



# 1235 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

Cycle: 1, Proposal Category: GTO

## INVESTIGATORS

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## OBSERVATIONS

| <i>Folder</i>               | <i>Observation</i> | <i>Label</i>                | <i>Observing Template</i>           | <i>Science Target</i>       |
|-----------------------------|--------------------|-----------------------------|-------------------------------------|-----------------------------|
| Observation Folder          |                    |                             |                                     |                             |
|                             | 3                  | MRS target #1: S-1          | MIRI Medium Resolution Spectroscopy | (2) S-1                     |
|                             | 4                  | MRS target #2: S-2          | MIRI Medium Resolution Spectroscopy | (3) S-2                     |
|                             | 5                  | MRS target #3: W-1          | MIRI Medium Resolution Spectroscopy | (7) W-1                     |
|                             | 7                  | MRS target #4: E-1          | MIRI Medium Resolution Spectroscopy | (11) E-1                    |
| MIRI imaging Mosaic Group   |                    |                             |                                     |                             |
|                             | 1                  | MIRI imaging                | MIRI Imaging                        | (2) S-1                     |
|                             | 10                 | MIRI imaging Copy of Tile-4 | MIRI Imaging                        | (14) S-1-TILE-4-COPY        |
| NIRcam imaging Mosaic Group |                    |                             |                                     |                             |
|                             | 2                  | NIRcam imaging              | NIRCam Imaging                      | (6) LHA-120-N-79-FOR-NIRCAM |

## **ABSTRACT**

Observations of galaxies across cosmic time show that the star formation rate peaked at a redshift of  $\sim 1.5$ , meaning star formation in the Universe occurred predominantly at lower than solar metallicity for which an active burst mode may be more prevalent. However, the overwhelming majority of observational studies have been conducted on solar metallicity Milky Way star formation regions. The question is: Are there substantial differences in the star formation process at lower metallicity? Studies of star forming clouds in reduced metallicity galaxies have been inhibited by the lack of observatories with sufficient resolution and sensitivity. With JWST, we will be able to study star formation in the Magellanic Clouds like we can in the Milky Way with Spitzer. Our Spitzer SAGE and Herschel HERITAGE surveys of the LMC and SMC have revealed where to point JWST to study active star formation from the discovery of thousands of young stellar objects (e.g., Whitney et al. 2008; Gruendl and Chu 2009; Sewio et al. 2013; Carlson et al. 2012; Seale et al. 2014). In the LMC, we have selected the target N79 for a comprehensive imaging and spectroscopic study with NIRCcam, MIRI Imager, and MIRI MRS spectroscopy.

At the heart of the N79 region lies the most luminous infrared (IR) compact source discovered with large-scale IR surveys of the LMC and Milky Way, possibly a precursor to the central Super Star Cluster of 30 Doradus, R136 (Ochsendorf et al. 2017, *Nature Astronomy*, Vol. 1, id. 268). In addition, we have obtained ALMA observations of the molecular gas immediately surrounding the most massive YSO to look for the presence of disks and outflows, which may shed light on how these massive objects obtain their mass (Nayal et al., in prep). The discovery of a nearby candidate Super Star Cluster may provide invaluable information to understand how extreme star formation proceeds in the current and high-redshift Universe.

From the MIRI and NIRCcam imaging study we plan to characterize the spectral energy distributions of over a thousand young stellar objects and pre-main sequence stars to understand the evolution of the circumstellar disks and envelopes of forming stars over a wide range in mass (1 to 50+  $M_{\odot}$ ) and evolutionary stage (0 to III). In particular, the greater clarity of JWST will enable us to detect for the first time the planet-forming dust disks around these solar-mass stars at the distance of the LMC and allow us to address questions such as: Can planet formation occur at low metallicity when dust disk masses may be smaller than Galactic counterparts? The MIRI imaging of the PAH bands will also probe the PAH physics of the gaseous regions.

## **OBSERVING DESCRIPTION**

### **DESCRIPTION:**

The program includes NIRCcam and MIRI imaging done in parallel. In addition, we will obtain MIRI MRS spectroscopy for three targets.

MIRI/NIRCam IMAGING PRIME/PARALLEL FILTER SELECTION:

When MIRI is prime, the filter selection for MIRI is F770W and F1130W to study the PAH emission of the region, F1000W for silicate absorption, F1500W to estimate the mid-IR continuum, and F2500W to constrain the long wavelength end of the YSO spectral energy distributions. For the NIRCam parallel observations, we select 4 possible filter sets for NIRCam, 3 of which will be the NIRCam prime filter sets (F115/F277M, F187N/F335M, F200W/F444W). The F187N/F335M is selected twice to obtain a similar depth as the prime observations. We select one other combination: F140M/F356W. The F140M will provide an extra wavelength measurement that will help identify background galaxy contaminants (the most significant contaminant expected). The F356W will provide a measurement of the PAH emission in the off field and overlaps with our previous Spitzer 3.3 micron observations.

When NIRCam is prime, we use F115W/F277W, F200W/F444W, F187N/F335M, which sample the spectral energy distribution of the YSOs (all the wide filters), image the field in the PAH 3.3 band (F335M), and image the Pa-alpha band (F187N) which will be used to estimate contamination by the Br-alpha in our F444W observations. For the MIRI parallel observations, we can choose only three of our MIRI filters to measure the background and we choose F770W, F1000W and F1500W which provide the best separation of YSOs and evolved stars (Jones et al. 2017).

MIRI MRS OBSERVATIONS:

When we use the MIRI MRS, we will be getting full spectral coverage (3 grating settings). Acquisition targets have been identified as point sources in previous Spitzer 5.8 image.

# Proposal 1235 - Targets - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

| #  | Name                    | Target Coordinates  | Targ. Coord. Corrections | Miscellaneous |
|--|-------------------------|---|--------------------------|---------------|
| (1)  | LHA-120-N-79-FOR-MIRI   | RA: 04 51 55.1386 (72.9797442d)<br>Dec: -69 22 32.38 (-69.37566d)<br>Equinox: J2000 |                          |               |
| <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br/>Category=Stellar Cluster<br/>Description=[OB associations, Young star clusters]</i>                 |                         |   |                          |               |
| (2)  | S-1                     | RA: 04 51 53.3131 (72.9721379d)<br>Dec: -69 23 28.72 (-69.39131d)<br>Equinox: J2000 |                          |               |
| <i>Comments:<br/>Category=Star<br/>Description=[Young stellar objects]<br/>Extended=YES</i>  |                         |   |                          |               |
| (3)  | S-2                     | RA: 04 51 11.5340 (72.7980583d)<br>Dec: -69 26 47.06 (-69.44641d)<br>Equinox: J2000 |                          |               |
| <i>Comments:<br/>Category=Star<br/>Description=[Young stellar objects]<br/>Extended=YES</i>  |                         |   |                          |               |
| (6)  | LHA-120-N-79-FOR-NIRCAM | RA: 04 52 2.8277 (73.0117821d)<br>Dec: -69 21 48.59 (-69.36350d)<br>Equinox: J2000  |                          |               |
| <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br/>Category=Stellar Cluster<br/>Description=[OB associations, Young star clusters]</i>                 |                         |   |                          |               |
| (7)  | W-1                     | RA: 04 48 54.5030 (72.2270958d)<br>Dec: -69 09 47.64 (-69.16323d)<br>Equinox: J2000 |                          |               |
| <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br/>Category=Stellar Cluster<br/>Description=[Protoclusters, Young star clusters]</i>                   |                         |   |                          |               |
| (8)  | ACQ-TARGET-1            | RA: 04 51 53.8308 (72.9742950d)<br>Dec: -69 23 48.98 (-69.39694d)<br>Equinox: J2000 |                          |               |
| <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.<br/>Acquisition target for MRS #1 (S-1)<br/>Category=Star<br/>Description=[B stars, O stars]</i>        |                         |   |                          |               |
| (9)  | 04511418-6926443-ACQ-2  | RA: 04 51 14.1893 (72.8091221d)<br>Dec: -69 26 44.33 (-69.44565d)<br>Equinox: J2000 |                          |               |
| <i>Comments: This object was generated by the targetselector and retrieved from the 2MASS database.<br/>Acquisition target for MRS #1 (S-1)<br/>Category=Unidentified<br/>Description=[Infrared sources]</i> |                         |   |                          |               |

Fixed Targets

## Proposal 1235 - Targets - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

|   |                              |  |
|---|------------------------------|--|
| (10)  | LHA-120-N-79-FOR-MIRI-TILE-4 | RA: 04 51 44.0115 (72.9333812d)<br>Dec: -69 22 6.00 (-69.36833d)<br>Equinox: J2000 |
| <p><i>Comments:</i><br/> <i>Category=Stellar Cluster</i><br/> <i>Description=[OB associations, Stellar associations, Young star clusters]</i></p> |                              |  |
| (11)  | E-1                          | RA: 04 53 58.6284 (73.4942850d)<br>Dec: -69 11 6.33 (-69.18509d)<br>Equinox: J2000 |
| <p><i>Comments:</i><br/> <i>Category=Star</i><br/> <i>Description=[Young stellar objects]</i></p>   |                              |  |
| (12)  | S-1-TILE-2                   | RA: 04 52 0.0255 (73.0001063d)<br>Dec: -69 22 35.19 (-69.37644d)<br>Equinox: J2000 |
| <p><i>Comments:</i><br/> <i>Category=Star</i><br/> <i>Description=[Young stellar objects]</i><br/> <i>Extended=YES</i></p>                        |                              |  |
| (13)  | S-1-TILE-4                   | RA: 04 52 0.0255 (73.0001063d)<br>Dec: -69 22 35.19 (-69.37644d)<br>Equinox: J2000 |
| <p><i>Comments:</i><br/> <i>Category=Star</i><br/> <i>Description=[Young stellar objects]</i><br/> <i>Extended=YES</i></p>                        |                              |  |
| (14)  | S-1-TILE-4-COPY              | RA: 04 52 2.4201 (73.0100838d)<br>Dec: -69 22 46.18 (-69.37949d)<br>Equinox: J2000 |
| <p><i>Comments:</i><br/> <i>Category=Star</i><br/> <i>Description=[Young stellar objects]</i><br/> <i>Extended=YES</i></p>                        |                              |  |

Proposal 1235 - Observation 3 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|   |   |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
|---|---|-------------------------|---|---------------|------------------------|-----------------------------|---------------------------------|------------------------|------------------------|----------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>  | <b>Proposal 1235, Observation 3: MRS target #1: S-1</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: MIRI Medium Resolution Spectroscopy |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
|   | (Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
| <b>Diagnosics</b>   |   |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
|   |   |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
| <b>Fixed Targets</b>  | <b>#</b>  | <b>Name</b>             | <b>Target Coordinates</b>   |               |                        |                             | <b>Targ. Coord. Corrections</b> |                        |                        | <b>Miscellaneous</b> |                           |                            |                         |
|   | (2)   | S-1                     | RA: 04 51 53.3131 (72.9721379d)<br>Dec: -69 23 28.72 (-69.39131d)<br>Equinox: J2000 |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
| <i>Comments:</i><br><i>Category=Star</i><br><i>Description=[Young stellar objects]</i><br><i>Extended=YES</i> |   |                         |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
| <b>Acquisition</b>  | <b>#</b>  | <b>Target</b>           |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
|   | 1   | NONE                    |   |               |                        |                             |                                 |                        |                        |                      |                           |                            |                         |
| <b>Template</b>   | <b>AcqFilter</b>  | <b>Primary Channel</b>  |   |               |                        | <b>Simultaneous Imaging</b> |                                 |                        | <b>Imager Subarray</b> |                      |                           |                            |                         |
|   | F560W   | ALL                     |   |               |                        | YES                         |                                 |                        | FULL                   |                      |                           |                            |                         |
| <b>Dithers</b>  | <b>#</b>  | <b>Dither Type</b>      |   |               |                        | <b>Optimized For</b>        |                                 |                        | <b>Direction</b>       |                      |                           |                            |                         |
|   | 1   | 4-Point                 |   |               |                        | EXTENDED SOURCE             |                                 |                        | NEGATIVE               |                      |                           |                            |                         |
| <b>Spectral Elements</b>  | <b>#</b>  | <b>Wavelength Range</b> | <b>Detector</b>   | <b>Filter</b> | <b>Readout Pattern</b> | <b>Groups/Int</b>           | <b>Integrations/E xp</b>        | <b>Exposures/Dit h</b> | <b>Dither</b>          | <b>Total Dithers</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|   | 1   |                         | IMAGER  | F1130W        | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 1   | LONG(C)                 | MRSLONG   |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 1   | LONG(C)                 | MRSSHORT  |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 2   |                         | IMAGER  | F770W         | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 2   | MEDIUM(B)               | MRSLONG   |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 2   | MEDIUM(B)               | MRSSHORT  |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 3   |                         | IMAGER  | F560W         | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 3   | SHORT(A)                | MRSLONG   |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |
|   | 3   | SHORT(A)                | MRSSHORT  |               | FASTR1                 | 5                           | 5                               | 1                      | Dither 1               | 4                    | 20                        | 321.905                    |                         |

Proposal 1235 - Observation 3 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

Special Requirements

Group Observations 3, 4, Non-interruptible

Proposal 1235 - Observation 4 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|   |   |                  |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
|---|---|------------------|---|--------|----------------------|--------------------------|-------------------|-----------------|---------------|---------------|--------------------|---------------------|------------------|
| <b>Observation</b>  | Proposal 1235, Observation 4: MRS target #2: S-2<br>Diagnostic Status: Warning<br>Observing Template: MIRI Medium Resolution Spectroscopy |                  |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
|   | (Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |                  |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
| <b>Fixed Targets</b>  | #   | Name             | Target Coordinates  |        |                      | Targ. Coord. Corrections |                   |                 | Miscellaneous |               |                    |                     |                  |
|   | (3)   | S-2              | RA: 04 51 11.5340 (72.7980583d)<br>Dec: -69 26 47.06 (-69.44641d)<br>Equinox: J2000 |        |                      |                          |                   |                 |               |               |                    |                     |                  |
| Comments:<br>Category=Star<br>Description=[Young stellar objects]<br>Extended=YES |   |                  |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
| <b>Acquisition</b>  | #   | Target           |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
|   | 1   | NONE             |   |        |                      |                          |                   |                 |               |               |                    |                     |                  |
| <b>Template</b>   | AcqFilter   | Primary Channel  |   |        | Simultaneous Imaging |                          |                   | Imager Subarray |               |               |                    |                     |                  |
|   | F560W   | ALL              |   |        | YES                  |                          |                   | FULL            |               |               |                    |                     |                  |
| <b>Dithers</b>  | #   | Dither Type      |   |        | Optimized For        |                          |                   | Direction       |               |               |                    |                     |                  |
|   | 1   | 4-Point          |   |        | EXTENDED SOURCE      |                          |                   | NEGATIVE        |               |               |                    |                     |                  |
| <b>Spectral Elements</b>  | #   | Wavelength Range | Detector  | Filter | Readout Pattern      | Groups/Int               | Integrations/E xp | Exposures/Dit h | Dither        | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|   | 1   |                  | IMAGER  | F1130W | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 1   | LONG(C)          | MRSLONG   |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 1   | LONG(C)          | MRSSHORT  |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 2   |                  | IMAGER  | F770W  | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 2   | MEDIUM(B)        | MRSLONG   |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 2   | MEDIUM(B)        | MRSSHORT  |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 3   |                  | IMAGER  | F560W  | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 3   | SHORT(A)         | MRSLONG   |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |
|   | 3   | SHORT(A)         | MRSSHORT  |        | FASTR1               | 13                       | 2                 | 1               | Dither 1      | 4             | 8                  | 299.704             |                  |



Proposal 1235 - Observation 4 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

Special Requirements

Group Observations 3, 4, Non-interruptible

Proposal 1235 - Observation 5 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|                          |   |                  |   |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|--------------------------|---|------------------|---|--------|-----------------|----------------------|--------------------------|-----------------|-----------------|---------------|--------------------|---------------------|------------------|
| <b>Observation</b>       | Proposal 1235, Observation 5: MRS target #3: W-1<br>Diagnostic Status: Warning<br>Observing Template: MIRI Medium Resolution Spectroscopy |                  |   |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|                          | (Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |                  |   |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Fixed Targets</b>     | #   | Name             | Target Coordinates  |        |                 |                      | Targ. Coord. Corrections |                 |                 | Miscellaneous |                    |                     |                  |
|                          | (7)   | W-1              | RA: 04 48 54.5030 (72.2270958d)<br>Dec: -69 09 47.64 (-69.16323d)<br>Equinox: J2000<br><br><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i><br><i>Category=Stellar Cluster</i><br><i>Description=[Protoclusters, Young star clusters]</i> |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Acquisition</b>       | #   | Target           |   |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|                          | 1   | NONE             |   |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Template</b>          | AcqFilter   | Primary Channel  |   |        |                 | Simultaneous Imaging |                          |                 | Imager Subarray |               |                    |                     |                  |
|                          | F560W   | ALL              |   |        |                 | YES                  |                          |                 | FULL            |               |                    |                     |                  |
| <b>Dithers</b>           | #   | Dither Type      |   |        |                 | Optimized For        |                          |                 | Direction       |               |                    |                     |                  |
|                          | 1   | 4-Point          |   |        |                 | EXTENDED SOURCE      |                          |                 | NEGATIVE        |               |                    |                     |                  |
| <b>Spectral Elements</b> | #   | Wavelength Range | Detector  | Filter | Readout Pattern | Groups/Int           | Integrations/E xp        | Exposures/Dit h | Dither          | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|                          | 1   |                  | IMAGER  | F1130W | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 1   | LONG(C)          | MRSLONG   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 1   | LONG(C)          | MRSSHORT  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   |                  | IMAGER  | F770W  | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   | MEDIUM(B)        | MRSLONG   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   | MEDIUM(B)        | MRSSHORT  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   |                  | IMAGER  | F560W  | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   | SHORT(A)         | MRSLONG   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   | SHORT(A)         | MRSSHORT  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |

Proposal 1235 - Observation 7 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|                          |   |                  |  |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|--------------------------|---|------------------|--|--------|-----------------|----------------------|--------------------------|-----------------|-----------------|---------------|--------------------|---------------------|------------------|
| <b>Observation</b>       | Proposal 1235, Observation 7: MRS target #4: E-1<br>Diagnostic Status: Warning<br>Observing Template: MIRI Medium Resolution Spectroscopy |                  |  |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|                          | (Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |                  |  |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Fixed Targets</b>     | #   | Name             | Target Coordinates   |        |                 |                      | Targ. Coord. Corrections |                 |                 | Miscellaneous |                    |                     |                  |
|                          | (11)  | E-1              | RA: 04 53 58.6284 (73.4942850d)<br>Dec: -69 11 6.33 (-69.18509d)<br>Equinox: J2000<br><br><i>Comments:</i><br><i>Category=Star</i><br><i>Description=/Young stellar objects/</i> |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Acquisition</b>       | #   | Target           |  |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
|                          | 1   | NONE             |  |        |                 |                      |                          |                 |                 |               |                    |                     |                  |
| <b>Template</b>          | AcqFilter   | Primary Channel  |  |        |                 | Simultaneous Imaging |                          |                 | Imager Subarray |               |                    |                     |                  |
|                          | F560W   | ALL              |  |        |                 | YES                  |                          |                 | FULL            |               |                    |                     |                  |
| <b>Dithers</b>           | #   | Dither Type      |  |        |                 | Optimized For        |                          |                 | Direction       |               |                    |                     |                  |
|                          | 1   | 4-Point          |  |        |                 | EXTENDED SOURCE      |                          |                 | NEGATIVE        |               |                    |                     |                  |
| <b>Spectral Elements</b> | #   | Wavelength Range | Detector   | Filter | Readout Pattern | Groups/Int           | Integrations/E xp        | Exposures/Dit h | Dither          | Total Dithers | Total Integrations | Total Exposure Time | ETC Wkbk.Calc ID |
|                          | 1   |                  | IMAGER   | F1130W | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 1   | LONG(C)          | MRSLONG  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 1   | LONG(C)          | MRSSHORT   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   |                  | IMAGER   | F770W  | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   | MEDIUM(B)        | MRSLONG  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 2   | MEDIUM(B)        | MRSSHORT   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   |                  | IMAGER   | F560W  | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   | SHORT(A)         | MRSLONG  |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |
|                          | 3   | SHORT(A)         | MRSSHORT   |        | FASTR1          | 13                   | 2                        | 1               | Dither 1        | 4             | 8                  | 299.704             |                  |

Proposal 1235 - Observation 1 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|                          |  |                    |                                 |                         |                         |                                 |                       |                      |                           |                            |                         |
|--------------------------|--|--------------------|---------------------------------|-------------------------|-------------------------|---------------------------------|-----------------------|----------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <p><b>Proposal 1235, Observation 1: MIRI imaging</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>  |                    |                                 |                         |                         |                                 |                       |                      |                           |                            |                         |
| <b>Diagnostics</b>       | <p>(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Visit 1:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Visit 1:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> |                    |                                 |                         |                         |                                 |                       |                      |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>   | <b>Name</b>        | <b>Target Coordinates</b>       |                         |                         | <b>Targ. Coord. Corrections</b> |                       | <b>Miscellaneous</b> |                           |                            |                         |
|                          | (2)  | S-1                | RA: 04 51 53.3131 (72.9721379d) |                         |                         |                                 |                       |                      |                           |                            |                         |
|                          |  |                    | Dec: -69 23 28.72 (-69.39131d)  |                         |                         |                                 |                       |                      |                           |                            |                         |
|                          |  |                    | Equinox: J2000                  |                         |                         |                                 |                       |                      |                           |                            |                         |
|                          | <p><i>Comments:</i></p> <p><i>Category=Star</i></p> <p><i>Description=[Young stellar objects]</i></p> <p><i>Extended=YES</i></p>   |                    |                                 |                         |                         |                                 |                       |                      |                           |                            |                         |
| <b>Template</b>          | <p><b>Subarray</b></p> <p>FULL</p>   |                    |                                 |                         |                         |                                 |                       |                      |                           |                            |                         |
| <b>Mosaic</b>            | <b>Rows</b>  | <b>Columns</b>     | <b>Row Overlap %</b>            | <b>Column Overlap %</b> | <b>Row shift</b>        | <b>Column shift</b>             | <b>Tile Order</b>     |                      |                           |                            |                         |
|                          | 2  | 2                  | 5.0                             | 5.0                     | 0.0                     | 0.0                             | HILBERT_CURVE         |                      |                           |                            |                         |
| <b>Dithers</b>           | <b>#</b>   | <b>Dither Type</b> | <b>Starting Point</b>           | <b>Number of Points</b> | <b>Points</b>           | <b>Starting Set</b>             | <b>Number of Sets</b> | <b>Optimized For</b> | <b>Direction</b>          | <b>Pattern Size</b>        |                         |
|                          | 1  | CYCLING            | 1                               | 4                       |                         |                                 |                       |                      |                           | DEFAULT                    |                         |
|                          | 2  | CYCLING            | 1                               | 4                       |                         |                                 |                       |                      |                           | DEFAULT                    |                         |
|                          | 3  | CYCLING            | 1                               | 4                       |                         |                                 |                       |                      |                           | DEFAULT                    |                         |
|                          | 4  | CYCLING            | 1                               | 4                       |                         |                                 |                       |                      |                           | DEFAULT                    |                         |
|                          | 5  | CYCLING            | 1                               | 4                       |                         |                                 |                       |                      |                           | DEFAULT                    |                         |
| <b>Spectral Elements</b> | <b>#</b>   | <b>Filter</b>      | <b>Readout Pattern</b>          | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Exposures/Dith</b>           | <b>Dither</b>         | <b>Total Dithers</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | F770W              | FASTR1                          | 30                      | 1                       | 1                               | Dither 1              | 4                    | 4                         | 333.005                    |                         |
|                          | 2  | F1000W             | FASTR1                          | 30                      | 1                       | 1                               | Dither 2              | 4                    | 4                         | 333.005                    |                         |
|                          | 3  | F1500W             | FASTR1                          | 30                      | 1                       | 1                               | Dither 4              | 4                    | 4                         | 333.005                    |                         |
|                          | 4  | F2100W             | FASTR1                          | 13                      | 3                       | 1                               | Dither 5              | 4                    | 12                        | 455.107                    |                         |

## Proposal 1235 - Observation 1 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

### Special Requirements

Group Visits within 53.0 Days  
Aperture PA Range 15 to 15 Degrees (V3 10.16455103 to 10.16455103)  
Visits Same PA  
Offset 25.0 arcsec, -50.0 arcsec  
  
Group Observations 1, 10 within 1 Days

Proposal 1235 - Observation 10 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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|                          |  |                                 |   |                         |                         |                             |                                 |                      |                           |                            |                         |
|--------------------------|--|---------------------------------|---|-------------------------|-------------------------|-----------------------------|---------------------------------|----------------------|---------------------------|----------------------------|-------------------------|
| <b>Observation</b>       | <b>Proposal 1235, Observation 10: MIRI imaging Copy of Tile-4</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: MIRI Imaging<br>Coordinated Parallel Template(s): NIRCam Imaging |                                 |   |                         |                         |                             |                                 |                      |                           |                            |                         |
|                          | (Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.   |                                 |   |                         |                         |                             |                                 |                      |                           |                            |                         |
| <b>Fixed Targets</b>     | <b>#</b>   | <b>Name</b>                     | <b>Target Coordinates</b>   |                         |                         |                             | <b>Targ. Coord. Corrections</b> |                      | <b>Miscellaneous</b>      |                            |                         |
|                          | (14)   | S-1-TILE-4-COPY                 | RA: 04 52 2.4201 (73.0100838d)<br>Dec: -69 22 46.18 (-69.37949d)<br>Equinox: J2000<br><br><i>Comments:</i><br><i>Category=Star</i><br><i>Description=[Young stellar objects]</i><br><i>Extended=YES</i> |                         |                         |                             |                                 |                      |                           |                            |                         |
| <b>Template</b>          | <b>MIRI Imaging</b>  |                                 |   |                         |                         | <b>NIRCam Imaging</b>       |                                 |                      |                           |                            |                         |
|                          | Subarray: FULL   |                                 |   |                         |                         | Module: B<br>Subarray: FULL |                                 |                      |                           |                            |                         |
| <b>Dithers</b>           | <b>#</b>   | <b>Dither Type</b>              | <b>Starting Point</b>   | <b>Number of Points</b> | <b>Points</b>           | <b>Starting Set</b>         | <b>Number of Sets</b>           | <b>Optimized For</b> | <b>Direction</b>          | <b>Pattern Size</b>        |                         |
|                          | 1  | 4-POINT-MIRI-F770W-WITH-NIRCam  | 1   | 4                       |                         |                             |                                 |                      |                           | DEFAULT                    |                         |
|                          | 2  | 4-POINT-MIRI-F1000W-WITH-NIRCam | 1   | 4                       |                         |                             |                                 |                      |                           | DEFAULT                    |                         |
|                          | 3  | 4-POINT-MIRI-F1500W-WITH-NIRCam | 1   | 4                       |                         |                             |                                 |                      |                           | DEFAULT                    |                         |
|                          | 4  | 4-POINT-MIRI-F2100W-WITH-NIRCam | 1   | 4                       |                         |                             |                                 |                      |                           | DEFAULT                    |                         |
| <b>Spectral Elements</b> | <b>MIRI Imaging</b>  | <b>Filter</b>                   | <b>Readout Pattern</b>  | <b>Groups/Int</b>       | <b>Integrations/Exp</b> | <b>Exposures/Dith</b>       | <b>Dither</b>                   | <b>Total Dithers</b> | <b>Total Integrations</b> | <b>Total Exposure Time</b> | <b>ETC Wkbk.Calc ID</b> |
|                          | 1  | F770W                           | FASTR1  | 30                      | 1                       | 1                           | Dither 1                        | 4                    | 4                         | 333.005                    |                         |
|                          | 2  | F1000W                          | FASTR1  | 30                      | 1                       | 1                           | Dither 2                        | 4                    | 4                         | 333.005                    |                         |
|                          | 3  | F1500W                          | FASTR1  | 30                      | 1                       | 1                           | Dither 3                        | 4                    | 4                         | 333.005                    |                         |
|                          | 4  | F2100W                          | FASTR1  | 13                      | 3                       | 1                           | Dither 4                        | 4                    | 12                        | 455.107                    |                         |

Proposal 1235 - Observation 10 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

| Spectral Elements    | NIRCam Imaging  | Short Filter | Long Filter | Readout Pattern | Groups/Int | Integrations/Exp | Total Integrations | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID |  |
|----------------------|---|--------------|-------------|-----------------|------------|------------------|--------------------|---------------|---------------------|------------------|--|
|                      | 1   |              | F187N       | F335M           | BRIGHT2    | 3                | 1                  | 4             | 4                   | 257.682          |  |
|                      | 2   |              | F115W       | F277W           | BRIGHT2    | 3                | 1                  | 4             | 4                   | 257.682          |  |
|                      | 3   |              | F150W       | F356W           | BRIGHT2    | 3                | 1                  | 4             | 4                   | 257.682          |  |
|                      | 4   |              | F200W       | F444W           | BRIGHT2    | 3                | 1                  | 4             | 4                   | 257.682          |  |
| Special Requirements | Aperture PA Range 15 to 15 Degrees (V3 10.16455103 to 10.16455103)<br>Offset 25.0 arcsec, -50.0 arcsec<br>No Parallel |              |             |                 |            |                  |                    |               |                     |                  |  |
|                      | Group Observations 1, 10 within 1 Days  |              |             |                 |            |                  |                    |               |                     |                  |  |

Proposal 1235 - Observation 2 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

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| <b>Observation</b>   | <b>Proposal 1235, Observation 2: NIRcam imaging</b><br><b>Diagnostic Status: Warning</b><br>Observing Template: NIRCam Imaging<br>Coordinated Parallel Template(s): MIRI Imaging  |  |                          |                    |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
|--|---|--|--------------------------|--------------------|--|-----------------------------|---------------|---------------------|---------------------|------------------|----------------|---------------------|-------------------------------|--------------------------|--------------------|--|-----------------------------|--|---------------------|---------------------|--|-------|-------------------------|--------------|---|---|----|----|----------|----|----------|-------|-------|---------|--------|---|----|----|----------|----|----|----------|-------|---------|--------|--------|----|----|----------|--|----|----|----------|--|
| <b>Diagnostics</b>   | (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.<br>(Visit 2:5) Warning (Form): Overheads are provisional until the Visit Planner has been run.<br>(Visit 2:6) 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>(6)</td> <td>LHA-120-N-79-FOR-NIRCAM</td> <td>RA: 04 52 2.8277 (73.0117821d)<br/>Dec: -69 21 48.59 (-69.36350d)<br/>Equinox: J2000</td> <td></td> <td></td> </tr> <tr> <td colspan="5"> <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i><br/> <i>Category=Stellar Cluster</i><br/> <i>Description=[OB associations, Young star clusters]</i> </td> </tr> </tbody> </table>  |  |                          |                    |  |                             |               |                     |                     |                  | #              | Name                | Target Coordinates            | Targ. Coord. Corrections | Miscellaneous      | (6)                                    | LHA-120-N-79-FOR-NIRCAM     | RA: 04 52 2.8277 (73.0117821d)<br>Dec: -69 21 48.59 (-69.36350d)<br>Equinox: J2000 |                     |                     | <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i><br><i>Category=Stellar Cluster</i><br><i>Description=[OB associations, Young star clusters]</i> |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| #  | Name  | Target Coordinates   | Targ. Coord. Corrections | Miscellaneous      |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| (6)  | LHA-120-N-79-FOR-NIRCAM   | RA: 04 52 2.8277 (73.0117821d)<br>Dec: -69 21 48.59 (-69.36350d)<br>Equinox: J2000 |                          |                    |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i><br><i>Category=Stellar Cluster</i><br><i>Description=[OB associations, Young star clusters]</i> |   |  |                          |                    |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| <b>Template</b>  | <table border="1"> <thead> <tr> <th>NIRCam Imaging</th> <th>MIRI Imaging</th> </tr> </thead> <tbody> <tr> <td>Module: ALL<br/>Subarray: FULL</td> <td>Subarray: FULL</td> </tr> </tbody> </table>   |  |                          |                    |  |                             |               |                     |                     |                  | NIRCam Imaging | MIRI Imaging        | Module: ALL<br>Subarray: FULL | Subarray: FULL           |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| NIRCam Imaging   | MIRI Imaging  |  |                          |                    |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| Module: ALL<br>Subarray: FULL  | Subarray: FULL  |  |                          |                    |  |                             |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| <b>Dithers</b>   | <table border="1"> <thead> <tr> <th>#</th> <th>Primary Dither Type</th> <th>Primary Dithers</th> <th>Dither Size</th> <th>Subpixel Positions</th> <th>Coordinated Parallel Subpixel Selector</th> <th>Dither Direct Images Primes</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FULLBOX</td> <td>4</td> <td></td> <td>1</td> <td>4-POINT-WITH-MIRI-F770W</td> <td>NO_DITHERING</td> </tr> </tbody> </table>   |  |                          |                    |  |                             |               |                     |                     |                  | #              | Primary Dither Type | Primary Dithers               | Dither Size              | Subpixel Positions | Coordinated Parallel Subpixel Selector | Dither Direct Images Primes | 1  | FULLBOX             | 4                   |  | 1     | 4-POINT-WITH-MIRI-F770W | NO_DITHERING |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| #  | Primary Dither Type   | Primary Dithers  | Dither Size              | Subpixel Positions | Coordinated Parallel Subpixel Selector | Dither Direct Images Primes |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 1  | FULLBOX   | 4  |                          | 1                  | 4-POINT-WITH-MIRI-F770W                | NO_DITHERING                |               |                     |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| <b>Spectral Elements</b>   | <table border="1"> <thead> <tr> <th>NIRCam Imaging</th> <th>Short Filter</th> <th>Long Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Total Integrations</th> <th>Total Dithers</th> <th>Total Exposure Time</th> <th>ETC Wkbk.Calc ID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>F187N</td> <td>F335M</td> <td>BRIGHT2</td> <td>8</td> <td>1</td> <td>16</td> <td>16</td> <td>2748.613</td> <td></td> </tr> <tr> <td>2</td> <td>F115W</td> <td>F277W</td> <td>BRIGHT2</td> <td>8</td> <td>1</td> <td>16</td> <td>16</td> <td>2748.613</td> <td></td> </tr> <tr> <td>3</td> <td>F200W</td> <td>F444W</td> <td>BRIGHT2</td> <td>8</td> <td>1</td> <td>16</td> <td>16</td> <td>2748.613</td> <td></td> </tr> </tbody> </table>                             |  |                          |                    |  |                             |               |                     |                     |                  | NIRCam Imaging | Short Filter        | Long Filter                   | Readout Pattern          | Groups/Int         | Integrations/Exp                       | Total Integrations          | Total Dithers  | Total Exposure Time | ETC Wkbk.Calc ID    | 1  | F187N | F335M                   | BRIGHT2      | 8 | 1 | 16 | 16 | 2748.613 |    | 2        | F115W | F277W | BRIGHT2 | 8      | 1 | 16 | 16 | 2748.613 |    | 3  | F200W    | F444W | BRIGHT2 | 8      | 1      | 16 | 16 | 2748.613 |  |    |    |          |  |
| NIRCam Imaging   | Short Filter  | Long Filter  | Readout Pattern          | Groups/Int         | Integrations/Exp                       | Total Integrations          | Total Dithers | Total Exposure Time | ETC Wkbk.Calc ID    |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 1  | F187N   | F335M  | BRIGHT2                  | 8                  | 1                                      | 16                          | 16            | 2748.613            |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 2  | F115W   | F277W  | BRIGHT2                  | 8                  | 1                                      | 16                          | 16            | 2748.613            |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 3  | F200W   | F444W  | BRIGHT2                  | 8                  | 1                                      | 16                          | 16            | 2748.613            |                     |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| <b>Spectral Elements</b>   | <table border="1"> <thead> <tr> <th>MIRI Imaging</th> <th>Filter</th> <th>Readout Pattern</th> <th>Groups/Int</th> <th>Integrations/Exp</th> <th>Exposures/Dith</th> <th>Dither</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>F770W</td> <td>SLOWR1</td> <td>6</td> <td>1</td> <td>1</td> <td></td> <td>16</td> <td>16</td> <td>2293.432</td> <td></td> </tr> <tr> <td>2</td> <td>F1000W</td> <td>SLOWR1</td> <td>6</td> <td>1</td> <td>1</td> <td></td> <td>16</td> <td>16</td> <td>2293.432</td> <td></td> </tr> <tr> <td>3</td> <td>F1500W</td> <td>SLOWR1</td> <td>6</td> <td>1</td> <td>1</td> <td></td> <td>16</td> <td>16</td> <td>2293.432</td> <td></td> </tr> </tbody> </table> |  |                          |                    |  |                             |               |                     |                     |                  | MIRI Imaging   | Filter              | Readout Pattern               | Groups/Int               | Integrations/Exp   | Exposures/Dith                         | Dither                      | Total Dithers  | Total Integrations  | Total Exposure Time | ETC Wkbk.Calc ID   | 1     | F770W                   | SLOWR1       | 6 | 1 | 1  |    | 16       | 16 | 2293.432 |       | 2     | F1000W  | SLOWR1 | 6 | 1  | 1  |          | 16 | 16 | 2293.432 |       | 3       | F1500W | SLOWR1 | 6  | 1  | 1        |  | 16 | 16 | 2293.432 |  |
| MIRI Imaging   | Filter  | Readout Pattern  | Groups/Int               | Integrations/Exp   | Exposures/Dith                         | Dither                      | Total Dithers | Total Integrations  | Total Exposure Time | ETC Wkbk.Calc ID |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 1  | F770W   | SLOWR1   | 6                        | 1                  | 1                                      |                             | 16            | 16                  | 2293.432            |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 2  | F1000W  | SLOWR1   | 6                        | 1                  | 1                                      |                             | 16            | 16                  | 2293.432            |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |
| 3  | F1500W  | SLOWR1   | 6                        | 1                  | 1                                      |                             | 16            | 16                  | 2293.432            |                  |                |                     |                               |                          |                    |  |                             |  |                     |                     |  |       |                         |              |   |   |    |    |          |    |          |       |       |         |        |   |    |    |          |    |    |          |       |         |        |        |    |    |          |  |    |    |          |  |



Proposal 1235 - Observation 2 - LMC-N79: Study of Most Massive Young Stellar Object Star Forming Region

**Special Requirements**

Group Visits within 53.0 Days  
Aperture PA Range 285 to 285 Degrees (V3 285.0713531 to 285.0713531)  
Visits Same PA  
No Parallel