



12520 - CAL-FGS-501: FGS Geometric Distortion and Pixel Scale

Cycle: 5, Proposal Category: CAL/FGS

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
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

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Cycle 5				
	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 the 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 sensitivities of Guiders 1 & 2. The cadence of the observations is one epoch per year due to the observed stability of the calibration over time.

This calibration program may change in response to system developments and the final Cycle 5 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 coefficients 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 intensities 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

There are no timing constraints for this program.

Proposal 12520 - Targets - CAL-FGS-501: FGS Geometric Distortion and Pixel 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]					

Proposal 12520 - Observation 1 - CAL-FGS-501: FGS Geometric Distortion and Pixel Scale

Observation	Proposal 12520, Observation 1: FGS1							Thu Mar 05 18:00:19 GMT 2026	
	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	Optional ETC ID	
	1	FGSRAPID	20	2	5	10	2254.722		
Special Requirements	Between Dates 01-OCT-2026 and 15-NOV-2026 Sequence Visits , Non-interruptible Visits Same PA								

Proposal 12520 - Observation 2 - CAL-FGS-501: FGS Geometric Distortion and Pixel Scale

Observation	Proposal 12520, Observation 2: FGS2							Thu Mar 05 18:00:19 GMT 2026
	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. 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	Optional ETC ID
	1	FGSRAPID	20	2	5	10	2254.722	
Special Requirements	Between Dates 01-OCT-2026 and 15-NOV-2026							
	Sequence Visits , Non-interruptible							
	Visits Same PA							