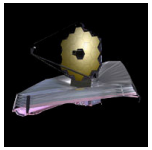

6687 - NIRCam PIL Images for Monitoring the Primary Mirror

Cycle: 3, Proposal Category: CAL/OTE

INVESTIGATORS

Name	*Institution*
Dr. Tracy Beck (PI)	**Space Telescope Science Institute**
Dr. Marcio Melendez (CoI)	Space Telescope Science Institute
Dr. Nicolas Flagey (CoI)	Space Telescope Science Institute
Mr. Matthew D. Lallo (CoI)	Space Telescope Science Institute
Randal Telfer (CoI)	Space Telescope Science Institute

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Epoch 1 NRC PIL Image - Primary Mirror Monitoring				
	1		NIRCam PIL Imaging	(1) 2MASS-05562621-6359103
Epoch 2 NRC PIL Image - Primary Mirror Monitoring				
	2		NIRCam PIL Imaging	(2) 2MASS-19590854+7313564
Epoch 3 NRC PIL Image - Primary Mirror Monitoring				
	3		NIRCam PIL Imaging	(4) 2MASS-12494253+5132129
Epoch 4 NRC PIL Image - Primary Mirror Monitoring				
	4		NIRCam PIL Imaging	(3) 2MASS-17505832+6914281

ABSTRACT

Quarterly NIRCam PIL images are requested to monitor the state of the primary mirror. PIL images will be inspected to identify and characterize features due to micro-meteoroid degradation, both those previously identified in WFE maps from phase retrieval and those for which the damage from individual micro-meteoroid are below the detection threshold in phase retrieval but are readily identifiable in PIL images. The features will be analyzed with detailed physical optical models in an effort to gain further knowledge of the shape and magnitude of the damage, both in WFE and

reflectivity, beyond what can be derived from phase retrieval. The goal is to use the results to accumulate statistical knowledge of the distribution of degradation, for the purpose of characterizing and monitoring observatory throughput and WFE and perhaps informing operations in strategies to minimize future degradation.

OBSERVING DESCRIPTION

Four Epochs of Primary Mirror monitoring observations using the NIRCam PIL template with the F140M and F210M filters on a K=7th magnitude star (taken from the pool of targets for the Routine WFS&C program).

2 Extra targets have been included in this program (and are not used at first) as backups in case any of the selected targets turns out to be an unknown binary.

Proposal 6687 - Targets - NIRCam PIL Images for Monitoring the Primary Mirror

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	2MASS-05562621-6359103	RA: 05 56 26.1833 (89.1090971d) Dec: -63 59 10.34 (-63.98621d) Equinox: J2000	Proper Motion RA: -1.579730909 mas/yr Proper Motion Dec: 4.980070582 mas/yr Epoch of Position: 2015.5	
Comments: K-magnitude = 7.05, Jmag = 8.229 *Category=Calibration* *Description=[Focus test]*				
(2)	2MASS-19590854+7313564	RA: 19 59 8.5425 (299.7855937d) Dec: +73 13 56.50 (73.23236d) Equinox: J2000	Proper Motion RA: 0.53906769 mas/yr Proper Motion Dec: -5.622224296 mas/yr Epoch of Position: 2015.5	
Comments: K-magnitude = 7.004, Jmag = 7.990 *Category=Calibration* *Description=[Focus test]*				
(3)	2MASS-17505832+6914281	RA: 17 50 58.3019 (267.7429246d) Dec: +69 14 28.14 (69.24115d) Equinox: J2000	Proper Motion RA: -12.11369631 mas/yr Proper Motion Dec: 0.454306278 mas/yr Epoch of Position: 2015.5	
Comments: K-magnitude = 6.935, Jmag = 7.621 *Category=Calibration* *Description=[Focus test]*				
(4)	2MASS-12494253+5132129	RA: 12 49 42.4856 (192.4270233d) Dec: +51 32 13.19 (51.53700d) Equinox: J2000	Proper Motion RA: -26.47648216 mas/yr Proper Motion Dec: 16.71649291 mas/yr Epoch of Position: 2015.5	
Comments: K-magnitude = 7.007, Jmag = 7.610 *Category=Calibration* *Description=[Focus test]*				

Observation

Proposal 6687, Observation 1

Thu May 16 19:01:24 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam PIL Imaging

Diagnostics

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	2MASS-05562621-6359103	RA: 05 56 26.1833 (89.1090971d)	Proper Motion RA: -1.579730909 mas/yr	
		Dec: -63 59 10.34 (-63.98621d)	Proper Motion Dec: 4.980070582 mas/yr	
		Equinox: J2000	Epoch of Position: 2015.5	

Comments: K-magnitude = 7.05, Jmag = 8.229
Category=Calibration
Description=[Focus test]

Template

Module
B

Spectral Elements

#	Short Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F140M	BRIGHT2	7	2	2	311.366	
2	F210M	BRIGHT2	7	2	2	311.366	

Special Requirements

Between Dates 31-JUL-2024:00:00:00 and 01-SEP-2024:00:00:00
No Parallel Attachments

Observation

Proposal 6687, Observation 2

Thu May 16 19:01:24 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam PIL Imaging

Diagnostics

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	2MASS-19590854+7313564	RA: 19 59 8.5425 (299.7855937d)	Proper Motion RA: 0.53906769 mas/yr	
		Dec: +73 13 56.50 (73.23236d)	Proper Motion Dec: -5.622224296 mas/yr	
		Equinox: J2000	Epoch of Position: 2015.5	

Comments: K-magnitude = 7.004, Jmag = 7.990
Category=Calibration
Description=[Focus test]

Template

Module
A

Spectral Elements

#	Short Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F140M	BRIGHT2	7	2	2	311.366	
2	F210M	BRIGHT2	7	2	2	311.366	

Special Requirements

Between Dates 31-OCT-2024:00:00:00 and 31-DEC-2024:00:00:00
No Parallel Attachments

Observation

Proposal 6687, Observation 3

Thu May 16 19:01:24 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam PIL Imaging

Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(4)	2MASS-12494253+5132129	RA: 12 49 42.4856 (192.4270233d)	Proper Motion RA: -26.47648216 mas/yr	
		Dec: +51 32 13.19 (51.53700d)	Proper Motion Dec: 16.71649291 mas/yr	
		Equinox: J2000	Epoch of Position: 2015.5	

Comments: K-magnitude = 7.007, Jmag = 7.610
Category=Calibration
Description=[Focus test]

Template

Module
B

Spectral Elements

#	Short Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F140M	BRIGHT2	7	2	2	311.366	
2	F210M	BRIGHT2	7	2	2	311.366	

Special Requirements

Between Dates 31-JAN-2025:00:00:00 and 01-MAR-2025:00:00:00
No Parallel Attachments

Observation

Proposal 6687, Observation 4

Thu May 16 19:01:24 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam PIL Imaging

Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(3)	2MASS-17505832+6914281	RA: 17 50 58.3019 (267.7429246d)	Proper Motion RA: -12.11369631 mas/yr	
		Dec: +69 14 28.14 (69.24115d)	Proper Motion Dec: 0.454306278 mas/yr	
		Equinox: J2000	Epoch of Position: 2015.5	

Comments: K-magnitude = 6.935, Jmag = 7.621
Category=Calibration
Description=[Focus test]

Template

Module
A

Spectral Elements

#	Short Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F140M	BRIGHT2	7	2	2	311.366	
2	F210M	BRIGHT2	7	2	2	311.366	

Special Requirements

Between Dates 30-APR-2025:00:00:00 and 01-JUN-2025:00:00:00
No Parallel Attachments