



6793 - Spectroscopic Verification of Robust $z > 15$ Galaxy Candidates Selected with Multiple Medium-Band Datasets

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	1	gds_v6_all_v1	NIRSpec MultiObject Spectroscopy	(18) catalog_gds_all_v6
	2	gdn_v7_test1	NIRSpec MultiObject Spectroscopy	(8) catalog_gdn_all_v4
	6	a2744p1_v5_all_v1	NIRSpec MultiObject Spectroscopy	(33) catalog_a2744p1_all_v5
	5	a2744p2_v6_all_v1	NIRSpec MultiObject Spectroscopy	(35) catalog_a2744p2_all_v6
	4	gdn_v8_all_v3	NIRSpec MultiObject Spectroscopy	(10) catalog_gdn_all_v6

ABSTRACT

JWST was designed to study the first galaxies, which are theoretically thought to have emerged at $z \sim 20$ -30. Since its first operation, the JWST has discovered a surprisingly large number of galaxies at $z > 10$, and its NIRSpec spectroscopy has successfully confirmed some of these galaxies up to $z \sim 14$. Because $z \sim 14$ is the upper limit for galaxies selected as F150W-dropouts, the next logical step is to target even higher redshift candidates, F200W-dropout galaxies at $z \sim 15$ -20. However, efforts to spectroscopically confirm F200W-dropouts have faced challenges. For example, NIRSpec

observations showed that a previously claimed $z \sim 16$ galaxy candidate was actually a foreground object at $z=4.9$ whose strong emission lines boosted fluxes in broad and medium-bands, making a SED similar to that of a $z \sim 16$ galaxy.

In this program, we will conduct NIRSpec/PRISM spectroscopy targeting 10 carefully selected F200W-dropout galaxies at $z \sim 15-20$. These galaxies are chosen based on extensive datasets that include multiple medium-band data crucial for removing interlopers with strong lines identified in the previous F200W-dropout selection, and multi-epoch broad-band data useful to exclude transient contamination, ensuring that our targets are robust $z > 15$ candidates. Successful confirmation of their redshifts would not only set a new redshift record but also provide a unique opportunity to study the star formation activity and the physical properties of galaxies at $z > 15$. Alternatively, if all of our candidates are revealed to be interlopers, this would indicate a sharp decline of the cosmic SFR density from $z \sim 12$ to $z > 15$, suggesting a rapid buildup of the first galaxies ~ 200 Myrs after the Big Bang.

OBSERVING DESCRIPTION

We propose NIRSpec spectroscopy targeting 10 F200W-dropout galaxies at $z \sim 15-20$, selected with multiple medium-band data and multi-epoch broadband data. We will use NIRSpec/PRISM to detect Lyman-alpha breaks of these candidates. We will use MOS to efficiently observe multiple targets in one pointing. Our exposure strategy follows previous successful observations.

Proposal 6793 - Targets - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band Datasets

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(3)	catalog_a2744all	RA: 00 14 8.9640 (3.5373500d) Dec: -30 22 17.44 (-30.37151d) Equinox: J2000		
	Comments: Description=[]				
	(8)	catalog_gdn_all_v4	RA: 12 36 47.1288 (189.1963700d) Dec: +62 15 12.60 (62.25350d) Equinox: J2000		
	Comments: Description=[]				
	(10)	catalog_gdn_all_v6	RA: 12 36 47.0299 (189.1959579d) Dec: +62 15 15.12 (62.25420d) Equinox: J2000		
	Comments: Description=[]				
	(18)	catalog_gds_all_v6	RA: 03 32 39.4786 (53.1644942d) Dec: -27 48 19.08 (-27.80530d) Equinox: J2000		
	Comments: Description=[]				
	(30)	catalog_a2744_all_v4	RA: 00 14 17.2791 (3.5719962d) Dec: -30 22 42.86 (-30.37857d) Equinox: J2000		
	Comments: Description=[]				
	(31)	catalog_a2744p1_all_v4	RA: 00 14 26.1721 (3.6090504d) Dec: -30 26 20.73 (-30.43909d) Equinox: J2000		
	Comments: Description=[]				
	(32)	catalog_a2744p2_all_v4	RA: 00 14 15.9897 (3.5666238d) Dec: -30 22 27.26 (-30.37424d) Equinox: J2000		
	Comments: Description=[]				
	(33)	catalog_a2744p1_all_v5	RA: 00 14 26.1721 (3.6090504d) Dec: -30 26 20.73 (-30.43909d) Equinox: J2000		
	Comments: Description=[]				
	(34)	catalog_a2744p2_all_v5	RA: 00 14 15.9897 (3.5666238d) Dec: -30 22 27.26 (-30.37424d) Equinox: J2000		
	Comments: Description=[]				

Proposal 6793 - Targets - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band Datasets

(35)	catalog_a2744p2_all_v6	RA: 00 14 15.9897 (3.5666238d) Dec: -30 22 27.26 (-30.37424d) Equinox: J2000
<i>Comments:</i> <i>Description=</i>		

Proposal 6793 - Observation 1 - Spectroscopic Verification of Robust z>15 Galaxy Candidates Selected with Multiple Medium-Band D...

Observation	Proposal 6793, Observation 1: gds_v6_all_v1										Mon Sep 28 23:01:21 GMT 2026	
	Diagnostic Status: Warning											
	Observing Template: NIRSpec MultiObject Spectroscopy											
Diagnostics	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#1) has 1 primary slit traces affected by failed open shutters.											
	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#1) has 5 primary slits affected by failed closed shutters.											
	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#2) has 1 primary slit traces affected by failed open shutters.											
	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#2) has 5 primary slits affected by failed closed shutters.											
	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#3) has 1 primary slit traces affected by failed open shutters.											
	(gds_v6_all_v1 (Obs 1)) Warning (Form): Config c1 (#3) has 5 primary slits affected by failed closed shutters.											
	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.											
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous			
	(18)	catalog_gds_all_v6	RA: 03 32 39.4786 (53.1644942d) Dec: -27 48 19.08 (-27.80530d) 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: CLEAR; Readout: NRSRAPIDD6; 8 sources in 4 quads; [Optimal TA Accuracy]	SAME	CLEAR	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		No	MSA Center	sci (22214 sources)				jwst-nirspec-prism	1.5
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude		
	1	108600	53.161800	-27.831614	23.89	1	159629	53.152706	-27.795715	24.21		
	1	112951	53.157124	-27.828382	23.46	1	168820	53.164110	-27.787367	23.69		
	1	127149	53.158413	-27.819086	23.90	1	172161	53.198452	-27.784956	23.53		
	1	130229	53.188404	-27.816177	23.14	1	172772	53.178493	-27.784105	23.51		

Proposal 6793 - Observation 1 - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band D...

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	53.1726435 Degrees - 27.806663333333 347 Degrees	87.074705340336 5			3	18	26522.602
	2	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	53.1726435 Degrees - 27.806663333333 347 Degrees	87.074705340336 5			3	18	26522.602
	3	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	53.1726435 Degrees - 27.806663333333 347 Degrees	87.074705340336 5			3	18	26522.602
Special Requirements	Aperture PA Range 87.0785 to 87.0785 Degrees (V3 308.5039303 to 308.5039303) [MSA Selected] MSA Scheduled Aperture PA 87.0785 to 87.0785 Degrees (V3 308.5039303 to 308.5039303)										

Proposal 6793 - Observation 2 - Spectroscopic Verification of Robust z>15 Galaxy Candidates Selected with Multiple Medium-Band D...

Observation	Proposal 6793, Observation 2: gdn_v7_test1										Mon Sep 28 23:01:21 GMT 2026
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(gdn_v7_test1 (Obs 2)) Warning (Form): Config c1 (#1) has 2 primary slit traces affected by failed open shutters.										
	(gdn_v7_test1 (Obs 2)) Warning (Form): Config c1 (#2) has 2 primary slit traces affected by failed open shutters.										
	(gdn_v7_test1 (Obs 2)) Warning (Form): Config c1 (#3) has 2 primary slit traces affected by failed open shutters.										
	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(8)	catalog_gdn_all_v4	RA: 12 36 47.1288 (189.1963700d) Dec: +62 15 12.60 (62.25350d) 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: CLEAR; Readout: NRSRAPIDD6; 8 sources in 3 quads; [Optimal TA Accuracy]	SAME	CLEAR	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		No	MSA Center	sci (7340 sources)		jwst-nirspec-prism		1.5	
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	935431	189.178410	62.238060	24.84	1	947119	189.182770	62.264930	24.87	
	1	937958	189.166430	62.242870	24.99	1	948445	189.112210	62.269870	24.65	
	1	939073	189.188530	62.244930	24.87	1	948778	189.109240	62.271070	24.13	
	1	942528	189.179970	62.251860	24.94	1	960337	189.140360	62.301820	23.48	
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	189.17270566666 664 Degrees 62.27571972222 22 Degrees	38.859105367204 926			3	18	26522.602
	2	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	189.17270566666 664 Degrees 62.27571972222 22 Degrees	38.859105367204 926			3	18	26522.602
	3	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	189.17270566666 664 Degrees 62.27571972222 22 Degrees	38.859105367204 926			3	18	26522.602

Proposal 6793 - Observation 2 - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band D...

Special Requirements	Aperture PA Range 38.8800 to 38.8800 Degrees (V3 260.3054303 to 260.3054303) [MSA Selected] MSA Scheduled Aperture PA 38.8800 to 38.8800 Degrees (V3 260.3054303 to 260.3054303)
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Proposal 6793 - Observation 6 - Spectroscopic Verification of Robust z>15 Galaxy Candidates Selected with Multiple Medium-Band D...

Observation	Proposal 6793, Observation 6: a2744p1_v5_all_v1 Diagnostic Status: Warning Observing Template: NIRSpec MultiObject Spectroscopy										Mon Sep 28 23:01:21 GMT 2026
	(a2744p1_v5_all_v1 (Obs 6)) Warning (Form): This MSA selected angle change is likely to impact scheduling and requires TTRB approval. (Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous			
	(33)	catalog_a2744p1_all_v5	RA: 00 14 26.1721 (3.6090504d) Dec: -30 26 20.73 (-30.43909d) 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: CLEAR; Readout: NRSRAPIDD6; 8 sources in 4 quads; [Optimal TA Accuracy]	SAME	CLEAR	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	No	MSA Center	sci (12858 sources)		jwst-nirspec-prism	1.5			
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	13288	3.599090	-30.485250	24.282513	1	19418	3.610070	-30.458110	24.064896	
	1	13696	3.615210	-30.483550	23.918779	1	19925	3.645530	-30.455950	24.217763	
	1	14191	3.652860	-30.481580	23.647196	1	20347	3.637410	-30.454160	24.091979	
	1	15091	3.647520	-30.478040	23.484613	1	20883	3.599270	-30.451840	24.507863	
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	3.6228582083333 336 Degrees - 30.469961944444 435 Degrees	180.51305888365 403			3	18	26522.602
	2	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	3.6228582083333 336 Degrees - 30.469961944444 435 Degrees	180.51305888365 403			3	18	26522.602

Proposal 6793 - Observation 6 - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band D...

Special Requirements	Aperture PA Range 180.52 to 180.52 Degrees (V3 41.9454303 to 41.9454303) [MSA Selected] MSA Scheduled Aperture PA 180.5200 to 180.5200 Degrees (V3 41.9454303 to 41.9454303)
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Proposal 6793 - Observation 5 - Spectroscopic Verification of Robust z>15 Galaxy Candidates Selected with Multiple Medium-Band D...

Observation	Proposal 6793, Observation 5: a2744p2_v6_all_v1										Mon Sep 28 23:01:21 GMT 2026
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(a2744p2_v6_all_v1 (Obs 5)) Warning (Form): Config c1 (#1) has 2 primary slit traces affected by failed open shutters.										
	(a2744p2_v6_all_v1 (Obs 5)) Warning (Form): This MSA selected angle change is likely to impact scheduling and requires TTRB approval.										
	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
Fixed Targets	#										
	Name										
	Target Coordinates										
Fixed Targets	Targ. Coord. Corrections										
	Miscellaneous										
	(35) catalog_a2744p2_all_v6 RA: 00 14 15.9897 (3.5666238d)										
Fixed Targets	Dec: -30 22 27.26 (-30.37424d)										
	Equinox: J2000										
	Comments: Description=[]										
Acquisition	#										
	Reference Star Bin										
	Target										
Acquisition	Filter										
	MSA Configuration										
	Readout Pattern										
Acquisition	Groups/Int										
	Integrations/Exp										
	Total Integrations										
Acquisition	Total Exposure Time										
	Optional ETC ID										
	1 Filter: CLEAR; Readout: NRSRAPIDD6; 8 sources in 3 quads; [Optimal TA Accuracy]										
Template	TA Method										
	HFF Readout Mode										
	Obtain Confirmation Images										
Template	Science Aperture										
	Primary Candidate List										
	Filler Candidate List										
Template	Spectral Overlap Map										
	Spectral Overlap Threshold										
	MSATA false No MSA Center sci (39773 sources) jwst-nirspec-prism 1.5										
Reference Stars	Visit										
	ID										
	RA										
Reference Stars	Dec										
	Magnitude										
	Visit										
Reference Stars	ID										
	RA										
	Dec										
Reference Stars	Magnitude										
	1 38546 3.555460 -30.398430 24.938229 1 43798 3.570270 -30.387380 24.669396										
	1 40346 3.574000 -30.394800 24.255313 1 45645 3.584420 -30.383040 23.423446										
Reference Stars	1 40912 3.543340 -30.393930 24.579229 1 59906 3.583760 -30.356570 23.56										
	1 42301 3.529920 -30.390750 24.301613 1 62459 3.567200 -30.351500 25.492896										
Spectral Elements	#										
	Exposure Specification										
	MSA Configuration										
Spectral Elements	Nod Pattern										
	Pointing										
	Aperture PA										
Spectral Elements	Dispersion Offset (Shutters)										
	Cross-Dispersion Offset (Shutters)										
	Total Dithers										
Spectral Elements	Total Integrations										
	Total Exposure Time										
	1 1 (PRISM/CLEAR) c1 3 Shutter Slitlet 3.5632325000000 179.69170976995 838 3 18 23896.602										

Proposal 6793 - Observation 5 - Spectroscopic Verification of Robust $z>15$ Galaxy Candidates Selected with Multiple Medium-Band D...

Special Requirements	Aperture PA Range 179.69 to 179.69 Degrees (V3 41.1154303 to 41.1154303) [MSA Selected] MSA Scheduled Aperture PA 179.6900 to 179.6900 Degrees (V3 41.1154303 to 41.1154303)
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Proposal 6793 - Observation 4 - Spectroscopic Verification of Robust z>15 Galaxy Candidates Selected with Multiple Medium-Band D...

Observation	Proposal 6793, Observation 4: gdn_v8_all_v3										Mon Sep 28 23:01:21 GMT 2026
	Diagnostic Status: Warning										
	Observing Template: NIRSpec MultiObject Spectroscopy										
Diagnostics	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.										
	(Visit 4:1) Warning (Form): The recommended value is 8 Reference Stars for this template.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections			Miscellaneous		
	(10)	catalog_gdn_all_v6	RA: 12 36 47.0299 (189.1959579d) Dec: +62 15 15.12 (62.25420d) 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: CLEAR; Readout: NRSRAPIDD6; 7 sources in 3 quads; [Optimal TA Accuracy]	SAME	CLEAR	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		No	MSA Center	sci (7328 sources)		jwst-nirspec-prism		1.5	
Reference Stars	Visit	ID	RA	Dec	Magnitude	Visit	ID	RA	Dec	Magnitude	
	1	948445	189.112210	62.269870	24.65	1	958474	189.084200	62.297070	24.71	
	1	949535	189.123010	62.273410	25.47	1	959490	189.116050	62.299740	24.09	
	1	952472	189.169860	62.281910	24.28	1	959816	189.105480	62.300300	25.25	
	1	956095	189.190600	62.290670	25.42						
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	189.133281125 Degrees 62.295753055555 Degrees	340.70478712227 81			3	18	26522.602
	2	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	189.133281125 Degrees 62.295753055555 Degrees	340.70478712227 81			3	18	26522.602
	3	1 (PRISM/CLEAR)	c1	3 Shutter Slitlet	189.133281125 Degrees 62.295753055555 Degrees	340.70478712227 81			3	18	26522.602

Special Requirements	MSA Scheduled Aperture PA 340.7602 to 340.7602 Degrees (V3 202.18562 to 202.18562)
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