16740 - The host galaxies of the first QSOs

Cycle: 29, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) P323+12	WFC3/IR	1	05-Apr-2022 14:00:15.0	yes
02	(2) P036+03	WFC3/IR	1	05-Apr-2022 14:00:16.0	yes
03	(3) J2329-0301	WFC3/IR	1	05-Apr-2022 14:00:17.0	yes
04	(4) J1030+0524	WFC3/IR	1	05-Apr-2022 14:00:17.0	yes
05	(5) P065-26	WFC3/IR	1	05-Apr-2022 14:00:18.0	yes
06	(6) P359-06	WFC3/IR	1	05-Apr-2022 14:00:18.0	yes
07	(7) P340-18	WFC3/IR	1	05-Apr-2022 14:00:19.0	yes
08	(8) P009-10	WFC3/IR	1	05-Apr-2022 14:00:19.0	yes
09	(9) J2228+0110	WFC3/IR	1	05-Apr-2022 14:00:20.0	yes
10	(4) J1030+0524	WFC3/IR	1	05-Apr-2022 14:00:20.0	yes

10 Total Orbits Used

ABSTRACT

The mere presence of hundreds of luminous quasars at cosmic dawn (redshift z>6, age of the Universe <1 Gyr) represents a puzzle to mechanisms of formation and early growth of massive black holes and galaxies. The central engine of these quasars is a black hole of ~1e9 solar masses. In the local universe, such massive black holes only reside in the most massive galaxies. Detailed optical IFU observations VLT/MUSE have indeed revealed massive and extended gaseous reservoirs fueling intense episodes of star formation in z>6 quasar hosts. At the same time, high-resolution ALMA observations unveiled highly massive and star forming galaxies. However, to date, the host starlight remain elusive at such early cosmic times, due to surface brightness and wavelength range limitations.

Here we propose to perform a survey of a sample of 9 QSOs at z>6 to image their host galaxy starlight in the rest-frame optical emission (which is a robust tracer of the stellar mass). For all these objects deep MUSE and ALMA observations shows the presence of extended gas reservoirs and dust. The ultimate goal of the project is to have direct constraints on the stellar distribution in these early active galaxies, and relate this information to the spatial distribution of gas and dust. This will allow us to investigate the interplay between star formation and the gas cycle in these systems.

OBSERVING DESCRIPTION

We aim to characterize the rest-frame UV properties of 9 faint (J>26) host galaxies located underneath the central (unresolved) emission of 9 bright (J<21) QSOs at z>6.

To achieve the required accuracy in the PSF modelling and in the detection of the low surface brightness emission from the QSO hosts we will image each field for one orbit with WFC3/IR F140W to achieve an AB magnitude of ~27 at 5-sigma. We will use the default 4-step box dither pattern (WFC3-IR-DITHER-BOX-MIN) with an increased dither step to avoid possible self-persistence issues due to the bright QSOs. This dither step will give adequate subpixel sampling to reconstruct nyquist-sampled (2pix/FWHM) images and it is a commonly used patthern for high-redshift studies, easing the search for PSF reference with the same sampling for PSF subtraction purposes.

Each visit is divided in 4 Sub Exposures to facilitate the removal of cosmic rays.

Visit

Proposal 16740, P323+12 (01), scheduled Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 21.7D TO 39.6 D; ORIENT 66.7D TO 84.6 D; ORIENT 104.6D TO 136.7 D; ORIENT 156.7D TO 174.6 D; ORIENT 201.7D TO 219.6 D; ORIENT 246.7D TO 264.6 D; ORIENT 284.6D TO 316.7 D; ORIENT 336.7D TO 354.6 D

Comments: Two bright stars located withing the WFC3/IR FoV at:
21:32:30.15 +12:17:26.0 (i_AB~9.8mag)
21:32:35.21 +12:17:52.9 (i_AB~11.7mag)
The separation from our target of the first star is 53.2arcsec and with an on-sky position angle (East of North) of PA=236.72degree.
The separation from our target of the second star is 29.68arcsec and with an on-sky position angle (East of North) of PA=94.56degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
1st star
1.7 deg < ORIENT < 21.7 deg
46.7 deg < ORIENT < 66.7 deg
136.7 deg < ORIENT < 156.7 deg
181.7 deg < ORIENT < 201.7 deg
226.7 deg < ORIENT < 246.7 deg
316.7 deg < ORIENT < 336.7 deg
2nd star
39.6 deg < ORIENT < 59.6 deg
84.6 deg < ORIENT < 104.6 deg
174.6 deg < ORIENT < 194.6 deg
219.6 deg < ORIENT < 239.6 deg
264.6 deg < ORIENT < 284.6 deg
354.6 deg < ORIENT < 14.6 deg

Nearby galaxy with K_AB=20.3mag located 1.6 arcsec NNE from the target QSO. This will be resolved by HST and thus the impact of the diffraction spikes will be minimal.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	P323+12	RA: 21 32 33.1910 (323.1382958d) Dec: +12 17 55.26 (12.29868d) Equinox: J2000	Redshift: 6.5881	V=35 J_AB=19.74	Reference Frame: ICRS

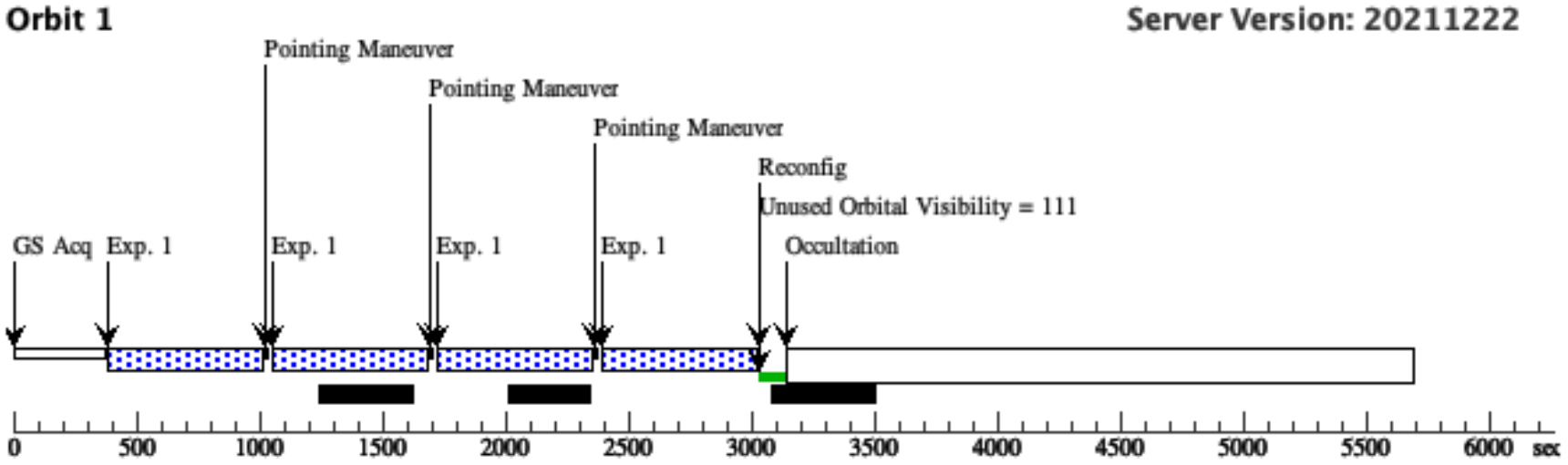
Comments: Two bright stars located withing the WFC3/IR FoV at:
21:32:30.15 +12:17:26.0 (i_AB~9.8mag)
21:32:35.21 +12:17:52.9 (i_AB~11.7mag)

Nearby galaxy with K_AB=20.3mag located 1.6 arcsec NNE from the target QSO.
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P323+12	(1) P323+12	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P323+12 (01) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16740, P036+03 (02), completed Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

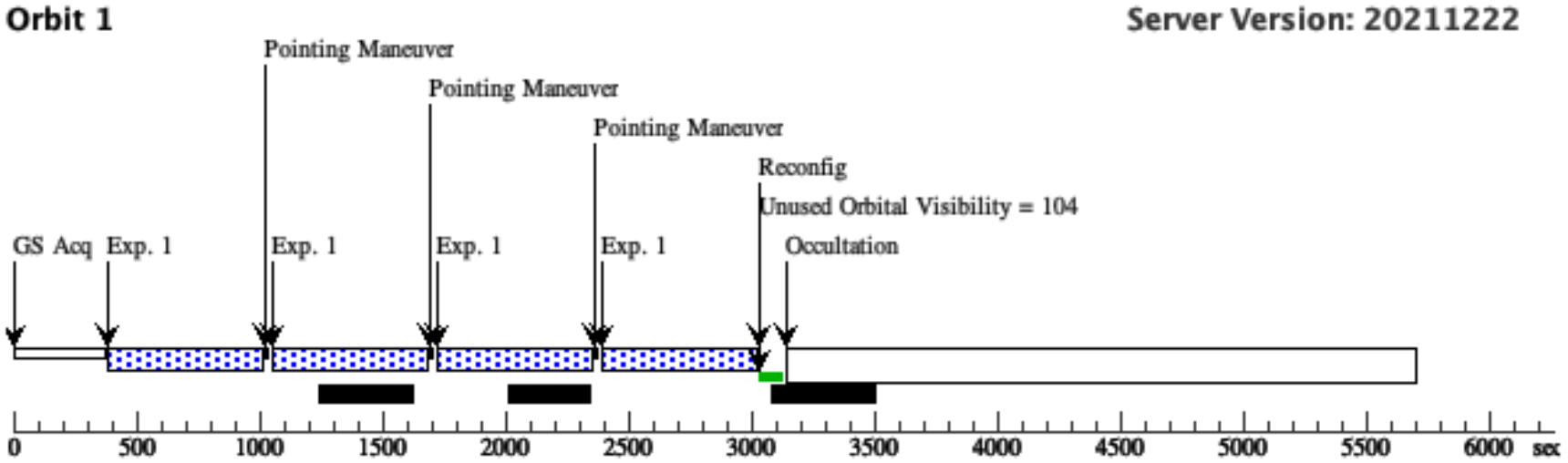
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	P036+03	RA: 02 26 1.8760 (36.5078167d) Dec: +03 02 59.39 (3.04983d) Equinox: J2000	Redshift: 6.5412	V=35 J_AB=19.51	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P036+03	(2) P036+03	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P036+03 (02) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16740, J2329-0301 (03), scheduling Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 307.1D TO 17.1 D; ORIENT 37.1D TO 62.1 D; ORIENT 82.1D TO 107.1 D; ORIENT 127.1D TO 197.1 D; ORIENT 217.1D TO 242.1 D; ORIENT 262.1D TO 287.1 D

Comments: One bright star located at the edge of the WFC3/IR FoV at: 23:29:12.23 -03:02:29.05 (i_AB~10.2mag)
The separation from our target of this star is 66.5arcsec and with an on-sky position angle (East of North) of PA=117.05degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
17.1 deg < ORIENT < 37.1 deg
62.1 deg < ORIENT < 82.1 deg
107.1 deg < ORIENT < 127.1 deg
197.1 deg < ORIENT < 217.1 deg
242.1 deg < ORIENT < 262.1 deg
287.1 deg < ORIENT < 307.1 deg

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

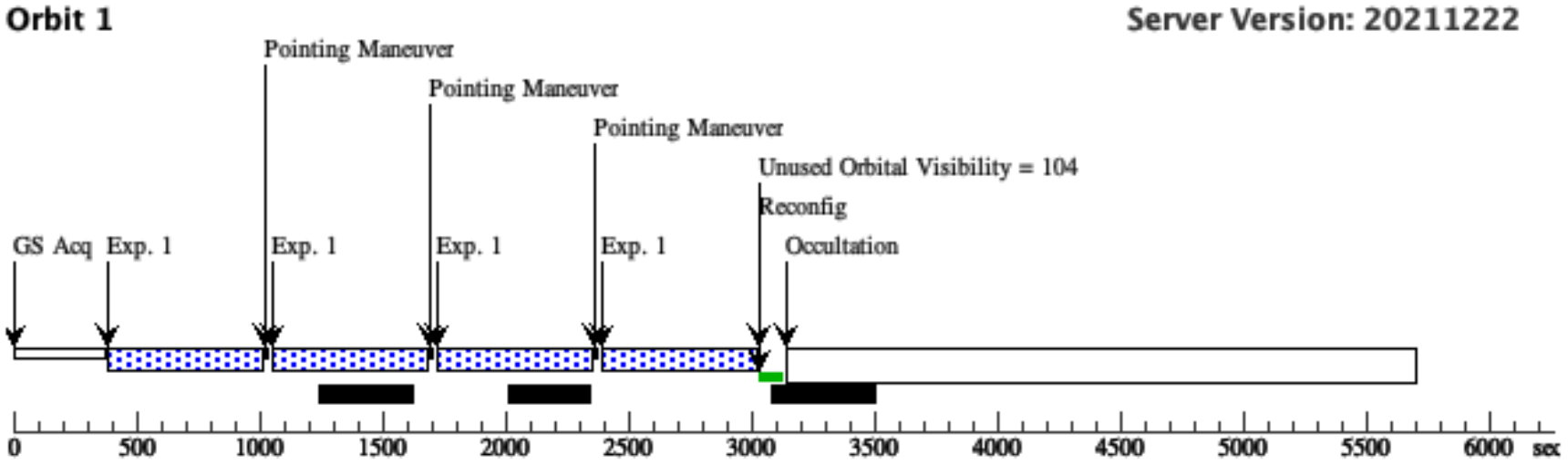
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	J2329-0301	RA: 23 29 8.2750 (352.2844792d) Dec: -03 01 58.80 (-3.03300d) Equinox: J2000	Redshift: 6.4164	V=35 J_AB=21.56	Reference Frame: ICRS

Comments: One bright star located at the edge of the WFC3/IR FoV at:
23:29:12.23 -03:02:29.05 (i_AB~10.2mag)
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	J2329-0301	(3) J2329-0301	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in J2329-0301 (03) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16740, J1030+0524 (04), failed Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 2.6D TO 27.6 D; ORIENT 47.6D TO 117.6 D; ORIENT 137.6D TO 162.6 D; ORIENT 182.6D TO 207.6 D; ORIENT 227.6D TO 297.6 D; ORIENT 317.6D TO 342.6 D

Comments: One bright star located within the WFC3/IR FoV at: 10:30:25.59, +05:24:25.71 (i_AB~12.5mag)
The separation from our target of this star is 36.9arcsec and with an on-sky position angle (East of North) of PA=217.55degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
27.6 deg < ORIENT < 47.6 deg
117.6 deg < ORIENT < 137.6 deg
162.6 deg < ORIENT < 182.6 deg
207.6 deg < ORIENT < 227.6 deg
297.6 deg < ORIENT < 317.6 deg
342.6 deg < ORIENT < 2.6 deg

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=18.528		
	Number Of Points=4	Angle Between Sides=74.653		
	Point Spacing=4.004	Center Pattern=false		
	Line Spacing=4.015			

Fixed Targets

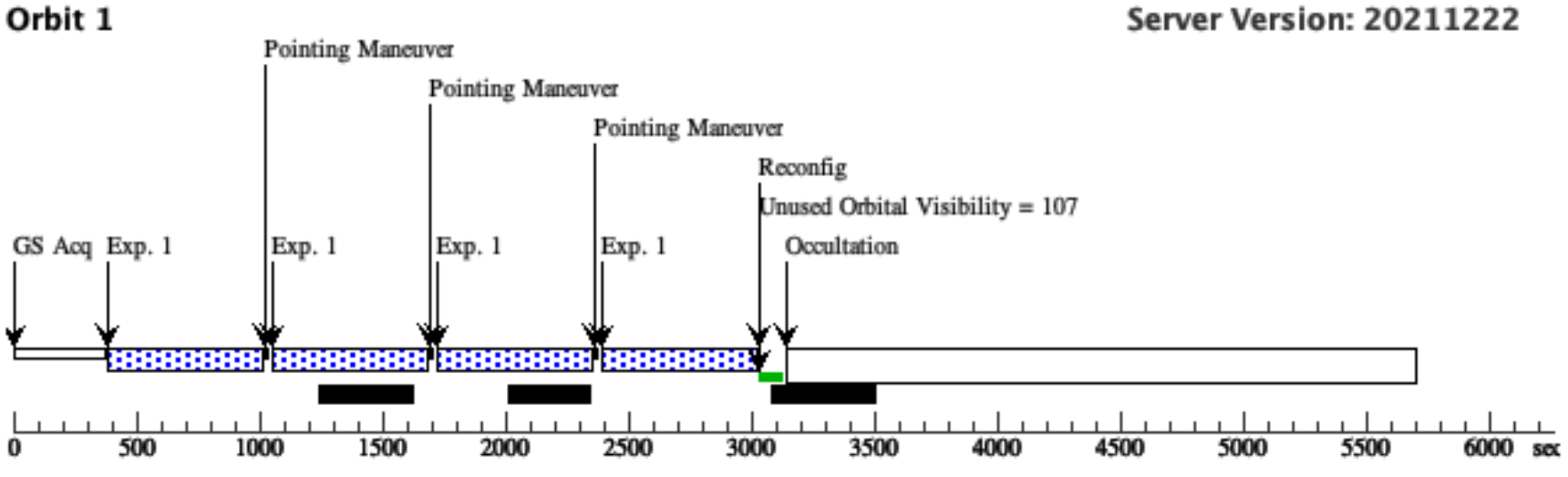
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1030+0524	RA: 10 30 27.0980 (157.6129083d)	Redshift: 6.3000	V=35	Reference Frame: ICRS
		Dec: +05 24 55.00 (5.41528d)		J_AB=19.79	
		Equinox: J2000			

Comments: One bright star located within the WFC3/IR FoV at:
10:30:25.59, +05:24:25.71 (i_AB~12.5mag)
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	J1030+0524	(4) J1030+0524	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in J1030+0524 (04) (1)	602.937703 Secs (2411.751 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Orbit Structure



Visit

Proposal 16740, P065-26 (05), completed Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

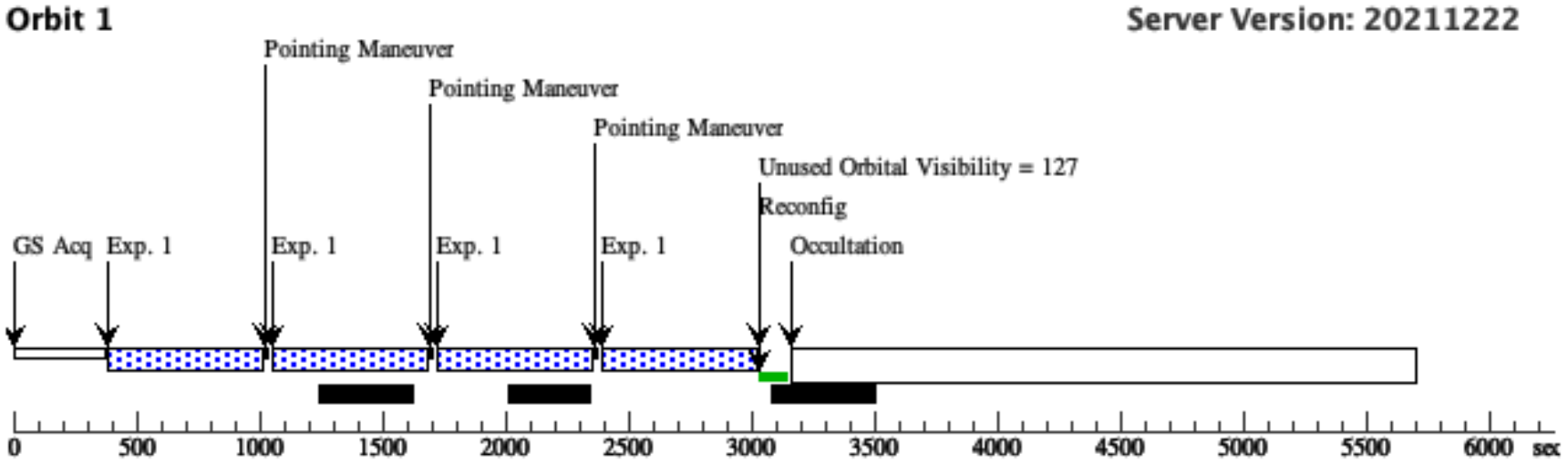
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	P065-26	RA: 04 21 38.0520 (65.4085500d) Dec: -26 57 15.60 (-26.95433d) Equinox: J2000	Redshift: 6.1877	V=35 J_AB=19.32	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P065-26	(5) P065-26	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P065-26 (05) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16740, P359-06 (06), completed Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

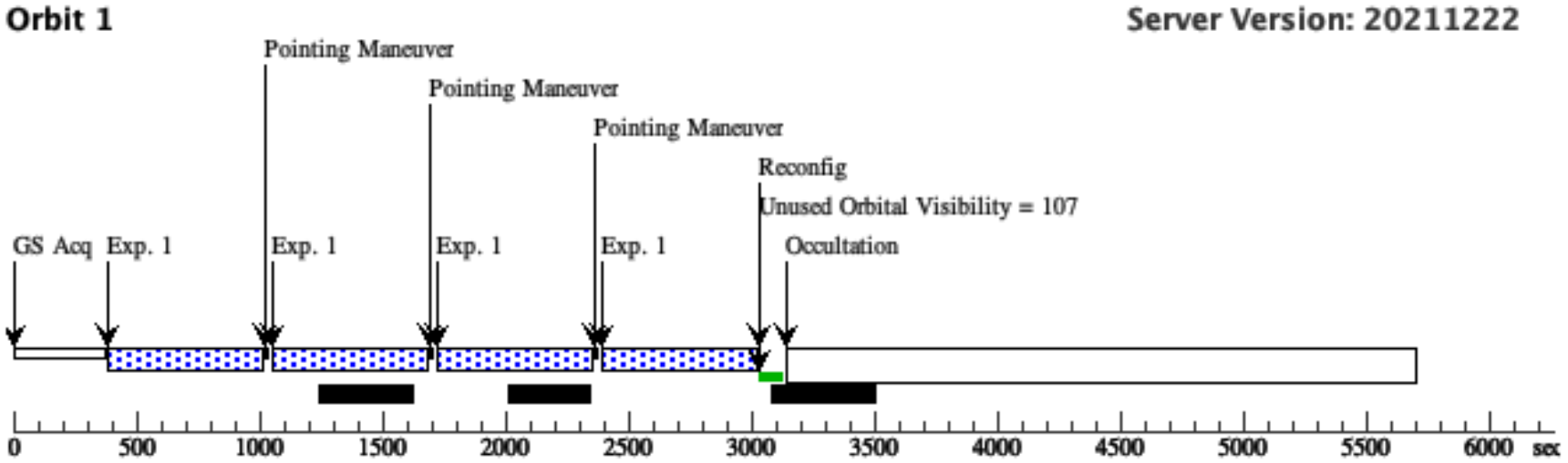
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	P359-06	RA: 23 56 32.4550 (359.1352292d) Dec: -06 22 59.26 (-6.38313d) Equinox: J2000	Redshift: 6.1722	V=35 J_AB=19.85	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P359-06	(6) P359-06	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P359-06 (06) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16740, P340-18 (07), scheduling Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 358.7D TO 68.7 D; ORIENT 88.7D TO 113.7 D; ORIENT 133.7D TO 158.7 D; ORIENT 178.7D TO 248.7 D; ORIENT 268.7D TO 293.7 D; ORIENT 313.7D TO 338.7 D

Comments: One bright star located withing the WFC3/IR FoV at: 22:40:48.77 -18:39:27.7 (i_AB~15.7mag)
The separation from our target of this star is 16.4arcsec and with an on-sky position angle (East of North) of PA=348.68degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
68.7 deg < ORIENT < 88.7 deg
113.7 deg < ORIENT < 133.7 deg
158.7 deg < ORIENT < 178.7 deg
248.7 deg < ORIENT < 268.7 deg
293.7 deg < ORIENT < 313.7 deg
338.7 deg < ORIENT < 358.7 deg

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=18.528		
	Number Of Points=4	Angle Between Sides=74.653		
	Point Spacing=4.004	Center Pattern=false		
	Line Spacing=4.015			

Fixed Targets

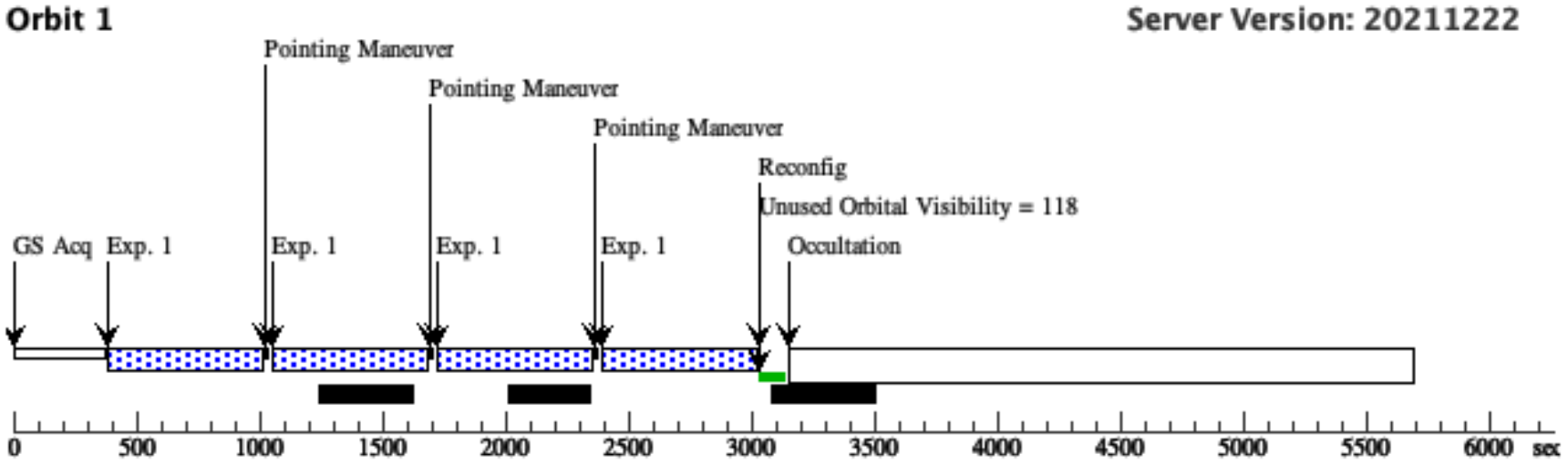
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	P340-18	RA: 22 40 48.9970 (340.2041542d)	Redshift: 6.0100	V=35	Reference Frame: ICRS
		Dec: -18 39 43.81 (-18.66217d)		J_AB=20.28	
		Equinox: J2000			

Comments: One bright star located withing the WFC3/IR FoV at:
22:40:48.77 -18:39:27.7 (i_AB~15.7mag)
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P340-18	(7) P340-18	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P340-18 (07) (1)	602.937703 Secs (2411.751 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Orbit Structure



Visit

Proposal 16740, P009-10 (08), scheduling Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

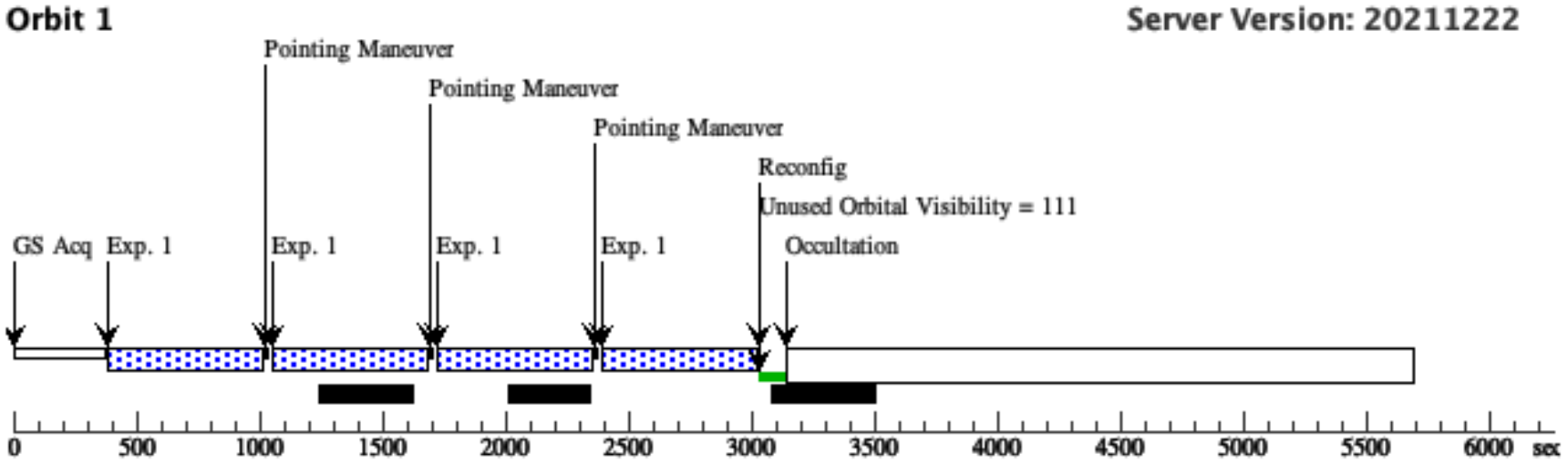
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	P009-10	RA: 00 38 56.5220 (9.7355083d) Dec: -10 25 53.90 (-10.43164d) Equinox: J2000	Redshift: 6.0039	V=35 J_AB=19.93	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	P009-10	(8) P009-10	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in P009-10 (08) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16740, J2228+0110 (09), completed Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 321.5D TO 31.5 D; ORIENT 51.5D TO 76.5 D; ORIENT 96.5D TO 121.5 D; ORIENT 141.5D TO 211.5 D; ORIENT 231.5D TO 256.5 D; ORIENT 276.5D TO 301.5 D

Comments: One fairly faint star located close to the target: 22:28:43.03 +01:10:38.89 (i_AB~18.1mag)
The separation from our target of this star is 10.1arcsec and with an on-sky position angle (East of North) of PA=311.46degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
31.5 deg < ORIENT < 51.5 deg
76.5 deg < ORIENT < 96.5 deg
121.5 deg < ORIENT < 141.5 deg
211.5 deg < ORIENT < 231.5 deg
256.5 deg < ORIENT < 276.5 deg
301.5 deg < ORIENT < 321.5 deg

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

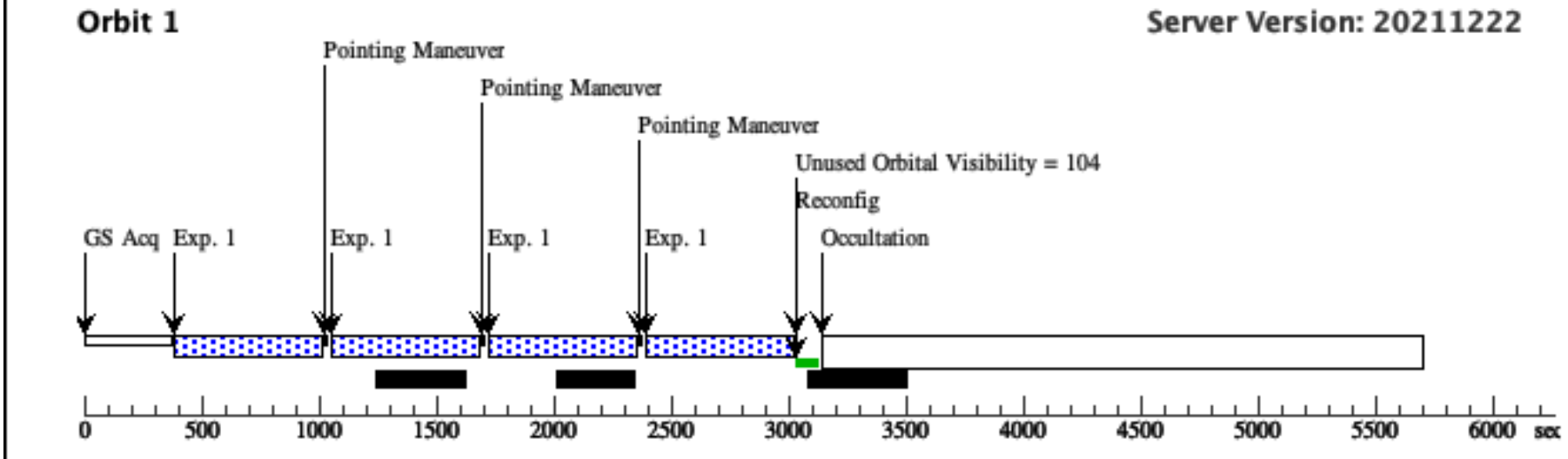
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	J2228+0110	RA: 22 28 43.5350 (337.1813958d) Dec: +01 10 32.20 (1.17561d) Equinox: J2000	Redshift: 5.9030	V=35 J_AB=20.90	Reference Frame: ICRS

Comments: One fairly faint star located close to the target:
22:28:43.03 +01:10:38.89 (i_AB~18.1mag)
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	J2228+0110	(9) J2228+0110	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in J2228+0110 (09) (1)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16740, J1030+0524 (10) Tue Apr 05 18:00:21 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 2.6D TO 27.6 D; ORIENT 47.6D TO 117.6 D; ORIENT 137.6D TO 162.6 D; ORIENT 182.6D TO 207.6 D; ORIENT 227.6D TO 297.6 D; ORIENT 317.6D TO 342.6 D

Comments: One bright star located within the WFC3/IR FoV at: 10:30:25.59, +05:24:25.71 (i_AB~12.5mag)
The separation from our target of this star is 36.9arcsec and with an on-sky position angle (East of North) of PA=217.55degree.
*Following the secition 6.2.2 (Target Orientation Visit-level Special Requirements) of the HST documentation we thus select to avoid angles within ORIENT - PA(star) equal to 135deg and 315deg (with a buffer of +/- 10deg) and those with ORIENT - PA(star) equal to 0deg, 90deg, 180deg, and 270deg. This implies that the following ORIENT ranges are *not* suitable for our observations:*
27.6 deg < ORIENT < 47.6 deg
117.6 deg < ORIENT < 137.6 deg
162.6 deg < ORIENT < 182.6 deg
207.6 deg < ORIENT < 227.6 deg
297.6 deg < ORIENT < 317.6 deg
342.6 deg < ORIENT < 2.6 deg

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=18.528		
	Number Of Points=4	Angle Between Sides=74.653		
	Point Spacing=4.004	Center Pattern=false		
	Line Spacing=4.015			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1030+0524	RA: 10 30 27.0980 (157.6129083d)	Redshift: 6.3000	V=35	Reference Frame: ICRS
		Dec: +05 24 55.00 (5.41528d)		J_AB=19.79	
		Equinox: J2000			

Comments: One bright star located within the WFC3/IR FoV at:
10:30:25.59, +05:24:25.71 (i_AB~12.5mag)
Category=GALAXY
Description=[QSO, QUASAR]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	J1030+0524	(4) J1030+0524	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=13; SAMP-SEQ=SPARS50		Pattern 1, Exps 1-1 in J1030+0524 (10) (1)	602.937703 Secs (2411.751 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Orbit Structure