



15084 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Cycle: 25, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Prof. J. Michael Shull (PI) (Contact)	University of Colorado at Boulder	mshull@casa.colorado.edu
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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) Q0025-4047	COS/FUV COS/NUV	3	02-May-2018 17:06:23.0	yes
02	(2) HS0747+4259	COS/FUV COS/NUV	3	02-May-2018 17:06:25.0	yes
03	(3) CTS0687	COS/FUV COS/NUV	3	02-May-2018 17:06:27.0	yes
04	(4) SDSS-J091532.59+172143.9	COS/FUV COS/NUV	3	02-May-2018 17:06:28.0	yes
Z4	(4) SDSS-J091532.59+172143.9	COS/FUV COS/NUV	1	02-May-2018 17:06:29.0	yes
05	(5) PKS0202-172	COS/FUV COS/NUV	3	02-May-2018 17:06:31.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
06	(6) SDSS-J154854.79+121119.9	COS/FUV COS/NUV	3	02-May-2018 17:06:32.0	yes
07	(7) HE0047-1756	COS/FUV COS/NUV	3	02-May-2018 17:06:33.0	yes

22 Total Orbits Used

ABSTRACT

After two decades of uncertainty, it is now possible to characterize the ionizing spectra of QSOs, using HST/COS observations of intermediate-redshift AGN. To construct a reliable composite AGN spectrum in the rest-frame EUV requires correcting for IGM absorption, identifying prominent broad emission lines, and fitting the underlying continuum. We propose to complete the observations of the last seven AGN (at $z = 1.67 - 2.18$) from a sample of 20 bright intermediate-redshift QSOs. Using the broad-band (1120-2150 Å) COS/G140L grating, we will probe the rest-frame continuum and emission lines down to 350-450 Angstroms at these redshifts. Completing this sample will increase the number of AGN-EUV spectra from 3 to 10 at $z > 1.67$ and significantly improve the statistical reliability of the AGN composite spectrum between 400-600 Å. Lyman continuum photons from AGN dominate the metagalactic background and photoionization of hydrogen, helium, and many metal ions. They also provide key correction factors needed to determine the baryon content and metallicities of intergalactic and circumgalactic gas. The harder photons also have important effects on IGM heating and for the He II epoch of reionization. Constraints on EUV spectral turnovers below 600 Angstroms are potential diagnostics of the thermal structure of AGN accretion disks.

OBSERVING DESCRIPTION

We request a total of 21 orbits (COS/G140L) on 7 new AGN targets that will probe the shortest wavelengths in the rest-frame EUV spectra (AGN at $z = 1.67 - 2.18$). Each GN will be observed for 3 orbits with the G140L grating, allowing us to extract an accurate EUV continuum distribution and correct for any H I absorbers (LLS or pLLS). Three-orbit exposures are needed to reach S/N of 10-30 across the sensitive portion of the G140L band (1120-1950 Å). Our chosen 7 targets (Table 1) are last of the 20 AGN identified in preparation for our initial COS AGN-Composite Spectrum

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project (Shull et al. 2012a; Stevans et al. 2014) with the G130M/G160M gratings (Figure 1). To probe to shorter rest-frame wavelengths with the G140L grating, we searched numerous AGN catalogs (Sloan-DR9, Veron-Cetty- Veron 2010). We queried SDSS DR9+DR7 ($N = 32,534$ objects) for QSOs, cut by redshift ($z = 1.4 - 2.2$) and magnitude $u < 21$. The VCV catalog gave $N = 1903$ QSOs brighter than 18th mag at $z > 1.4$. We looked up each FUV-bright candidate in NED to verify redshifts, classifications, and other observations, and used the SDSS spectrum catalog to double-check their AGN classification. All bright SDSS objects also appear in VCV-2010. We cross-correlated these objects with GALEX, ranked them by FUV fluxes, and selected the top 20 sources with GALEX-calibrated far-UV fluxes between $(1.3 - 4.2) \times 10^{15}$ erg/cm²/s/Å. In Cycle 21, we successfully observed 11 of these targets at $z = 1.5 - 2.1$. Figure 2 shows three examples with a range of EUV spectral indices.

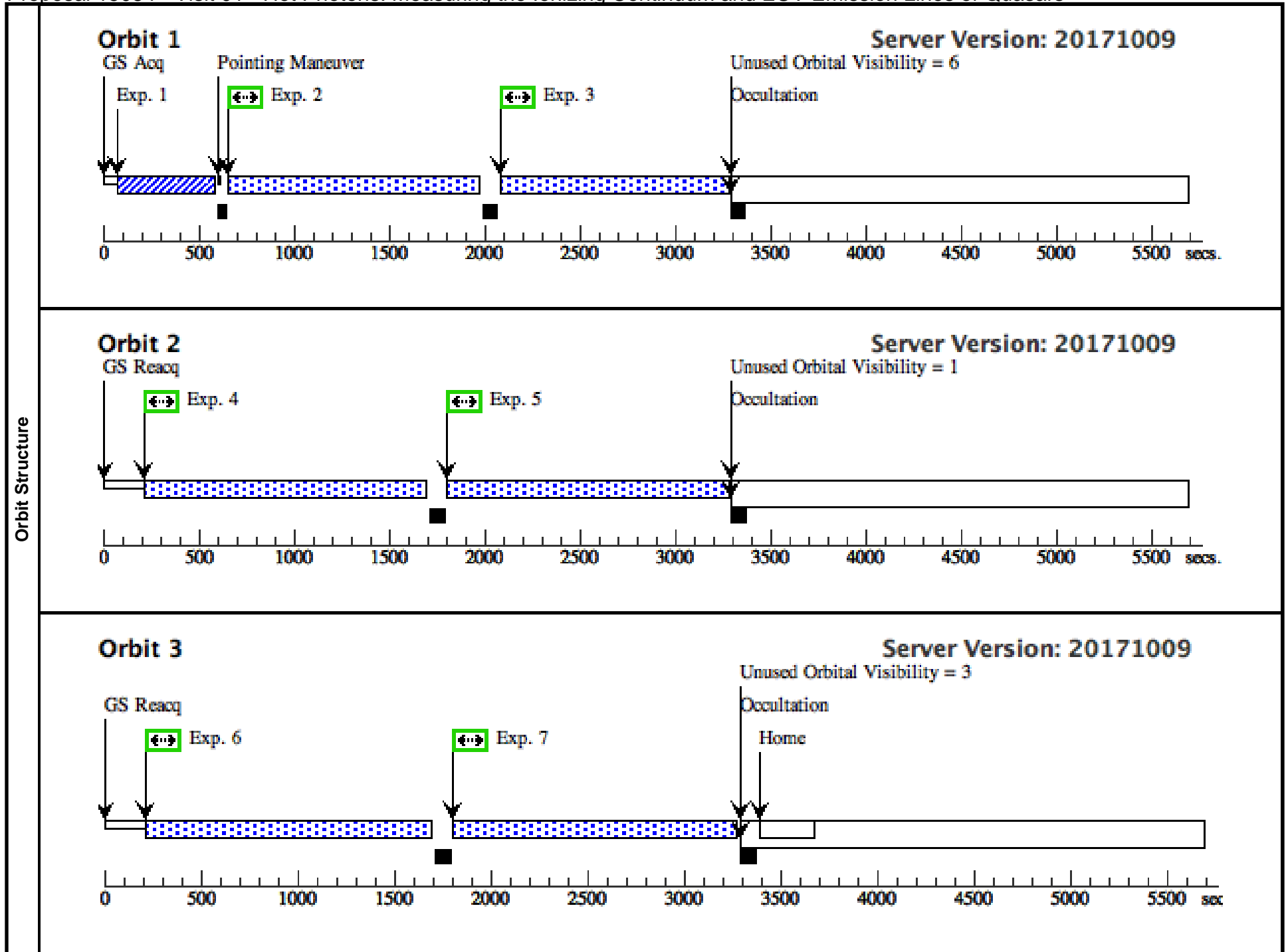
In Cycle 25 we will observe seven more AGN, concentrating on bright AGN at the highest redshifts ($z = 1.67 - 2.18$) that provide EUV wavelength coverage down to 350-400 Å in the AGN rest-frame, sufficient to limit any EUV turnovers indicative of smaller inner edges of accretion disks produced by black hole spin. We used the HST exposure time calculator to show that these exposure times will yield $S/N = 15-20$ over most of the G140L range (1120-1950 Å), particularly at important wavelengths needed to fix the continuum (line-free bands) and probe the EUV at $\lambda < 600$ Å. We chose a single exposure with G140L rather than two much longer exposures with the native resolution of medium resolution (G130M+G160M) gratings. The advantage of G140L is its broad coverage from 1120-2150 Å, rather than making two exposures with G130M (1133-1468 Å) and G160M (1383-1796 Å) and matching fluxes. In its 1105 Å setting, G140L gives continuous coverage and high sensitivity with no detector gap in side-A. This allows us to fit the underlying continuum through key line-free wavelength bands (red squares along the bottom of Figure 1). The G130M and G160M spectra do not cover those wavelengths for many of our high- z AGN.

Tilton et al. (2016) described our moderate-resolution (G140L) observations of 11 AGN observed in Cycle 21. Those AGN produced a composite rest-frame EUV spectrum using spline fitting over narrow lines and identifying the strong absorbers (LLS and pLLS). We have therefore demonstrated an ability to characterize the QSO continuum, fit the broad emission lines, and restore the continuum from LLS and pLLS absorbers in high- S/N G140L data. Figure 2 illustrates this technique for 3 of the 11 AGN observed in Cycle-21.

Proposal 15084 - Visit 01 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

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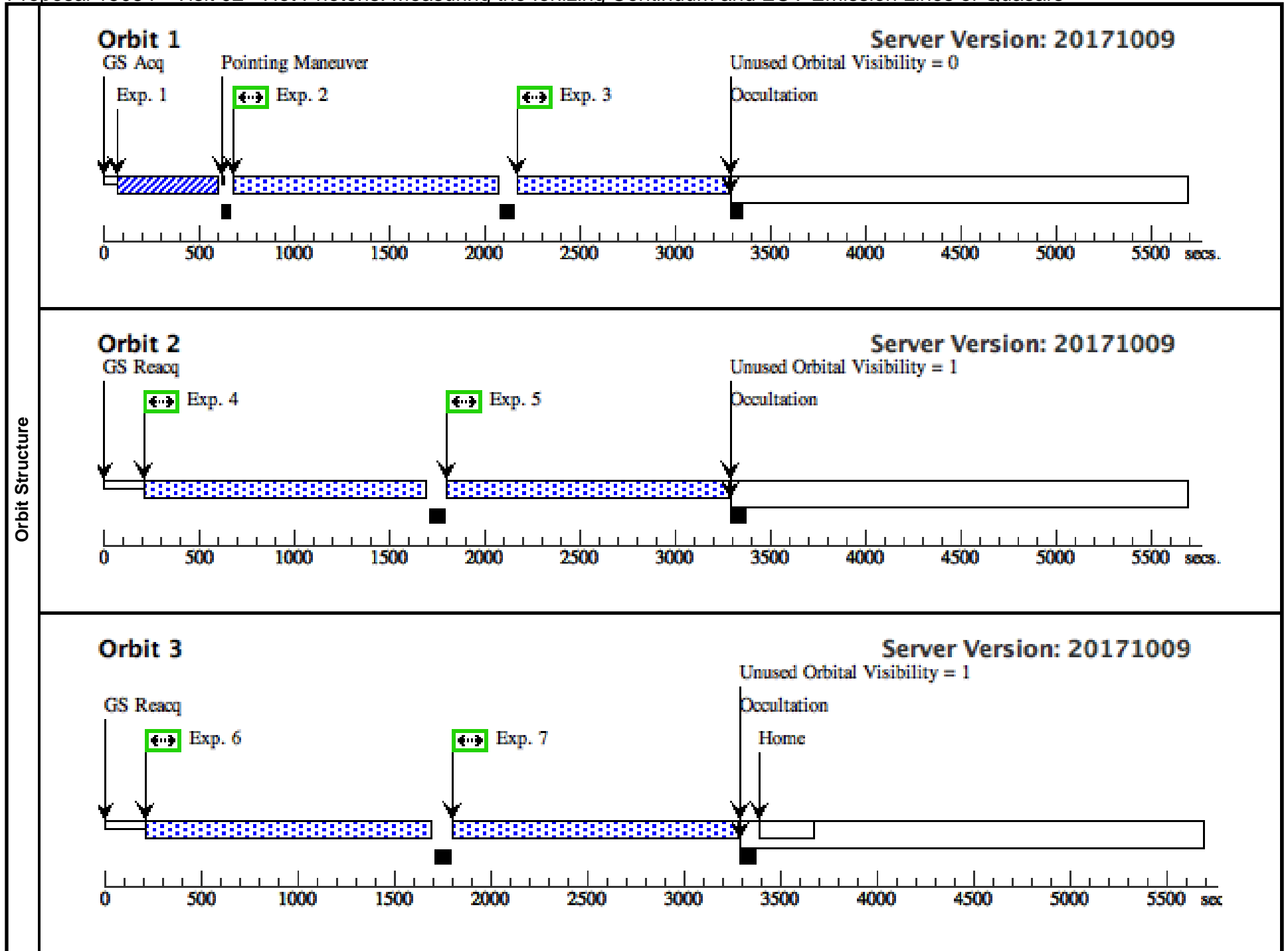
Visit	Proposal 15084, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	Q0025-4047 Alt Name1: HE0025-4047	RA: 00 27 42.8300 (6.9284583d) Dec: -40 31 0.60 (-40.51683d) Equinox: J2000	Redshift: 2.18	V=17.14 F(1530A)=1.6e-15	Reference Frame: ICRS			
	<i>Comments:</i> Category=GALAXY Description=[QSO, QUASAR] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.ta.100 3693)	(1) Q0025-4047	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				98 Secs (98 Secs) [==>]	[1]
	<i>Comments: F(1530A)=1.6e-15, MIRRORA=4.7 sec.</i>									
	2	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1			1000 Secs (1144 Secs) [==>1144.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									
	3	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2			1000 Secs (1144 Secs) [==>1144.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									
	4	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1426 Secs) [==>1426.0 Secs]	[2]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									
	5	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1426 Secs) [==>1426.0 Secs]	[2]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									
	6	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1425 Secs) [==>1425.0 Secs]	[3]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									
	7	(COS.sp.100 3695)	(1) Q0025-4047	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1425 Secs) [==>1425.0 Secs]	[3]
	<i>Comments: S/N for 1ks exp=7.8 S/N for 7ks=20</i>									



Proposal 15084 - Visit 02 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

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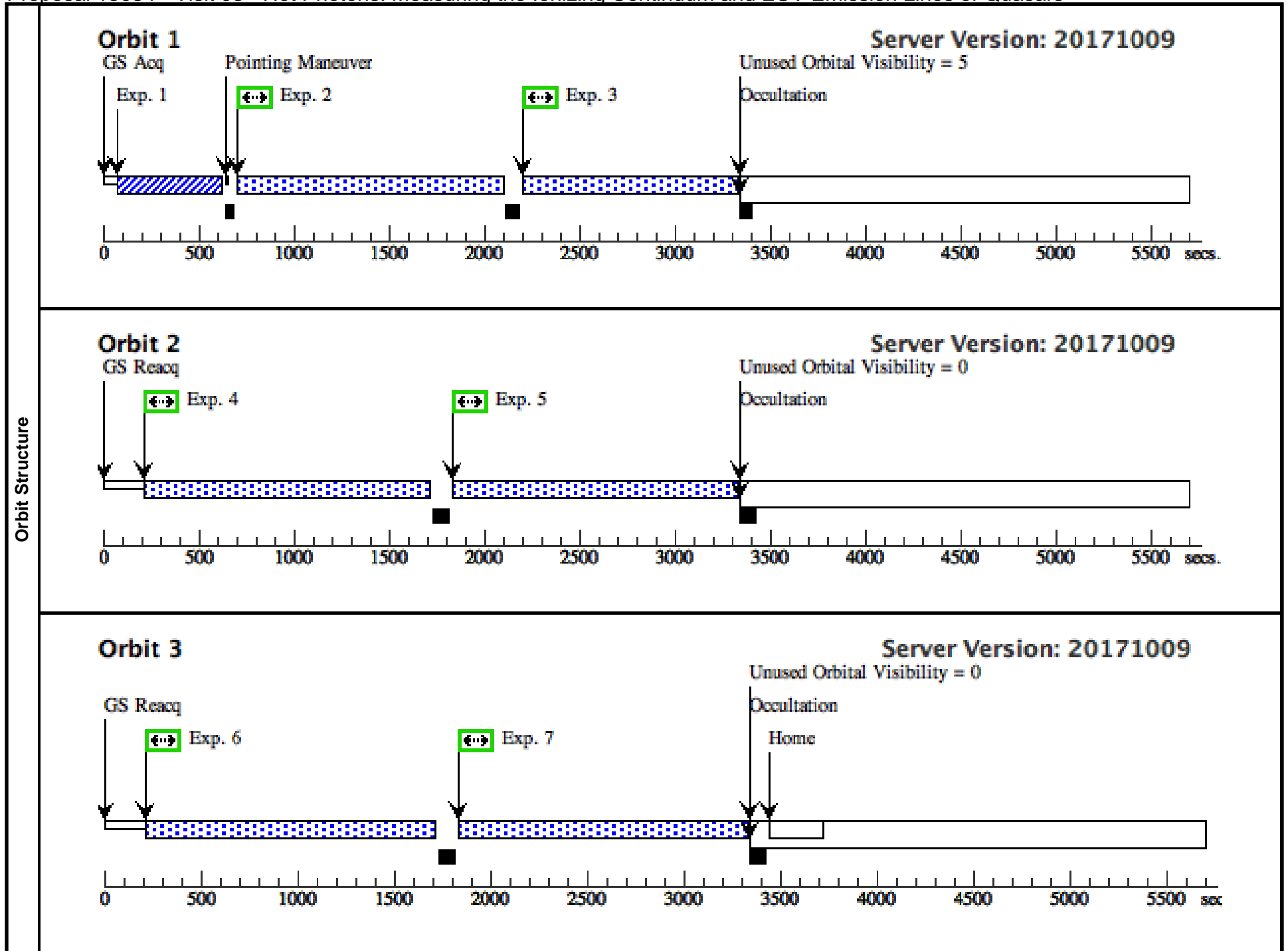
Visit	Proposal 15084, Visit 02, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(2)	HS0747+4259 Alt Name1: SDSSJ075054.64+42521 9.2	RA: 07 50 54.6478 (117.7276992d) Dec: +42 52 19.23 (42.87201d) Equinox: J2000	Redshift: 1.89646	V=16.23+/-5 F(1530A)=1.4e-15	Reference Frame: ICRS			
	<i>Comments: Coordinates (with very small uncertainty) courtesy of GAIA dr1. Source ID: 925602973122608768</i> Category=GALAXY Description=[QSO, QUASAR] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.ta.100 3701)	(2) HS0747+4259	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				111 Secs (111 Secs) [==>]	[1]
	<i>Comments: F(1530A)=1.4e-15, MIRRORA=5.5 sec.</i>									
	<i>Updated 2/5/18</i>									
	2	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1			1000 Secs (1207 Secs) [==>1207.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>									
	3	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2			1000 Secs (1061 Secs) [==>1061.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>									
4	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1426 Secs) [==>1426.0 Secs]	[2]	
<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>										
5	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1426 Secs) [==>1426.0 Secs]	[2]	
<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>										
6	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1426 Secs) [==>1426.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>										
7	(COS.sp.100 3706)	(2) HS0747+4259	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1426 Secs) [==>1426.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=7.3</i> <i>S/N for 7ks=20</i>										



Proposal 15084 - Visit 03 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

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Visit	Proposal 15084, Visit 03, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																																																																																																																																																						
Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>CTS0687</td> <td>RA: 23 40 15.7500 (355.0656250d) Dec: -47 26 35.70 (-47.44325d) Equinox: J2000</td> <td>Redshift: 1.96</td> <td>V=17.6 F(1530A)=1.3e-15</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p> <i>Comments:</i> Category=GALAXY Description=[QSO, QUASAR] Extended=NO </p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(3)	CTS0687	RA: 23 40 15.7500 (355.0656250d) Dec: -47 26 35.70 (-47.44325d) Equinox: J2000	Redshift: 1.96	V=17.6 F(1530A)=1.3e-15	Reference Frame: ICRS																																																																																																																																										
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6	(COS.sp.100 3720)	(3) CTS0687	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1450 Secs) [==>1450.0 Secs]	[3]																																																																																																																																														
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<i>Comments: S/N for 1ks exp=7.0 S/N for 7ks=18</i>																																																																																																																																																							



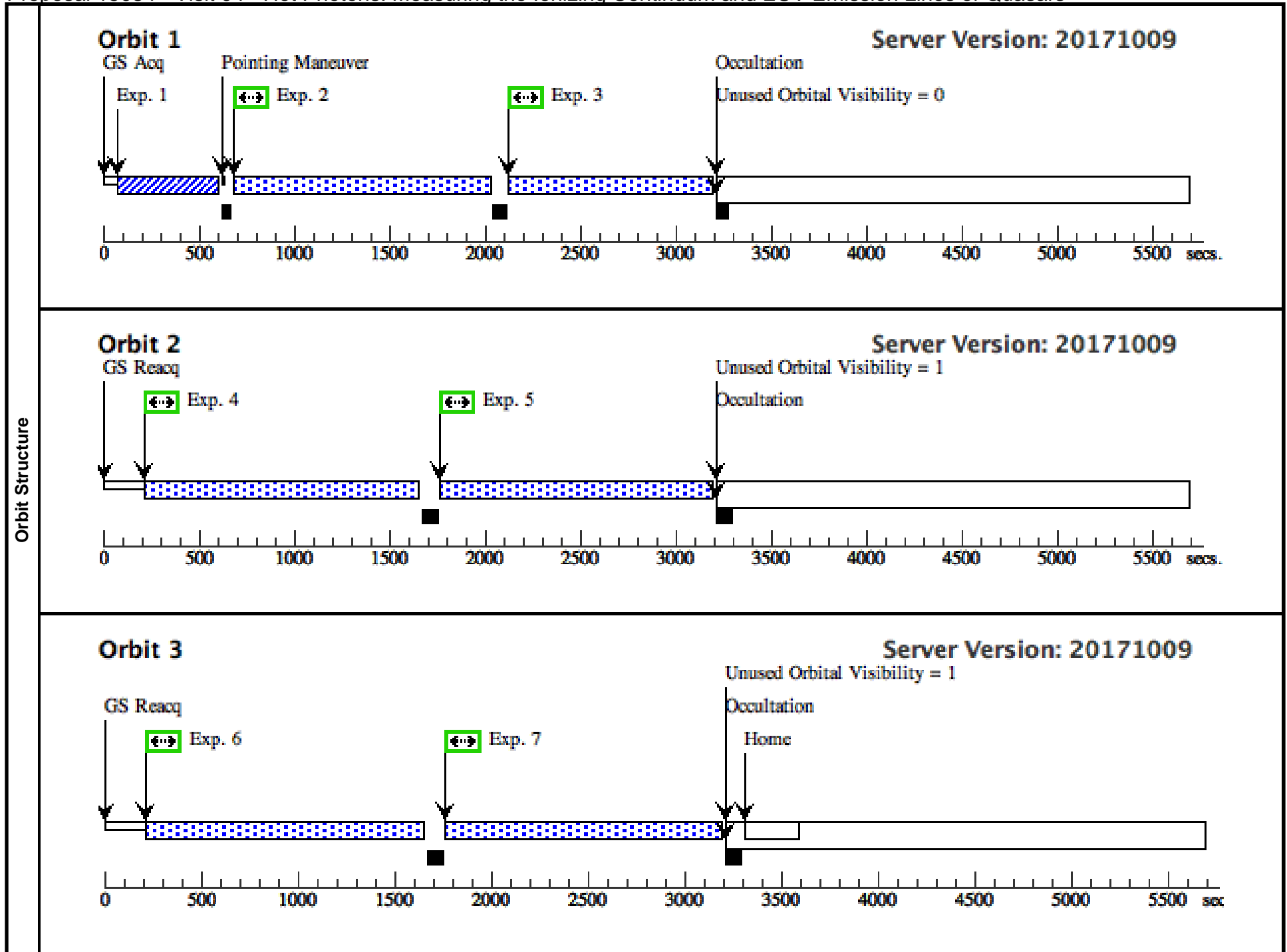
Proposal 15084 - Visit 04 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Wed May 02 21:06:35 GMT 2018

Visit	Proposal 15084, Visit 04, failed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: COS/FUV, COS/NUV				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(4)	SDSS-J091532.59+172143.9	RA: 09 15 32.6001 (138.8858338d) Dec: +17 21 43.95 (17.36221d) Equinox: J2000	Redshift: 1.752	V=17.71 F(1530A)=1.4e-15	Reference Frame: ICRS
	<i>Comments: Coordinates (with very small uncertainty) courtesy of GAIA dr1. Source ID: 632123356664406912</i>					
	<i>Category=GALAXY Description=[QSO, QUASAR] Extended=NO</i>					

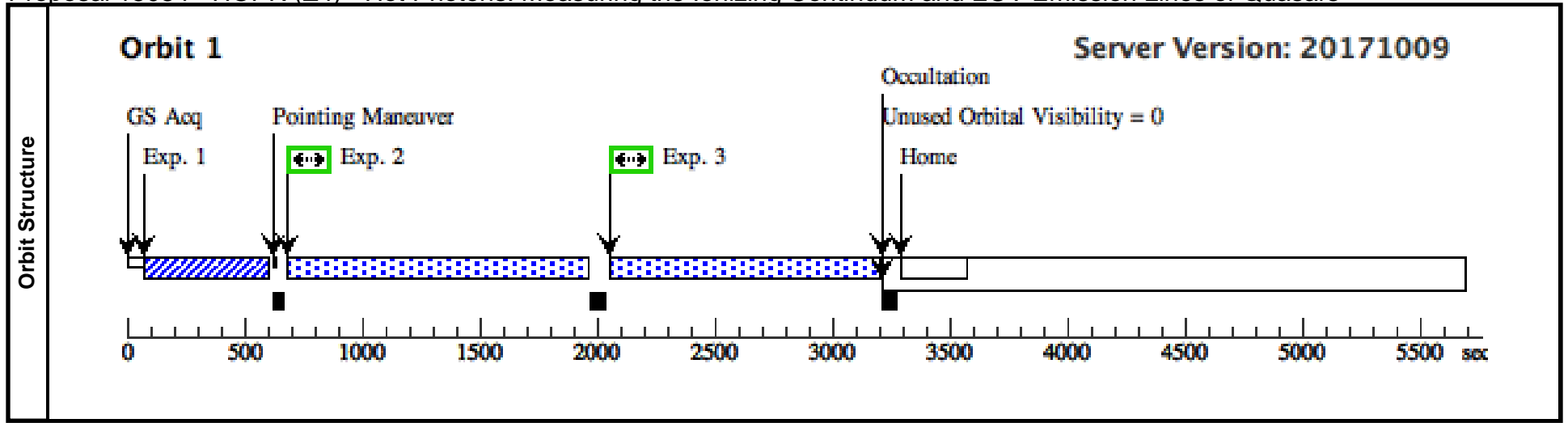
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(COS.ta.100 3701)	(4) SDSS-J091532.59+172143.9	COS/NUV, ACQ/IMAGE, PSA	MIRRORB					111 Secs (111 Secs) [==>]	[1]
	<i>Comments: F(1530A)=1.4e-15, MIRRORA=5.5 sec.</i>										
	<i>Updated 2/5/18</i>										
	2	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1				1000 Secs (1166 Secs) [==>1166.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>										
	3	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2				1000 Secs (1020 Secs) [==>1020.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>										
4	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3				1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]	
<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>											
5	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3				1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]	
<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>											
6	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4				1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>											
7	(COS.sp.100 3706)	(4) SDSS-J091532.59+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4				1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=7.3 S/N for 7ks=20</i>											



Proposal 15084 - HOPR (Z4) - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Wed May 02 21:06:35 GMT 2018

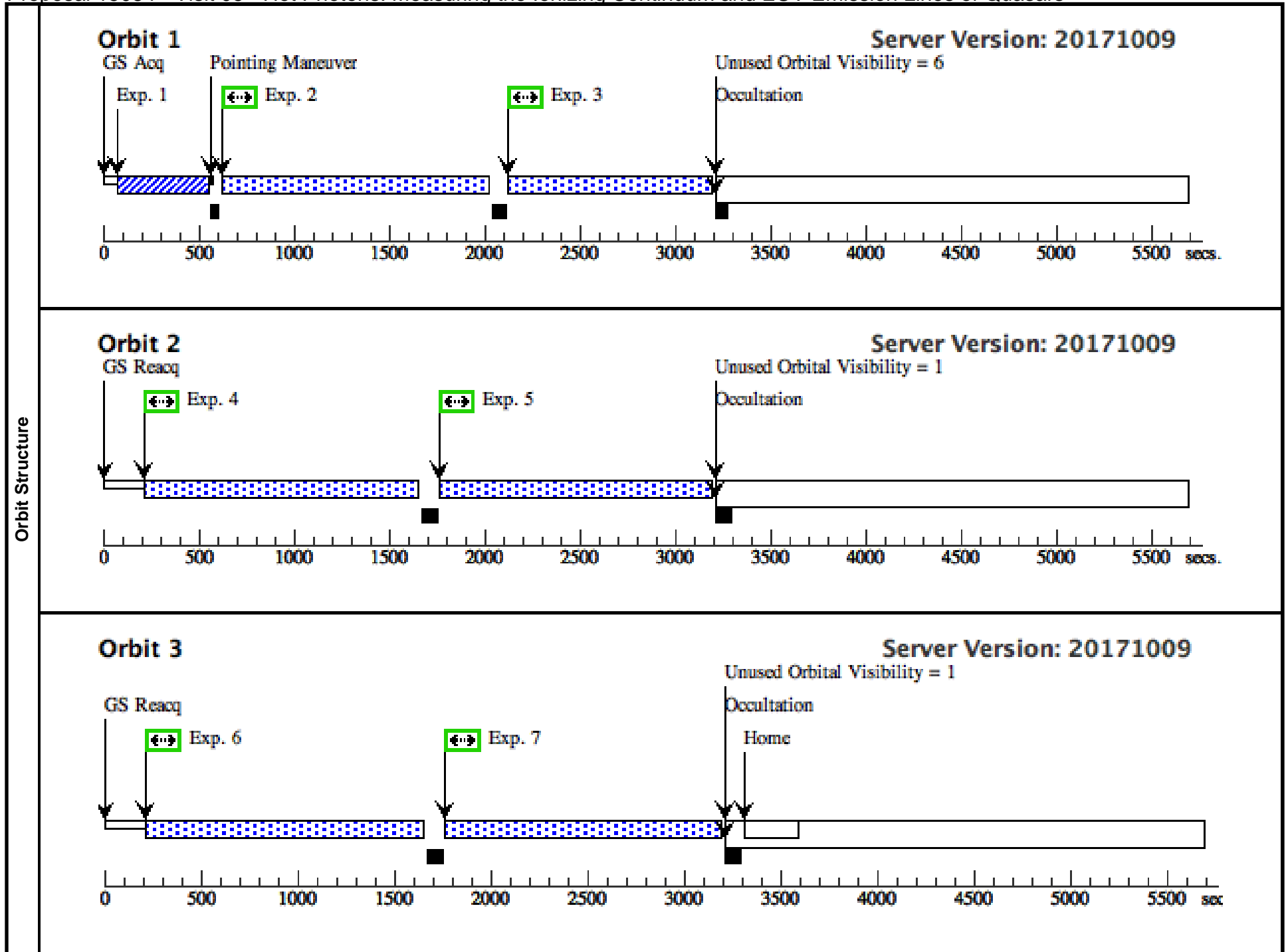
Visit	Proposal 15084, HOPR (Z4), implementation Diagnostic Status: Warning Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)										
	(HOPR (Z4)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(4)	SDSS-J091532.59+172143.9	RA: 09 15 32.6001 (138.8858338d) Dec: +17 21 43.95 (17.36221d) Equinox: J2000	Redshift: 1.752	V=17.71 F(1530A)=1.4e-15	Reference Frame: ICRS					
Comments: Coordinates (with very small uncertainty) courtesy of GAIA dr1. Source ID: 632123356664406912 Category=GALAXY Description=[QSO, QUASAR] Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(COS.ta.100 3701)	(4) SDSS-J091532.5 9+172143.9	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				111 Secs (111 Secs) [==>]	[1]	
	Comments: F(1530A)=1.4e-15, MIRRORA=5.5 sec. Updated 2/5/18										
	2	(COS.sp.100 3706)	(4) SDSS-J091532.5 9+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3				1000 Secs (1098 Secs) [==>1098.0 Secs]	[1]
Comments: S/N for 1ks exp=7.3 S/N for 7ks=20											
3	(COS.sp.100 3706)	(4) SDSS-J091532.5 9+172143.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4				1000 Secs (1098 Secs) [==>1098.0 Secs]	[1]	
Comments: S/N for 1ks exp=7.3 S/N for 7ks=20											



Proposal 15084 - Visit 05 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Wed May 02 21:06:35 GMT 2018

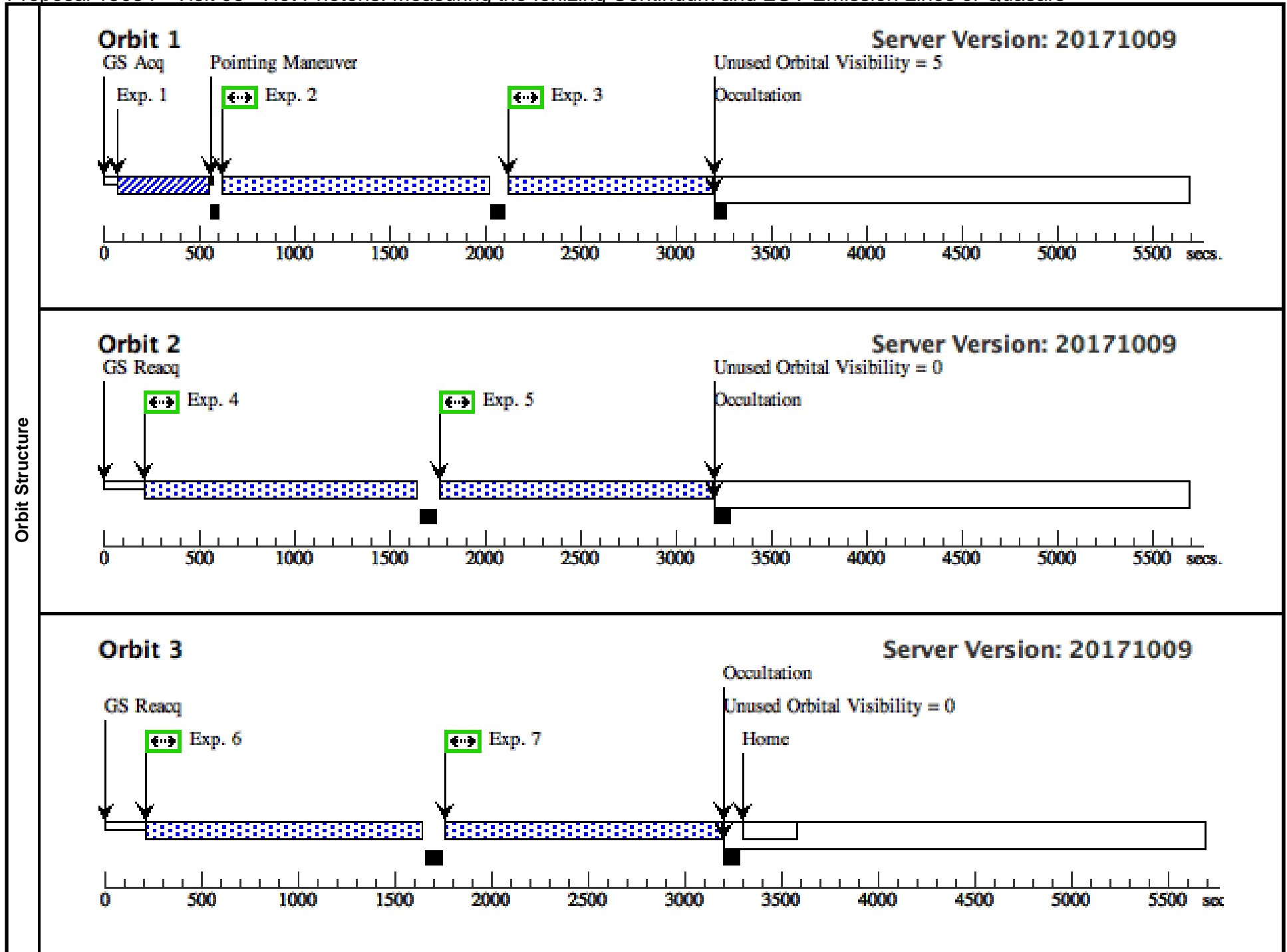
Visit	Proposal 15084, Visit 05, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	PKS0202-172 Alt Name1: 2MASSJ02045766-1701200	RA: 02 04 57.6724 (31.2403017d) Dec: -17 01 19.74 (-17.02215d) Equinox: J2000	Redshift: 1.739	V=18.0 F(1530A)=1.9e-15	Reference Frame: ICRS				
	<i>Comments:</i> Category=GALAXY Description=[QSO, QUASAR] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.ta.100 3727)	(5) PKS0202-172	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				82 Secs (82 Secs) [==>]	[1]
	<i>Comments: F(1530A)=1.9e-15, MIRRORA=4.0 sec.</i>									
	2	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1			1000 Secs (1222 Secs) [==>1222.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
	3	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2			1000 Secs (1016 Secs) [==>1016.0 Secs]	[1]
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
	4	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]
<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>										
5	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]	
<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>										
6	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>										
7	(COS.sp.100 3732)	(5) PKS0202-172	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]	
<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>										



Proposal 15084 - Visit 06 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Wed May 02 21:06:35 GMT 2018

Visit	Proposal 15084, Visit 06, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(6)	SDSS- J154854.79+121119.9 Alt Name1: 2MASSJ15485478+1211 200	RA: 15 48 54.7880 (237.2282833d) Dec: +12 11 20.01 (12.18889d) Equinox: J2000	Redshift: 1.73816	V=17.16 F(1530A)=1.9e-15	Reference Frame: ICRS			
	<i>Comments:</i> Category=GALAXY Description=[QSO, QUASAR] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.ta.100 3727)	(6) SDSS-J154854.7 9+121119.9	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				82 Secs (82 Secs) [==>]	[1]
	<i>Comments: F(1530A)=1.9e-15, MIRRORA=4.0 sec.</i>									
2	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1			1000 Secs (1219 Secs) [==>1219.0 Secs]	[1]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
3	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2			1000 Secs (1013 Secs) [==>1013.0 Secs]	[1]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
4	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1382 Secs) [==>1382.0 Secs]	[2]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
5	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1382 Secs) [==>1382.0 Secs]	[2]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
6	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1382 Secs) [==>1382.0 Secs]	[3]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									
7	(COS.sp.100 3732)	(6) SDSS-J154854.7 9+121119.9	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1382 Secs) [==>1382.0 Secs]	[3]	
	<i>Comments: S/N for 1ks exp=8.5 S/N for 7ks=22</i>									



Proposal 15084 - Visit 07 - Hot Photons: Measuring the Ionizing Continuum and EUV Emission Lines of Quasars

Wed May 02 21:06:36 GMT 2018

Visit	Proposal 15084, Visit 07, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																											
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(7)</td> <td>HE0047-1756 Alt Name1: 2MASSJ00502782-1740092</td> <td>RA: 00 50 27.8350 (12.6159792d) Dec: -17 40 9.27 (-17.66924d) Equinox: J2000</td> <td>Redshift: 1.6756</td> <td>V=16.98 F(1530A)=1.9e-15</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6"> <i>Comments: QSO lensed by z=0.408 galaxy.</i> <i>Category=GALAXY</i> <i>Description=[QSO, QUASAR]</i> <i>Extended=NO</i> </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(7)	HE0047-1756 Alt Name1: 2MASSJ00502782-1740092	RA: 00 50 27.8350 (12.6159792d) Dec: -17 40 9.27 (-17.66924d) Equinox: J2000	Redshift: 1.6756	V=16.98 F(1530A)=1.9e-15	Reference Frame: ICRS	<i>Comments: QSO lensed by z=0.408 galaxy.</i> <i>Category=GALAXY</i> <i>Description=[QSO, QUASAR]</i> <i>Extended=NO</i>				
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																							
(7)	HE0047-1756 Alt Name1: 2MASSJ00502782-1740092	RA: 00 50 27.8350 (12.6159792d) Dec: -17 40 9.27 (-17.66924d) Equinox: J2000	Redshift: 1.6756	V=16.98 F(1530A)=1.9e-15	Reference Frame: ICRS																							
<i>Comments: QSO lensed by z=0.408 galaxy.</i> <i>Category=GALAXY</i> <i>Description=[QSO, QUASAR]</i> <i>Extended=NO</i>																												
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																		
	1	(COS.ta.100 3727)	(7) HE0047-1756	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				82 Secs (82 Secs) [==>]	[1]																		
	<i>Comments: F(1530A)=1.9e-15, MIRRORA=4.0 sec.</i>																											
	2	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=1			1000 Secs (1222 Secs) [==>1222.0 Secs]	[1]																		
	<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																											
	3	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=2			1000 Secs (1016 Secs) [==>1016.0 Secs]	[1]																		
	<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																											
	4	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]																		
<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																												
5	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=3			1000 Secs (1385 Secs) [==>1385.0 Secs]	[2]																			
<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																												
6	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]																			
<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																												
7	(COS.sp.100 3732)	(7) HE0047-1756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=20 00; FP-POS=4			1000 Secs (1385 Secs) [==>1385.0 Secs]	[3]																			
<i>Comments: S/N for 1ks exp=8.5</i> <i>S/N for 7ks=22</i>																												

