



## 6613 - CAL-MIRI-304 MIRI Controlled Darks

Cycle: 3, Proposal Category: CAL/MIRI

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Mike Engesser (PI)</b>	<b>Space Telescope Science Institute</b>
Dr. Michael W. Regan (CoI)	Space Telescope Science Institute
Dr. Alberto Noriega-Crespo (CoI)	Space Telescope Science Institute
Dr. Greg Sloan (CoI)	Space Telescope Science Institute

### OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Low-Zodi-F560W-Dark1				
	1	Low-Zodi-Idle	MIRI Imaging	(2) 12MINZODY
	2	Low-Zodi-Dark	MIRI Dark	NONE
Low-Zodi-F560W-Dark2				
	3	Low-Zodi-Idle	MIRI Imaging	(2) 12MINZODY
	4	Low-Zodi-Dark	MIRI Dark	NONE
Low-Zodi-F560W-Dark3				
	5	Low-Zodi-Idle	MIRI Imaging	(2) 12MINZODY
	6	Low-Zodi-Dark	MIRI Dark	NONE
High-Zodi-F560W-Dark1				
	11	High-Zodi-Idle	MIRI Imaging	(1) HIGHZODI-DOY117
	12	High-Zodi-Dark	MIRI Dark	NONE
High-Zodi-F560W-Dark2				
	13	High-Zodi-Idle	MIRI Imaging	(1) HIGHZODI-DOY117
	14	High-Zodi-Dark	MIRI Dark	NONE
High-Zodi-F560W-Dark3				

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	15	High-Zodi-Idle	MIRI Imaging	(1) HIGHZODI-DOY117
	16	High-Zodi-Dark	MIRI Dark	NONE

## **ABSTRACT**

Cycle 1 and 2 darks show an elevated and inconsistent dark rate when the instrument is open to the sky prior to the dark. The effect does not seem to scale strongly with filter or idle time. The effect is thought to be due to persistence from the sky background. We naively expect that the background in F560W is low enough to mitigate this persistence, however the one example we have with this filter prior to a dark also shows the issue. With this program we aim to reduce the number of free parameters to isolate the issue and then determine a path forward for MIRI dark current calibration.

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

## **OBSERVING DESCRIPTION**

The program consists of 3 measurements at low Zodiacal emission and 3 at high Zodiacal emission. Each measurement includes an initial, or idle, observation, to be followed by the actual dark measurement after a 20-60 minute pause with exclusive use of the instrument so that any persistence can decay.

Observations will be made in F560W with a single 5-group integration, as the Cycle 2 trending darks.

## **TIMING CONSTRAINTS**

All 12 observations are grouped in 6 pairs, with the second of each pair to follow the first within 20-60 minutes.

The 3 high-zodi pairs are constrained to occur within 60 days so that they are all obtained in the same window of visibility.

Proposal 6613 - Targets - CAL-MIRI-304 MIRI Controlled Darks

	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
<b>Fixed Targets</b>	(1)	HIGHZODI-DOY117	RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000  <i>Comments:</i> <i>Category=Calibration</i> <i>Description=[Stray light test]</i> <i>Extended=NO</i>		
	(2)	12MINZODY	RA: 17 26 44.0000 (261.6833333d) Dec: -73 19 56.00 (-73.33222d) Equinox: J2000  <i>Comments:</i> <i>Category=Calibration</i> <i>Description=[Telescope/sky background]</i>		

Proposal 6613 - Observation 1 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 1: Low-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>										
<b>Diagnostics</b>	(Visit 1:1) 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>			
	(2)	12MINZODY	RA: 17 26 44.0000 (261.6833333d) Dec: -73 19 56.00 (-73.33222d) Equinox: J2000								
	<p><i>Comments:</i>  <i>Category=Calibration</i>  <i>Description=[Telescope/sky background]</i></p>										
<b>Template</b>	<p><b>Subarray</b> FULL</p>										
<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	F560W	FASTR1	5	1	1	None	1	1	13.875	
<b>Special Requirements</b>	2 After 1 by 20 Mins to 60 Mins, Exclusive Use Of Instrument										

Proposal 6613 - Observation 2 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 2: Low-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>								
<b>Diagnostics</b>	<p>(Low-Zodi-Dark (Obs 2)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>								
<b>Template</b>	<p><b>Detector</b></p> <p>IMAGER</p>			<p><b>Test Pattern</b></p> <p>NONE</p>			<p><b>Imager Subarray</b></p> <p>FULL</p>		
<b>Spectral Elements</b>	<b>#</b>	<b>Detector</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Exposures/Dith</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	IMAGER	FASTR1	250	2	1	2	1390.295	
<b>Special Requirements</b>	<p>2 After 1 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>								

Proposal 6613 - Observation 3 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 3: Low-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>										
<b>Diagnostics</b>	(Visit 3:1) 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>			
	(2)	12MINZODY	RA: 17 26 44.0000 (261.6833333d) Dec: -73 19 56.00 (-73.33222d) Equinox: J2000								
	<p><i>Comments:</i>  <i>Category=Calibration</i>  <i>Description=[Telescope/sky background]</i></p>										
<b>Template</b>	<p><b>Subarray</b> FULL</p>										
<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	F560W	FASTR1	5	1	1	None	1	1	13.875	
<b>Special Requirements</b>	4 After 3 by 20 Mins to 60 Mins, Exclusive Use Of Instrument										

Proposal 6613 - Observation 4 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 4: Low-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>								
<b>Diagnostics</b>	<p>(Low-Zodi-Dark (Obs 4)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>								
<b>Template</b>	<b>Detector</b>	<b>Test Pattern</b>				<b>Imager Subarray</b>			
	IMAGER	NONE				FULL			
<b>Spectral Elements</b>	<b>#</b>	<b>Detector</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Exposures/Dith</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	IMAGER	FASTR1	250	2	1	2	1390.295	
<b>Special Requirements</b>	<p>4 After 3 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>								

Proposal 6613 - Observation 5 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 5: Low-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>										
<b>Diagnostics</b>	(Visit 5:1) 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>			
	(2)	12MINZODY	RA: 17 26 44.0000 (261.6833333d)		Dec: -73 19 56.00 (-73.33222d)			Equinox: J2000			
	<p><i>Comments:</i>  <i>Category=Calibration</i>  <i>Description=[Telescope/sky background]</i></p>										
<b>Template</b>	<p><b>Subarray</b></p> <p>FULL</p>										
<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	F560W	FASTR1	5	1	1	None	1	1	13.875	
<b>Special Requirements</b>	6 After 5 by 20 Mins to 60 Mins, Exclusive Use Of Instrument										

Proposal 6613 - Observation 6 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 6: Low-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>																										
<b>Diagnostics</b>	<p>(Low-Zodi-Dark (Obs 6)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																										
<b>Template</b>	<table border="1"> <thead> <tr> <th>Detector</th> <th>Test Pattern</th> <th>Imager Subarray</th> </tr> </thead> <tbody> <tr> <td>IMAGER</td> <td>NONE</td> <td>FULL</td> </tr> </tbody> </table>			Detector	Test Pattern	Imager Subarray	IMAGER	NONE	FULL																		
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#	Detector	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID																			
1	IMAGER	FASTR1	250	2	1	2	1390.295																				
<b>Special Requirements</b>	<p>6 After 5 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>																										

Proposal 6613 - Observation 11 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 11: High-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>																																										
<b>Diagnostics</b>	<p>(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																																										
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>HIGHZODI-DOY117</td> <td>RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000</td> <td colspan="4"></td> <td colspan="4"></td> </tr> <tr> <td colspan="11"> <i>Comments:</i>                      Category=Calibration                      Description=[Stray light test]                      Extended=NO                 </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(1)	HIGHZODI-DOY117	RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000									<i>Comments:</i> Category=Calibration Description=[Stray light test] Extended=NO										
#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																																				
(1)	HIGHZODI-DOY117	RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000																																									
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<b>Template</b>	<p>Subarray</p> <p>FULL</p>																																										
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#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID																																	
1	F560W	FASTR1	5	1	1	None	1	1	13.875																																		
<b>Special Requirements</b>	<p>12 After 11 by 20 Mins to 60 Mins, Exclusive Use Of Instrument                      Sequence Observations 11, 13, 15 within 60 Days</p>																																										

Proposal 6613 - Observation 12 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 12: High-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>																												
<b>Diagnostics</b>	<p>(High-Zodi-Dark (Obs 12)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																												
<b>Template</b>	<table border="1"> <thead> <tr> <th>Detector</th> <th>Test Pattern</th> <th>Imager Subarray</th> </tr> </thead> <tbody> <tr> <td>IMAGER</td> <td>NONE</td> <td>FULL</td> </tr> </tbody> </table>			Detector	Test Pattern	Imager Subarray	IMAGER	NONE	FULL																				
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#	Detector	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Integrations	Total Exposure Time	ETC	Wkbk.Calc ID																				
1	IMAGER	FASTR1	250	2	1	2	1390.295																						
<b>Special Requirements</b>	<p>12 After 11 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>																												

Proposal 6613 - Observation 13 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 13: High-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>										
<b>Diagnostics</b>	(Visit 13:1) 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>			
	(1)	HIGHZODI-DOY117	RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000								
	<p><i>Comments:</i>  <i>Category=Calibration</i>  <i>Description=[Stray light test]</i>  <i>Extended=NO</i></p>										
<b>Template</b>	<p><b>Subarray</b></p> <p>FULL</p>										
<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	F560W	FASTR1	5	1	1	None	1	1	13.875	
<b>Special Requirements</b>	<p>14 After 13 by 20 Mins to 60 Mins, Exclusive Use Of Instrument                  Sequence Observations 11, 13, 15 within 60 Days</p>										

Proposal 6613 - Observation 14 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 14: High-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>								
<b>Diagnostics</b>	<p>(High-Zodi-Dark (Obs 14)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>								
<b>Template</b>	<b>Detector</b>	<b>Test Pattern</b>				<b>Imager Subarray</b>			
	IMAGER	NONE				FULL			
<b>Spectral Elements</b>	<b>#</b>	<b>Detector</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Exposures/Dith</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	IMAGER	FASTR1	250	2	1	2	1390.295	
<b>Special Requirements</b>	<p>14 After 13 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>								

Proposal 6613 - Observation 15 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 15: High-Zodi-Idle</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Imaging</p>										
<b>Diagnostics</b>	(Visit 15:1) 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>			
	(1)	HIGHZODI-DOY117	RA: 08 39 54.7000 (129.9779167d) Dec: +18 28 36.10 (18.47669d) Equinox: J2000								
	<p><i>Comments:</i>  <i>Category=Calibration</i>  <i>Description=[Stray light test]</i>  <i>Extended=NO</i></p>										
<b>Template</b>	<p><b>Subarray</b></p> <p>FULL</p>										
<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	F560W	FASTR1	5	1	1	None	1	1	13.875	
<b>Special Requirements</b>	<p>16 After 15 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p> <p>Sequence Observations 11, 13, 15 within 60 Days</p>										

Proposal 6613 - Observation 16 - CAL-MIRI-304 MIRI Controlled Darks

Fri May 17 07:00:23 GMT 2024

<b>Observation</b>	<p><b>Proposal 6613, Observation 16: High-Zodi-Dark</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: MIRI Dark</p>								
<b>Diagnostics</b>	<p>(High-Zodi-Dark (Obs 16)) Warning (Form): PARALLEL requirement expected.</p> <p>(Visit 16:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>								
<b>Template</b>	<p><b>Detector</b></p> <p>IMAGER</p>			<p><b>Test Pattern</b></p> <p>NONE</p>			<p><b>Imager Subarray</b></p> <p>FULL</p>		
<b>Spectral Elements</b>	<b>#</b>	<b>Detector</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Exposures/Dith</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b>	<b>ETC Wkbk.Calc ID</b>
	1	IMAGER	FASTR1	250	2	1	2	1390.295	
<b>Special Requirements</b>	<p>16 After 15 by 20 Mins to 60 Mins, Exclusive Use Of Instrument</p>								