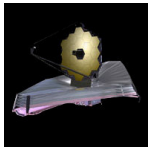

5460 - A Panchromatic View of Protoplanetary Disk Dispersal

Cycle: 3, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
NIRSpec Observations				
	1	177-341 NIRspec	NIRSpec IFU Spectroscopy	(1) 177-341
	2	142-301 NIRspec	NIRSpec IFU Spectroscopy	(2) 142-301
	3	072-135 NIRspec	NIRSpec IFU Spectroscopy	(3) 072-135
	4	Background NIRSpec	NIRSpec IFU Spectroscopy	(4) PROPLYDS-BACKGROUND

ABSTRACT

The majority of stars, including our Sun, form in clusters in the presence of massive stars. This UV-rich environment leads to the rapid destruction of the stars' protoplanetary disks. While Hubble, ALMA, and JWST images have glimpsed the photoevaporating "proplyds" in Orion, there is still much we do not understand about the driving forces that lead to these disks' dispersal and its effect on planet formation. We propose to use the JWST NIRSpec IFU to conduct a detailed spatial/spectral analysis of the ionization front, outflow, and disk of three Orion proplyds. The targets exhibit the

prototypical proplyd morphology on which models of disk photoevaporation are based. We will map the key molecular dissociation fronts in the outflows and derive their density and temperature to accurately calculate the disk mass loss rates. Measuring the PAH abundance will reveal the microphysics that drives external photoevaporation, putting the leading models of this process to the test. Finally, molecular emission and ice absorption features from the disks will tell us how the cluster environment impacts the chemistry of planet formation.

OBSERVING DESCRIPTION

The goal of these observations is to acquire deep NIRSpec IFU observations of three proplyds in the Orion Nebula Cluster. We are interested in mapping the distribution of various atomic and molecular emission lines, the PAH 3.3 micron feature, and ice absorption features across the various proplyd components (ionization front, outflow, and molecular disk). We will use a 4-point dither pattern optimized for extended sources. We request dedicated background observations and NIRspec leakcal exposures to aid in data reduction. We do not request target acquisition. We center the observations on the proplyd head and central disk because measuring the full extent of the tail is not critical.

Proposal 5460 - Targets - A Panchromatic View of Protoplanetary Disk Dispersal

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	177-341	RA: 05 35 17.7000 (83.8237500d) Dec: -05 23 41.10 (-5.39475d) Equinox: J2000	Epoch of Position: 2015.5	
Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV. *Category=Star* *Description=[Proplyds, Protoplanetary disks]* *Extended=YES*				
(2)	142-301	RA: 05 35 14.1500 (83.8089583d) Dec: -05 23 0.90 (-5.38358d) Equinox: J2000	Epoch of Position: 2015.5	
Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV. *Category=Star* *Description=[Proplyds, Protoplanetary disks]* *Extended=YES*				
(3)	072-135	RA: 05 35 7.2200 (83.7800833d) Dec: -05 21 34.30 (-5.35953d) Equinox: J2000	Epoch of Position: 2000	
Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV. *Category=Star* *Description=[Proplyds, Protoplanetary disks]* *Extended=YES*				
(4)	PROPLYDS-BACKGROUND	RA: 05 27 19.4000 (81.8308333d) Dec: -05 32 4.40 (-5.53456d) Equinox: J2000		
Comments: *Category=Unidentified* *Description=[Blank field]* *Extended=YES*				

Observation

Proposal 5460, Observation 1: 177-341 NIRspec

Mon Aug 12 19:01:16 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Background Observations:[Background NIRSpec (Obs 4)]

Diagnostics

(Visit 1:1) Warning (Form): Data Excess over lower threshold

(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)	177-341	RA: 05 35 17.7000 (83.8237500d) Dec: -05 23 41.10 (-5.39475d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV.
Category=Star
Description=[Proplyds, Protoplanetary disks]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	4-POINT-DITHER				

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	G140H/F100LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.12
2	G140H/F100LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.12
3	G235H/F170LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.11
4	G235H/F170LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.11
5	G395H/F290LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.10
6	G395H/F290LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.10

Special Requirements	Group Observations 1, 2, 3, 4, Non-interruptible

Observation

Proposal 5460, Observation 2: 142-301 NIRspec Mon Aug 12 19:01:16 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Background Observations:[Background NIRSpec (Obs 4)]

Diagnostics

(Visit 2:1) Warning (Form): Data Excess over lower threshold

(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)	142-301	RA: 05 35 14.1500 (83.8089583d) Dec: -05 23 0.90 (-5.38358d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV.
Category=Star
Description=[Proplyds, Protoplanetary disks]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	4-POINT-DITHER				

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	G140H/F100LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.9
2	G140H/F100LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.9
3	G235H/F170LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.8
4	G235H/F170LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.8
5	G395H/F290LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.7
6	G395H/F290LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.7

Special Requirements	Group Observations 1, 2, 3, 4, Non-interruptible

Observation

Proposal 5460, Observation 3: 072-135 NIRspec Mon Aug 12 19:01:16 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Background Observations:[Background NIRSpec (Obs 4)]

Diagnostics

(Visit 3:1) Warning (Form): Data Excess over lower threshold

(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)	072-135	RA: 05 35 7.2200 (83.7800833d) Dec: -05 21 34.30 (-5.35953d) Equinox: J2000	Epoch of Position: 2000	

Comments: The coordinates are set to ensure the proplyd head and central disk are within the FOV of the smallest IFU fields. The end of the proplyd tail will fall outside the FOV.
Category=Star
Description=[Proplyds, Protoplanetary disks]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	4-POINT-DITHER				

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	G140H/F100LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.6
2	G140H/F100LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.6
3	G235H/F170LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.5
4	G235H/F170LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.5
5	G395H/F290LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.4
6	G395H/F290LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.4

Special Requirements	Group Observations 1, 2, 3, 4, Non-interruptible

Observation

Proposal 5460, Observation 4: Background NIRSpec

Mon Aug 12 19:01:16 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Background Observation For: [177-341 NIRspec (Obs 1), 142-301 NIRspec (Obs 2), 072-135 NIRspec (Obs 3)]

Diagnostics

(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
(4)	PROPLYDS-BACKGROUND	RA: 05 27 19.4000 (81.8308333d) Dec: -05 32 4.40 (-5.53456d) Equinox: J2000		

Comments:
Category=Unidentified
Description=[Blank field]
Extended=YES

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	4-POINT-DITHER				

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	G140H/F100LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.6
2	G140H/F100LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.6
3	G235H/F170LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.5
4	G235H/F170LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.5
5	G395H/F290LP	NRSIRS2RAPID	31	1	false	true	NONE	4	4	1867.378	177786.4
6	G395H/F290LP	NRSIRS2RAPID	31	1	true	true	NONE	4	4	1867.378	177786.4

Special Requirements	Group Observations 1, 2, 3, 4, Non-interruptible