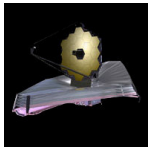

7898 - CAL-FGS-401: FGS Geometric Distortion and Scale

Cycle: 4, Proposal Category: CAL/FGS

INVESTIGATORS

Name	*Institution*
Dr. Edmund Nelan (PI)	**Space Telescope Science Institute**
Mr. Matthew D. Lallo (CoI)	Space Telescope Science Institute
Dr. Pierre Chayer (CoI)	Space Telescope Science Institute
Ms. Sherie Holfeltz (CoI) (CoPI) (Contact)	Space Telescope Science Institute
Dr. Sangmo Tony Sohn (CoI) (CoPI)	Space Telescope Science Institute

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Cycle 4 Epoch 1				
	1	FGS1	FGS External Calibration	(1) LMC-ASTROMETRIC
	2	FGS2	FGS External Calibration	(1) LMC-ASTROMETRIC

ABSTRACT

This proposal acquires data to calibrate the geometric distortion & pixel scale of both FGS Guide channels. The LMC astrometric field is imaged via FGS in calibration mode, obtaining full frame images at 5 different positions (standard 5-point dither) within the astrometric field for each of the two channels. The mid-point of the catalog will be placed at the center of the initial pointing of FGS channel being calibrated (the other channel will be guiding). This will ensure that (1) the same stars are used to calibrate FGS1 and FGS2, and (2) we will thus obtain an accurate measure of the relative sensitivity of Guiders 1 & 2. New for Cycle 4 we reduce the cadence of the observations to one epoch per year, down from 2 epochs/year, due to the observed stability of the calibration over time.

This calibration program is provisional and may change in response to system developments and final science program.

OBSERVING DESCRIPTION

FGS full frame images of the astrometric field in the LMC will be obtained with a 5-point dither pattern. For each guider channel, the mid-point of the LMC astrometric catalog will serve as the "target" while the "other" guider channel executes the guide function. These images will be mapped to the astrometric catalog to determine the polynomial cofficients that describe the instrument's geometric distortions. If significantly different from previous measurements the ground system and flight model will be updated to restore the calibration's accuracy. A secondary measurement, by comparing the instensities of the observed stars in Guider 1 and Guider 2, the relative sensitivities of the two channels can be monitored.

The imaging channel will operate in 'calibration mode' using the FGS External Calibration APT template. A 5-point primary dither pattern is used to acquire full frame images of the star field.

TIMING CONSTRAINTS

Previous Calibration Cycles executed these observations 2/yr, approximately every 6 months. Exerience has shown the calibration to be sufficiently stable to reduce this cadance to once per year. The observations in Guider 1 and Guider 2 should execute in a non-interputed sequence.

Proposal 7898 - Targets - CAL-FGS-401: FGS Geometric Distortion and Scale

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	LMC-ASTROMETRIC	RA: 05 21 57.3030 (80.4887625d) Dec: -69 29 57.90 (-69.49942d) Equinox: J2000		

Comments: This location in LMC was taken from earlier HST observations to establish an astrometric calibration field common to HST and JWST missions [REFERENCE proposal or paper]
Category=Calibration
Description=[Astrometric]

Observation

Proposal 7898, Observation 1: FGS1 Fri May 30 16:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: FGS External Calibration

Comments: For this observation, the 5-point dither pattern will be centered on the mid-point of the catalog. FGS2 will execute the guide function.

Diagnostics

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 1:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 1:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 1:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	LMC-ASTROMETRIC	RA: 05 21 57.3030 (80.4887625d) Dec: -69 29 57.90 (-69.49942d) Equinox: J2000		

Comments: This location in LMC was taken from earlier HST observations to establish an astrometric calibration field common to HST and JWST missions [REFERENCE proposal or paper]
Category=Calibration
Description=[Astrometric]

Template

Pointing Type	Target type	Detector
PRIME	IMAGE	GUIDER1

Dithers

#	Primary Dithers	Subpixel Positions
1	5	1

Spectral Elements

#	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	FGSRAPID	20	2	5	10	2254.722	

Special Requirements

Between Dates 01-OCT-2025 and 15-NOV-2025
Sequence Visits , Non-interruptible
Visits Same PA

Observation

Proposal 7898, Observation 2: FGS2 Fri May 30 16:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: FGS External Calibration

Comments: For this observation, the 5-point dither patteren will be centered on the mid-point of the catalog. FGS1 will execute the guide function.

Diagnostics

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 2:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 2:3) Warning (Form): Overheads are provisional until the Visit Planner has been run.
(Visit 2:4) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	LMC-ASTROMETRIC	RA: 05 21 57.3030 (80.4887625d) Dec: -69 29 57.90 (-69.49942d) Equinox: J2000		

Comments: This location in LMC was taken from earlier HST observations to establish an astrometric calibration field common to HST and JWST missions [REFERENCE proposal or paper]
Category=Calibration
Description=[Astrometric]

Template

Pointing Type	Target type	Detector
PRIME	IMAGE	GUIDER2

Dithers

#	Primary Dithers	Subpixel Positions
1	5	1

Spectral Elements

#	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	FGSRAPID	20	2	5	10	2254.722	

Special Requirements

Between Dates 01-OCT-2025 and 15-NOV-2025
Sequence Visits , Non-interruptible
Visits Same PA