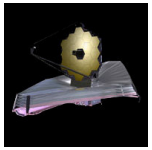

6644 - CAL-NRS-313: NIRSpec Faint Target Calibration and Linearity

Cycle: 3, Proposal Category: CAL/NIRSPEC

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	FULL - PRISM	NIRSpec Fixed Slit Spectroscopy	(1) NGC2506G31
	2	SUB2048 PRISM + Medium	NIRSpec Fixed Slit Spectroscopy	(1) NGC2506G31
	3	S200A1 PRISM	NIRSpec Fixed Slit Spectroscopy	(1) NGC2506G31
	4	S200A2 PRISM	NIRSpec Fixed Slit Spectroscopy	(1) NGC2506G31
	5	S400A1 PRISM	NIRSpec Fixed Slit Spectroscopy	(1) NGC2506G31

ABSTRACT

The solar analogue G31 in NGC 2506 is faint enough that even full frame NIRSpec NRSRAPID IRS2 MOS observations allow 3 groups before saturation.

But the only NIRSpec observations tying this to brighter standards use the SUB512 subarray which lacks real reference pixels. To ensure a good tie to brighter standards, we will also observe this star with the NIRSpec PRISM using both SUB2048 NRSRAPID and FULL Frame NRSIRS2RAPID readouts. In addition we will obtain G140M+G235M+G395M spectra which will allow more detailed spectral fitting of this star and which, when compared to brighter standards, will allow the NIRSpec lnearity to be checked at lower count rates. Finally, we will also observe this star with

PRISM in the S200A1, S200A2, and S400A1 apertures. Existing standard star observations in these slits with the PRISM saturate in less than 2 NRSRAPID groups and observations of this fainter star will allow improved derivation of the sensitivity at these wavelengths, while at longer wavelengths, we will combine these observations with the SUB2048 fixed slit observations to improve our measurement of the flux of this standard at long wavelengths.

This calibration program may change in response to system developments and the final Cycle 3 science program.

OBSERVING DESCRIPTION

All observations will use the solar analogue star G31 in the open cluster NGC 2506.

This star is just faint enough that for NIRSpec MOS PRISM observations that three NRSIRS2RAPID groups can be obtained before the spectrum begins to saturate at the most sensitive wavelengths, and so it is valuable to have redundant verification of the spectral energy distribution.

The SUB200A1, SUB200A2, and SUB400A1 exposures use the corresponding NIRSpec apertures. All other observations use the S1600A1.

Results of ETC calculations for each proposed exposure are summarized below for the planned exposure sequences, (groups x integrations x dithers). For the PRISM observations, also listed are the number of NRSIRS2RAPID groups at which the counts at the most sensitive wavelength first reach saturation.

Workbook ID: 167403
12 G140M/F070LP SUB2048 165x2x5 (1497s, S/N 40:1 to 180:1)
11 G140M/F100LP SUB2048 153x2x5 (1389s, S/N > 100:1 everwhere)
13 G235M/F170LP SUB2048 400x2x5 (3617s, S/N > 100:1 everywhere)
08 G395M/F290LP SUB2048 450x2x5 (4068s, S/N 50 - 160)

38 PRISM SUB2048 NRSRAPID 130x2x5 S/N 65+ 1182s, 66 groups to saturation
39 PRISM FULL NRSIRS2RAPID 10x4x5 S/N 100 - 500, 3210s, 2.86 grps to first saturation

36 PRISM SUB200A1 NRSRAPID 75x2x5 S/N 74+ 1184s, 40 groups to saturation

SUB200A2, and SUB400A1 are similar to SUB200A1.

Proposal 6644 - Targets - CAL-NRS-313: NIRSpec Faint Target Calibration and Linearity

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Observation

Proposal 6644, Observation 1: FULL - PRISM

Tue Oct 22 19:00:27 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit 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)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	167403.40

Template

Slit	Subarray
S1600A1	FULL

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	S1600A1	NRSIRS2RAPID	10	4	1	NONE	5	20	3209.556	

Observation

Proposal 6644, Observation 2: SUB2048 PRISM + Medium

Tue Oct 22 19:00:27 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit 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
(1)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	167403.40

Template

Slit	Subarray
S1600A1	SUB2048

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	S1600A1	NRSRAPID	130	2	1	NONE	5	10	1181.825	167403.38
2	G140M/F070LP	S1600A1	NRSRAPID	165	2	2	NONE	5	10	1497.525	167403.12
3	G140M/F100LP	S1600A1	NRSRAPID	153	2	3	NONE	5	10	1389.285	167403.11
4	G235M/F170LP	S1600A1	NRSRAPID	320	2	4	NONE	5	10	2895.625	167403.13
5	G395M/F290LP	S1600A1	NRSRAPID	450	2	5	NONE	5	10	4068.225	167403.08

Observation

Proposal 6644, Observation 3: S200A1 PRISM

Tue Oct 22 19:00:27 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit 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
(1)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	167403.40

Template

Slit	Subarray
S200A1	SUBS200A1

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	S200A1	NRSRAPID	75	2	1	NONE	5	10	1184.285	188773.36

Observation

Proposal 6644, Observation 4: S200A2 PRISM

Tue Oct 22 19:00:27 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	167403.40

Template

Slit	Subarray
S200A2	SUBS200A2

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	S200A2	NRSRAPID	75	2	1	NONE	5	10	1184.285	

Observation

Proposal 6644, Observation 5: S400A1 PRISM

Tue Oct 22 19:00:27 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Diagnostics

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC2506G31	RA: 08 00 14.2125 (120.0592187d) Dec: -10 47 29.47 (-10.79152d) Equinox: J2000	Proper Motion RA: -2.515 mas/yr Proper Motion Dec: 4.057 mas/yr Parallax: 0.0001" Epoch of Position: 2016	

Comments: Gaia DR3 3038045185547143936
Solar analogue in the open cluster NGC 2506
Category=Star
Description=[G dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	WATA	SUB2048	F110W	NRSRAPID	3	1	1	3.628	167403.40

Template

Slit	Subarray
S400A1	SUBS400A1

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	PRISM/CLEAR	S400A1	NRSRAPID	75	2	1	NONE	5	10	1184.285	