18208 - LP11 Geometric Correction + Y-walk Analysis

Cycle: 33, Proposal Category: CAL/COS

(Calibration)

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*
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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) V-EP-CHA DARK NONE	COS COS/FUV COS/NUV S/C	1	11-Nov-2025 11:00:50.0	yes

1 Total Orbits Used

ABSTRACT

This program will take G130M/1291 observations of an emission line target at a cross-dispersion location as close as possible to the soft stop (i.e., the expected LP11 position). The observations will use the PSA. Observations will be taken with at least three different HV settings so that Y-walk can also be investigated. Using G130M also provides information on both FUV segments.

OBSERVING DESCRIPTION

The geometric correction was recently updated for a large region of the FUV detector. However, rows lower on the detector than LP4 lie outside the formal geometric correction range and are only corrected via extrapolation of the existing reference file values. This program will use data from an emission line target (V-EP-CHA) to assess the performance of the geometric correction extrapolation in the LP11 region. Y-walk in the LP11 region will also be investigated.

Note that the V-EP-CHA target was observed previously as part of program 11616 (Visit 24), and was called RECX-11. This target was also observed by PID 17760. We are using the PID 17760 observation parameters for the TA and G130M exposures. For the program, an initial exposure is taken at LP3 to set the HV and focus, the aperture block is moved to +270 steps, and then a cycle of exposures and HV changes is repeated.

--SPECIAL NOTES--

-This program originally used G160M/1577, but after discussion with the Contact Scientist we decided to switch to G130M/1291 for more line coverage on both segments.

-The first science exposure does not have the wavecal lamp on because it is just to intialize the instrument. The remaining exposures will flash the lamp using TAGFALSH.

-The special command ELHVADJPROP is used to adjust the HV. This command has been used numerous times in the past and our HV values are not exceeding the standard limits (178/175 for FUVA/FUVB).

-The BOT gives a health and safety warning for the target for all exposures. However, we know from PID 17760 and 11616 that the target is safe to observe, and we are using the exact same modes for this proposal. The warning seems to stem from the BOT assumption of an O5V star.

-Image calibration:
(1) Please turn off calibration for all the COS/FUV exposures. These data should not be used for scientific purposes.
(2) Please disassociate all exposures. All data that is not calibrated must be disassociated to make it into the archive.

SQL is used to meet the above requests. For request (1) qexposure.control_id is modified. For request (2) qeassociation records are deleted. Contact the HST SOC SE team for further information about this process.

Visit

Proposal 18208, V-EP-CHA VISIT 1 (01), implementation Tue Nov 11 16:00:50 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS, S/C, COS/FUV, COS/NUV

Special Requirements: (none)

Comments: Configuration copied from PID 17760, which observed the same object.

Diagnostics

(V-EP-CHA VISIT 1 (01)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(V-EP-CHA VISIT 1 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

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(V-EP-CHA VISIT 1 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

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(V-EP-CHA VISIT 1 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-EP-CHA	RA: 08 47 1.6440 (131.7568500d) Dec: -78 59 34.38 (-78.99288d) Equinox: J2000	Proper Motion RA: -30.145000000000003 mas/yr Proper Motion Dec: 26.801 mas/yr Parallax: 0.0101198" Epoch of Position: 2000	V=11.1	Reference Frame: ICRS

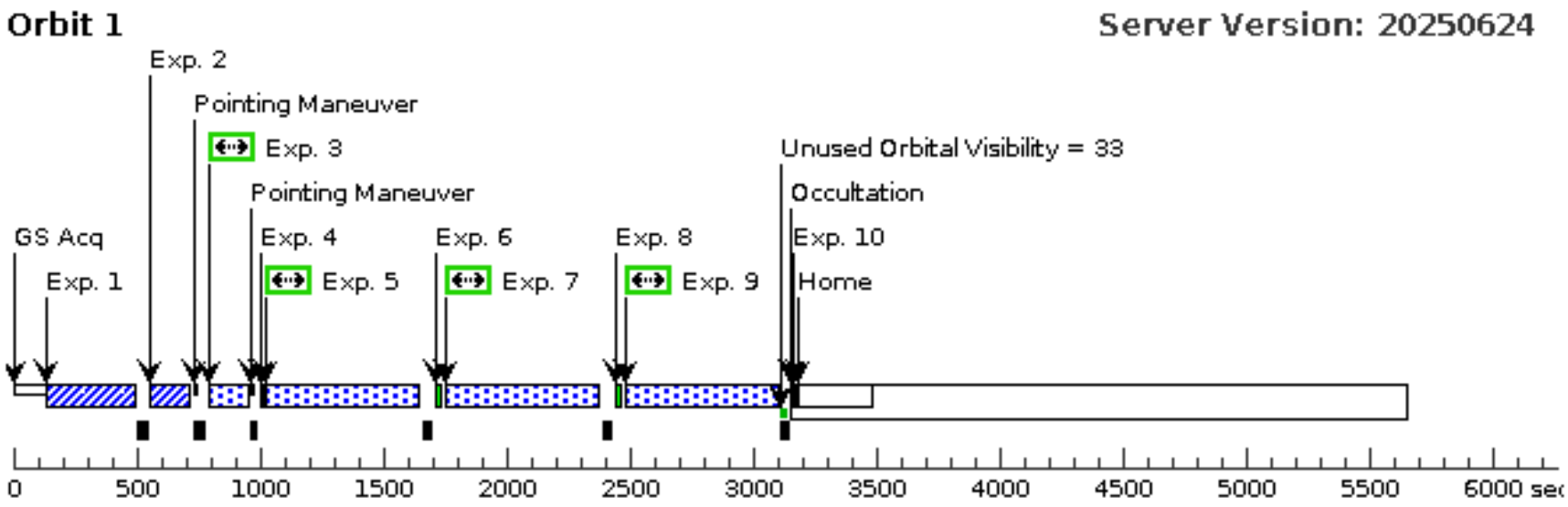
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[T TAURI STAR, YSO]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target Acquisition (COS.ta.2224884)	(1) V-EP-CHA	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				25 Secs (25 Secs) *[==>]*	***[1]***
Comments: Parameters similar to PID 17760. Both 17760 and 11616 used PSA + MIRRORB so it should be safe. Setting exposure time to 25 seconds to get a little extra signal.									
2	Second Target Acquisition (COS.ta.2224884)	(1) V-EP-CHA	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				25 Secs (25 Secs) *[==>]*	***[1]***
Comments: Second acquisition in case of failure.									
3	Initialization exposure with LP3 (COS.sp.2224893)	(1) V-EP-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	LIFETIME-POS=LP3; FLASH=NO; WAVECAL=NO; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=80			0.1 Secs (0.1 Secs) *[==>]*	***[1]***
Comments: A short initialization exposure at LP3 to set the approximate focus and HV to the maximum value.									
4	Aperture Adjustment to +270 steps	NONE	COS, ALIGN/APER		XAPER=89			0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: LAPXSTP for LP3 is +181 steps. *LAPXSTP for PSA at LP11 was determined to be +270 steps (closest safe approach to the soft stop)* *XAPER = desired position - current position* *XAPER = +270 - +181 = +89*									
5	Exposure at the highest HV (COS.sp.2230570)	(1) V-EP-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	LIFETIME-POS=LP3; FLASH=YES; WAVECAL=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=3000	POS TARG null,-4.238		575 Secs (575 Secs) *[==>]*	***[1]***
Comments: Science exposure taken at the highest HV on each segment (178/175). *Since the geo/walk analysis may benefit from having wavecal spectra, FLASH and WAVECAL are set to YES. At this position TAGFLASH should be safe.* *Since the aperture block has been moved +89 steps and there are 21 steps per arc second, the POS TARG Y value should be -1*(89/21) = -4.238"; note the sign flip since positive steps are lower on the detector and negative POS TARG Y is lower on the detector.*									

6	Adjust HV to 167/169	DARK	S/C, DATA, NONE			SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 167; QESIPARM ENDCTSB 169; QESIPARM SEGMENT AB	39 Secs (39 Secs) *[==>]*	***[1]***
Comments: Adjust HV from 178/175 --> 167/169. Since HV is not increasing, exposure time is 39 seconds.									
7	Exposure at HV = 167/169 (COS.sp.2230570)	(1) V-EP-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	LIFETIME-POS=LP3; FLASH=YES; WAVECAL=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=3000	POS TARG null,-4.238	575 Secs (575 Secs) *[==>]*	***[1]***
Comments: Exposure taken at HV = 167/169. *Since the geo/walk analysis may benefit from having wavecal spectra, FLASH and WAVECAL are set to YES. At this position TAGFLASH should be safe.* *Since the aperture block has been moved +89 steps and there are 21 steps per arc second, the POS TARG Y value should be -1*(89/21) = -4.238"; note the sign flip since positive steps are lower on the detector and negative POS TARG Y is lower on the detector.*									
8	Adjust HV to 163/163	DARK	S/C, DATA, NONE			SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 163; QESIPARM ENDCTSB 163; QESIPARM SEGMENT AB	39 Secs (39 Secs) *[==>]*	***[1]***
Comments: Adjust HV from 167/169 --> 163/163. Since HV is not increasing, exposure time is 39 seconds.									
9	Exposure at HV = 163/163 (COS.sp.2230570)	(1) V-EP-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	LIFETIME-POS=LP3; FLASH=YES; WAVECAL=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=3000	POS TARG null,-4.238	575 Secs (575 Secs) *[==>]*	***[1]***
Comments: Exposure taken at HV = 163/163. *Since the geo/walk analysis may benefit from having wavecal spectra, FLASH and WAVECAL are set to YES. At this position TAGFLASH should be safe.* *Since the aperture block has been moved +89 steps and there are 21 steps per arc second, the POS TARG Y value should be -1*(89/21) = -4.238"; note the sign flip since positive steps are lower on the detector and negative POS TARG Y is lower on the detector.*									

	10	Return aperture to original position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEPS -89	0 Secs (0 Secs) *[==>]*	*[1]*

Comments: Since the aperture was moved +89 steps, XSTEPS will be set to -89 steps to return it.

Orbit Structure