



1255 - JWST Medium-Deep Fields -- Hammel IDS GTO Program

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

| <i>Name</i> | <i>Institution</i> | <i>E-Mail</i> |
|-----------------------------------|---|----------------------------------|
| Dr. Stefanie N. Milam (PI) | NASA Goddard Space Flight Center | stefanie.n.milam@nasa.gov |
| Dr. Rolf A. Jansen (CoI) | Arizona State University | rolf.jansen@asu.edu |
| Dr. Heidi B. Hammel (CoI) | Space Science Institute | hbhammel@aura-astronomy.org |

OBSERVATIONS

| <i>Folder</i> | <i>Observation</i> | <i>Label</i> | <i>Observing Template</i> | <i>Science Target</i> |
|-----------------------|--------------------|-----------------------|---------------------------|------------------------|
| NEP Time-Domain Field | | | | |
| | 1 | NEP TDS FIELD Spoke 5 | NIRCam Imaging | (1) JWST-NEP-TDS-FIELD |

ABSTRACT

Our team assessed the detectability of distant solar system objects based on the parameters discussed in the “JWSTNEPcommunityfield16” document provided by JWST IDS R. Windhorst. Overall, nearly all distant solar system populations (> 40 AU) would have very low detectability: the proposed field is near the ecliptic pole (generally rules out Kuiper Belt Objects both classical and scattered, as well as Inner Oort Cloud Objects); the objects are extremely faint (e.g., Oort Cloud Objects); or the object's low density across the sky precludes meaningful discovery statistics (the near-polar-orbit Centaurs). There may be some populations that we know very little about such as bodies on near-polar orbits that could be detectable, but their numbers are not guaranteed. We nonetheless felt that given the non-zero probability of detection and given the importance of an actual detection, it was worthwhile to contribute time to the survey.

This includes observation IDs: Hammel_6000, 6001, 6002, 6003, 6004, 6005, 6006, 6007, 6008, 6009, 6010.

OBSERVING DESCRIPTION

JWST NEP Time-Domain Community Field: Our team assessed the detectability of distant solar system objects based on the parameters discussed in the “JWSTNEPcommunityfield16” document provided by JWST IDS R. Windhorst. Overall, nearly all distant solar system populations (> 40 AU) would have very low detectability: the proposed field is near the ecliptic pole (generally rules out Kuiper Belt Objects both classical and scattered, as well as Inner Oort Cloud Objects); the objects are extremely faint (e.g., Oort Cloud Objects); or the object's low density across the sky precludes meaningful discovery statistics (the near-polar-orbit Centaurs). There may be some populations that we know very little about such as bodies on near-polar orbits that could be detectable, but their numbers are not guaranteed. We nonetheless felt that given the non-zero probability of detection and given the importance of an actual detection, it was worthwhile to contribute time to the survey.

Within the northern CVZ, in the very best field for Time-Domain Science with JWST, IDS Windhorst defined a ~46 hr Medium-Deep Blank Field GTO program, covering a 4-spoke pattern that can efficiently provide NIRISS slitless grism spectroscopy of a large portion of the area observed with NIRCcam. Each spoke in this unique pattern consists of a 1row x 2col NIRCcam mosaic with significant overlap to fill the large (~44") gap between the NIRCcam modules and to provide contiguous NIRISS spectroscopic coverage. At each mosaic pointing, we fill the 4"-5" intra-module gaps using a 3-step INTRAMODULE dither (no sub-pixel dithering).

The present observations add half of a component for an additional spoke at an orientation that notionally differs by 45 degrees from the pattern defined by Windhorst to add both areal coverage over which full object characterization is obtained, as well as time-domain coverage in the areas (wedges) of overlap. NIRCcam imaging is obtained in F090W, F115W, F150W, F200W in the SW, and F277W, F356W, F444W, and F410M in the LW channel, with the F150W, F200W, F277W and F356W exposures split to match number of NIRISS exposures). In parallel to the NIRCcam imaging, we obtain NIRISS slitless spectroscopy with the orthogonal F150C and F150R grisms, crossed with the F200W filter (the associated NIRISS direct images are with the F200W filter).

Proposal 1255 - Targets - JWST Medium-Deep Fields -- Hammel IDS GTO Program

| Fixed Targets | # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous |
|---------------|-----|--------------------|---|--------------------------|---------------|
| | (1) | JWST-NEP-TDS-FIELD | RA: 17 22 47.8960 (260.6995667d) Dec: +65 49 21.54 (65.82265d) Equinox: J2000 <i>Comments: PA offset from WINDHORST_1131 by 255 to 315 degrees</i> <i>Category=Unidentified</i> <i>Description=[Infrared sources, Radio sources, Variable radiation sources, Visible sources, X-ray sources]</i> <i>Extended=NO</i> | | |

Proposal 1255 - Observation 1 - JWST Medium-Deep Fields -- Hammel IDS GTO Program

| Observation | Proposal 1255, Observation 1: NEP TDS FIELD Spoke 5 Fri Oct 22 17:00:18 GMT 2021 Diagnostic Status: Warning Observing Template: NIRCam Imaging Coordinated Parallel Template(s): NIRISS Wide Field Slitless Spectroscopy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|--------------------|--------------------------|--|-----------------------------|--------------------|-------------------|---------------------|--------------------|---------------------|---|---------------------|--------------------|--------------------------|--------------------|--|-----------------------------|---|---------------------|--------------------|--|------------------|-------------|--------------|-------|---|-----|---|---------|----|---|-------|---------|---------|---|-------|-------|--------|---------|---|---|-------|-------|----------|---|---|--------|-------|---------|-----|---|-------|-------|----------|---|---------|---|---|---------|-------|---|-------|-------|---------|----|---|---|---------|---------|---|-------|-------|--------|----------|---|---|---|---|---------|--|---|--------|
| | (Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fixed Targets | <table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>JWST-NEP-TDS-FIELD</td> <td>RA: 17 22 47.8960 (260.6995667d) Dec: +65 49 21.54 (65.82265d) Equinox: J2000</td> <td></td> <td></td> </tr> <tr> <td colspan="5"> <i>Comments: PA offset from WINDHORST_1131 by 255 to 315 degrees</i> <i>Category=Unidentified</i> <i>Description=[Infrared sources, Radio sources, Variable radiation sources, Visible sources, X-ray sources]</i> <i>Extended=NO</i> </td> </tr> </tbody> </table> | | | | | | | | | | | # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous | (1) | JWST-NEP-TDS-FIELD | RA: 17 22 47.8960 (260.6995667d) Dec: +65 49 21.54 (65.82265d) Equinox: J2000 | | | <i>Comments: PA offset from WINDHORST_1131 by 255 to 315 degrees</i> <i>Category=Unidentified</i> <i>Description=[Infrared sources, Radio sources, Variable radiation sources, Visible sources, X-ray sources]</i> <i>Extended=NO</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | # | Name | Target Coordinates | Targ. Coord. Corrections | Miscellaneous | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | JWST-NEP-TDS-FIELD | RA: 17 22 47.8960 (260.6995667d) Dec: +65 49 21.54 (65.82265d) Equinox: J2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Comments: PA offset from WINDHORST_1131 by 255 to 315 degrees</i> <i>Category=Unidentified</i> <i>Description=[Infrared sources, Radio sources, Variable radiation sources, Visible sources, X-ray sources]</i> <i>Extended=NO</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Template | NIRCam Imaging NIRISS Wide Field Slitless Spectroscopy Module: ALL Subarray: FULL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>#</th> <th>Primary Dither Type</th> <th>Primary Dithers</th> <th>Dither Size</th> <th>Subpixel Positions</th> <th>Coordinated Parallel Subpixel Selector</th> <th>Dither Direct Images Primes</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>INTRAMODULE</td> <td>4</td> <td></td> <td>1</td> <td>NIRCam Only</td> <td>NO_DITHERING</td> </tr> </tbody> </table> | | | | | | | | | | | # | Primary Dither Type | Primary Dithers | Dither Size | Subpixel Positions | Coordinated Parallel Subpixel Selector | Dither Direct Images Primes | 1 | INTRAMODULE | 4 | | 1 | NIRCam Only | NO_DITHERING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| # | Primary Dither Type | Primary Dithers | Dither Size | Subpixel Positions | Coordinated Parallel Subpixel Selector | Dither Direct Images Primes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | INTRAMODULE | 4 | | 1 | NIRCam Only | NO_DITHERING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spectral Elements | <table border="1"> <thead> <tr> <th>NIRCam Imaging</th> <th>Short Filter</th> <th>Long Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Dithers</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>F150W</td> <td>F356W</td> <td>SHALLOW2</td> <td>4</td> <td>2</td> <td>2</td> <td>1</td> <td>375.787</td> <td></td> </tr> <tr> <td>2</td> <td>F090W</td> <td>F444W</td> <td>BRIGHT2</td> <td>4</td> <td>1</td> <td>4</td> <td>4</td> <td>343.577</td> <td></td> </tr> <tr> <td>3</td> <td>F150W</td> <td>F356W</td> <td>SHALLOW2</td> <td>4</td> <td>2</td> <td>2</td> <td>1</td> <td>375.787</td> <td></td> </tr> <tr> <td>4</td> <td>F200W</td> <td>F277W</td> <td>SHALLOW2</td> <td>4</td> <td>2</td> <td>2</td> <td>1</td> <td>375.787</td> <td></td> </tr> <tr> <td>5</td> <td>F115W</td> <td>F410M</td> <td>BRIGHT2</td> <td>4</td> <td>1</td> <td>4</td> <td>4</td> <td>343.577</td> <td></td> </tr> <tr> <td>6</td> <td>F200W</td> <td>F277W</td> <td>SHALLOW2</td> <td>4</td> <td>2</td> <td>2</td> <td>1</td> <td>375.787</td> <td></td> </tr> </tbody> </table> | | | | | | | | | | | NIRCam Imaging | Short Filter | Long Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID | 1 | F150W | F356W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | 2 | F090W | F444W | BRIGHT2 | 4 | 1 | 4 | 4 | 343.577 | | 3 | F150W | F356W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | 4 | F200W | F277W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | 5 | F115W | F410M | BRIGHT2 | 4 | 1 | 4 | 4 | 343.577 | | 6 | F200W | F277W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | | |
| | NIRCam Imaging | Short Filter | Long Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | F150W | F356W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | F090W | F444W | BRIGHT2 | 4 | 1 | 4 | 4 | 343.577 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | F150W | F356W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | F200W | F277W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | F115W | F410M | BRIGHT2 | 4 | 1 | 4 | 4 | 343.577 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | F200W | F277W | SHALLOW2 | 4 | 2 | 2 | 1 | 375.787 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spectral Elements | <table border="1"> <thead> <tr> <th>NIRISS Wide Field Slitless Spectroscopy</th> <th>Exposure Type</th> <th>Filter</th> <th>Grism</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Two Extra Dithers</th> <th>Total Dithers</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DIRECT</td> <td>F200W</td> <td></td> <td>NIS</td> <td>8</td> <td>1</td> <td>NO</td> <td>1</td> <td>1</td> <td>354.313</td> <td></td> </tr> <tr> <td>2</td> <td>GRISM</td> <td>F200W</td> <td>GR150C</td> <td>NIS</td> <td>2</td> <td>1</td> <td>4</td> <td>4</td> <td>386.524</td> <td></td> <td>3</td> </tr> <tr> <td>DIRECT</td> <td>F200W</td> <td></td> <td>NIS</td> <td>8</td> <td>1</td> <td>NO</td> <td>1</td> <td>1</td> <td>354.313</td> <td></td> <td>4</td> </tr> <tr> <td>DIRECT</td> <td>F200W</td> <td></td> <td>NIS</td> <td>8</td> <td>1</td> <td>NO</td> <td>1</td> <td>1</td> <td>354.313</td> <td></td> <td>5</td> </tr> <tr> <td>GRISM</td> <td>F200W</td> <td>GR150R</td> <td>NIS</td> <td>2</td> <td>1</td> <td>4</td> <td>4</td> <td>386.524</td> <td></td> <td>6</td> <td>DIRECT</td> </tr> </tbody> </table> | | | | | | | | | | | NIRISS Wide Field Slitless Spectroscopy | Exposure Type | Filter | Grism | Readout Pattern | Groups/Int | Integrations/Exp | Two Extra Dithers | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID | 1 | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | 2 | GRISM | F200W | GR150C | NIS | 2 | 1 | 4 | 4 | 386.524 | | 3 | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | 4 | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | 5 | GRISM | F200W | GR150R | NIS | 2 | 1 | 4 | 4 | 386.524 | | 6 | DIRECT |
| | NIRISS Wide Field Slitless Spectroscopy | Exposure Type | Filter | Grism | Readout Pattern | Groups/Int | Integrations/Exp | Two Extra Dithers | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | GRISM | F200W | GR150C | NIS | 2 | 1 | 4 | 4 | 386.524 | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DIRECT | F200W | | NIS | 8 | 1 | NO | 1 | 1 | 354.313 | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRISM | F200W | GR150R | NIS | 2 | 1 | 4 | 4 | 386.524 | | 6 | DIRECT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Proposal 1255 - Observation 1 - JWST Medium-Deep Fields -- Hammel IDS GTO Program

Special Requirements

Aperture PA Range 110 to 120 Degrees (V3 110.11255124 to 120.11255124)
Offset 190.0 arcsec, -105.0 arcsec
No Parallel