



12497 - CAL-NRS-: Cycle 4 NIRSpec MOS wavelength calibration field check

Cycle: 4, Proposal Category: CAL/NIRSPEC

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Dr. James Muzerolle Page (PI)	Space Telescope Science Institute
Dr. Nimisha Kumari (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Ms. Kayli Glidic (CoI)	Space Telescope Science Institute
Dr. Dan Coe (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST

OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	1	new 8e	NIRSpec MultiObject Spectroscopy	(3) F115W_refs-isolated-pruned-Gaia
	2	new 12c	NIRSpec MultiObject Spectroscopy	(3) F115W_refs-isolated-pruned-Gaia
	3	new 11v	NIRSpec MultiObject Spectroscopy	(3) F115W_refs-isolated-pruned-Gaia
	4	new 10c 7 steps G140H	NIRSpec MultiObject Spectroscopy	(3) F115W_refs-isolated-pruned-Gaia
	5	new 6b	NIRSpec MultiObject Spectroscopy	(3) F115W_refs-isolated-pruned-Gaia

ABSTRACT

We obtain additional MOS observations of a planetary nebula in M31 in order to check the wavelength calibration as a function of MSA field position. These data will allow us to more firmly tie the calibration of the prism to the gratings, and characterize any residual field dependence not already accounted for by the instrument model. The M31 target is expected to be spatially unresolved, and of suitable brightness to allow efficient and unsaturated exposures with all dispersers.

This calibration program may change in response to system developments and the final Cycle 4 science program.

OBSERVING DESCRIPTION

Primary Target: M31_PN2538-observed

RA 00 36 28.7774 Dec +39 35 26.30

perfectly centered within slit in every observation

(manually: ran MPT, shifted the RA, Dec and reran MPT)

5 observations with PRISM

Obs 4 also has G140H with 7 steps with dispersion offset ± 0.4

manually opened more slits in Obs 1 and 3 to sample backgrounds

in both empty sky regions and extending some 3-slit apertures to 5-slits long

Compared to previous observations in Cycle 3:

1. Q2 pos 8: redo (saw offset in PRISM)
2. Q2 pos 12: new Q2 center to check offset
3. Q1 pos 11: new (pos 3 failed TA)
4. Q4 pos 10: new = Field Point 1
5. Q4 pos 6: redo (failed closed shutter)

Proposal 12497 - Targets - CAL-NRS-: Cycle 4 NIRSpec MOS wavelength calibration field check

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	M31_PN2538-observed	RA: 00 36 28.7774 (9.1199058d) Dec: +39 35 26.30 (39.59064d) Equinox: J2000		
	Comments: Category=Calibration Description=[Line spread function, Planetary nebulae, Wavelength] Extended=NO				
	(2)	F115W_refs-isolated-pruned_MSA	RA: 00 36 27.8011 (9.1158379d) Dec: +39 35 33.45 (39.59263d) Equinox: J2000		
	Comments: Description=[]				
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000		
	Comments: Description=[]				

Proposal 12497 - Observation 1 - CAL-NRS-: Cycle 4 NIRSpec MOS wavelength calibration field check

Observation	Proposal 12497, Observation 1: new 8e											Mon Dec 22 17:00:54 GMT 2025
	Diagnostic Status: Warning											
	Observing Template: NIRSpec MultiObject Spectroscopy											
Diagnostics	(new 8e (Obs 1)) Warning (Form): Mode switch between TA and science exposures may cause thermal transient.											
	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous			
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000									
	Comments: Description=[]											
Acquisition	#	Reference Star Bin	Target	Filter	MSA Configuration	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID	
	1	Filter: F110W; Readout: NRSRAPIDD6; 8 sources in 2 quads; [Optimal TA Accuracy]	SAME	F110W	Auto Acq MSA Config	NRSRAPIDD6	3	1	4	687.153		
Template	TA Method	HFF Readout Mode		Obtain Confirmation Images	Science Aperture	Primary Candidate List	Filler Candidate List		Spectral Overlap Map		Spectral Overlap Threshold	
	MSATA	false		After Target ACQ and New MSA Config	MSA Center	PN2538-Gaia (1 sources)	Fillers-Gaia pruned (8500 sources)		jwst-nirspec-prism		1.5	
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude		
	1	3335	9.093321	39.584601	21.94726385196276	1	6718	9.060543	39.610532	21.673717111022658		
	1	3651	9.109245	39.586746	21.842109120981927	1	6736	9.085215	39.610726	21.384786908391234		
	1	4095	9.094751	39.589693	21.79992392099112	1	6910	9.081913	39.612217	21.77586562224699		
	1	6583	9.063752	39.609198	21.69607959916671	1	7008	9.067450	39.612914	21.893012685148644		
Confirmation	#	Confirmation Type		Conf. Readout Pattern	Conf. Groups/Int	Conf. Integrations/Exp		Conf. Total Integrations		Conf. Total Exposure Time		
	1	c1		NRSIRS2RAPID	3	1		1		58.356		

Proposal 12497 - Observation 1 - CAL-NRS-: Cycle 4 NIRSspec MOS wavelength calibration field check

Spectral Elements	#	Exposure Specification	MSA Configuration	Nod Pattern	Pointing	Aperture PA	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutters)	Total Dithers	Total Integrations	Total Exposure Time
	1	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	9.0755108333333 33 Degrees 39.583239722222 224 Degrees	210.28934785040 19			3	3	700.267
Special Requirements	Before Date 23-JAN-2026:00:00:00 MSA Scheduled Aperture PA 210.3151 to 210.3151 Degrees (V3 71.74054 to 71.74054)										

Proposal 12497 - Observation 2 - CAL-NRS-: Cycle 4 NIRSPEC MOS wavelength calibration field check

Observation	Proposal 12497, Observation 2: new 12c										Mon Dec 22 17:00:54 GMT 2025
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(new 12c (Obs 2)) Warning (Form): Mode switch between TA and science exposures may cause thermal transient.										
	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000								
	Comments: Description=[]										
Acquisition	#	Reference Star Bin	Target	Filter	MSA Configuration	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
	1	Filter: F110W; Readout: NRSRAPIDD6; 8 sources in 2 quads; [Optimal TA Accuracy]	SAME	F110W	Auto Acq MSA Config	NRSRAPIDD6	3	1	4	687.153	
Template	TA Method	HFF Readout Mode		Obtain Confirmation Images	Science Aperture	Primary Candidate List	Filler Candidate List	Spectral Overlap Map		Spectral Overlap Threshold	
	MSATA	false		After Target ACQ and New MSA Config	MSA Center	PN2538-Gaia (1 sources)	Fillers-Gaia pruned (8500 sources)	jwst-nirspec-prism		1.5	
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	3797	9.104806	39.587645	21.874322493814987	1	5832	9.071153	39.603189	22.019225196054762	
	1	5144	9.117335	39.598013	21.64747960722812	1	6736	9.085215	39.610726	21.384786908391234	
	1	5475	9.078521	39.600519	21.870722841169794	1	6998	9.095040	39.612857	22.145469243372848	
	1	5577	9.084169	39.601283	21.90216129985126	1	7077	9.088134	39.613526	21.797663339506318	
Confirmation	#	Confirmation Type		Conf. Readout Pattern	Conf. Groups/Int	Conf. Integrations/Exp		Conf. Total Integrations		Conf. Total Exposure Time	
	1	c1		NRSIRS2RAPID	3	1		1		58.356	

Proposal 12497 - Observation 2 - CAL-NRS-: Cycle 4 NIRSspec MOS wavelength calibration field check

Spectral Elements	#	Exposure Specification	MSA Configuration	Nod Pattern	Pointing	Aperture PA	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutters)	Total Dithers	Total Integrations	Total Exposure Time
	1	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	9.08967 Degrees 39.583898888888 89 Degrees	210.29809602608 55			3	3	700.267
Special Requirements	Before Date 23-JAN-2026:00:00:00 MSA Scheduled Aperture PA 210.3148 to 210.3148 Degrees (V3 71.74026 to 71.74026)										

Proposal 12497 - Observation 3 - CAL-NRS-: Cycle 4 NIRSPEC MOS wavelength calibration field check

Observation	Proposal 12497, Observation 3: new 11v										Mon Dec 22 17:00:54 GMT 2025
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(new 11v (Obs 3)) Warning (Form): Config c1 (#1) has 1 primary slit traces affected by failed open shutters.										
	(new 11v (Obs 3)) Warning (Form): Mode switch between TA and science exposures may cause thermal transient.										
	(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000								
	Comments: Description=[]										
Acquisition	#	Reference Star Bin	Target	Filter	MSA Configuration	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
	1	Filter: F110W; Readout: NRSRAPIDD6; 8 sources in 4 quads; [Optimal TA Accuracy]	SAME	F110W	Auto Acq MSA Config	NRSRAPIDD6	3	1	4	687.153	
Template	TA Method	HFF Readout Mode	Obtain Confirmation Images	Science Aperture	Primary Candidate List	Filler Candidate List	Spectral Overlap Map	Spectral Overlap Threshold			
	MSATA	false	After Target ACQ and New MSA Config	MSA Center	PN2538-Gaia (1 sources)	Fillers-Gaia pruned (8500 sources)	jwst-nirspec-prism	1.5			
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	2096	9.116940	39.576466	21.75731285469117 2	1	4378	9.083804	39.592144	21.57710577576957 4	
	1	3620	9.099115	39.586589	21.79241984430356 6	1	5439	9.138162	39.600191	21.59994840539866 7	
	1	3982	9.114776	39.589018	21.32400858171018 1	1	6101	9.077201	39.605233	21.54310433024767 2	
	1	4095	9.094751	39.589693	21.79992392099112 1	1	7421	9.103925	39.616130	21.58782259792832 3	
Confirmation	#	Confirmation Type	Conf. Readout Pattern	Conf. Groups/Int	Conf. Integrations/Exp	Conf. Total Integrations	Conf. Total Exposure Time				
	1	c1	NRSIRS2RAPID	3	1	1	58.356				

Proposal 12497 - Observation 3 - CAL-NRS-: Cycle 4 NIRSspec MOS wavelength calibration field check

Spectral Elements	#	Exposure Specification	MSA Configuration	Nod Pattern	Pointing	Aperture PA	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutters)	Total Dithers	Total Integrations	Total Exposure Time
	1	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	9.1176883333333 34 Degrees 39.601968333333 33 Degrees	210.31695986057 23			3	3	700.267
Special Requirements	Before Date 23-JAN-2026:00:00:00 MSA Scheduled Aperture PA 210.3159 to 210.3159 Degrees (V3 71.74129 to 71.74129)										

Proposal 12497 - Observation 4 - CAL-NRS-: Cycle 4 NIRSspec MOS wavelength calibration field check

Observation	Proposal 12497, Observation 4: new 10c 7 steps G140H										Mon Dec 22 17:00:54 GMT 2025
	Diagnostic Status: Warning										
	Observing Template: NIRSspec MultiObject Spectroscopy										
Diagnostics	(new 10c 7 steps G140H (Obs 4)) Warning (Form): Mode switch between TA and science exposures may cause thermal transient.										
	(Visit 4:1) Warning (Form): Data Excess over lower threshold										
	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000								
	Comments: Description=[]										
Acquisition	#	Reference Star Bin	Target	Filter	MSA Configuration	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
	1	Filter: F110W; Readout: NRSRAPIDD6; 8 sources in 3 quads; [Optimal TA Accuracy]	SAME	F110W	Auto Acq MSA Config	NRSRAPIDD6	3	1	4	687.153	
Template	TA Method	HFF Readout Mode		Obtain Confirmation Images	Science Aperture	Primary Candidate List	Filler Candidate List	Spectral Overlap Map		Spectral Overlap Threshold	
	MSATA	false		After Target ACQ and New MSA Config	MSA Center	PN2538-Gaia (1 sources)	Fillers-Gaia pruned (8500 sources)	jwst-nirspec-hr		1.5	
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	227	9.162388	39.551301	21.679540743233016	1	5038	9.139055	39.597202	21.67247044991173	
	1	1497	9.169315	39.570924	21.512862572455532	1	5375	9.123449	39.599629	21.570690730863753	
	1	3982	9.114776	39.589018	21.32400858171018	1	5977	9.131419	39.604218	21.368176492510315	
	1	4140	9.139842	39.590056	21.633270777998057	1	6004	9.127407	39.604388	21.45021665456662	
Confirmation	#	Confirmation Type		Conf. Readout Pattern	Conf. Groups/Int	Conf. Integrations/Exp		Conf. Total Integrations		Conf. Total Exposure Time	
	1	c1		NRSIRS2RAPID	3	1		1		58.356	

Proposal 12497 - Observation 4 - CAL-NRS-: Cycle 4 NIRSpec MOS wavelength calibration field check

Spectral Elements	#	Exposure Specification	MSA Configuration	Nod Pattern	Pointing	Aperture PA	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutters)	Total Dithers	Total Integrations	Total Exposure Time
	1	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32704200329 673	-0.4		3	3	2888.6
	2	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32704908686 19	-0.2666		3	3	2888.6
	3	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32705616512 62	-0.1333		3	3	2888.6
	4	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32706324339 966	0.0		3	3	2888.6
	5	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32707032168 23	0.1333		3	3	2888.6
	6	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32707739997 41	0.2666		3	3	2888.6
	7	1 (G140H/F100LP)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32708448358 514	0.4		3	3	2888.6
	8	2 (PRISM/CLEAR)	c1	3 Shutter Slitlet	9.1386333333333 33 Degrees 39.572148333333 34 Degrees	210.32706324339 966			3	3	700.267
Special Requirements	Before Date 23-JAN-2026:00:00:00 MSA Scheduled Aperture PA 210.3125 to 210.3125 Degrees (V3 71.737976 to 71.737976)										

Proposal 12497 - Observation 5 - CAL-NRS-: Cycle 4 NIRSPEC MOS wavelength calibration field check

Observation	Proposal 12497, Observation 5: new 6b										Mon Dec 22 17:00:54 GMT 2025
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(new 6b (Obs 5)) Warning (Form): Mode switch between TA and science exposures may cause thermal transient.										
	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(3)	F115W_refs-isolated-pruned-Gaia	RA: 00 36 27.8242 (9.1159342d) Dec: +39 35 33.51 (39.59264d) Equinox: J2000								
	Comments: Description=[]										
Acquisition	#	Reference Star Bin	Target	Filter	MSA Configuration	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
	1	Filter: F110W; Readout: NRSRAPIDD6; 8 sources in 2 quads; [Optimal TA Accuracy]	SAME	F110W	Auto Acq MSA Config	NRSRAPIDD6	3	1	4	687.153	
Template	TA Method	HFF Readout Mode	Obtain Confirmation Images	Science Aperture	Primary Candidate List	Filler Candidate List	Spectral Overlap Map	Spectral Overlap Threshold			
	MSATA	false	After Target ACQ and New MSA Config	MSA Center	PN2538-Gaia (1 sources)	Fillers-Gaia pruned (8500 sources)	jwst-nirspec-prism	1.5			
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	875	9.131969	39.563284	21.906008523879514	1	2785	9.139879	39.581015	21.58167945455134	
	1	1334	9.143734	39.568965	21.88844642587881	1	3335	9.093321	39.584601	21.94726385196276	
	1	2079	9.126938	39.576343	21.88754131260086	1	3797	9.104806	39.587645	21.874322493814987	
	1	2337	9.097570	39.578050	21.44771734723691	1	4591	9.097041	39.593937	21.94763463127948	
Confirmation	#	Confirmation Type	Conf. Readout Pattern	Conf. Groups/Int	Conf. Integrations/Exp	Conf. Total Integrations	Conf. Total Exposure Time				
	1	c1	NRSIRS2RAPID	3	1	1	58.356				

Proposal 12497 - Observation 5 - CAL-NRS-: Cycle 4 NIRSspec MOS wavelength calibration field check

Spectral Elements	#	Exposure Specification	MSA Configuration	Nod Pattern	Pointing	Aperture PA	Dispersion Offset (Shutters)	Cross-Dispersion Offset (Shutters)	Total Dithers	Total Integrations	Total Exposure Time
	1	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	9.1114633333333 33 Degrees 39.5654777777777 77 Degrees	210.30972983641 29			3	3	700.267
Special Requirements	Before Date 23-JAN-2026:00:00:00										
	MSA Scheduled Aperture PA 210.3125 to 210.3125 Degrees (V3 71.73796 to 71.73796)										