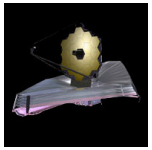

2959 - Resolving early galaxy disks at z~8 with NIRSpec-IFS

Cycle: 2, Proposal Category: GO

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
NIRSPEC IFS R2700				
	1	04590	NIRSpec IFU Spectroscopy	(1) 04590
	2	06355	NIRSpec IFU Spectroscopy	(2) 06355
	3	10612	NIRSpec IFU Spectroscopy	(3) 10612

ABSTRACT

We propose deep, high spectral resolution (R2700) NIRSpec IFS observations of three lensed star-forming galaxies at z=7.5-8.5 in the SMACS J0723.3-7327S cluster. These galaxies were recently observed with the NIRSPEC MSA in R1000 as part of the Early Released Observations with strong detection of rest-frame optical emission lines, while still representative of `normal' star-forming galaxies (SFR~8-30 Msol/yr). Furthermore, these lensed galaxies already show spatial extension and or signs of velocity gradient in the MSA 2D spectra, making them ideal targets for this kinematical study. Using these deep high-resolution (FWHM=120km/s) observations of [OIII] and Hbeta, we will derive the kinematical properties of these galaxies at the very early stages of galaxy evolution and test if these sources are dominated by turbulent gas or orderly gas-rich disks. This analysis will reveal if smooth accretion from the cosmic web or major mergers contributes most to the build-up of stellar and baryonic mass 700 million years after the Big Bang. This will be the first time this experiment is performed using optical-emission lines at the epoch of reionisations and at such a high resolution (~0.15 arcseconds). Furthermore, we will also search for star-formation driven outflows in the [OIII] emission line in these galaxies including in the suspected AGN in our sample.

OBSERVING DESCRIPTION

This proposal aims to spatially and kinematically resolve the ionized gas and stellar continuum emission in three star-forming galaxies at z=7.5-8.5 using NIRSpec IFS insturment using R2700 grating (resolution of 120 km/s). NIRSpec IFS uses filter F290LP and grating G395H to cover the main optical emission lines such as Hb and [OIII]4959/5007 that are redshifted into the wavelength range, 4.0-5.27um. We ask for 8 point cycling dither to properly sample the PSF. As our observations are in SMACS lensing cluster we require leakcal observations to account for any contamination from opened MSA shutters.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	04590	RA: 07 23 26.2392 (110.8593300d) Dec: -73 26 56.98 (-73.44916d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Emission line galaxies, Infrared galaxies]* *Extended=YES*				
(2)	06355	RA: 07 23 22.6848 (110.8445200d) Dec: -73 26 6.29 (-73.43508d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[High-redshift galaxies, Lyman-break galaxies]* *Extended=YES*				
(3)	10612	RA: 07 23 20.1480 (110.8339500d) Dec: -73 26 4.34 (-73.43454d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[High-redshift galaxies, Lyman-alpha galaxies, Lyman-break galaxies]* *Extended=YES*				

Observation

Proposal 2959, Observation 1: 04590

Wed Apr 10 14:00:36 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU 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)	04590	RA: 07 23 26.2392 (110.8593300d) Dec: -73 26 56.98 (-73.44916d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Emission line galaxies, Infrared galaxies]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	MEDIUM	1	8	

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	NRSIRS2	19	2	false	true	NONE	8	16	22408.535	140890
2	G395H/F290LP	NRSIRS2RAPID	25	1	true	false	NONE	1	1	379.311	140890

Special Requirements

Aperture PA Range 139.97164917 to 61.97164917 Degrees (V3 1.0 to 283.0)

Observation

Proposal 2959, Observation 2: 06355

Wed Apr 10 14:00:36 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

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)	06355	RA: 07 23 22.6848 (110.8445200d) Dec: -73 26 6.29 (-73.43508d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[High-redshift galaxies, Lyman-break galaxies]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	MEDIUM	1	8	

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	NRSIRS2	19	2	false	true	NONE	8	16	22408.535	140890
2	G395H/F290LP	NRSIRS2RAPID	25	1	true	false	NONE	1	1	379.311	140890

Special Requirements

Aperture PA Range 163.97164917 to 60.97164917 Degrees (V3 25.0 to 282.0)

Observation

Proposal 2959, Observation 3: 10612

Wed Apr 10 14:00:36 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

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
(3)	10612	RA: 07 23 20.1480 (110.8339500d) Dec: -73 26 4.34 (-73.43454d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[High-redshift galaxies, Lyman-alpha galaxies, Lyman-break galaxies]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	MEDIUM	1	8	

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	NRSIRS2	19	2	false	true	NONE	8	16	22408.535	140890
2	G395H/F290LP	NRSIRS2RAPID	25	1	true	false	NONE	1	1	379.311	140890

Special Requirements

Aperture PA Range 166.97164917 to 64.97164917 Degrees (V3 28.0 to 286.0)