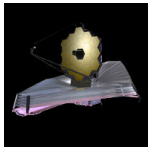

6640 - NIRSpec IFU Cube Build and Spectral Distortion Verification

Cycle: 3, Proposal Category: CAL/NIRSPEC

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
NGC 6720 NIRSpec IFU				
	1	NGC 6720 Position 2	NIRSpec IFU Spectroscopy	(1) NGC6720-NIRSPEC-POSITION-2
	2	NGC 6720 Position 2	NIRSpec IFU Spectroscopy	(1) NGC6720-NIRSPEC-POSITION-2
	52	NGC 6720 Position 2	NIRSpec IFU Spectroscopy	(1) NGC6720-NIRSPEC-POSITION-2

ABSTRACT

Our analysis of Cycle 1 CAL LSF data has shown that the compact spectrally unresolved planetary nebula has unexpected kinematic structure on the order of 2 pixels of shift from one slice to another (Beck, TM in prep). This large pixel shift is seen for all grating + filter settings, even for the prism. Prior data acquired in Cycle 1 did not observe enough dithers to properly characterize the 2D to 3D data mapping. We are requesting an expanded dataset to properly calibrate the IFU spatio/spectral voxel shape in 3D.

OBSERVING DESCRIPTION

OBJECTIVE: The goal of this activity is to measure and calibrate spectral distortion effects seen spatial elements (voxels) in NIRSpec IFU data – and acquire a more complete dataset (more dithers) to characterize the spectral mapping from 2D to 3D NIRSpec IFU data.

METHOD: Observations of the point source planetary nebula will be acquired with a dither pattern and a small 3pt mosaic raster scan across the IFU slices.

JUSTIFICATION: Our analysis of Cycle 1 CAL LSF data has shown that the compact spectrally unresolved planetary nebula has unexpected kinematic structure on the order of 2 pixels of shift from one slice to another (Beck, TM in prep). This large pixel shift is seen for all grating + filter settings, even for the prism. This obviously points to a problem in the cube build, and all indications are that it is a problem in the knowledge of the distortion model shape at a sub-spatial element level. Prior data acquired in Cycle 1 did not observe enough dithers to properly characterize the 2D to 3D data mapping. We are requesting an expanded dataset to properly calibrate the IFU spatio/spectral voxel shape in 3D.

PREVIOUS CALIBRATIONS: This is an expanded version of the Cycle 1 LSF calibration program (PID 1492). That program only observed a simple 4pt dither with each grating on the compact planetary nebula, which we have since learned is not optimal for building 3D cubes at any level of sub-sampling of spatial elements. Here we will acquire observations with a 9 point dither to better sample the spatial/spectral mapping from 2D to 3D.

TIMING CONSTRAINTS: No timing constraints. Observations are split into two parts with four spectral settings in one observation and 3 in another.

Proposal 6640 - Targets - NIRSpec IFU Cube Build and Spectral Distortion Verification

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC6720-NIRSPEC-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=ISM
Description=[Planetary nebulae]

Observation

Proposal 6640, Observation 1: NGC 6720 Position 2

Tue Oct 08 15:00:20 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(NGC 6720 Position 2 (Obs 1)) Warning (Form): This exposure specifies a WAVECAL in band G140M which duplicates grating/filter(s): 2 (G140M/F070LP)

(NGC 6720 Position 2 (Obs 1)) Warning (Form): This exposure specifies a WAVECAL in band G140M which duplicates grating/filter(s): 3 (G140M/F100LP)

(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)	NGC6720-NIRSPEC-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=ISM
Description=[Planetary nebulae]

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	9	

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	G140M/F070LP	NRSIRS2RAPID	10	1	true	true	NONE	9	9	1444.3	57104.5
2	G140M/F070LP	NRSIRS2RAPID	10	1	false	true	WAVECAL	9	9	1444.3	57104.5
3	G140M/F100LP	NRSIRS2RAPID	10	1	false	true	WAVECAL	9	9	1444.3	57104.5
4	G140M/F100LP	NRSIRS2RAPID	10	1	true	true	NONE	9	9	1444.3	
5	G235M/F170LP	NRSIRS2RAPID	10	1	true	true	NONE	9	9	1444.3	57104.6
6	G235M/F170LP	NRSIRS2RAPID	10	1	false	true	WAVECAL	9	9	1444.3	
7	G395M/F290LP	NRSIRS2RAPID	10	1	false	true	WAVECAL	9	9	1444.3	57104.7
8	G395M/F290LP	NRSIRS2RAPID	10	1	true	true	NONE	9	9	1444.3	
9	G140H/F070LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
10	G140H/F070LP	NRSIRS2RAPID	7	2	false	true	NONE	9	18	2100.8	
11	G140H/F100LP	NRSIRS2RAPID	7	2	false	true	NONE	9	18	2100.8	
12	G140H/F100LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
13	G235H/F170LP	NRSIRS2RAPID	9	2	true	true	NONE	9	18	2626.0	
14	G235H/F170LP	NRSIRS2RAPID	9	2	false	true	NONE	9	18	2626.0	
15	G395H/F290LP	NRSIRS2RAPID	15	2	false	true	NONE	9	18	4201.6	
16	G395H/F290LP	NRSIRS2RAPID	15	2	true	true	NONE	9	18	4201.6	
17	PRISM/CLEAR	NRSIRS2RAPID	3	4	true	true	NONE	9	36	2100.8	
18	PRISM/CLEAR	NRSIRS2RAPID	3	4	false	true	NONE	9	36	2100.8	

Special Requirements

No Parallel Attachments

Observation

Proposal 6640, Observation 2: NGC 6720 Position 2

Tue Oct 08 15:00:20 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(NGC 6720 Position 2 (Obs 2)) Warning (Form): This exposure specifies a WAVECAL in band G140H which duplicates grating/filter(s): 1 (G140H/F070LP)

(NGC 6720 Position 2 (Obs 2)) Warning (Form): This exposure specifies a WAVECAL in band G140H which duplicates grating/filter(s): 4 (G140H/F100LP)

(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
(1)	NGC6720-NIRSPEC-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=ISM
Description=[Planetary nebulae]

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	9	

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/F070LP	NRSIRS2RAPID	7	2	false	true	WAVECAL	9	18	2100.8	
2	G140H/F070LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
3	G140H/F100LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
4	G140H/F100LP	NRSIRS2RAPID	7	2	false	true	WAVECAL	9	18	2100.8	
5	G235H/F170LP	NRSIRS2RAPID	9	2	false	true	WAVECAL	9	18	2626.0	
6	G235H/F170LP	NRSIRS2RAPID	9	2	true	true	NONE	9	18	2626.0	
7	G395H/F290LP	NRSIRS2RAPID	15	2	true	true	NONE	9	18	4201.6	
8	G395H/F290LP	NRSIRS2RAPID	15	2	false	true	WAVECAL	9	18	4201.6	
9	PRISM/CLEAR	NRSIRS2RAPID	3	4	false	true	WAVECAL	9	36	2100.8	
10	PRISM/CLEAR	NRSIRS2RAPID	3	4	true	true	NONE	9	36	2100.8	

Special Requirements	No Parallel Attachments

Observation

Proposal 6640, Observation 52: NGC 6720 Position 2

Tue Oct 08 15:00:20 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec IFU Spectroscopy

Diagnostics

(NGC 6720 Position 2 (Obs 52)) Warning (Form): This exposure specifies a WAVECAL in band G140H which duplicates grating/filter(s): 1 (G140H/F070LP)

(NGC 6720 Position 2 (Obs 52)) Warning (Form): This exposure specifies a WAVECAL in band G140H which duplicates grating/filter(s): 4 (G140H/F100LP)

(Visit 52:1) Warning (Form): Data Excess over lower threshold

(Visit 52:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC6720-NIRSPEC-POSITION-2	RA: 18 53 33.2430 (283.3885125d) Dec: +33 01 49.90 (33.03053d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=ISM
Description=[Planetary nebulae]

Template

TA Method
NONE

Dithers

#	Dither Type	Size	Starting Point	Number of Points	Points
1	CYCLING	LARGE	1	9	

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/F070LP	NRSIRS2RAPID	7	2	false	true	WAVECAL	9	18	2100.8	
2	G140H/F070LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
3	G140H/F100LP	NRSIRS2RAPID	7	2	true	true	NONE	9	18	2100.8	
4	G140H/F100LP	NRSIRS2RAPID	7	2	false	true	WAVECAL	9	18	2100.8	
5	G235H/F170LP	NRSIRS2RAPID	9	2	false	true	WAVECAL	9	18	2626.0	
6	G235H/F170LP	NRSIRS2RAPID	9	2	true	true	NONE	9	18	2626.0	
7	G395H/F290LP	NRSIRS2RAPID	15	2	true	true	NONE	9	18	4201.6	
8	G395H/F290LP	NRSIRS2RAPID	15	2	false	true	WAVECAL	9	18	4201.6	
9	PRISM/CLEAR	NRSIRS2RAPID	3	4	false	true	WAVECAL	9	36	2100.8	
10	PRISM/CLEAR	NRSIRS2RAPID	3	4	true	true	NONE	9	36	2100.8	

Special Requirements	No Parallel Attachments