12874 - Quasar accretion disks: is the standard model valid?

Cycle: 20, 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) MGJ0414+0534	WFC3/IR WFC3/UVIS	2	19-Jul-2013 21:29:36.0	yes
02	(2) RXJ0911+0551	WFC3/IR WFC3/UVIS	1	19-Jul-2013 21:30:01.0	yes
03	(3) SDSSJ0924+0219	WFC3/IR WFC3/UVIS	2	19-Jul-2013 21:30:24.0	yes
04	(4) PG1115+080	WFC3/IR WFC3/UVIS	1	19-Jul-2013 21:30:48.0	yes
05	(5) B1422+231	WFC3/IR WFC3/UVIS	2	19-Jul-2013 21:31:09.0	yes
06	(6) WFIJ2026-4536	WFC3/IR WFC3/UVIS	1	19-Jul-2013 21:31:31.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
07	(7) WFIJ2033-4723	WFC3/IR WFC3/UVIS	1	19-Jul-2013 21:31:54.0	yes

10 Total Orbits Used

ABSTRACT

Understanding quasar accretion is both at the frontier of new physics, and essential in understanding the driving force behind the great power of quasars and their energetic feedback onto their galactic environments. However, the accretion disks are at micro-to-nano arcsecond scales, unresolvable from Earth.

Gravitational microlensing of quasars (by stars in a foreground lensing galaxy) provides statistical information on the microarcsecond structure of the lensed quasar. By measuring the flux ratio in two of the lensed images and comparing to a lens models for the intervening galaxy, we can establish upper limits on the size of the emission region. The principle is now well-established, with variability (due to caustic-crossing events) and statistical modelling of the microlens population giving consistent results. Both techniques have shown tantalising evidence that the emission region does not fit the standard accretion disk model, being larger, and with flatter profiles (change of source size with wavelength), than expected.

However, existing studies have used ground-based data (in which separation of the quasar images from each other and from the host galaxy arc is difficult), and have been unable to probe the UV in detail. Existing multi-wavelength HST observations do not cover the UV and are split across multiple epochs, so it is impossible to eliminate variability as a cause of the observed changes in flux.

We propose contemporaneous medium-band WFC3/UVIS and broad-band WFC3/IR imaging of all known ``anomalous'' lensed quasars, in which the effects of variability are eliminated.

OBSERVING DESCRIPTION

Our sample contains all known quadruply-imaged lensed quasars with a close image pair (a minimum and saddle point image within 0.5 arcsecond), and is selected from the CASTLES survey: http://www.cfa.harvard.edu/glensdata/. In quasars with close image pairs, the light travel time of the two images differs by much less than a day, and variability cannot cause the relative demagnification. The difference in magnification of the close image pair gives us a measurement of the size of the emitting region. We observe each quasar through 6-8 filters (in 1-2 orbits) on the WFC3 UVIS and IR channels.

Criteria for the HST observations:

- Spatial resolution to separate the close image pair (between 0.2 and 0.5 arcsec apart).
- Sensitivity to detect the dim member of the image pair.
- Spatial resolution and depth required to separate out any lensing arc from the quasar host galaxy (superceded by the above in general).
- Same epoch observations of a given quasar covering IR to UV while avoiding strong quasar emission lines.

The observations must be sufficiently deep to measure the faintest lensed quasar image. Typical exposure times are ~10-100 second. We employ a 4-point dither to return critical sampling of the PSF. Each point in our dither attains at least the minimal required depth, so we can fulfil our science objectives even allowing for problems or unusually high backgrounds, CRE's etc. in some of our images. Our fields of interest are small (a few arcseconds) and the total number of images is also small. We employ subarrays in both channels to eliminate the need for buffer dumps until the end of each visit.

Visit

Proposal 12874, 0414 (2 orbit) (01), scheduling Sat Jul 20 01:32:05 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(5-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3), (4)

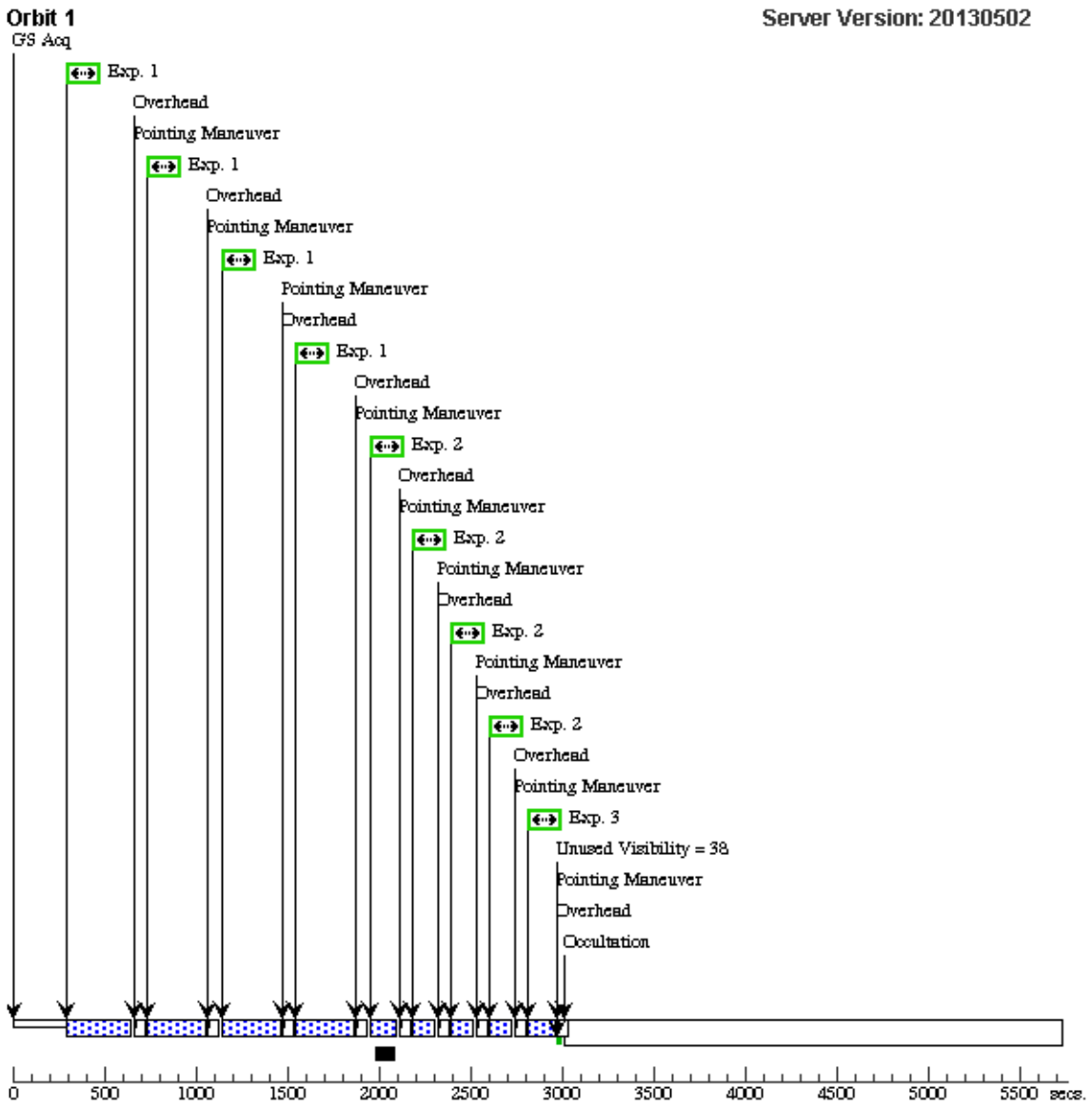
Fixed Targets

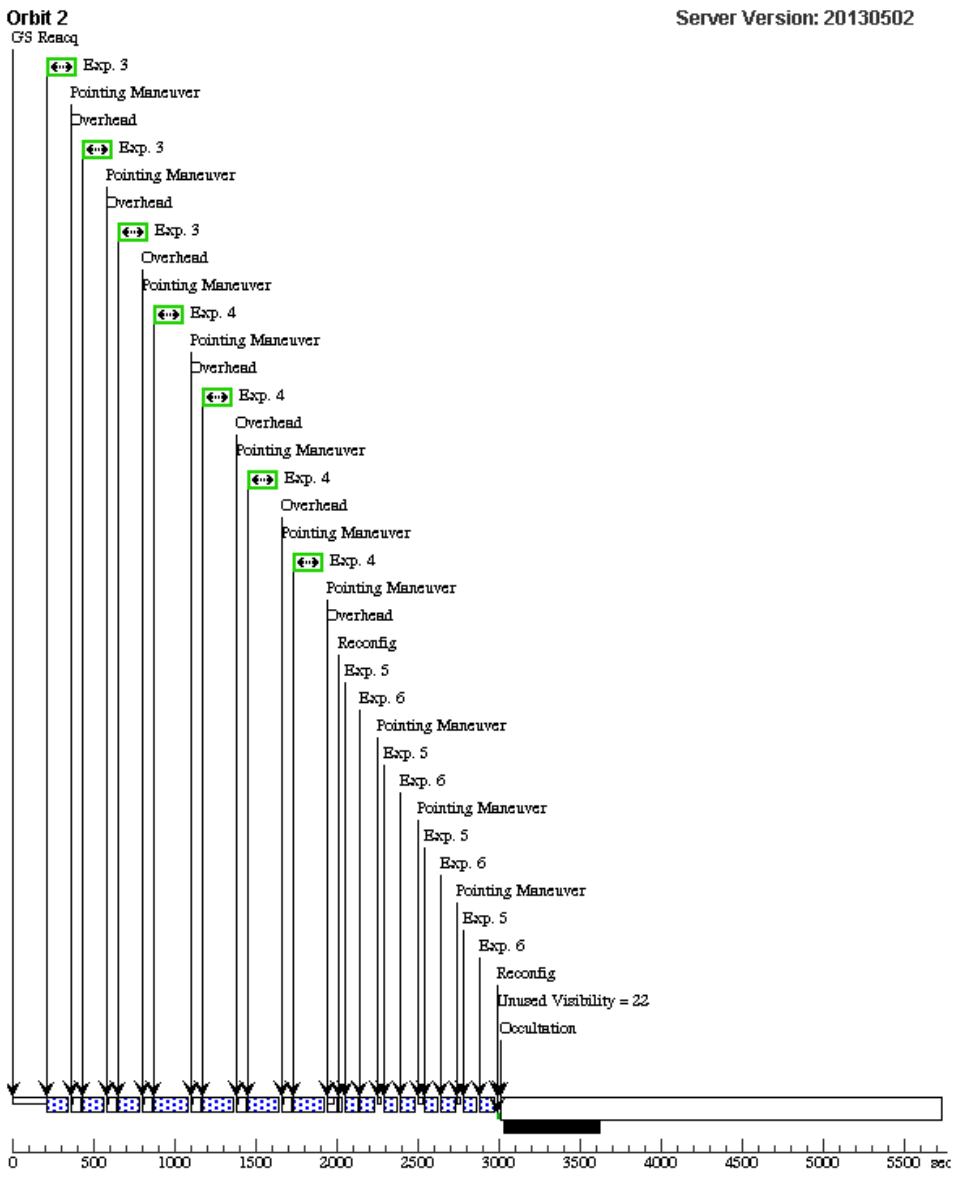
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MGJ0414+0534	RA: 04 14 37.7300 (63.6572083d) Dec: +05 34 44.30 (5.57897d) Equinox: J2000	Redshift: 2.639	V=19.62+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410591)	(1) MGJ0414+0534	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F467M			Pattern 2, Exps 1-1 in 0414 (2 orbit) (01) (2)	320 Secs (1280 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
2	(410593)	(1) MGJ0414+0534	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 2-2 in 0414 (2 orbit) (01) (2)	120 Secs (480 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
3	(410594)	(1) MGJ0414+0534	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M			Pattern 2, Exps 3-3 in 0414 (2 orbit) (01) (2)	130 Secs (520 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	***[2]***
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
4	(410595)	(1) MGJ0414+0534	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 4-4 in 0414 (2 orbit) (01) (2)	190 Secs (760 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
5		(1) MGJ0414+0534	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=7		Pattern 1, Exps 5-6 in 0414 (2 orbit) (01) (1)	59.675893 Secs (238.704 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
6		(1) MGJ0414+0534	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=8		Pattern 1, Exps 5-6 in 0414 (2 orbit) (01) (1)	82.597144 Secs (330.389 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Orbit Structure




Orbit 2
Server Version: 20130502
GS Reacq
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Reconfig
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Reconfig
Unused Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12874, 0911 (1 orbit) (02), completed Sat Jul 20 01:32:09 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(5-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3), (4)

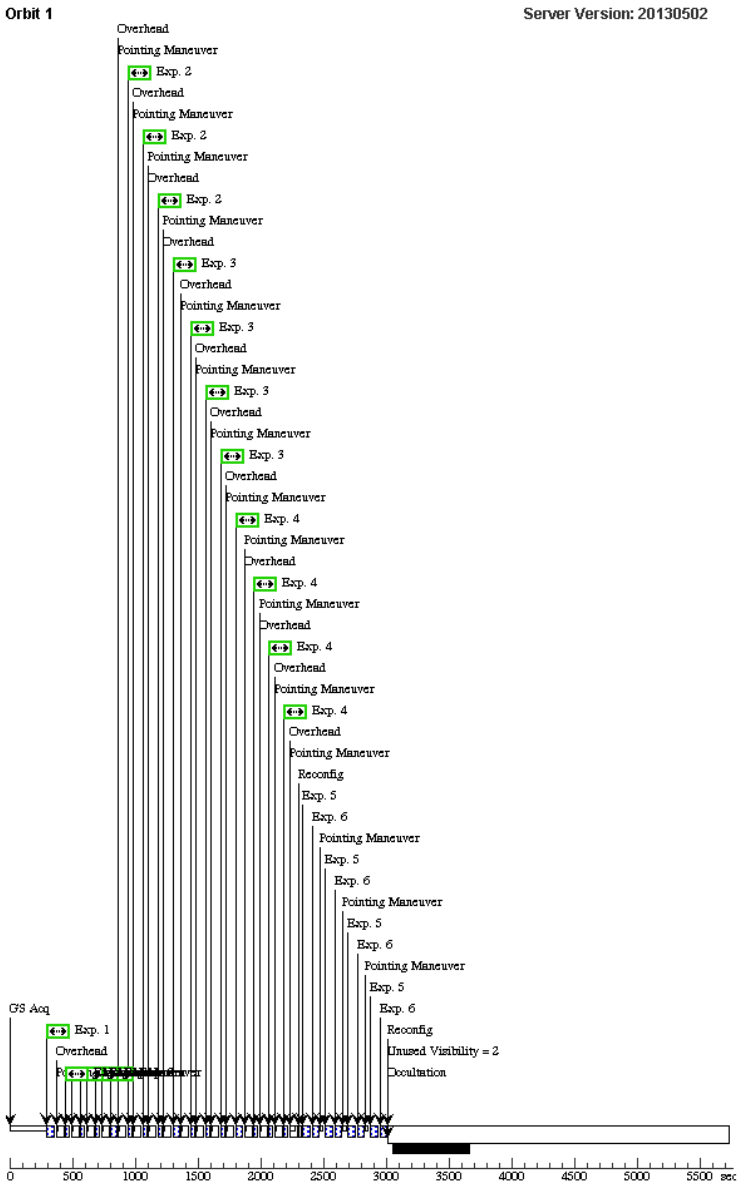
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	RXJ0911+0551	RA: 09 11 27.6000 (137.8650000d) Dec: +05 50 54.30 (5.84842d) Equinox: J2000	Redshift: 2.793270	V=17.39+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410591)	(2) RXJ0911+0551	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F547M			Pattern 2, Exps 1-1 in 0911 (1 orbit) (02) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(410593)	(2) RXJ0911+0551	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 2-2 in 0911 (1 orbit) (02) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3	(410594)	(2) RXJ0911+0551	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F689M			Pattern 2, Exps 3-3 in 0911 (1 orbit) (02) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
4	(410595)	(2) RXJ0911+0551	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 4-4 in 0911 (1 orbit) (02) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
5		(2) RXJ0911+0551	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 5-6 in 0911 (1 orbit) (02) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
6		(2) RXJ0911+0551	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 5-6 in 0911 (1 orbit) (02) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 12874, 0924 (2 orbit) (03), completed Sat Jul 20 01:32:11 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(5-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3), (4)

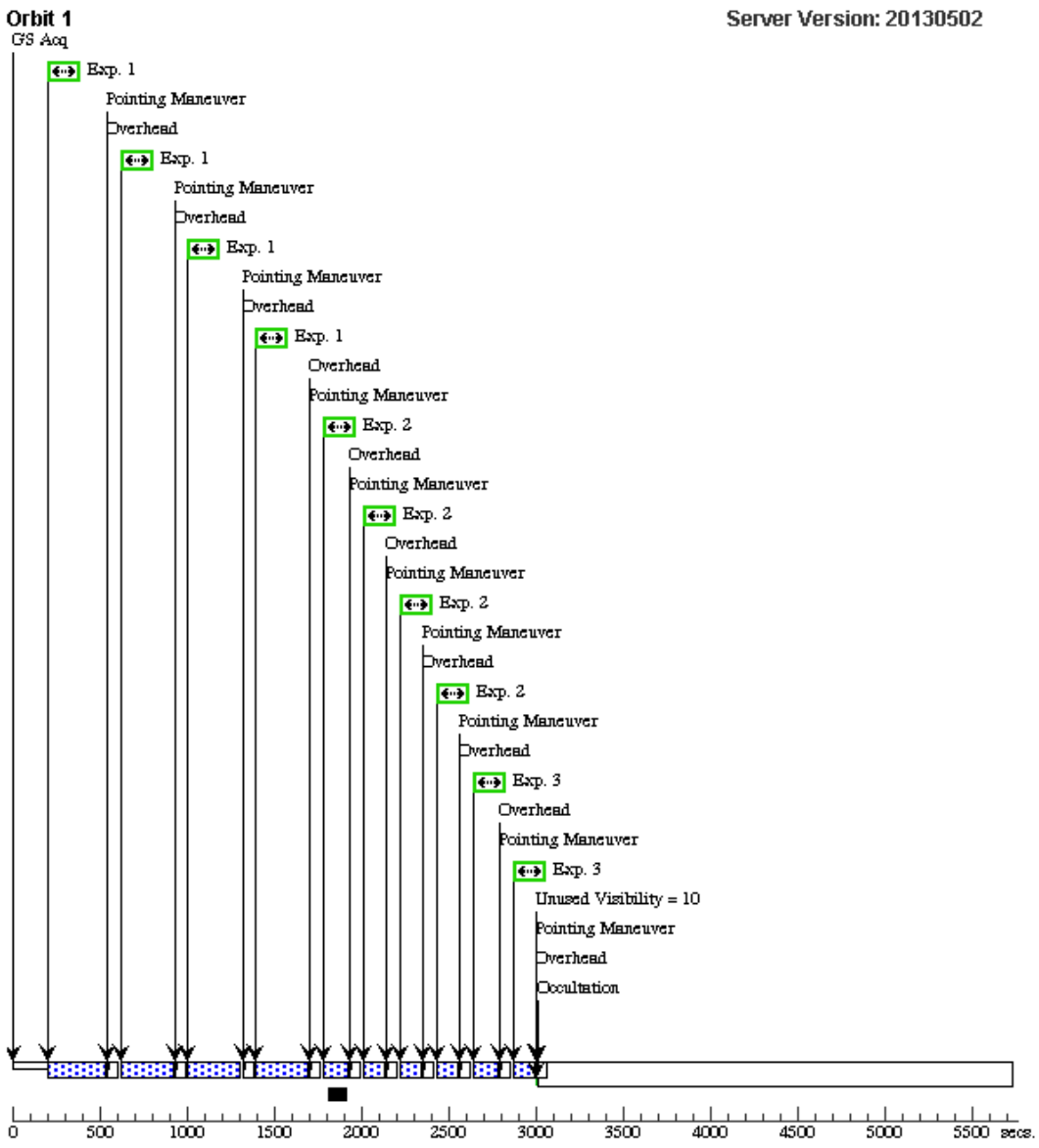
Fixed Targets

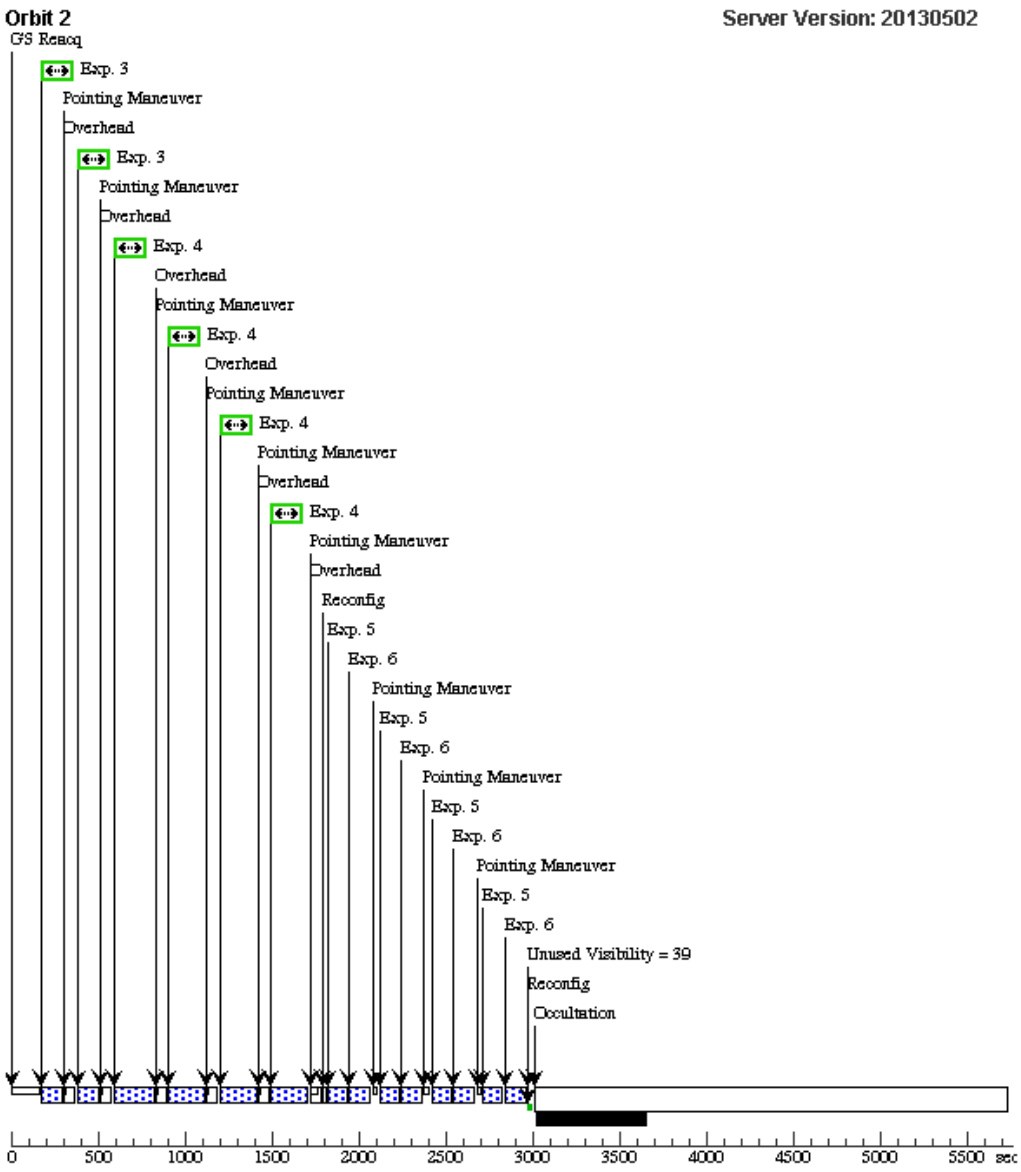
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SDSSJ0924+0219	RA: 09 24 55.7900 (141.2324583d) Dec: +02 19 25.26 (2.32368d) Equinox: J2000	Redshift: 1.522970	V=18.18+/-0.3	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) SDSSJ0924+0219	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F410M		GS ACQ SCENARIO SINGLE	Pattern 2, Exps 1-1 in 0924 (2 orbit) (03) (2)	300 Secs (1200 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
2		(3) SDSSJ0924+0219	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F547M			Pattern 2, Exps 2-2 in 0924 (2 orbit) (03) (2)	120 Secs (480 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
3		(3) SDSSJ0924+0219	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 3-3 in 0924 (2 orbit) (03) (2)	120 Secs (480 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	***[2]***
								[==>(Pattern 4)]	
4		(3) SDSSJ0924+0219	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 4-4 in 0924 (2 orbit) (03) (2)	210 Secs (840 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
5		(3) SDSSJ0924+0219	WFC3/IR, MULTIACCUM, IRSUB512	F105W	SAMP-SEQ=STEP25; NSAMP=8		Pattern 1, Exps 5-6 in 0924 (2 orbit) (03) (1)	82.597144 Secs (330.389 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
6		(3) SDSSJ0924+0219	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=9		Pattern 1, Exps 5-6 in 0924 (2 orbit) (03) (1)	105.518395 Secs (422.074 Secs)	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Orbit Structure




Orbit 2
Server Version: 20130502
GS Reacq
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Pointing Maneuver
Overhead
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Pointing Maneuver
Overhead
Reconfig
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Unused Visibility = 39
Reconfig
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12874, 1115 (1 orbit) (04), completed Sat Jul 20 01:32:13 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(4-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3)

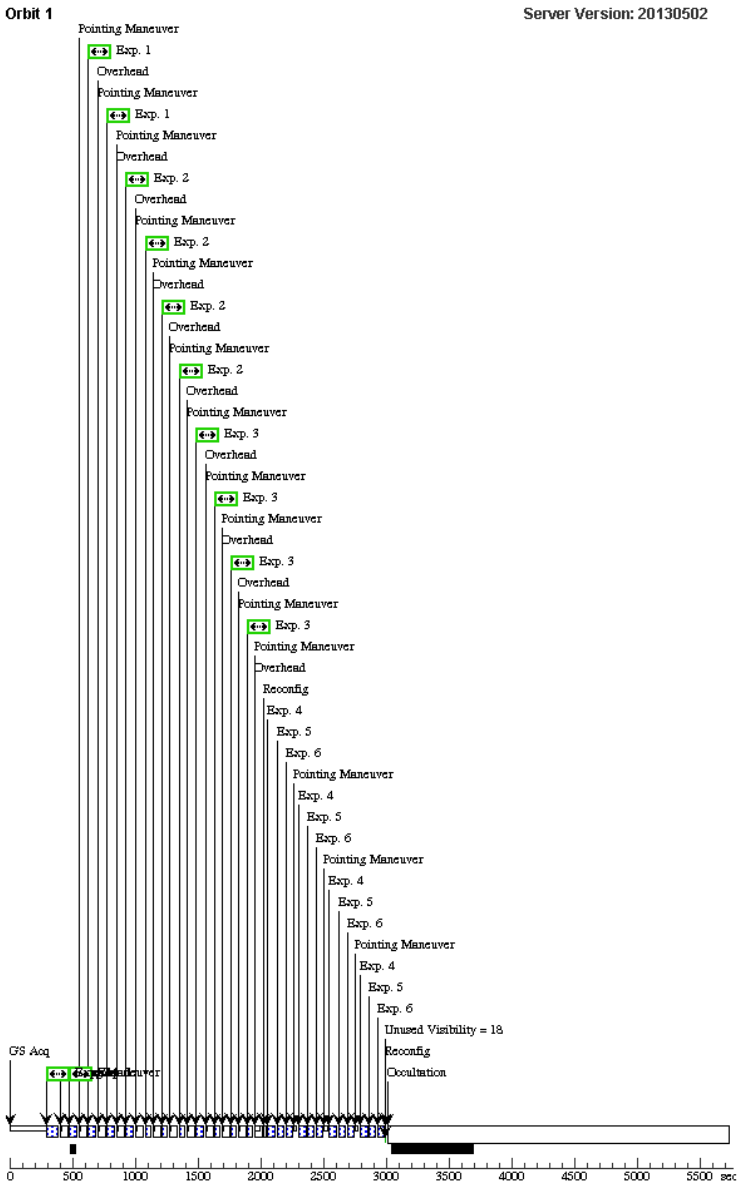
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	PG1115+080	RA: 11 18 16.9360 (169.5705667d) Dec: +07 45 58.52 (7.76626d) Equinox: J2000	Redshift: 1.735470	V=15.62+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410591)	(4) PG1115+080	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F410M		GS ACQ SCENARIO BASE1B3	Pattern 2, Exps 1-1 in 1115 (1 orbit) (04) (2)	60 Secs (240 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(410593)	(4) PG1115+080	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 2-2 in 1115 (1 orbit) (04) (2)	45 Secs (180 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3	(410595)	(4) PG1115+080	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 3-3 in 1115 (1 orbit) (04) (2)	40 Secs (160 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
4		(4) PG1115+080	WFC3/IR, MULTIACCUM, IRSUB512	F105W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 4-6 in 1115 (1 orbit) (04) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
5		(4) PG1115+080	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 4-6 in 1115 (1 orbit) (04) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
6		(4) PG1115+080	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 4-6 in 1115 (1 orbit) (04) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 12874, 1422 (2 orbit) (05), completed Sat Jul 20 01:32:15 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(4), (5-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3)

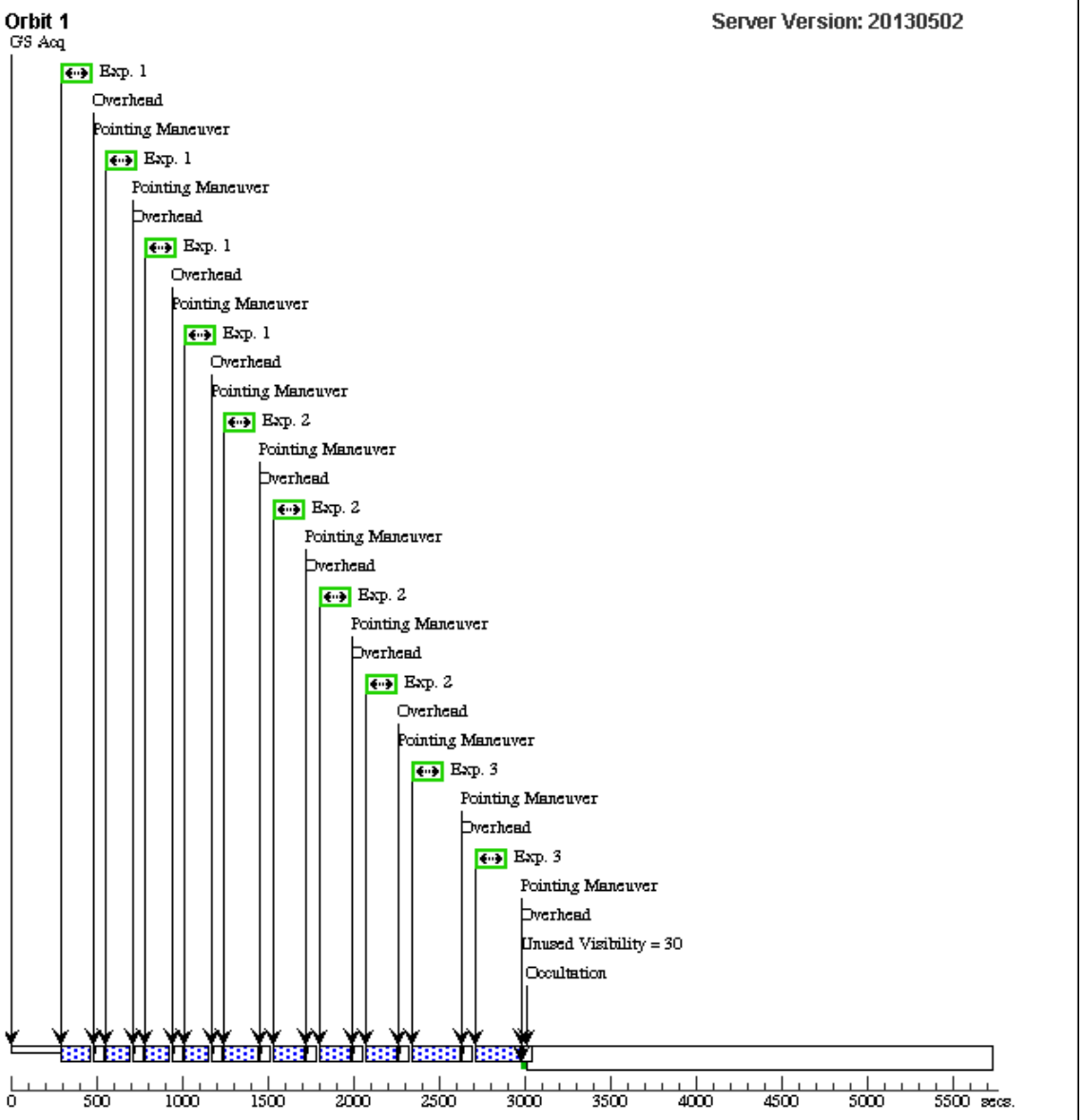
Fixed Targets

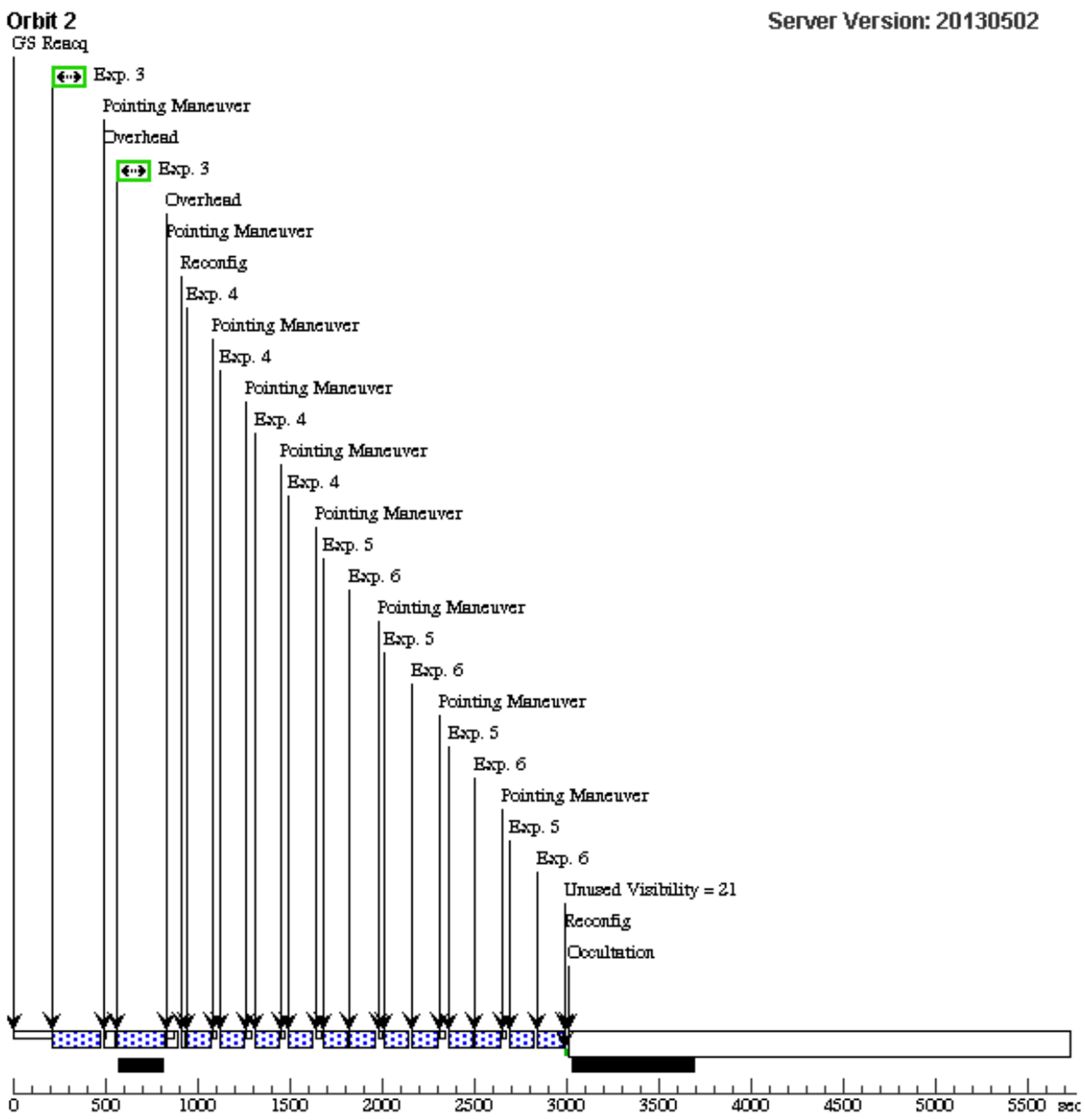
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	B1422+231	RA: 14 24 38.0900 (216.1587083d) Dec: +22 56 0.40 (22.93344d) Equinox: J2000	Redshift: 3.620000	V=14.81+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410593)	(5) B1422+231	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 1-1 in 1422 (2 orbit) (05) (2)	140 Secs (560 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(410594)	(5) B1422+231	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M			Pattern 2, Exps 2-2 in 1422 (2 orbit) (05) (2)	180 Secs (720 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3	(410595)	(5) B1422+231	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 3-3 in 1422 (2 orbit) (05) (2)	260 Secs (1040 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]*** ***[2]***
4		(5) B1422+231	WFC3/IR, MULTIACCUM, IRSUB512	F105W	SAMP-SEQ=STEP25; NSAMP=9		Pattern 1, Exps 4-4 in 1422 (2 orbit) (05) (1)	105.518395 Secs (422.074 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
5		(5) B1422+231	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=9		Pattern 1, Exps 5-6 in 1422 (2 orbit) (05) (1)	105.518395 Secs (422.074 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
6		(5) B1422+231	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=10		Pattern 1, Exps 5-6 in 1422 (2 orbit) (05) (1)	128.439646 Secs (513.759 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20130502
GS Reacq
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Reconfig
Exp. 4
Pointing Maneuver
Exp. 4
Pointing Maneuver
Exp. 4
Pointing Maneuver
Exp. 4
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 5
Exp. 6
Unused Visibility = 21
Reconfig
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12874, 2026 (1 orbit) (06), completed Sat Jul 20 01:32:17 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(6-7)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3), (4), (5)

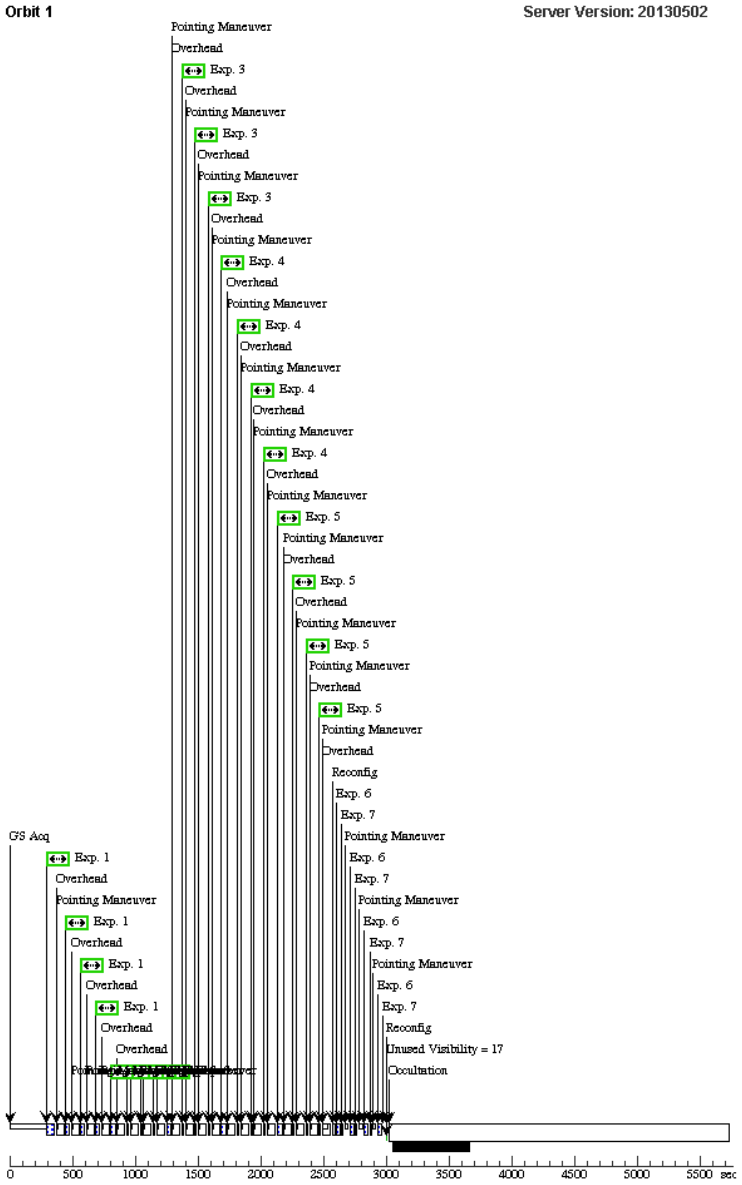
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	WFIJ2026-4536	RA: 20 26 10.4300 (306.5434583d) Dec: -45 36 27.10 (-45.60753d) Equinox: J2000	Redshift: 2.223000	V=16.18+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410591)	(6) WFIJ2026-4536	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F410M			Pattern 2, Exps 1-1 in 2026 (1 orbit) (06) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(410593)	(6) WFIJ2026-4536	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F547M			Pattern 2, Exps 2-2 in 2026 (1 orbit) (06) (2)	15 Secs (60 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3	(410594)	(6) WFIJ2026-4536	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F689M			Pattern 2, Exps 3-3 in 2026 (1 orbit) (06) (2)	15 Secs (60 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
4	(410595)	(6) WFIJ2026-4536	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M			Pattern 2, Exps 4-4 in 2026 (1 orbit) (06) (2)	15 Secs (60 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
5	(410595)	(6) WFIJ2026-4536	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 2, Exps 5-5 in 2026 (1 orbit) (06) (2)	15 Secs (60 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
6		(6) WFIJ2026-4536	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=4		Pattern 1, Exps 6-7 in 2026 (1 orbit) (06) (1)	3.412108 Secs (13.648 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
7		(6) WFIJ2026-4536	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=4		Pattern 1, Exps 6-7 in 2026 (1 orbit) (06) (1)	3.412108 Secs (13.648 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 12874, 2033 (1 orbit) (07), completed Sat Jul 20 01:32:18 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-IR-DITHER-BOX-UVIS Purpose=DITHER Number Of Points=4 Point Spacing=23.02 Line Spacing=35.212	Coordinate Frame=POS-TARG Pattern Orientation=0.713 Angle Between Sides=89.287 Center Pattern=true		(5-6)
(2)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2), (3), (4)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	WFIJ2033-4723	RA: 20 33 42.0800 (308.4253333d) Dec: -47 23 43.00 (-47.39528d) Equinox: J2000	Redshift: 1.661000	V=17.59+/-0.3	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(410591)	(7) WFIJ2033-4723	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F467M			Pattern 2, Exps 1-1 in 2033 (1 orbit) (07) (2)	60 Secs (240 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(410593)	(7) WFIJ2033-4723	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 2, Exps 2-2 in 2033 (1 orbit) (07) (2)	30 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3	(410595)	(7) WFIJ2033-4723	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M			Pattern 2, Exps 3-3 in 2033 (1 orbit) (07) (2)	35 Secs (140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
4	(410595)	(7) WFIJ2033-4723	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F814W			Pattern 2, Exps 4-4 in 2033 (1 orbit) (07) (2)	18 Secs (72 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
5		(7) WFIJ2033-4723	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=5		Pattern 1, Exps 5-6 in 2033 (1 orbit) (07) (1)	13.833391 Secs (55.334 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
6		(7) WFIJ2033-4723	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=STEP25; NSAMP=6		Pattern 1, Exps 5-6 in 2033 (1 orbit) (07) (1)	36.754642 Secs (147.019 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure