



13298 - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

Cycle: 21, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) SDSSJ0812+5225	STIS/CCD STIS/NUV-MAMA	1	12-Aug-2013 21:04:12.0	yes
02	(2) SDSSJ0908+2852	STIS/CCD STIS/NUV-MAMA	1	12-Aug-2013 21:04:20.0	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>
03	(3) SDSSJ1252+2640	STIS/CCD STIS/NUV-MAMA	1	12-Aug-2013 21:04:27.0	yes
04	(4) SDSSJ1447-0203	STIS/CCD STIS/NUV-MAMA	2	12-Aug-2013 21:04:35.0	yes
05	(5) SDSSJ1530+2310	STIS/CCD STIS/NUV-MAMA	1	12-Aug-2013 21:04:42.0	yes
06	(6) SDSSJ1629+2532	STIS/CCD STIS/NUV-MAMA	1	12-Aug-2013 21:04:47.0	yes

7 Total Orbits Used

ABSTRACT

Over the past 15 years, examples of exotic radio-quiet quasars with intrinsically weak or absent broad emission line regions (BELRs) have emerged from large-scale spectroscopic sky surveys. Such types of weak-lined quasars (hereafter WLQs) challenge both the standard orientation-based quasar unification paradigm, and also quasar models that explicitly include factors beyond orientation (e.g., "disk+wind" BELR models). WLQs thus represent a new extreme of parameter space. Here, we propose STIS UV observations (7 orbits) for six WLQs to measure their (weak) Ly α line properties and their UV continuum slopes. Our targets cover $0.9 < z < 1.4$, a carefully selected redshift range that allows HST to access the spectral regime near Ly α , and where our existing ground-based spectra also cover longer-wavelength emission line species through at least MgII[2800 Ang]. This unprecedented spectral coverage for WLQs, combined with existing Chandra X-ray data, will allow us to compare line properties over a broad range of ionization potentials with the underlying broadband ionizing continuum. We will determine if WLQ BELRs are in an exotic ionization state due to exceptionally soft ionizing continua, or if WLQs are instead unusually gas-deficient. Understanding the physical mechanisms that prevent strong emission lines from forming will present new clues into the extent that intrinsic differences among quasars can affect their radiative and mechanical output, which has important implications for quasar unification and for black hole feedback.

OBSERVING DESCRIPTION

We will use the STIS/NUV-MAMA G230L grating to observe Ly α and the nearby continuum for six Weak Emission Line Quasars ($0.9 < z < 1.4$), in order to constrain the properties of their unusual broad emission line regions. One source will be observed for two orbits, the rest require only a single orbit per source. We include a target acquisition (with the STIS/CCD) at the beginning of each visit to center the target.

Targets were selected from the SDSS and matched to GALEX catalogs in order to obtain UV fluxes. Exposure times were calculated using the STIS ETCs to achieve $S/N > 10$ per resolution element at 1216 Angstroms rest-frame, based on their GALEX NUV magnitudes. Target acquisition exposure times (with STIS/CCD) were calculated to achieve $S/N > 40$ over a 3x3 pixel checkbox, based on their SDSS optical magnitudes. We will take two exposures per orbit dithered along the slit, in order to clean for cosmic-rays and hot pixels.

REAL TIME JUSTIFICATION

N/A

CALIBRATION JUSTIFICATION

N/A

ADDITIONAL COMMENTS

N/A

Proposal 13298 - J0812 (01) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

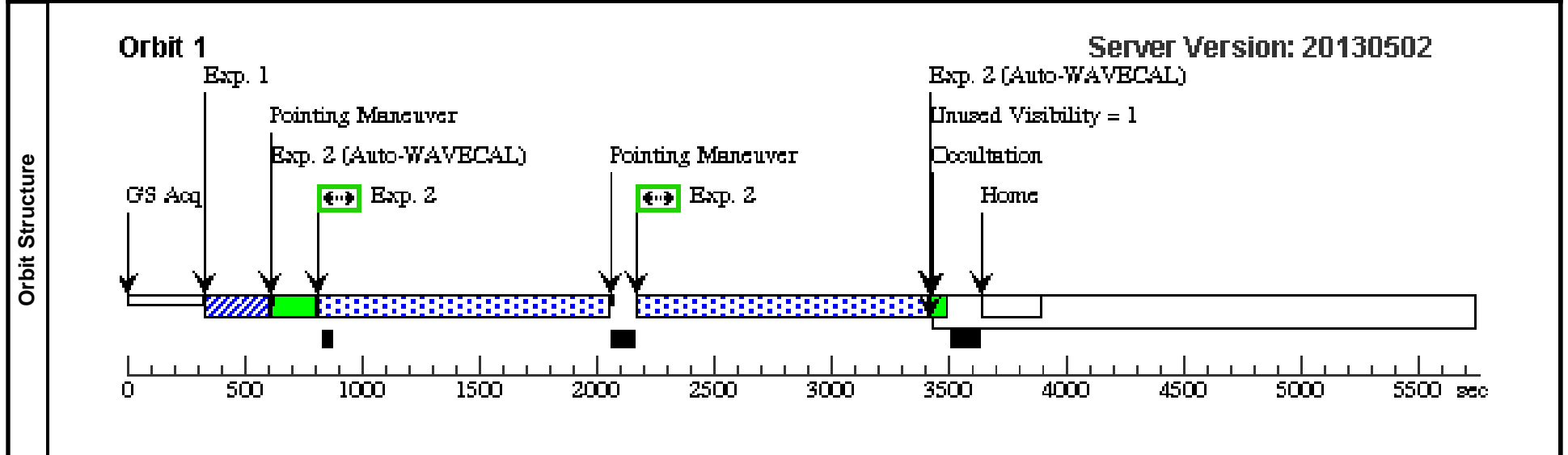
Tue Aug 13 01:04:54 GMT 2013

Visit	Proposal 13298, J0812 (01), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	SDSSJ0812+5225	RA: 08 12 50.8032 (123.2116800d) Dec: +52 25 30.83 (52.42523d) Equinox: J2000	Redshift: 1.15	V=18.15+/-0.05 GALEX(NUV)= 19.1 mag	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		(1) SDSSJ0812+5225 5	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT				10 Secs (10 Secs)
2	(STIS.sp.50 8179)	(1) SDSSJ0812+5225 5	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			Pattern 1, Exps 2-2 in J0812 (01) (1)		1100 Secs (2446 Secs)	
									[==>1223.0 Secs (Pattern 1)]	[1]
									[==>1223.0 Secs (Pattern 2)]	[1]



Proposal 13298 - J0908 (02) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

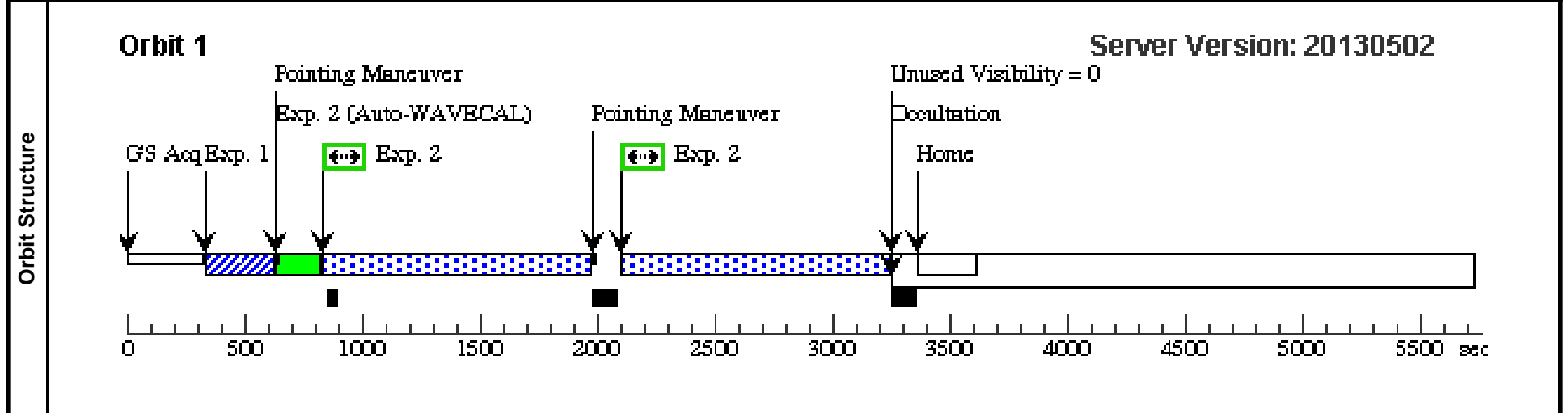
Tue Aug 13 01:04:56 GMT 2013

Visit	Proposal 13298, J0908 (02), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	SDSSJ0908+2852	RA: 09 08 43.2576 (137.1802400d) Dec: +28 52 29.86 (28.87496d) Equinox: J2000	Redshift: 0.93	V=18.47+/-0.05 GALEX(NUV)= 19.1 mag	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		(2) SDSSJ0908+2852	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT				15 Secs (15 Secs)
		2							[==>]	[1]
2	(STIS.sp.50 8184)	(2) SDSSJ0908+2852	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				Pattern 1, Exps 2-2 in J0908 (02) (1)	1080 Secs (2250 Secs)	
		2							[==>1125.0 Secs (Pattern 1)]	[1]
									[==>1125.0 Secs (Pattern 2)]	



Proposal 13298 - J1252 (03) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

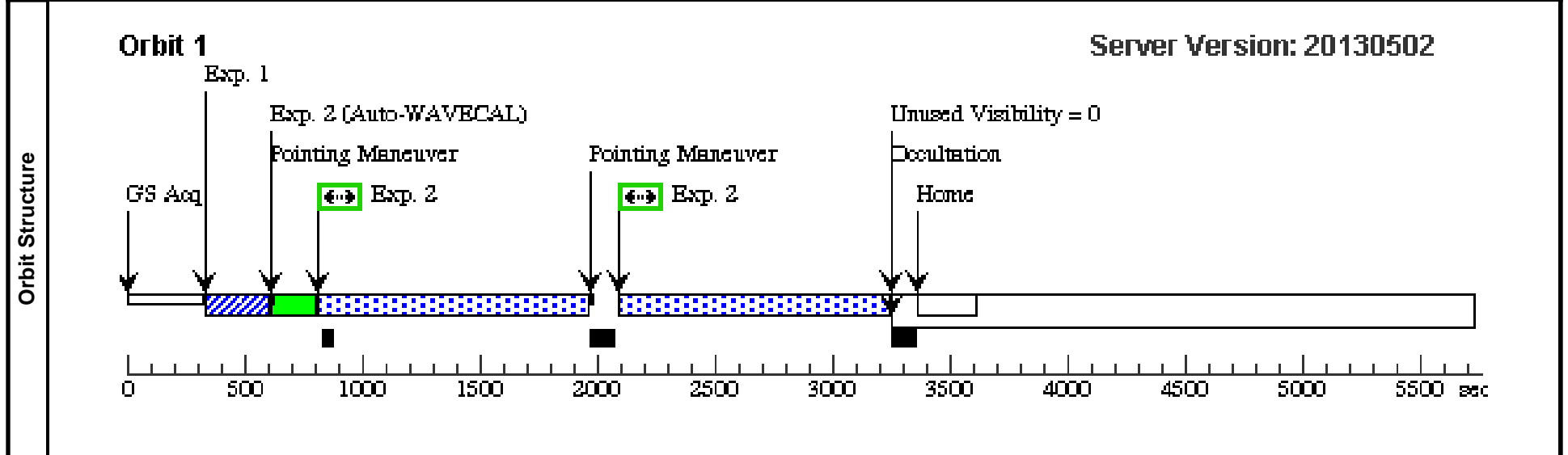
Tue Aug 13 01:04:57 GMT 2013

Visit	Proposal 13298, J1252 (03), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SDSSJ1252+2640	RA: 12 52 19.4808 (193.0811700d) Dec: +26 40 53.98 (26.68166d) Equinox: J2000	Redshift: 1.29	V=17.81+/-0.05 GALEX(NUV)= 18.8 mag	Reference Frame: ICRS

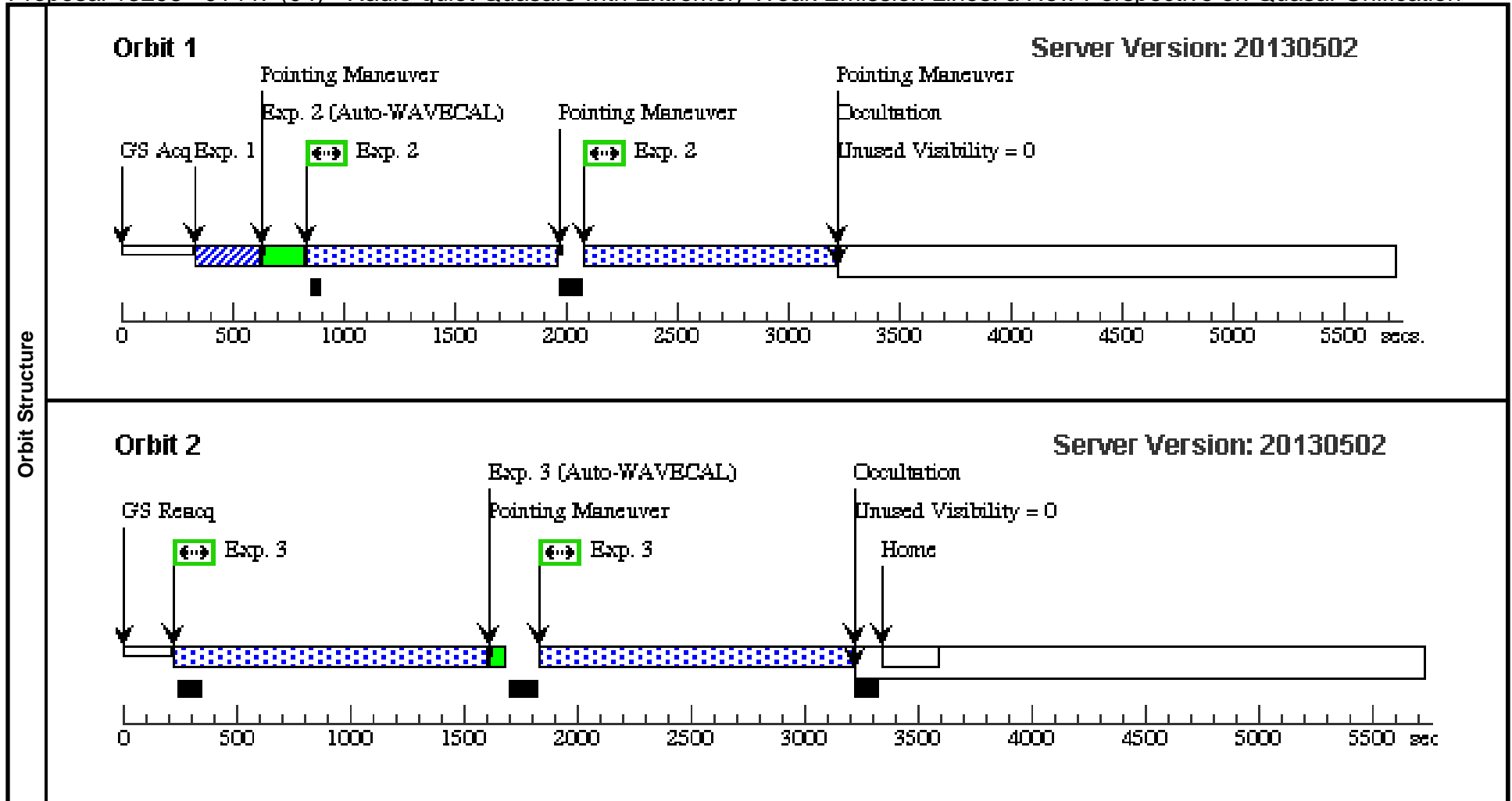
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) SDSSJ1252+2640	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT				10 Secs (10 Secs)
		0							[==>]	[1]
2	(STIS.sp.50 8185)	(3) SDSSJ1252+2640	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L	2376 A			Pattern 1, Exps 2-2 in J1252 (03) (1)	1080 Secs (2270 Secs)	
		0							[==>1135.0 Secs (Pattern 1)]	[1]
									[==>1135.0 Secs (Pattern 2)]	



Proposal 13298 - J1447 (04) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

Tue Aug 13 01:04:58 GMT 2013

Visit	Proposal 13298, J1447 (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: (none)										
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures		
		(1)	Pattern Type=STIS-ALONG-SLIT	Coordinate Frame=POS-TARG							(2), (3)
		Purpose=DITHER	Pattern Orientation=90.0								
		Number Of Points=2	Angle Between Sides=								
		Point Spacing=0.3	Center Pattern=false								
		Line Spacing=									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(4)	SDSSJ1447-0203	RA: 14 47 41.7672 (221.9240300d)	Dec: -02 03 39.17 (-2.06088d)	Equinox: J2000	Redshift: 1.43	V=18.61+/-0.05	GALEX(NUV)= 19.1 mag	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		(4) SDSSJ1447-0203	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			15 Secs (15 Secs)		
									[==>]		[1]
	2	(STIS.sp.50 8186)	(4) SDSSJ1447-0203	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			Pattern 1, Exps 2-2 in J1447 (04) (1)	1080 Secs (2226 Secs)		
									[==>1113.0 Secs (Pattern 1)]		[1]
								[==>1113.0 Secs (Pattern 2)]			
3	(STIS.sp.50 8186)	(4) SDSSJ1447-0203	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			Pattern 1, Exps 3-3 in J1447 (04) (1)	1080 Secs (2734 Secs)			
								[==>1367.0 Secs (Pattern 1)]		[2]	
								[==>1367.0 Secs (Pattern 2)]			



Proposal 13298 - J1530 (05) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

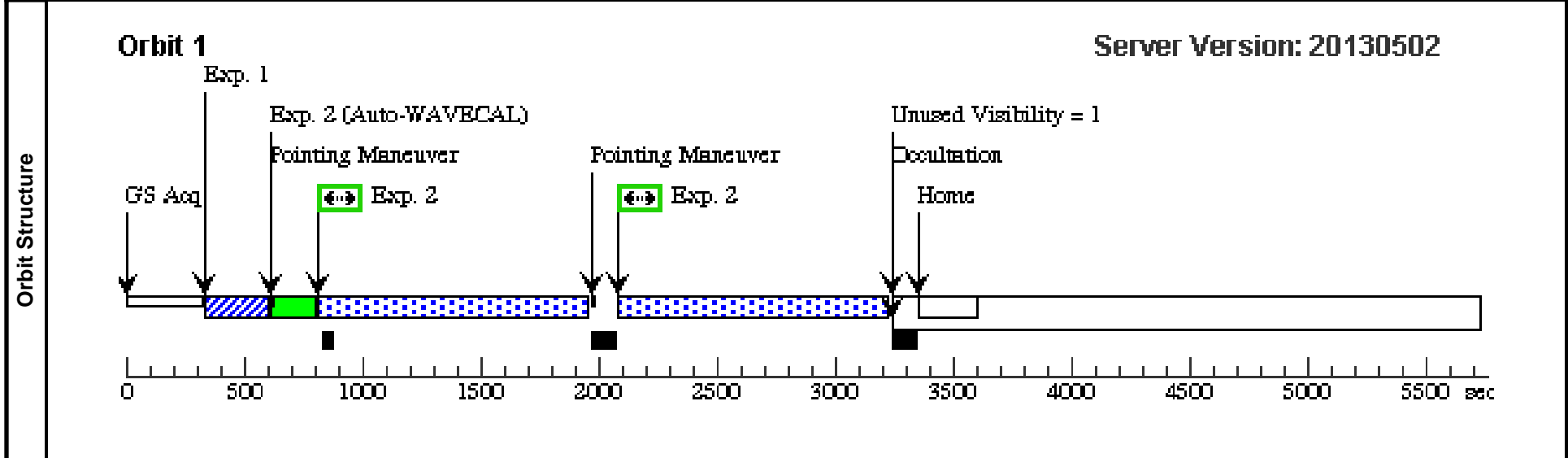
Tue Aug 13 01:04:59 GMT 2013

Visit	Proposal 13298, J1530 (05), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(5)	SDSSJ1530+2310	RA: 15 30 44.0856 (232.6836900d) Dec: +23 10 13.51 (23.17042d) Equinox: J2000	Redshift: 1.41	V=17.69+/-0.06 GALEX(NUV)= 18.8 mag	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		(5) SDSSJ1530+2310	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT	GS ACQ SCENARI	O BASE1B3		10 Secs (10 Secs)
		0							[==>]	[1]
2	(STIS.sp.50 8187)	(5) SDSSJ1530+2310	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				Pattern 1, Exps 2-2 in J1530 (05) (1)	1080 Secs (2260 Secs)	
		0							[==>1130.0 Secs (Pattern 1)]	[1]
									[==>1130.0 Secs (Pattern 2)]	



Proposal 13298 - J1629 (06) - Radio-quiet Quasars with Extremely Weak Emission Lines: a New Perspective on Quasar Unification

Tue Aug 13 01:05:00 GMT 2013

Visit	Proposal 13298, J1629 (06), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	SDSSJ1629+2532	RA: 16 29 33.6072 (247.3900300d) Dec: +25 32 0.64 (25.53351d) Equinox: J2000	Redshift: 1.33	V=19.31+/-0.05 GALEX(NUV)= 18.8 mag	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		(6) SDSSJ1629+2532	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT				20 Secs (20 Secs)
2	(STIS.sp.50 8188)	(6) SDSSJ1629+2532	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			Pattern 1, Exps 2-2 in J1629 (06) (1)		1080 Secs (2230 Secs)	
									[==>1115.0 Secs (Pattern 1)]	[1]
									[==>1115.0 Secs (Pattern 2)]	[1]

