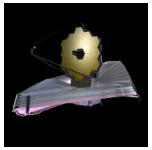

3362 - JWST in Technicolor: Finding and Mapping the Most Extreme Star Forming Galaxies in the Epoch of Reionization with Medium and Narrow Bands

Cycle: 2, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Abell 370				

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
	2		NIRISS Wide Field Slitless Spectroscopy	(1) ABELL370
MACSJ0416.1-2403				
	10		NIRISS Wide Field Slitless Spectroscopy	(2) MACSJ0416.1-2403
MACSJ1149+2223				
	11		NIRISS Wide Field Slitless Spectroscopy	(4) MACSJ1149+2223

ABSTRACT

We propose a NIRCam imaging program of the Hubble Frontier Fields Parallel Fields in 8 broad/medium/narrowband filters. Building upon the existing treasury data from JWST and HST, these fields will have 29-band space telescope imaging covering 0.4 - 5.0 microns and will be the only fields to contain the full suite of all 20 NIRCam broad and medium bands, providing an exceptional “technicolor” dataset to the community. The key addition to existing data is imaging in the reddest medium bands (F430M/F460M/F480M) and bluest narrow bands (F164N/F187N) which enable multiple science goals: 1) The detection and characterization of the most extreme emission line galaxies (1000A < EW < 5000A) at 5 < z < 12 based purely on their line fluxes. 2) Substantially improved measurements of the stellar mass function of galaxies at 5 < z < 12. 3) Resolved 2D mapping of emission lines at 1 < z < 12. 4) Detection of ultra-low metallicity galaxies with strong HeII emission at 9 < z < 12. By selecting galaxies based only on their emission line fluxes, this will be the first line-flux-limited imaging survey and will unveil previously undetected reionization sources such as dusty galaxies without clear continuum breaks, as well as ultra low-mass galaxies (6 < LogM < 7) that are too faint to be well-detected in continuum. We will also conduct parallel WFSS observations with NIRISS in F090W which will allow the study of Ha emitters in the HFF cluster galaxies and LyA at 5 < z < 7. Given the legacy value of these data we are requesting no proprietary time and commit to delivering reduced data products and catalogs to the community in advance of the Cycle 3 deadline if scheduling permits.

OBSERVING DESCRIPTION

This proposal consists of a prime observation of NIRISS WFSS spectroscopy in the F090W filter of three of the Hubble Frontier Fields Clusters. It also contains a co-ordinated parallel of NIRCam Imaging in 4 SW (F070W/F164N/F187N/F200W) and 4 LW filters (F356W/F430M/F460M/F480M). The total exposure time is ~10 hours for the NIRISS WFSS F090W, and is ~10ks in most of the NIRCam filters.

The PA of each observation is fairly tightly constrained so that the observations will line up with previous GTO observations of the same field with the same instruments (using different filters). There are no special requirements.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	ABELL370	RA: 02 39 54.0850 (39.9753542d) Dec: -01 34 33.76 (-1.57604d) Equinox: J2000		
Comments: *Category=Clusters of Galaxies* *Description=[Abell clusters, Rich clusters]* *Extended=YES*				
(2)	MACSJ0416.1-2403	RA: 04 16 9.3700 (64.0390417d) Dec: -24 04 20.50 (-24.07236d) Equinox: J2000		
Comments: *Category=Clusters of Galaxies* *Description=[Rich clusters]* *Extended=YES*				
(4)	MACSJ1149+2223	RA: 11 49 35.8500 (177.3993750d) Dec: +22 23 53.78 (22.39827d) Equinox: J2000		
Comments: *Category=Clusters of Galaxies* *Description=[Rich clusters]* *Extended=YES*				

Observation

Proposal 3362, Observation 2

Tue Nov 21 18:00:55 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRISS Wide Field Slitless Spectroscopy

Coordinated Parallel Template(s): NIRCam 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
(1)	ABELL370	RA: 02 39 54.0850 (39.9753542d) Dec: -01 34 33.76 (-1.57604d) Equinox: J2000		

Comments:
Category=Clusters of Galaxies
Description=[Abell clusters, Rich clusters]
Extended=YES

Template

NIRISS Wide Field Slitless Spectroscopy	NIRCam Imaging
	Module: ALL Subarray: FULL Target Placement: Module Gap

Dithers

#	Image Dithers	Pattern Size
1	8	LARGE

Direct Image

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Two Extra Dithers	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	DIRECT	F090W		NIS	8	1	NO	1	1	354.313	
2	DIRECT	F090W		NIS	8	1	NO	1	1	354.313	
3	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
4	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
5	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
6	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
7	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
8	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	

Spectral Elements

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	GRISM	F090W	GR150R	NIS	16	1	8	8	5583.12	
2	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	
3	GRISM	F090W	GR150R	NIS	26	1	8	8	9018.887	
4	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	

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	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
2	F200W	F356W	MEDIUM2	7	1	8	8	5325.438	
3	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
4	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
5	F070W	F430M	DEEP2	6	1	8	8	8761.204	
6	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
7	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
8	F164N+F150W2	F460M	DEEP2	6	1	8	8	8761.204	
9	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
10	F187N	F480M	MEDIUM2	5	1	1	1	450.944	
11	F187N	F480M	DEEP2	6	1	8	8	8761.204	
12	F187N	F480M	MEDIUM2	5	1	1	1	450.944	

Special Requirements

Aperture PA Range 64.52006903 to 64.52006903 Degrees (V3 63.95880186 to 63.95880186)
No Parallel Attachments
Background Limited. Background no more than 30th percentile above minimum

Observation

Proposal 3362, Observation 10

Tue Nov 21 18:00:55 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRISS Wide Field Slitless Spectroscopy

Coordinated Parallel Template(s): NIRCam 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
(2)	MACSJ0416.1-2403	RA: 04 16 9.3700 (64.0390417d) Dec: -24 04 20.50 (-24.07236d) Equinox: J2000		

Comments:
Category=Clusters of Galaxies
Description=[Rich clusters]
Extended=YES

Template

NIRISS Wide Field Slitless Spectroscopy	NIRCam Imaging
	Module: ALL Subarray: FULL Target Placement: Module Gap

Dithers

#	Image Dithers	Pattern Size
1	8	LARGE

Direct Image

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Two Extra Dithers	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	DIRECT	F090W		NIS	8	1	NO	1	1	354.313	
2	DIRECT	F090W		NIS	8	1	NO	1	1	354.313	
3	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
4	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
5	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
6	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
7	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
8	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	

Spectral Elements

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	GRISM	F090W	GR150R	NIS	16	1	8	8	5583.12	
2	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	
3	GRISM	F090W	GR150R	NIS	26	1	8	8	9018.887	
4	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	

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	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
2	F200W	F356W	MEDIUM2	7	1	8	8	5325.438	
3	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
4	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
5	F070W	F430M	DEEP2	6	1	8	8	8761.204	
6	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
7	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
8	F164N+F150W2	F460M	DEEP2	6	1	8	8	8761.204	
9	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
10	F187N	F480M	MEDIUM2	5	1	1	1	450.944	
11	F187N	F480M	DEEP2	6	1	8	8	8761.204	
12	F187N	F480M	MEDIUM2	5	1	1	1	450.944	

Special Requirements

Aperture PA Range 49.11926717 to 49.11926717 Degrees (V3 48.558 to 48.558)
No Parallel Attachments
Background Limited. Background no more than 20th percentile above minimum

Observation

Proposal 3362, Observation 11

Tue Nov 21 18:00:55 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRISS Wide Field Slitless Spectroscopy

Coordinated Parallel Template(s): NIRCam Imaging

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
(4)	MACSJ1149+2223	RA: 11 49 35.8500 (177.3993750d) Dec: +22 23 53.78 (22.39827d) Equinox: J2000		

Comments:
Category=Clusters of Galaxies
Description=[Rich clusters]
Extended=YES

Template

NIRISS Wide Field Slitless Spectroscopy	NIRCam Imaging
	Module: ALL Subarray: FULL Target Placement: Module Gap

Dithers

#	Image Dithers	Pattern Size
1	8	LARGE

Direct Image

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Two Extra Dithers	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
2	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
3	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
4	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
5	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
6	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
7	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	
8	DIRECT	F090W		NIS	12	1	NO	1	1	526.102	

Spectral Elements

NIRISS Wide Field Slitless Spectroscopy	Exposure Type	Filter	Grism	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	GRISM	F090W	GR150R	NIS	16	1	8	8	5583.12	
2	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	
3	GRISM	F090W	GR150R	NIS	26	1	8	8	9018.887	
4	GRISM	F090W	GR150C	NIS	26	1	8	8	9018.887	

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	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
2	F200W	F356W	MEDIUM2	7	1	8	8	5325.438	
3	F200W	F356W	SHALLOW4	6	1	1	1	311.366	
4	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
5	F070W	F430M	DEEP2	6	1	8	8	8761.204	
6	F070W	F430M	MEDIUM2	5	1	1	1	450.944	
7	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
8	F164N+F150W2	F460M	DEEP2	6	1	8	8	8761.204	
9	F164N+F150W2	F460M	MEDIUM2	5	1	1	1	450.944	
10	F187N	F480M	MEDIUM2	5	1	1	1	450.944	
11	F187N	F480M	DEEP2	6	1	8	8	8761.204	
12	F187N	F480M	MEDIUM2	5	1	1	1	450.944	

Special Requirements

Aperture PA Range 122.52009427 to 122.52009427 Degrees (V3 121.9588271 to 121.9588271)
No Parallel Attachments
Background Limited. Background no more than 20th percentile above minimum