1	2	0.0		45.0		0.0		0.0		DEFAULT		
Dithers	#	Primary Dither Type				Primary Dithers			Subpixel Positions			
1	INTRAMODULEX				3			4-Point				
Direct Image	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F444W	SHALLOW4	6	1	1	311.366		GRISMR	Direct Image	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
2	F200W	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
3	F200W	F444W	SHALLOW4	6	1	2	622.733			Out of Field	2	

Proposal 6827 - Observation 8 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Special Requirements

Group Visits within 53.0 Days
Aperture PA Range 94.81 to 124.81 Degrees (V3 94.81 to 124.81)
Aperture PA Range 274.81 to 304.81 Degrees (V3 274.81 to 304.81)
Visits Same PA

Proposal 6827 - Observation 9 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 9: J1120+0641 Diagnostic Status: Warning Observing Template: NIRCam Wide Field Slitless Spectroscopy											
Diagnostics	(J1120+0641 (Obs 9)) Warning (Form): By selecting Target Placement = Module Gap the target coordinates will not fall on any detector unless an appropriate Mosaic, set of Dithers or Offset Special Requirement is specified. (J1120+0641 (Obs 9)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended. (J1120+0641 (Obs 9)) 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 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 9:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections		Miscellaneous			
(4)	J1120+0641	RA: 11 20 1.4800 (170.0061667d) Dec: +06 41 24.30 (6.69008d) Equinox: J2000										
	<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Quasars]</i>											
Template	Module		Subarray			Grism (Long Wavelength)			Target Placement			
ALL		FULL			GRISMR			Module gap (large extended source)				
Mosaic	Rows	Columns	Row Overlap %		Column Overlap %		Row shift (deg)	Column shift (deg)		Tile Order		
1	2	0.0		45.0		0.0	0.0		DEFAULT			
Dithers	#	Primary Dither Type				Primary Dithers			Subpixel Positions			
1	INTRAMODULEX				3			4-Point				
Direct Image	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F444W	SHALLOW4	6	1	1	311.366		GRISMR	Direct Image	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
2	F200W	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
3	F200W	F444W	SHALLOW4	6	1	2	622.733			Out of Field	2	

Proposal 6827 - Observation 9 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Special Requirements

Group Visits within 53.0 Days
Aperture PA Range 98.98 to 128.98 Degrees (V3 98.98 to 128.98)
Aperture PA Range 278.98 to 308.98 Degrees (V3 278.98 to 308.98)
Visits Same PA

Proposal 6827 - Observation 10 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Tue Nov 25 18:06:44 GMT 2025

Observation	Proposal 6827, Observation 10: J1148+5251 Diagnostic Status: Warning Observing Template: NIRCam Wide Field Slitless Spectroscopy											
Diagnostics	(J1148+5251 (Obs 10)) Warning (Form): By selecting Target Placement = Module Gap the target coordinates will not fall on any detector unless an appropriate Mosaic, set of Dithers or Offset Special Requirement is specified. (J1148+5251 (Obs 10)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended. (J1148+5251 (Obs 10)) 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 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Visit 10:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates				Targ. Coord. Corrections			Miscellaneous		
(5)	J1148+5251	RA: 11 48 16.6000 (177.0691667d) Dec: +52 51 50.00 (52.86389d) Equinox: J2000										
	<i>Comments:</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Quasars]</i>											
Template	Module		Subarray				Grism (Long Wavelength)			Target Placement		
ALL		FULL				GRISMR			Module gap (large extended source)			
Mosaic	Rows	Columns	Row Overlap %		Column Overlap %		Row shift (deg)	Column shift (deg)		Tile Order		
1	2	0.0		45.0		0.0	0.0		DEFAULT			
Dithers	#	Primary Dither Type				Primary Dithers			Subpixel Positions			
1	INTRAMODULEX				3			4-Point				
Direct Image	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F444W	SHALLOW4	6	1	1	311.366		GRISMR	Direct Image	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
2	F200W	F444W	SHALLOW4	5	1	12	3092.19		GRISMR	Grism (Long Wavelength)	12	
3	F200W	F444W	SHALLOW4	6	1	2	622.733			Out of Field	2	

Proposal 6827 - Observation 10 - From Dawn till Noon: Chronicling the Cosmic History of Black Hole Growth

Special Requirements

Group Visits within 53.0 Days
Visits Same PA