

1263 - NIRSpec and MIRI Spectroscopy of QSOs - Part 2

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

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OBSERVATIONS

Folder	Observation Label		Observing Template	Science Target						
MIRI - J1120										
	1	J1120 [WRIGHT_0501	MIRI Medium Resolution Spectroscopy	(1) MIRI-J1120						
	2	J1120-Imager [WRIGH T_0502]	MIRI Imaging	(2) MIRI-J1120-IMAGER						
NIRSPI	EC - J1120									
	3	NIRSpec IFU observati on of J1120 [FERRUIT _3053]	NIRSpec IFU Spectroscopy	(3) NIRSPEC-J1120+0641						

JWST Proposal 1263 (Created: Wednesday, June 19, 2019 at 4:00:36 PM Eastern Standard Time) - Overview

ABSTRACT

This APT is for IFU Observations of the high-z QSO J1120 which is in common with the MIRI programme, hence the programmes are merged to save slew.

The goals of both observations are to map the optical and near-IR nebular lines in the host galaxy circumgalactic region of this quasar at z=7.08.

MIRI, with its spectral coverage from 5 to 28 m and sensitivity, is the only instrument onboard JWST able to explore the optical and near-infrared spectrum and light distribution of galaxies and QSOs at redshifts above 6.7. A complete 5 to 28 spectrum (~0.6 to 3.5 microns rest-frame) of QSO J1120+0641 at z of 7.0842 will be obtained together with MIRI F560W imaging of the host and surrounding field. In addition, F560W and F1000W imaging of a nearby field will also be obtained.

NIRSpec will observe this quasar with the IFS and with R2700 - band III grating, with the goal of tracing the distribution and kinematics of the main nebular emission lines and, in

particular, [OII], Hbeta, [OIII], [OI], Halpha. The ultimate goal is to trace the presence and properties of a quasar driven outflow and the dynamics and star formration of the host galaxy and

its close environment. This information will be precious to constrain the evolutionary processes of early massive galaxies hosting supermassive accreting black holes.

OBSERVING DESCRIPTION

MIRI MRS and Imager:

The purpose of the program is to get a full 5 - 28 um spectrum of J1120 using the 3 MRS configurations. In addition, we request the imaging of the host galaxy and surrounding field with the F560W filter, as well as MIRIM simultaneous F560W and F1000W imaging of a nearby field.

The dithering strategies (4-pt, point source) were selected to optimize the PSF and detector effects in all MRS channels and Imager filters. These strategies could be subject to change without modifying the total charged time.

Constraints:

JWST Proposal 1263 (Created: Wednesday, June 19, 2019 at 4:00:36 PM Eastern Standard Time) - Overview MIRI: the position angle has been selected so as to avoid the bright stars and minimize the impact of background in the MRS observations. NIRSpec: due to the bright stars in the field and MSA contamination issues, the V3 range between 55 to 130 should be avoided.

NIRSpec IFU OBSERVATION:

This part corresponds to NIRSpec IFU Proposal ID: FERRUIT_3053

(NIRSpec contact person: Roberto Maiolino)

Proposal title "NIRSpec and MIRI spectroscopy of QSOs - part #2"

The NIRSpec IFU observation is done with the G395H grating and it is aimed aimed primarily at mapping the strongest optical nebular lines (Hbeta, [OIII], Halpha, [NII]).

PA constraints are driven by the MIRI observation and by the requirement to avoid some bright stars to be in the NIRSpec MSA footprint.

In this specific case, if the target is positioned in the center of the IFU field of view then at this specific redshift the brightest [OIII]5007 is located in the detectors gap over about half of the field of view. Hence, we have offset the centering by -0.7 arcsec in the X-direction (we hope this is in the instrument coordinates, not on sky), which will enable to properly map [OIII]5007 in the central +-0.7 arcsec of the source.

We have adopted a "small" dither pattern, given the reduced effective field as a consequence of the offset discussed above.

JWST Proposal 1263 (Created: Wednesday, June 19, 2019 at 4:00:36 PM Eastern Standard Time) - Overview We are using no target acquisition (i.e. point-and-shoot).

At any of the constrained PA range there are Gaia GS that can be selected for guiding and which will ensure the proper location of the target within the IFU aperture, with the required accuracy.

We are using NRSIRS2RAPID for a better identification and rejection of cosmic rays.

Proposal 1263 - Targets - NIRSpec and MIRI Spectroscopy of QSOs - Part 2

	# Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1) MIRI-J1120	RA: 11 20 1.4600 (170.0060833d)		
		Dec: +06 41 23.80 (6.68994d)		
		Equinox: J2000		
ķ	Comments: Category=Galaxy Description=[Quasars] Extended=NO			
Targets	(2) MIRI-J1120-IM	IAGER RA: 11 20 3.1764 (170.0132350d)		
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	Extended=NO			
l	(3) NIRSPEC-J112	0+0641 RA: 11 20 1.4630 (170.0060958d)		
		Dec: +06 41 23.79 (6.68994d)		
		Equinox: J2000		
	Comments:			
	Category=Galaxy Description=[High-redshift ga	daxies, Ouasars]		

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tra	2	MEDIUM(B)	MRSLONG		SLOW	36	1	1	Dither 1	4	4	3440.148	
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