



## 4447 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

Cycle: 2, Proposal Category: CAL/NIRCAM

### INVESTIGATORS

| <i>Name</i>                            | <i>Institution</i>                       |
|--|--|
| <b>Dr. Vera Kozhurina-Platais (PI)</b> | <b>Space Telescope Science Institute</b> |
| Dr. Armin Rest (CoI) (CoPI) (Contact)  | Space Telescope Science Institute        |
| Dr. Martha L. Boyer (CoI) (Contact)    | Space Telescope Science Institute        |
| Julien Girard (CoI)                    | Space Telescope Science Institute        |
| Dr. Mario Gennaro (CoI)                | Space Telescope Science Institute        |
| Dr. David A. Golimowski (CoI)          | Space Telescope Science Institute        |

### OBSERVATIONS

| <i>Folder</i>      | <i>Observation</i> | <i>Label</i>                        | <i>Observing Template</i>   | <i>Science Target</i> |
|--------------------|--------------------|-------------------------------------|-----------------------------|-----------------------|
| Distortion Monitor |                    |                                     |                             |                       |
|                    | 1                  | Module B at center, FG S2           | NIRCcam Engineering Imaging | (1) LMC-CAL-FIELD     |
|                    | 2                  | Module A at center, FG S1           | NIRCcam Engineering Imaging | (1) LMC-CAL-FIELD     |
|                    | 3                  | Lyot Wedges Astrometric Calibration | NIRCcam Engineering Imaging | (1) LMC-CAL-FIELD     |

### ABSTRACT

This activity monitors NIRCcam's distortion and global alignment by visiting the LMC Calibration Field in both imaging and coronagraph imaging. The data will be used to determine the plate scale, orientation, and geometric distortion for each SCA in each NIRCcam module over the full wavelength range. These observations use a combination of dithers and mosaics to overlap all SCAs onto the same location within the LMC. For all observations, we use a subset of the available filters and observe with FGS in parallel.

This calibration program may change in response to system developments and the final Cycle 2 science program.

**OBSERVING DESCRIPTION**

**EXPOSURE SETUP:** We use readout patterns and groups/ints appropriate for a broad dynamic range of LMC stars, as demonstrated by Commissioning and Cycle 1 observations of the LMC Calibration field.

**DITHERS:** We include 2 INTRAMODULEBOX dithers for imaging and 7 INTRASCA 24" dithers for coronagraphy

**MOSAIC:** We include mosaics that place each SCA at the same location in the LMC

FGS is in parallel for all observations

**OFFSETS:** We include target offsets to help overlap all SCAs

**TIMING CONSTRAINTS:** We set a BETWEEN special requirement to observe this program in the first third of Cycle 2, about 6 months after the latest Cycle 1 observations.

# Proposal 4447 - Targets - NIRCcam Imaging and Coronagraphy Distortions and Alignment

| Fixed Targets | #  | Name                           | Target Coordinates                   | Targ. Coord. Corrections                              | Miscellaneous |
|---------------|--|--------------------------------|--------------------------------------|---|---------------|
|               | (1)  | LMC-CAL-FIELD                  | RA: 05 21 57.6740 (80.4903083d)      | Proper Motion RA: 3.679973456416861E-4 sec of time/yr |               |
|               |  | Dec: -69 29 53.36 (-69.49816d) | Proper Motion Dec: 2.29E-4 arcsec/yr |   |               |
|               |  | Equinox: J2000                 | Epoch of Position: 2015.5            |   |               |
|               | <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> |                                |                                      |   |               |
|               | <i>Category=Calibration</i>  |                                |                                      |   |               |
|               | <i>Description=[Astrometric, Coronagraphic, Photometric]</i>   |                                |                                      |   |               |

# Proposal 4447 - Observation 1 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

Mon May 08 21:01:26 GMT 2023

| <b>Observation</b>   | <b>Proposal 4447, Observation 1: Module B at center, FGS2</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: NIRCcam Engineering Imaging<br>Coordinated Parallel Template(s): FGS External Calibration  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|--|--|---|--|--------------------------|---------------|--------------------|---|------------------|--------------------|---------------|---------------------|------------------|-----------------------------|---------------------|--------------------|--------------------------|---------------|--------------------|---------------------|---|--|---------------|---------------------|------------------|-----|---------|---------|-------|-------|---------|---|---|---|---|---------|--|---|-------|-------|-------|-------|---------|---------|---|---|-----|---------|---|---|-------|---------|-------|-------|---------|---|---|---|---|---------|--|---|-------|-------|-------|-------|---------|---|---|---|---|---------|--|
|  | (Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 1:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 1:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 1:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| <b>Diagnosics</b>  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| <b>Fixed Targets</b>   | <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>LMC-CAL-FIELD</td> <td>RA: 05 21 57.6740 (80.4903083d)<br/>Dec: -69 29 53.36 (-69.49816d)<br/>Equinox: J2000</td> <td>Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br/>Proper Motion Dec: 2.29E-4 arcsec/yr<br/>Epoch of Position: 2015.5</td> <td></td> </tr> </tbody> </table>   |   |  |                          |               |                    |   |                  |                    |               |                     |                  | #                           | Name                | Target Coordinates | Targ. Coord. Corrections | Miscellaneous | (1)                | LMC-CAL-FIELD       | RA: 05 21 57.6740 (80.4903083d)<br>Dec: -69 29 53.36 (-69.49816d)<br>Equinox: J2000 | Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br>Proper Motion Dec: 2.29E-4 arcsec/yr<br>Epoch of Position: 2015.5 |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | #  | Name  | Target Coordinates   | Targ. Coord. Corrections | Miscellaneous |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
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| Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br>Category=Calibration<br>Description=[Astrometric, Coronagraphic, Photometric] |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| <b>Template</b>  | NIRCcam Engineering Imaging  |   |  |                          |               |                    | FGS External Calibration                |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | Module: ALL<br>Subarray: FULL  |   |  |                          |               |                    | Target type: IMAGE<br>Detector: GUIDER2 |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| <b>Mosaic</b>  | <table border="1"> <thead> <tr> <th>Rows</th> <th>Columns</th> <th>Row Overlap %</th> <th>Column Overlap %</th> <th>Row shift</th> <th>Column shift</th> <th>Tile Order</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>2</td> <td>50.0</td> <td>80.0</td> <td>0.0</td> <td>0.0</td> <td>DEFAULT</td> </tr> </tbody> </table>  |   |  |                          |               |                    |   |                  |                    |               |                     |                  | Rows                        | Columns             | Row Overlap %      | Column Overlap %         | Row shift     | Column shift       | Tile Order          | 2   | 2  | 50.0          | 80.0                | 0.0              | 0.0 | DEFAULT |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | Rows   | Columns   | Row Overlap %  | Column Overlap %         | Row shift     | Column shift       | Tile Order                              |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| 2  | 2  | 50.0  | 80.0   | 0.0                      | 0.0           | DEFAULT            |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| <b>Dithers</b>   | <table border="1"> <thead> <tr> <th>#</th> <th>Primary Dither Type</th> <th>Primary Dithers</th> <th>Subpixel Dither Type</th> <th>Dither Size</th> <th>Subpixel Positions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>INTRAMODULEBOX</td> <td>2</td> <td>STANDARD</td> <td></td> <td>1</td> </tr> </tbody> </table>   |   |  |                          |               |                    |   |                  |                    |               |                     |                  | #                           | Primary Dither Type | Primary Dithers    | Subpixel Dither Type     | Dither Size   | Subpixel Positions | 1                   | INTRAMODULEBOX  | 2  | STANDARD      |                     | 1                |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | #  | Primary Dither Type   | Primary Dithers  | Subpixel Dither Type     | Dither Size   | Subpixel Positions |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| 1  | INTRAMODULEBOX   | 2   | STANDARD   |                          | 1             |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
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|  | NIRCcam Engineering Imaging  | Short Pupil   | Long Pupil   | Short Filter             | Long Filter   | Readout Pattern    | Groups/Int                              | Integrations/Exp | Total Integrations | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 1  | CLEAR   | CLEAR  | F210M                    | F335M         | BRIGHT1            | 5                                       | 1                | 2                  | 2             | 193.262             |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 2  | CLEAR   | CLEAR  | F150W                    | F277W         | BRIGHT1            | 5                                       | 1                | 2                  | 2             | 193.262             |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 3  | CLEAR   | CLEAR  | F200W                    | F356W         | BRIGHT1            | 5                                       | 1                | 2                  | 2             | 193.262             |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| 4  | CLEAR  | CLEAR   | F070W  | F444W                    | BRIGHT1       | 5                  | 1                                       | 2                | 2                  | 193.262       |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
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|  | FGS External Calibration   | Readout Pattern   | Groups/Int   | Integrations/Exp         | Total Dithers | Total Integrations | Total Exposure Time                     | ETC Wkbk.Calc ID |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 1  | FGS   | 2  | 1                        | 2             | 2                  | 193.262                                 |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 2  | FGS   | 2  | 1                        | 2             | 2                  | 193.262                                 |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  | 3  | FGS   | 2  | 1                        | 2             | 2                  | 193.262                                 |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
| 4  | FGS  | 2   | 1  | 2                        | 2             | 193.262            |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |
|  |  |   |  |                          |               |                    |   |                  |                    |               |                     |                  |                             |                     |                    |                          |               |                    |                     |   |  |               |                     |                  |     |         |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |         |   |   |     |         |   |   |       |         |       |       |         |   |   |   |   |         |  |   |       |       |       |       |         |   |   |   |   |         |  |

Proposal 4447 - Observation 1 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

**Special Requirements**

Before Date 31-DEC-2023:00:00:00  
Group Visits within 10.0 Days  
Visits Same PA  
No Parallel Attachments  
Guide Star in Guider 1

# Proposal 4447 - Observation 2 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

Mon May 08 21:01:26 GMT 2023

| <b>Observation</b>       | <b>Proposal 4447, Observation 2: Module A at center, FGS1</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: NIRCcam Engineering Imaging<br>Coordinated Parallel Template(s): FGS External Calibration  |   |  |                          |                          |                    |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|--------------------------|--|---|--|--------------------------|--------------------------|--------------------|--|------------------|---|--|---------------------|---|--|--|--|--|--|--|--|--|--|--|
|                          | (Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 2:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 2:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 2:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |   |  |                          |                          |                    |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| <b>Fixed Targets</b>     | <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>LMC-CAL-FIELD</td> <td>RA: 05 21 57.6740 (80.4903083d)<br/>Dec: -69 29 53.36 (-69.49816d)<br/>Equinox: J2000</td> <td>Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br/>Proper Motion Dec: 2.29E-4 arcsec/yr<br/>Epoch of Position: 2015.5</td> <td></td> </tr> </tbody> </table> | #   | Name   | Target Coordinates       | Targ. Coord. Corrections | Miscellaneous      | (1)  | LMC-CAL-FIELD    | RA: 05 21 57.6740 (80.4903083d)<br>Dec: -69 29 53.36 (-69.49816d)<br>Equinox: J2000 | Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br>Proper Motion Dec: 2.29E-4 arcsec/yr<br>Epoch of Position: 2015.5 |                     | <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i><br>Category=Calibration<br>Description=[Astrometric, Coronagraphic, Photometric] |  |  |  |  |  |  |  |  |  |  |
|                          | #  | Name  | Target Coordinates   | Targ. Coord. Corrections | Miscellaneous            |                    |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| (1)                      | LMC-CAL-FIELD  | RA: 05 21 57.6740 (80.4903083d)<br>Dec: -69 29 53.36 (-69.49816d)<br>Equinox: J2000 | Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br>Proper Motion Dec: 2.29E-4 arcsec/yr<br>Epoch of Position: 2015.5 |                          |                          |                    |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| <b>Template</b>          | <b>NIRCcam Engineering Imaging</b><br>Module: ALL<br>Subarray: FULL  |   |  |                          |                          |                    | <b>FGS External Calibration</b><br>Target type: IMAGE<br>Detector: GUIDER1 |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| <b>Mosaic</b>            | Rows   | Columns   | Row Overlap %  | Column Overlap %         | Row shift                | Column shift       | Tile Order   |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 2  | 2   | 50.0   | 80.0                     | 0.0                      | 0.0                | DEFAULT  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| <b>Dithers</b>           | #  | Primary Dither Type   | Primary Dithers  | Subpixel Dither Type     | Dither Size              | Subpixel Positions |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 1  | INTRAMODULEBOX  | 2  | STANDARD                 |                          | 1                  |  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
| <b>Spectral Elements</b> | <b>NIRCcam Engineering Imaging</b>   | Short Pupil   | Long Pupil   | Short Filter             | Long Filter              | Readout Pattern    | Groups/Int   | Integrations/Exp | Total Integrations  | Total Dithers  | Total Exposure Time | ETC Wkbk.Calc ID  |  |  |  |  |  |  |  |  |  |  |
|                          | 1  | CLEAR   | CLEAR  | F210M                    | F335M                    | BRIGHT1            | 5  | 1                | 2   | 2  | 193.262             |   |  |  |  |  |  |  |  |  |  |  |
|                          | 2  | CLEAR   | CLEAR  | F150W                    | F277W                    | BRIGHT1            | 5  | 1                | 2   | 2  | 193.262             |   |  |  |  |  |  |  |  |  |  |  |
|                          | 3  | CLEAR   | CLEAR  | F200W                    | F356W                    | BRIGHT1            | 5  | 1                | 2   | 2  | 193.262             |   |  |  |  |  |  |  |  |  |  |  |
|                          | 4  | CLEAR   | CLEAR  | F070W                    | F444W                    | BRIGHT1            | 5  | 1                | 2   | 2  | 193.262             |   |  |  |  |  |  |  |  |  |  |  |
| <b>Spectral Elements</b> | <b>FGS External Calibration</b>  | Readout Pattern   | Groups/Int   | Integrations/Exp         | Total Dithers            | Total Integrations | Total Exposure Time  | ETC Wkbk.Calc ID |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 1  | FGS   | 2  | 1                        | 2                        | 2                  | 193.262  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 2  | FGS   | 2  | 1                        | 2                        | 2                  | 193.262  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 3  | FGS   | 2  | 1                        | 2                        | 2                  | 193.262  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |
|                          | 4  | FGS   | 2  | 1                        | 2                        | 2                  | 193.262  |                  |   |  |                     |   |  |  |  |  |  |  |  |  |  |  |

## Proposal 4447 - Observation 2 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

### Special Requirements

Before Date 31-DEC-2023:00:00:00  
Group Visits within 10.0 Days  
Visits Same PA  
Offset -75.0 arcsec, 0.0 arcsec  
No Parallel Attachments  
Guide Star in Guider 2

# Proposal 4447 - Observation 3 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

Mon May 08 21:01:26 GMT 2023

| <b>Observation</b>   | <b>Proposal 4447, Observation 3: Lyot Wedges Astrometric Calibration</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: NIRCcam Engineering Imaging<br>Coordinated Parallel Template(s): FGS External Calibration  |   |  |  |                          |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
|----------------------|---|---|--|--|--------------------------|---------------|--------------------|---------------|---|--|----------|-------------|-----|-----|---------|--|--|--|--|--|--|
| <b>Diagnostics</b>   | (Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:5) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:6) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:7) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:8) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:9) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:10) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:11) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:12) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:13) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:14) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:15) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:16) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:17) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 3:18) Warning (Form): Overheads are provisional until the Visit Planner has been run. |   |  |  |                          |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| <b>Fixed Targets</b> | <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>LMC-CAL-FIELD</td> <td>RA: 05 21 57.6740 (80.4903083d)<br/>Dec: -69 29 53.36 (-69.49816d)<br/>Equinox: J2000</td> <td>Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br/>Proper Motion Dec: 2.29E-4 arcsec/yr<br/>Epoch of Position: 2015.5</td> <td></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br/>Category=Calibration<br/>Description=[Astrometric, Coronagraphic, Photometric]</i></p>   | #   | Name   | Target Coordinates   | Targ. Coord. Corrections | Miscellaneous | (1)                | LMC-CAL-FIELD | RA: 05 21 57.6740 (80.4903083d)<br>Dec: -69 29 53.36 (-69.49816d)<br>Equinox: J2000 | Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br>Proper Motion Dec: 2.29E-4 arcsec/yr<br>Epoch of Position: 2015.5 |          |             |     |     |         |  |  |  |  |  |  |
| #                    | Name  | Target Coordinates  | Targ. Coord. Corrections   | Miscellaneous  |                          |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| (1)                  | LMC-CAL-FIELD   | RA: 05 21 57.6740 (80.4903083d)<br>Dec: -69 29 53.36 (-69.49816d)<br>Equinox: J2000 | Proper Motion RA: 3.679973456416861E-4 sec of time/yr<br>Proper Motion Dec: 2.29E-4 arcsec/yr<br>Epoch of Position: 2015.5 |  |                          |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| <b>Template</b>      | <b>NIRCcam Engineering Imaging</b><br>Module: ALL<br>Subarray: FULL   |   |  | <b>FGS External Calibration</b><br>Target type: IMAGE<br>Detector: GUIDER1 |                          |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| <b>Mosaic</b>        | <table border="1"> <thead> <tr> <th>Rows</th> <th>Columns</th> <th>Row Overlap %</th> <th>Column Overlap %</th> <th>Row shift</th> <th>Column shift</th> <th>Tile Order</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>10.0</td> <td>80.0</td> <td>0.0</td> <td>0.0</td> <td>DEFAULT</td> </tr> </tbody> </table>   | Rows  | Columns  | Row Overlap %  | Column Overlap %         | Row shift     | Column shift       | Tile Order    | 1   | 2  | 10.0     | 80.0        | 0.0 | 0.0 | DEFAULT |  |  |  |  |  |  |
| Rows                 | Columns   | Row Overlap %   | Column Overlap %   | Row shift  | Column shift             | Tile Order    |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| 1                    | 2   | 10.0  | 80.0   | 0.0  | 0.0                      | DEFAULT       |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| <b>Dithers</b>       | <table border="1"> <thead> <tr> <th>#</th> <th>Primary Dither Type</th> <th>Primary Dithers</th> <th>Subpixel Dither Type</th> <th>Dither Size</th> <th>Subpixel Positions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>INTRASCA</td> <td>7</td> <td>STANDARD</td> <td>24" (LARGE)</td> <td>2</td> </tr> </tbody> </table>   | #   | Primary Dither Type  | Primary Dithers  | Subpixel Dither Type     | Dither Size   | Subpixel Positions | 1             | INTRASCA  | 7  | STANDARD | 24" (LARGE) | 2   |     |         |  |  |  |  |  |  |
| #                    | Primary Dither Type   | Primary Dithers   | Subpixel Dither Type   | Dither Size  | Subpixel Positions       |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |
| 1                    | INTRASCA  | 7   | STANDARD   | 24" (LARGE)  | 2                        |               |                    |               |   |  |          |             |     |     |         |  |  |  |  |  |  |

Proposal 4447 - Observation 3 - NIRCcam Imaging and Coronagraphy Distortions and Alignment

| Spectral Elements    | NIRCcam Engineering Imaging   | Short Pupil     | Long Pupil | Short Filter     | Long Filter   | Readout Pattern    | Groups/Int          | Integrations/Exp | Total Integrations | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID |
|----------------------|---|-----------------|------------|------------------|---------------|--------------------|---------------------|------------------|--------------------|---------------|---------------------|------------------|
|                      | 1   | CLEAR           | CLEAR      | F210M            | F335M         | BRIGHT1            | 5                   | 1                | 14                 | 14            | 1352.833            |                  |
|                      | 2   | MASKRND         | MASKRND    | F210M            | F335M         | SHALLOW2           | 5                   | 1                | 14                 | 14            | 3306.925            |                  |
|                      | 3   | MASKBAR         | MASKBAR    | F210M            | F335M         | SHALLOW2           | 5                   | 1                | 14                 | 14            | 3306.925            |                  |
| Spectral Elements    | FGS External Calibration  | Readout Pattern | Groups/Int | Integrations/Exp | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |                    |               |                     |                  |
|                      | 1   | FGS             | 2          | 1                | 14            | 14                 | 1352.833            |                  |                    |               |                     |                  |
|                      | 2   | FGS             | 5          | 1                | 14            | 14                 | 3156.61             |                  |                    |               |                     |                  |
|                      | 3   | FGS             | 5          | 1                | 14            | 14                 | 3156.61             |                  |                    |               |                     |                  |
| Special Requirements | Before Date 31-OCT-2023:00:00:00<br>Group Visits within 53.0 Days<br>Visits Same PA<br>Offset -75.0 arcsec, 0.0 arcsec<br>No Parallel Attachments<br>Guide Star in Guider 2 |                 |            |                  |               |                    |                     |                  |                    |               |                     |                  |