



## 3925 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Cycle: 2, Proposal Category: GO

### INVESTIGATORS

| <i>Name</i>                         | <i>Institution</i>                 |
|-------------------------------------|------------------------------------|
| <b>Dr. Charles A. Beichman (PI)</b> | <b>Jet Propulsion Laboratory</b>   |
| Dr. Marie Ygouf (CoI)               | Jet Propulsion Laboratory          |
| Dr. Geoffrey Bryden (CoI)           | Jet Propulsion Laboratory          |
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| Dr. Andras Gaspar (CoI)             | University of Arizona              |
| Jorge Llop-Sayson (CoI)             | Jet Propulsion Laboratory          |
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| Dr. George Rieke (CoI)              | University of Arizona              |
| Dr. Schuyler G. Wolff (CoI)         | University of Arizona              |
| Dr. Thomas P. Greene (CoI)          | NASA Ames Research Center          |

### OBSERVATIONS

| <i>Folder</i> | <i>Observation</i> | <i>Label</i>               | <i>Observing Template</i>    | <i>Science Target</i> |
|---------------|--------------------|----------------------------|------------------------------|-----------------------|
| Fomalhaut     |                    |                            |                              |                       |
|               | 1                  | Fomalhaut-Roll1 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 2                  | Fomalhaut-Roll2 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 3                  | Fomalhaut-Roll1 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 4                  | Fomalhaut-Roll2 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |

| <i>Folder</i> | <i>Observation</i> | <i>Label</i>               | <i>Observing Template</i>    | <i>Science Target</i> |
|---------------|--------------------|----------------------------|------------------------------|-----------------------|
|               | 5                  | Fomalhaut-Roll1 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 6                  | Fomalhaut-Roll2 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 7                  | Fomalhaut-Roll1 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |
|               | 8                  | Fomalhaut-Roll2 Full Array | NIRCam Coronagraphic Imaging | (1) FOMALHAUT         |

## ABSTRACT

Fomalhaut is one of the original debris disk systems discovered through its strong infrared excess and the debris disk phenomenon soon became a signpost of the planet formation process. Direct imaging from the visible through the millimeter has led to a detailed characterization of the distribution of the dust orbiting Fomalhaut. Yet, until now, there has been no convincing evidence for planets in the Fomalhaut system. Most recently MIRI observed the disk revealing dramatic new details and multiple rings in the disk system, including an outer "Kuiper Belt" ring at 140 AU, an inner ring, and a broad disk equivalent to the asteroid belt in the Solar System. NIRCam coronagraphic imaging has revealed a half dozen faint targets within and near the debris disk, including Source 1 which coincides with a compact region of enhanced dust emission seen by MIRI within the outer disk. Source 1, or one of the other NIRCam objects, might be planet-mass objects responsible for sculpting the various disk structures. Alternatively, with its unusual colors, Source 1 might be a transient knot of hot dust resulting from a recent collision of planetesimals which produced the excess MIRI emission. The goals of this program are: 1) to provide astrometric confirmation (or rejection) for these sources to be associated with Fomalhaut through common proper motion; and 2) to improve the photometry to enable a fuller characterization of these sources. If one or more of the NIRCam objects prove to be part of the Fomalhaut system, then they will be some of the lowest mass planets yet discovered by direct imaging.

## OBSERVING DESCRIPTION

We will observe with the NIRCam/MASK335R coronagraph mask simultaneously in two pairs of filters -- F200W+F444W and F200M+F356W. We will use the RAPID read mode with NGROUPS=5 and NINT=50 per filter for a total integration time of 3200 sec per roll. Based on the pynrc tool, these observations should achieve 5sigma sensitivities of: [F200W] = 21.9 mags and contrast  $\sim 4.5 \times 10^{-9}$ ; [F356W] = 20.8 mags and contrast  $\sim 1.2 \times 10^{-8}$ ; and [F444W] = 20.4 mags and contrast  $\sim 1.7 \times 10^{-8}$  and mass limit of 0.4 MJup. With these settings, saturation will be limited to inner 1.0-1.5", well inside the region where the NIRCam sources are found. Full frame imaging will rely exclusively on roll subtraction to remove the star. We choose not to request the observation of a reference star to keep this follow-up proposal short and maximize the observing time on the science

## JWST Proposal 3925 (Created: Monday, April 7, 2025, 5:00:09PM Eastern Standard Time) - Overview

target. This technique worked well for the Cycle-1 full frame images. Post processing will also take advantage of synthetic PSFs derived from the closest-in-time telescope optical phase difference (OPD) maps as demonstrated in observations of HD19467 (PID\#1189, private communication). We have no constraints on observing scheduling and are open to any observing window that mitigates micrometeroid concerns.

Proposal 3925 - Targets - Planets or Giant Collisions in the Fomalhaut Debris Disk System

| Fixed Targets | #   | Name      | Target Coordinates   | Targ. Coord. Corrections  | Miscellaneous  |
|---------------|-----|-----------|--|---|--|
|               | (1) | FOMALHAUT | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 | Comments: 10 parsec sample in GAIA era (Reyle, 2021)<br><br>A4V-type star<br>Kmag=1.05<br><br>15.5 mu F: 6.75 Jy<br>23.0 mu F: 3.08 Jy<br>25.5 mu F: 2.52 Jy<br>Category=Star<br>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]<br>Extended=NO |

# Proposal 3925 - Observation 1 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|                          |  |                     |  |   |  |                         |                         |                           |                            |                         |
|--------------------------|--|---------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 3925, Observation 1: Fomalhaut-Roll1 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll1 Full Array (Obs 1)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 1:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll1 Full Array (Obs 1)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>   | <b>Name</b>         | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|                          | (1)  | FOMALHAUT           | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
|                          | <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>       | <b>#</b>   | <b>Target</b>       | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | 1 FOMALHAUT         | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>          | <b>Module</b>  |                     | <b>Occluding Mask</b>  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         | <b>Dither Pattern</b>     |                            |                         |
|                          | A  |                     | MASK335R   |   | false  |                         | FULL                    | NONE                      |                            |                         |
| <b>Spectral Elements</b> | <b>#</b>   | <b>Short Filter</b> | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | F200W               | F444W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

# Proposal 3925 - Observation 1 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                             |   |
|-----------------------------|---|
| <b>PSF References</b>       | Fomalhaut-Roll2 Full Array (Obs 2) (Filters [F200W/F444W])<br>Additional Justification: true  |
| <b>Special Requirements</b> | Offset -0.006 arcsec, -0.012 arcsec<br>Sequence Observations 1, 2, Non-interruptible<br>Aperture PA Offset 2 from 1 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 2 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|                          |  |                     |  |   |  |                         |                         |                           |                            |                         |
|--------------------------|--|---------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 3925, Observation 2: Fomalhaut-Roll2 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll2 Full Array (Obs 2)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 2:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll2 Full Array (Obs 2)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>   | <b>Name</b>         | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|                          | (1)  | FOMALHAUT           | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
|                          | <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>       | <b>#</b>   | <b>Target</b>       | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | 1 FOMALHAUT         | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>          | <b>Module</b>  |                     | <b>Occulting Mask</b>  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         | <b>Dither Pattern</b>     |                            |                         |
|                          | A  |                     | MASK335R   |   | false  |                         | FULL                    | NONE                      |                            |                         |
| <b>Spectral Elements</b> | <b>#</b>   | <b>Short Filter</b> | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | F200W               | F444W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

Proposal 3925 - Observation 2 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                      |   |
|----------------------|---|
| PSF References       | Fomalhaut-Roll1 Full Array (Obs 1) (Filters [F200W/F444W])<br>Additional Justification: true  |
| Special Requirements | Offset -0.006 arcsec, -0.012 arcsec<br>2 After 3 by 0 Days to 14 Days<br>Sequence Observations 1, 2, Non-interruptible<br>Aperture PA Offset 2 from 1 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 3 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|                          |  |                     |  |   |  |                         |                         |                           |                            |                         |
|--------------------------|--|---------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 3925, Observation 3: Fomalhaut-Roll1 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll1 Full Array (Obs 3)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 3:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll1 Full Array (Obs 3)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>   | <b>Name</b>         | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|                          | (1)  | FOMALHAUT           | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
|                          | <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p>   |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>       | <b>#</b>   | <b>Target</b>       | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | 1 FOMALHAUT         | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>          | <b>Module</b>  |                     | <b>Occulting Mask</b>  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         |                           | <b>Dither Pattern</b>      |                         |
|                          | A  |                     | MASK335R   |   | false  |                         | FULL                    |                           | NONE                       |                         |
| <b>Spectral Elements</b> | <b>#</b>   | <b>Short Filter</b> | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | F200W               | F356W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

## Proposal 3925 - Observation 3 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                             |   |
|-----------------------------|---|
| <b>PSF References</b>       | Fomalhaut-Roll2 Full Array (Obs 4) (Filters [F200W/F356W])<br>Additional Justification: true  |
| <b>Special Requirements</b> | Offset -0.006 arcsec, -0.012 arcsec<br>2 After 3 by 0 Days to 14 Days<br>Sequence Observations 3, 4, Non-interruptible<br>Aperture PA Offset 4 from 3 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 4 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

| <b>Observation</b>       | <p><b>Proposal 3925, Observation 4: Fomalhaut-Roll2 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>   |  |   |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
|--------------------------|--|--|---|-----------------|------------------|------------------|--------------------|---------------------|------------------|--|--------|----------------|---|--------------------------|-----------------|------------------|------------------|--|---|------------------|---|-------------|-------|--------------------|-------|----|---|----|----------|--------|
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll2 Full Array (Obs 4)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 4:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll2 Full Array (Obs 4)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>   |  |   |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <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>FOMALHAUT</td> <td>RA: 22 57 39.0463 (344.4126929d)<br/>Dec: -29 37 20.05 (-29.62224d)<br/>Equinox: J2000</td> <td>Proper Motion RA: 328.95 mas/yr<br/>Proper Motion Dec: -164.67 mas/yr<br/>Parallax: 0.12981"<br/>Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p> |  |   |                 |                  |                  |                    |                     |                  |  | #      | Name           | Target Coordinates                      | Targ. Coord. Corrections | Miscellaneous   | (1)              | FOMALHAUT        | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |                  |   |             |       |                    |       |    |   |    |          |        |
| #                        | Name   | Target Coordinates   | Targ. Coord. Corrections  | Miscellaneous   |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| (1)                      | FOMALHAUT  | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Acquisition</b>       | <table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Filter</th> <th>Target Brightness</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1 FOMALHAUT</td> <td>F335M</td> <td>BRIGHT (ND Square)</td> <td>RAPID</td> <td>33</td> <td>1</td> <td>1</td> <td>1.708</td> <td>142341</td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | #      | Target         | Filter                                  | Target Brightness        | Readout Pattern | Groups/Int       | Integrations/Exp | Total Integrations   | Total Exposure Time   | ETC Wkbk.Calc ID | 1 | 1 FOMALHAUT | F335M | BRIGHT (ND Square) | RAPID | 33 | 1 | 1  | 1.708    | 142341 |
| #                        | Target   | Filter   | Target Brightness   | Readout Pattern | Groups/Int       | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| 1                        | 1 FOMALHAUT  | F335M  | BRIGHT (ND Square)  | RAPID           | 33               | 1                | 1                  | 1.708               | 142341           |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Template</b>          | <table border="1"> <thead> <tr> <th>Module</th> <th>Occulting Mask</th> <th>Obtain Astrometric Confirmation Images?</th> <th>Subarray</th> <th>Dither Pattern</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>MASK335R</td> <td>false</td> <td>FULL</td> <td>NONE</td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | Module | Occulting Mask | Obtain Astrometric Confirmation Images? | Subarray                 | Dither Pattern  | A                | MASK335R         | false  | FULL  | NONE             |   |             |       |                    |       |    |   |    |          |        |
| Module                   | Occulting Mask   | Obtain Astrometric Confirmation Images?  | Subarray  | Dither Pattern  |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| A                        | MASK335R   | false  | FULL  | NONE            |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Spectral Elements</b> | <table border="1"> <thead> <tr> <th>#</th> <th>Short Filter</th> <th>Long Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</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>F200W</td> <td>F356W</td> <td>RAPID</td> <td>5</td> <td>52</td> <td>1</td> <td>52</td> <td>3339.135</td> <td></td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | #      | Short Filter   | Long Filter                             | Readout Pattern          | Groups/Int      | Integrations/Exp | Total Dithers    | Total Integrations   | Total Exposure Time   | ETC Wkbk.Calc ID | 1 | F200W       | F356W | RAPID              | 5     | 52 | 1 | 52 | 3339.135 |        |
| #                        | Short Filter   | Long Filter  | Readout Pattern   | Groups/Int      | Integrations/Exp | Total Dithers    | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| 1                        | F200W  | F356W  | RAPID   | 5               | 52               | 1                | 52                 | 3339.135            |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |

Proposal 3925 - Observation 4 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                             |   |
|-----------------------------|---|
| <b>PSF References</b>       | Fomalhaut-Roll1 Full Array (Obs 3) (Filters [F200W/F356W])<br>Additional Justification: true  |
| <b>Special Requirements</b> | Offset -0.006 arcsec, -0.012 arcsec<br>Sequence Observations 3, 4, Non-interruptible<br>Aperture PA Offset 4 from 3 by 7 to 14 Degrees (Same offsets in V3) |

Proposal 3925 - Observation 5 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|  |   |                       |  |   |  |                         |                         |                           |                            |                         |
|--|---|-----------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>   | <p><b>Proposal 3925, Observation 5: Fomalhaut-Roll1 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>  |                       |  |   |  |                         |                         |                           |                            |                         |
|  | <p>(Fomalhaut-Roll1 Full Array (Obs 5)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 5:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll1 Full Array (Obs 5)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> <p>(Visit 5:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p> |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>   |   |                       |  |   |  |                         |                         |                           |                            |                         |
|  |   |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>   | <b>#</b>  | <b>Name</b>           | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|  | (1)   | FOMALHAUT             | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
| <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p> |   |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>   | <b>#</b>  | <b>Target</b>         | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|  | 1   | 1 FOMALHAUT           | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>  | <b>Module</b>   | <b>Occulting Mask</b> |  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         | <b>Dither Pattern</b>     |                            |                         |
|  | A   | MASK430R              |  |   | false  |                         | FULL                    | NONE                      |                            |                         |
| <b>Spectral Elements</b>   | <b>#</b>  | <b>Short Filter</b>   | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|  | 1   | F200W                 | F444W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

Proposal 3925 - Observation 5 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                      |  |
|----------------------|--|
| PSF References       | Fomalhaut-Roll2 Full Array (Obs 6) (Filters [F200W/F444W])<br>Additional Justification: true                         |
| Special Requirements | Sequence Observations 5, 6, Non-interruptible<br>Aperture PA Offset 6 from 5 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 6 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

| <b>Observation</b>       | <p><b>Proposal 3925, Observation 6: Fomalhaut-Roll2 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCam Coronagraphic Imaging</p>  |  |   |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
|--------------------------|--|--|---|-----------------|------------------|------------------|--------------------|---------------------|------------------|--|--------|----------------|---|--------------------------|-----------------|------------------|------------------|--|---|------------------|---|-------------|-------|--------------------|-------|----|---|----|----------|--------|
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll2 Full Array (Obs 6)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 6:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll2 Full Array (Obs 6)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> <p>(Visit 6:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p>  |  |   |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <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>FOMALHAUT</td> <td>RA: 22 57 39.0463 (344.4126929d)<br/>Dec: -29 37 20.05 (-29.62224d)<br/>Equinox: J2000</td> <td>Proper Motion RA: 328.95 mas/yr<br/>Proper Motion Dec: -164.67 mas/yr<br/>Parallax: 0.12981"<br/>Epoch of Position: 2000</td> <td></td> </tr> </tbody> </table> <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i><br/><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i><br/><i>23.0 mu F: 3.08 Jy</i><br/><i>25.5 mu F: 2.52 Jy</i><br/><i>Category=Star</i><br/><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i><br/><i>Extended=NO</i></p> |  |   |                 |                  |                  |                    |                     |                  |  | #      | Name           | Target Coordinates                      | Targ. Coord. Corrections | Miscellaneous   | (1)              | FOMALHAUT        | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |                  |   |             |       |                    |       |    |   |    |          |        |
| #                        | Name   | Target Coordinates   | Targ. Coord. Corrections  | Miscellaneous   |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| (1)                      | FOMALHAUT  | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |                 |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Acquisition</b>       | <table border="1"> <thead> <tr> <th>#</th> <th>Target</th> <th>Filter</th> <th>Target Brightness</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1 FOMALHAUT</td> <td>F335M</td> <td>BRIGHT (ND Square)</td> <td>RAPID</td> <td>33</td> <td>1</td> <td>1</td> <td>1.708</td> <td>142341</td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | #      | Target         | Filter                                  | Target Brightness        | Readout Pattern | Groups/Int       | Integrations/Exp | Total Integrations   | Total Exposure Time   | ETC Wkbk.Calc ID | 1 | 1 FOMALHAUT | F335M | BRIGHT (ND Square) | RAPID | 33 | 1 | 1  | 1.708    | 142341 |
| #                        | Target   | Filter   | Target Brightness   | Readout Pattern | Groups/Int       | Integrations/Exp | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| 1                        | 1 FOMALHAUT  | F335M  | BRIGHT (ND Square)  | RAPID           | 33               | 1                | 1                  | 1.708               | 142341           |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Template</b>          | <table border="1"> <thead> <tr> <th>Module</th> <th>Occulting Mask</th> <th>Obtain Astrometric Confirmation Images?</th> <th>Subarray</th> <th>Dither Pattern</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>MASK430R</td> <td>false</td> <td>FULL</td> <td>NONE</td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | Module | Occulting Mask | Obtain Astrometric Confirmation Images? | Subarray                 | Dither Pattern  | A                | MASK430R         | false  | FULL  | NONE             |   |             |       |                    |       |    |   |    |          |        |
| Module                   | Occulting Mask   | Obtain Astrometric Confirmation Images?  | Subarray  | Dither Pattern  |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| A                        | MASK430R   | false  | FULL  | NONE            |                  |                  |                    |                     |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| <b>Spectral Elements</b> | <table border="1"> <thead> <tr> <th>#</th> <th>Short Filter</th> <th>Long Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</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>F200W</td> <td>F444W</td> <td>RAPID</td> <td>5</td> <td>52</td> <td>1</td> <td>52</td> <td>3339.135</td> <td></td> </tr> </tbody> </table>   |  |   |                 |                  |                  |                    |                     |                  |  | #      | Short Filter   | Long Filter                             | Readout Pattern          | Groups/Int      | Integrations/Exp | Total Dithers    | Total Integrations   | Total Exposure Time   | ETC Wkbk.Calc ID | 1 | F200W       | F444W | RAPID              | 5     | 52 | 1 | 52 | 3339.135 |        |
| #                        | Short Filter   | Long Filter  | Readout Pattern   | Groups/Int      | Integrations/Exp | Total Dithers    | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |
| 1                        | F200W  | F444W  | RAPID   | 5               | 52               | 1                | 52                 | 3339.135            |                  |  |        |                |   |                          |                 |                  |                  |  |   |                  |   |             |       |                    |       |    |   |    |          |        |

# Proposal 3925 - Observation 6 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                             |  |
|-----------------------------|--|
| <b>PSF References</b>       | Fomalhaut-Roll1 Full Array (Obs 5) (Filters [F200W/F444W])<br>Additional Justification: true   |
| <b>Special Requirements</b> | 7 After 6 by 0 Days to 14 Days<br>Sequence Observations 5, 6, Non-interruptible<br>Aperture PA Offset 6 from 5 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 7 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|                          |   |                       |  |   |  |                         |                         |                           |                            |                         |
|--------------------------|---|-----------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 3925, Observation 7: Fomalhaut-Roll1 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCam Coronagraphic Imaging</p>   |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll1 Full Array (Obs 7)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 7:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll1 Full Array (Obs 7)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> <p>(Visit 7:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p> |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>  | <b>Name</b>           | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|                          | (1)   | FOMALHAUT             | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
|                          | <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i></p> <p><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i></p> <p><i>23.0 mu F: 3.08 Jy</i></p> <p><i>25.5 mu F: 2.52 Jy</i></p> <p><i>Category=Star</i></p> <p><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i></p> <p><i>Extended=NO</i></p>  |                       |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>       | <b>#</b>  | <b>Target</b>         | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1   | 1 FOMALHAUT           | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>          | <b>Module</b>   | <b>Occulting Mask</b> |  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         | <b>Dither Pattern</b>     |                            |                         |
|                          | A   | MASK430R              |  |   | false  |                         | FULL                    | NONE                      |                            |                         |
| <b>Spectral Elements</b> | <b>#</b>  | <b>Short Filter</b>   | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1   | F200W                 | F356W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

## Proposal 3925 - Observation 7 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                             |  |
|-----------------------------|--|
| <b>PSF References</b>       | Fomalhaut-Roll2 Full Array (Obs 8) (Filters [F200W/F356W])<br>Additional Justification: true   |
| <b>Special Requirements</b> | 7 After 6 by 0 Days to 14 Days<br>Sequence Observations 7, 8, Non-interruptible<br>Aperture PA Offset 8 from 7 by 7 to 14 Degrees (Same offsets in V3) |

# Proposal 3925 - Observation 8 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

Mon Apr 07 22:00:09 GMT 2025

|                          |   |                     |  |   |  |                         |                         |                           |                            |                         |
|--------------------------|---|---------------------|--|---|--|-------------------------|-------------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 3925, Observation 8: Fomalhaut-Roll2 Full Array</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>  |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Fomalhaut-Roll2 Full Array (Obs 8)) Warning (Form): By checking 'Additional justification', this observation is identified as part of a self reference survey. Remember to provide justification for this in the technical description text of your PDF attachment.</p> <p>(Visit 8:1) Warning (Form): Data Excess over lower threshold</p> <p>(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Fomalhaut-Roll2 Full Array (Obs 8)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p> <p>(Visit 8:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.</p> |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>  | <b>Name</b>         | <b>Target Coordinates</b>  | <b>Targ. Coord. Corrections</b>   |  |                         | <b>Miscellaneous</b>    |                           |                            |                         |
|                          | (1)   | FOMALHAUT           | RA: 22 57 39.0463 (344.4126929d)<br>Dec: -29 37 20.05 (-29.62224d)<br>Equinox: J2000 | Proper Motion RA: 328.95 mas/yr<br>Proper Motion Dec: -164.67 mas/yr<br>Parallax: 0.12981"<br>Epoch of Position: 2000 |  |                         |                         |                           |                            |                         |
|                          | <p><i>Comments: 10 parsec sample in GAIA era (Reyle, 2021)</i></p> <p><i>A4V-type star</i></p> <p><i>Kmag=1.05</i></p> <p><i>15.5 mu F: 6.75 Jy</i></p> <p><i>23.0 mu F: 3.08 Jy</i></p> <p><i>25.5 mu F: 2.52 Jy</i></p> <p><i>Category=Star</i></p> <p><i>Description=[Circumstellar disks, Debris disks, Exoplanet Systems]</i></p> <p><i>Extended=NO</i></p>  |                     |  |   |  |                         |                         |                           |                            |                         |
| <b>Acquisition</b>       | <b>#</b>  | <b>Target</b>       | <b>Filter</b>  | <b>Target Brightness</b>  | <b>Readout Pattern</b>                         | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1   | 1 FOMALHAUT         | F335M  | BRIGHT (ND Square)  | RAPID  | 33                      | 1                       | 1                         | 1.708                      | 142341                  |
| <b>Template</b>          | <b>Module</b>   |                     | <b>Occulting Mask</b>  |   | <b>Obtain Astrometric Confirmation Images?</b> |                         | <b>Subarray</b>         | <b>Dither Pattern</b>     |                            |                         |
|                          | A   |                     | MASK430R   |   | false  |                         | FULL                    | NONE                      |                            |                         |
| <b>Spectral Elements</b> | <b>#</b>  | <b>Short Filter</b> | <b>Long Filter</b>   | <b>Readout Pattern</b>  | <b>Groups/Int</b>                              | <b>Integrations/Exp</b> | <b>Total Dithers</b>    | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1   | F200W               | F356W  | RAPID   | 5  | 52                      | 1                       | 52                        | 3339.135                   |                         |

Proposal 3925 - Observation 8 - Planets or Giant Collisions in the Fomalhaut Debris Disk System

|                      |  |
|----------------------|--|
| PSF References       | Fomalhaut-Roll1 Full Array (Obs 7) (Filters [F200W/F356W])<br>Additional Justification: true                         |
| Special Requirements | Sequence Observations 7, 8, Non-interruptible<br>Aperture PA Offset 8 from 7 by 7 to 14 Degrees (Same offsets in V3) |