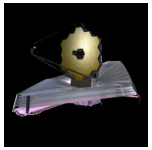

4537 - B335 with NIRSpec IFU

Cycle: 3, Proposal Category: GTO

INVESTIGATORS

Name	*Institution*
Dr. Klaus Werner Hodapp (PI)	**University of Hawaii**
Prof. Michael R. Meyer (CoI)	University of Michigan
Dr. Thomas P. Greene (CoI)	Caltech/IPAC
Dr. Laurie E Chu (CoI)	California Institute of Technology

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	B335	NIRSpec IFU Spectroscopy	(1) B335-protostar

ABSTRACT

We propose to follow up on the discovery of very young, highly excited shock fronts very close to the central protostellar object in B335. These shock fronts were found in the slitless spectroscopy and imaging obtained as part of the extinction mapping program 1187. We propose to follow-up this discovery with mapping of the inner few arcsec of this protostellar outflow with the NIRSpec IFU to study the CO bandhead emission from the densest shock fronts in detail, and to study the spectrum of the embedded protostar in the scattered continuum observed in the reflection nebula. We expect that the emission lines in the scattered light, originating from the disk around the protostar will have very different kinematics from the emission in the shock fronts. The proposed observations will have significant legacy value, since the string of shock fronts in B335 indicates repeated ejection events on timescales of a few decades and both morphological and spectral changes in the outflow launch region are to be expected on this time scale.

OBSERVING DESCRIPTION

We propose a set of 5 IFU pointings covering east and west of the ALMA position of the central protostar. A position angle of PA-V3 = 100 deg. is dictated by the available visibility, the desire to avoid the micrometeroid risk zone, and the need to avoid diffraction spikes from a nearby very bright star, that affected part of Figure 1. The resulting mosaic pattern (Figure 7) has the outflow axis roughly diagonal through the IFU, which is cosmetically not ideal, but feasible. The mosaic will include the central region and the two youngest show fronts on either side of the central protostar.

We will use one NIRSpec setting with the F290LP filter and the G395H high- resolution grating with a spectral resolution of 2700. Shorter wavelengths are so much more obscured by extinction that getting a good spectrum becomes pro- hibitively difficult.

Since the B335 region has a rich background star field (the very reasons why it was chosen for 1187) with bright extended emission, we want to use a full set of MSA leak calibration exposures, even though these are expensive in observing time.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	B335-protostar	RA: 19 37 0.8795 (294.2536646d) Dec: +07 34 9.29 (7.56925d) Equinox: J2000	Parallax: 0.008" Epoch of Position: 2015	

Comments:
Category=ISM
Description=[Dense interstellar clouds, Protostars, Stellar jets]
Extended=YES

Observation

Proposal 4537, Observation 1: B335

Fri May 09 23:00:08 GMT 2025

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
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Comments:
Category=ISM
Description=[Dense interstellar clouds, Protostars, Stellar jets]
Extended=YES

Template

TA Method	HFF Readout Mode
NONE	false

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
1	5	10.0	60.0	0.0	50.0	DEFAULT

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	G395H/F290LP	NRSIRS2RAPID	13	1	false	true	NONE	4	4	816.978	
2	G395H/F290LP	NRSIRS2RAPID	13	1	true	true	NONE	4	4	816.978	

Special Requirements	
	Aperture PA Range 238.97164917 to 238.97164917 Degrees (V3 100.0 to 100.0) Offset -1.2 arcsec, 1.8 arcsec