15321 - Direct Constraints on the Temperature and Ionization of Low-Redshift O VI Absorbers from Ultra-High Resolution Spectroscopy of H1821+643

Cycle: 25, Proposal Category: GO

(UV Initiative)

(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) H1821+643	STIS/CCD STIS/FUV-MAMA	5	20-Jul-2017 16:16:51.0	yes
02	(1) H1821+643	STIS/CCD STIS/FUV-MAMA	5	29-Aug-2018 17:00:46.0	yes
03	(1) H1821+643	STIS/CCD STIS/FUV-MAMA	4	29-Aug-2018 17:00:50.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
53	(1) H1821+643	STIS/CCD STIS/FUV-MAMA	4	29-Aug-2018 17:00:54.0	yes

18 Total Orbits Used

ABSTRACT

The OVI doublet in low-z QSO absorption systems can provide valuable constraints on the mass and physics of highly ionized gas in galaxy halos and the IGM. However, use of the OVI doublet is still hampered by uncertainty regarding the physical nature of these absorbers. Eight OVI absorption systems have been detected on the sight line to the low-redshift QSO H1821+643 with HST+STIS and FUSE. Careful inspection of these absorbers (observed with the STIS E140M echelle) reveals narrow peaks and inflections in the OVI profiles that are closely aligned with well-detected narrow HI and SiIII components at the same redshifts. This tentatively suggests that the OVI profiles contain narrow components at cool temperatures. However, the E140M spectral resolution is not adequate to constrain the line widths of these blended components accurately enough to support firm conclusions. We propose to use the E140H echelle mode of STIS to observe H1821+643 with ultra-high spectral resolution (R = 115,000) to place direct constraints on the temperature of the OVI-bearing gas based on the OVI line widths. We will also measure more precise centroids for the OVI, SiIII, and HI absorption components and more accurately decompose the multicomponent blends in many of the absorbers. In addition to probing the physics of extragalactic OVI systems, the spectra will provide a wealth of information about the Milky Way ISM and the low-redshift Lya forest.

OBSERVING DESCRIPTION

We will observe the QSO H1821+643 [z(QSO) = 0.297] with the E140H echelle mode of STIS. Motivated by a detailed communication with the STScI STIS Team, we will observe the target with the 0.2"x0.2" aperture in order to avoid throughput losses that can occur with the narrower apertures (see Proffitt et al. 2017, ISR STIS 2017-01). To use the telescope efficiently, we will observe the target in the continuous viewing zone (CVZ), which will allow us to use the majority of each orbit for science exposures. Following a recommendation from STScI, we will obtain two discrete science exposures in each orbit for good wavelength calibration (this will provide two wavelength calibration exposures in each orbit) and optimal buffer management. For this program, it is crucial to align individual spectra as well as possible (to avoid degradation of spectral resolution when the individual exposures are coadded to form the final spectrum). In principle, strong lines in the individual exposures can be used to align the spectra, but this can be difficult if the individual spectra are noisy. Therefore, we will execute an ACQ/PEAKUP procedure at the beginning of the first and third orbits in each visit to maintain optimal centering of the target in the aperture (and thereby maintain good alignment of the individual

observations). We will record the science data in TIMETAG mode to enable improved data reduction procedures such as removal of data adversely affected by geocoronal emission (which can be more severe in CVZ observations).

This target is known to be somewhat variable; photometry from the literature indicates that the QSO varies from V = 13.69 to 14.24. We have allowed for this variability in our exposure time calculations for acquisitions, peakups, and science exposures. Specifically, we have used the brightest known magnitudes to make sure that our exposures will not saturate if the target happens to be bright, but we have also selected exposure times that should enable successful acquisition even if the QSO turns out to be at the fainter end when the visits are executed (ETC details are provided in the Phase II exposure comments). Likewise, we have allowed for the possibility that the MAMA dark background "glow" could be high when these observations are obtained (CVZ observations tend to elevate the dark background as the observations within a visit progress). We have assumed the highest dark background levels in our ETC calculations of buffer times for the TIMETAG observations and in our bright-object checks for instrument safety. We find that this target does not pose any bright-object danger to the instrument, and following Figure 11.6 in the STIS Instrument Handbook, we find that the buffer dumps for the TIMETAG science exposures should be fully successful with buffer time = (exposure time)/2.

Visit

Proposal 15321, H1821_cenwave1343_visit1 (01), completed Wed Aug 29 21:00:55 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: CVZ

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	H1821+643	RA: 18 21 57.2365 (275.4884854d) Dec: +64 20 36.23 (64.34340d) Equinox: J2000		V=14.24+/-0.1 Flambda(1300 A) = (6.0+/-0.25) e-14. Pan-STARRS mean mags: g = 14.071+/- 0.006, r = 13.977+/-0.005	Reference Frame: ICRS

Comments: Photometry from the literature indicates that this source is somewhat variable with literature measurements ranging from Johnson V = 13.7 to Johnson V = 14.24 (with Pan-STARRS magnitudes in between these extremes). We have taken this variability into account in our calculations of acquisition and peakup exposure times as well as instrument safety assessment.
Category=EXT-MEDIUM
Description=[ABSORPTION LINE SYSTEM - EXTRAGALACTIC, CORONAL GAS, HOT GAS]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	H1821_ACQ (STIS.ta.1009205)	(1) H1821+643	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 9.67 seconds (STIS.ta.1009292), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
2	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
3	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
4	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
5	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
6	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
7	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[3]***
	Comments: Following recommendation from STScI, this peakup will recenter the target in the slit to guard against drift problems. H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
8	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1100			2200 Secs (2200 Secs) *[==>]*	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								

	9	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1100	2200 Secs (2200 Secs) *[==>]*	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	10	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1212	2424 Secs (2424 Secs) *[==>]*	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	11	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1212	2424 Secs (2424 Secs) *[==>]*	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	12	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1212	2424 Secs (2424 Secs) *[==>]*	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	13	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=1212	2424 Secs (2424 Secs) *[==>]*	***[5]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							

Visit

Proposal 15321, H1821_cenwave1343_visit2 (02), completed Wed Aug 29 21:00:55 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: CVZ

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	H1821+643	RA: 18 21 57.2365 (275.4884854d) Dec: +64 20 36.23 (64.34340d) Equinox: J2000		V=14.24+/-0.1 Flambda(1300 A) = (6.0+/-0.25) e-14. Pan-STARRS mean mags: g = 14.071+/- 0.006, r = 13.977+/-0.005	Reference Frame: ICRS

Comments: Photometry from the literature indicates that this source is somewhat variable with literature measurements ranging from Johnson V = 13.7 to Johnson V = 14.24 (with Pan-STARRS magnitudes in between these extremes). We have taken this variability into account in our calculations of acquisition and peakup exposure times as well as instrument safety assessment.
Category=EXT-MEDIUM
Description=[ABSORPTION LINE SYSTEM - EXTRAGALACTIC, CORONAL GAS, HOT GAS]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	H1821_ACQ (STIS.ta.1009205)	(1) H1821+643	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 9.67 seconds (STIS.ta.1009292), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
2	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
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	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
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	Comments: Following recommendation from STScI, this peakup will recenter the target in the slit to guard against drift problems. H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
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	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
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	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
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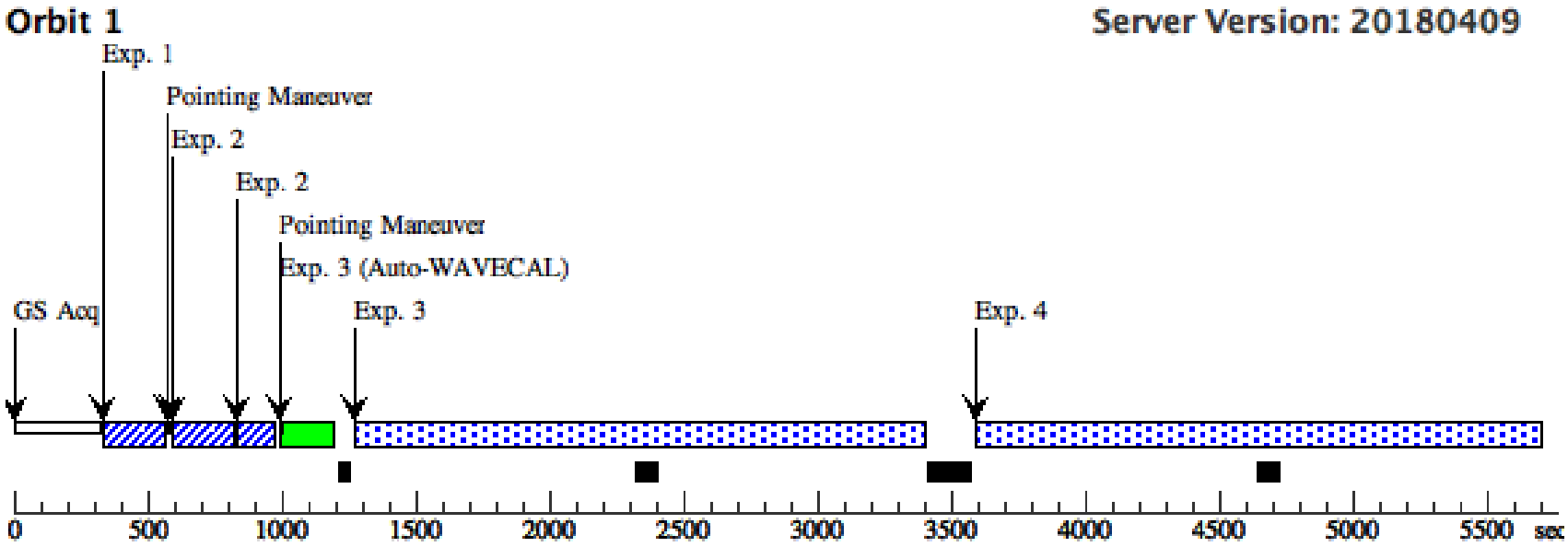
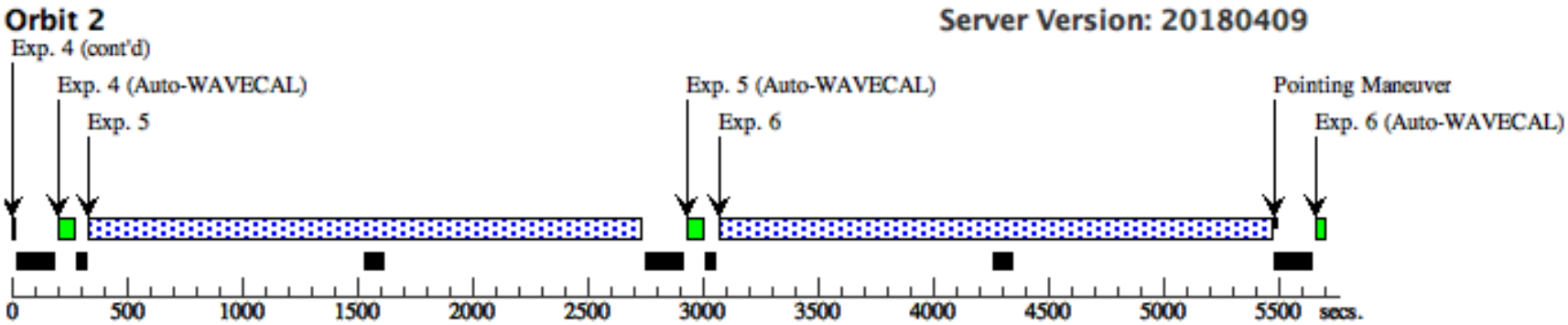
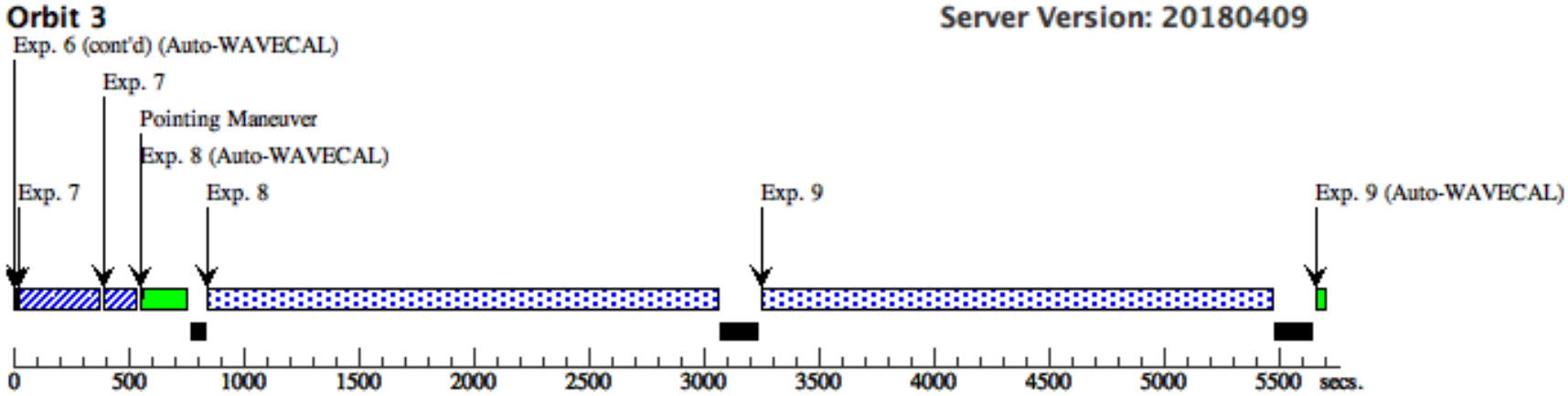
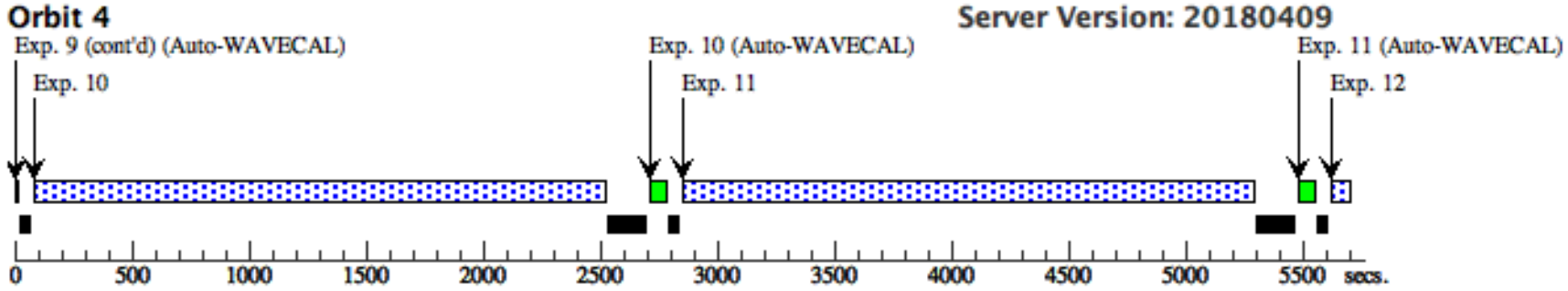
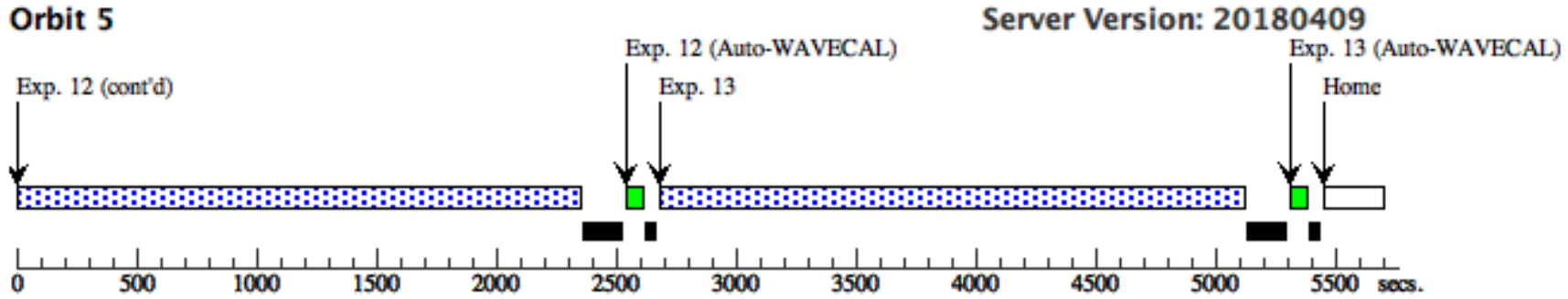
Orbit Structure






Orbit 3
Server Version: 20180409
Exp. 6 (cont'd) (Auto-WAVECAL)
Exp. 7
Pointing Maneuver
Exp. 8 (Auto-WAVECAL)
Exp. 7
Exp. 8
Exp. 9
Exp. 9 (Auto-WAVECAL)
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 secs.


Orbit 4
Server Version: 20180409
Exp. 9 (cont'd) (Auto-WAVECAL)
Exp. 10
Exp. 10 (Auto-WAVECAL)
Exp. 11
Exp. 11 (Auto-WAVECAL)
Exp. 12
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 secs.


Orbit 5
Server Version: 20180409
Exp. 12 (cont'd)
Exp. 12 (Auto-WAVECAL)
Exp. 13
Exp. 13 (Auto-WAVECAL)
Home
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 secs.

Visit

Proposal 15321, H1821_cenwave1343_cenwave1453 (03), completed Wed Aug 29 21:00:55 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: CVZ

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	H1821+643	RA: 18 21 57.2365 (275.4884854d) Dec: +64 20 36.23 (64.34340d) Equinox: J2000		V=14.24+/-0.1 Flambda(1300 A) = (6.0+/-0.25) e-14. Pan-STARRS mean mags: g = 14.071+/- 0.006, r = 13.977+/-0.005	Reference Frame: ICRS

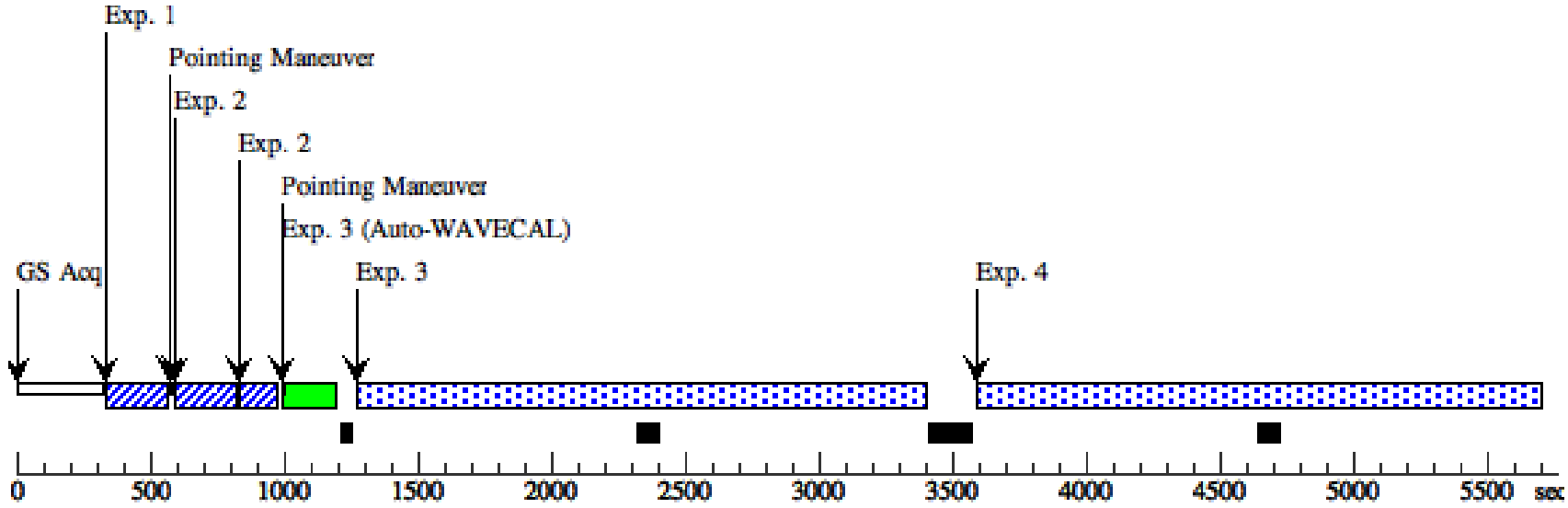
Comments: Photometry from the literature indicates that this source is somewhat variable with literature measurements ranging from Johnson V = 13.7 to Johnson V = 14.24 (with Pan-STARRS magnitudes in between these extremes). We have taken this variability into account in our calculations of acquisition and peakup exposure times as well as instrument safety assessment.
Category=EXT-MEDIUM
Description=[ABSORPTION LINE SYSTEM - EXTRAGALACTIC, CORONAL GAS, HOT GAS]
Extended=NO

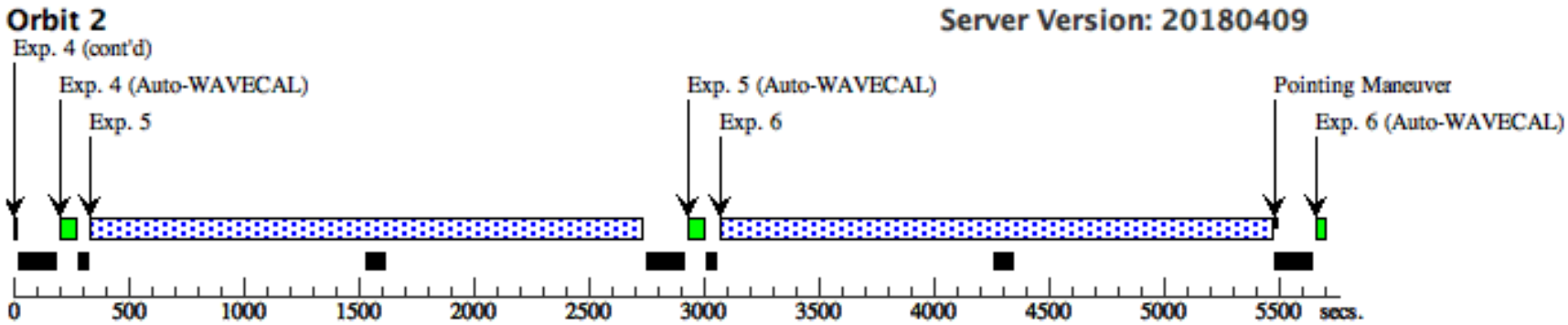
Exposures

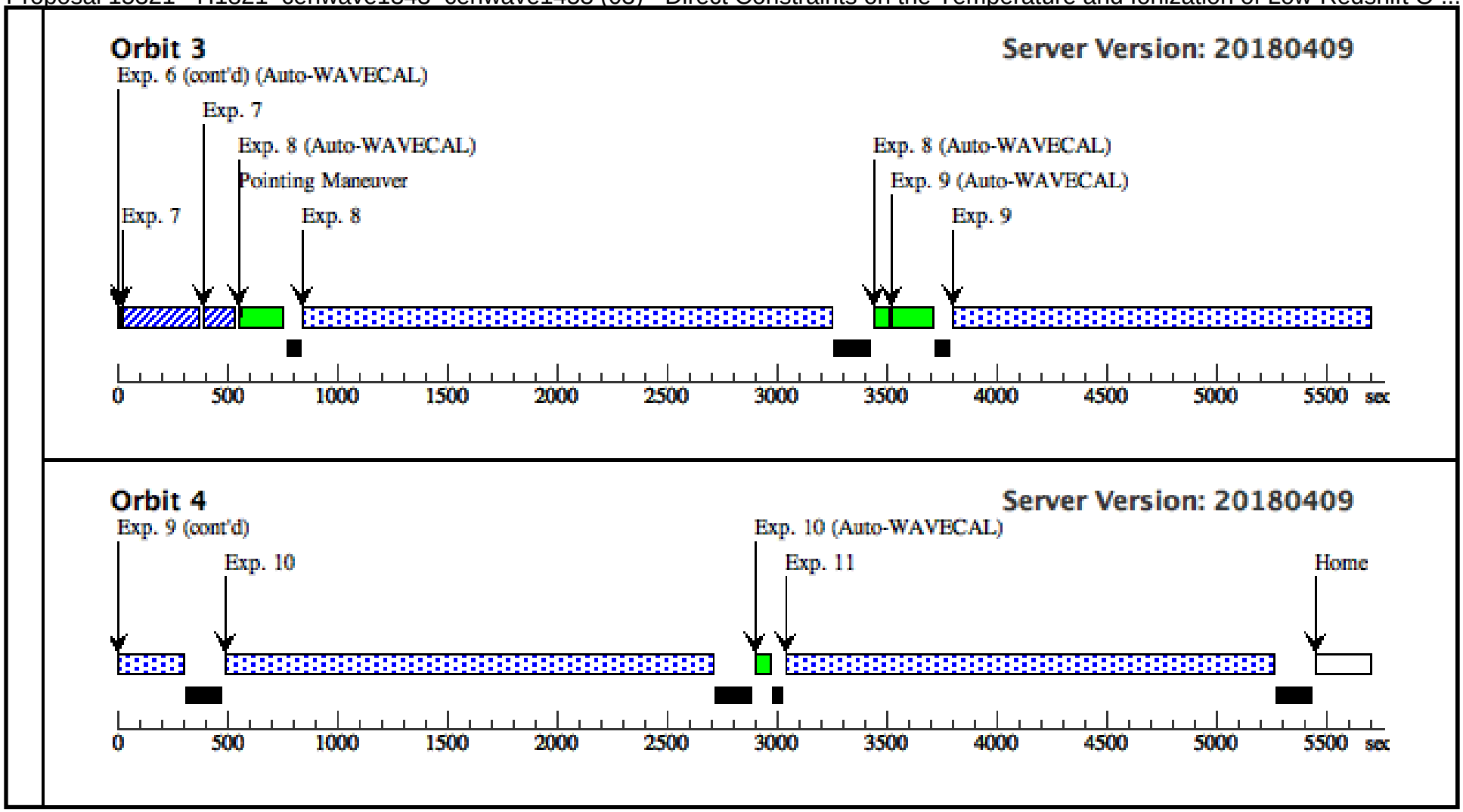
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	H1821_ACQ (STIS.ta.1009205)	(1) H1821+643	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 9.67 seconds (STIS.ta.1009292), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
2	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
3	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
4	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
5	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
6	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
7	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[3]***
	Comments: Following recommendation from STScI, this peakup will recenter the target in the slit to guard against drift problems. H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
8	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1195			2390 Secs (2390 Secs) *[==>]*	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								

	9	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	10	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	11	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							

Orbit Structure






Orbit 3
Server Version: 20180409
Exp. 6 (cont'd) (Auto-WAVECAL)
Exp. 7
Exp. 8 (Auto-WAVECAL)
Pointing Maneuver
Exp. 7
Exp. 8
Exp. 8 (Auto-WAVECAL)
Exp. 9 (Auto-WAVECAL)
Exp. 9
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Orbit 4
Server Version: 20180409
Exp. 9 (cont'd)
Exp. 10
Exp. 10 (Auto-WAVECAL)
Exp. 11
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15321, H1821_cenwave1343_cenwave1453 (53) Wed Aug 29 21:00:55 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: CVZ

Comments: Repeat of failed visit 03.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	H1821+643	RA: 18 21 57.2365 (275.4884854d) Dec: +64 20 36.23 (64.34340d) Equinox: J2000		V=14.24+/-0.1 Flambda(1300 A) = (6.0+/-0.25) e-14. Pan-STARRS mean mags: g = 14.071+/- 0.006, r = 13.977+/-0.005	Reference Frame: ICRS

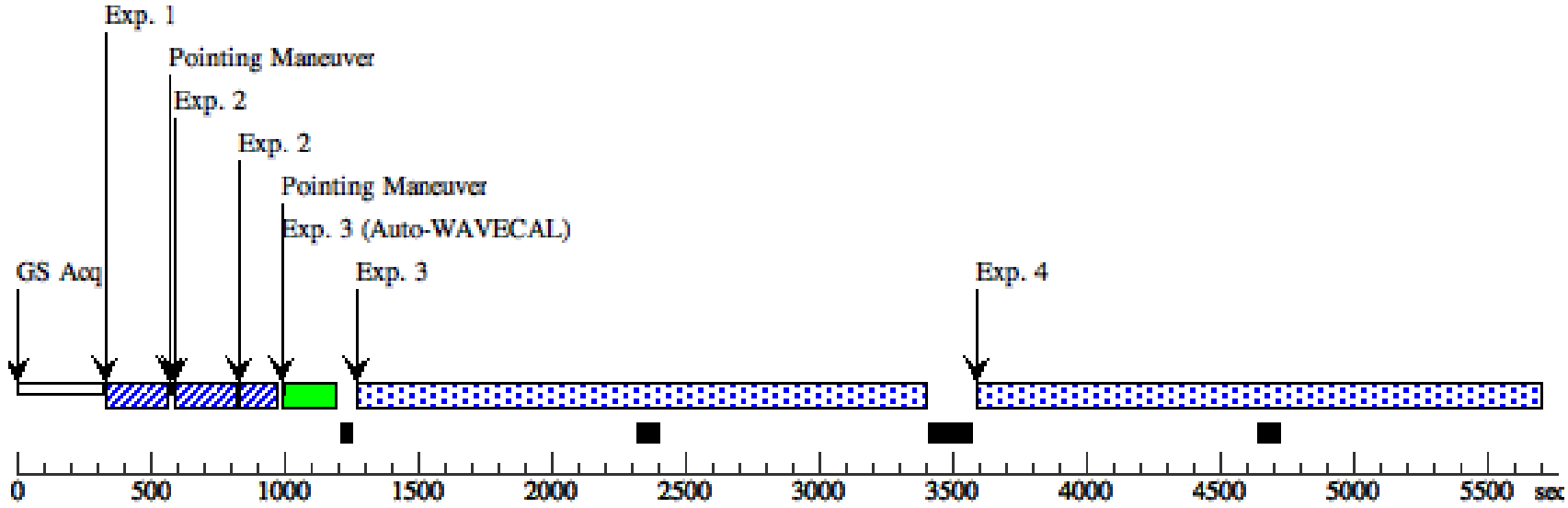
Comments: Photometry from the literature indicates that this source is somewhat variable with literature measurements ranging from Johnson V = 13.7 to Johnson V = 14.24 (with Pan-STARRS magnitudes in between these extremes). We have taken this variability into account in our calculations of acquisition and peakup exposure times as well as instrument safety assessment.
Category=EXT-MEDIUM
Description=[ABSORPTION LINE SYSTEM - EXTRAGALACTIC, CORONAL GAS, HOT GAS]
Extended=NO

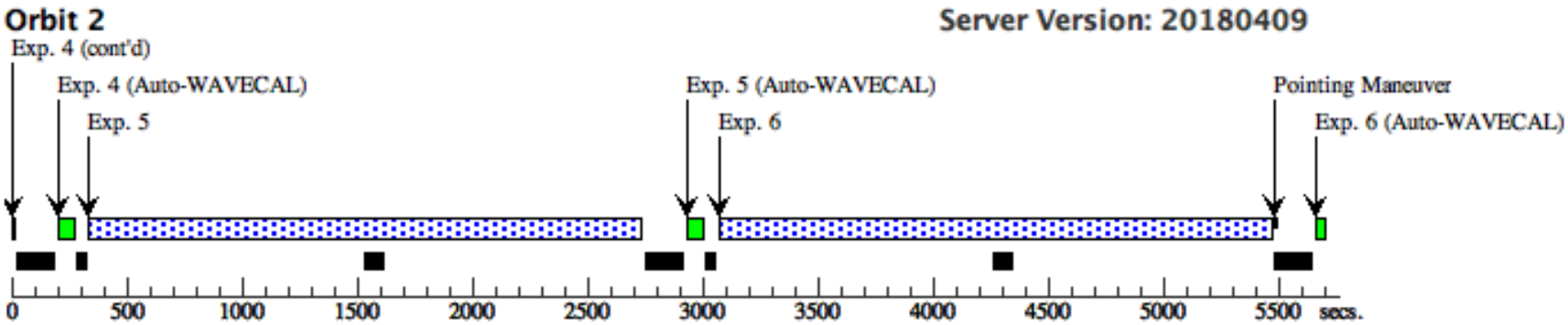
Exposures

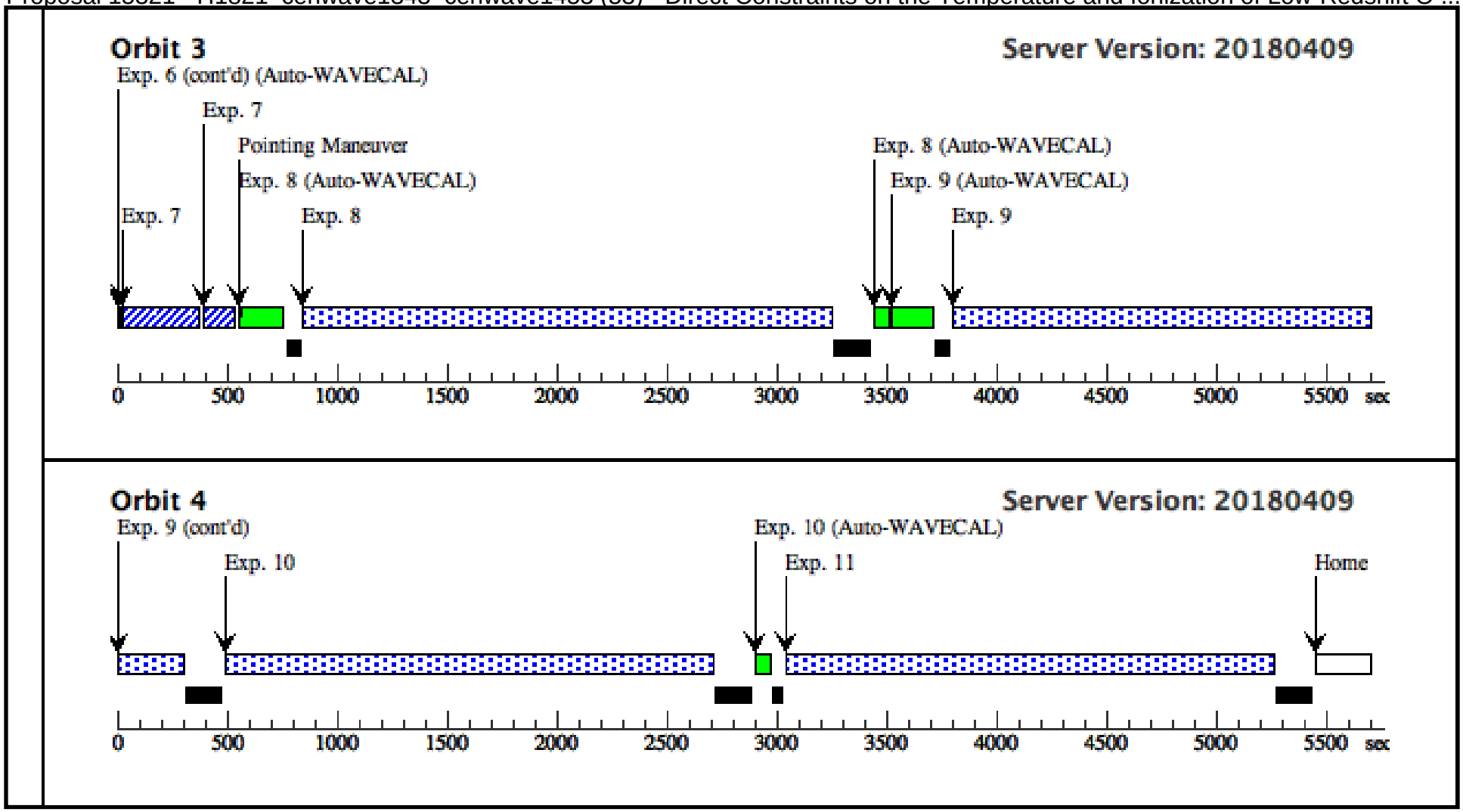
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	H1821_ACQ (STIS.ta.1009205)	(1) H1821+643	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 9.67 seconds (STIS.ta.1009292), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
2	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[1]***
	Comments: H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
3	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
4	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1057			2115 Secs (2115 Secs) *[==>]*	***[1]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
5	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
6	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1192			2385 Secs (2385 Secs) *[==>]*	***[2]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								
7	H1821_ACQ/PEAKUP (STIS.ta.1009210)	(1) H1821+643	STIS/CCD, ACQ/PEAK, 0.2X0.09	MIRROR				1.3 Secs (1.3 Secs) *[==>]*	***[3]***
	Comments: Following recommendation from STScI, this peakup will recenter the target in the slit to guard against drift problems. H1821+643 has been previously observed successfully with the STIS E140M mode and a narrow slit (see program 8165). We will use the same exposure times for the ACQ and ACQ/PEAKUP as the previous successful observation. However, literature photometry indicates that the target is somewhat variable with V band magnitudes ranging from V = 13.69 to 14.24. To ensure that the detector will not saturate, we have used the STIS acquistion ETC to check whether an exposure of 1.3 seconds poses a risk of detector saturation. We find that with V = 13.69, the detector will saturate after 7.88 seconds with the 0.2x0.09 slit (STIS.ta.1012810), so our requested exposure time of 1.3 seconds should be well below the danger of saturation. Similarly, the exposure time should allow for sucessful acquisition even if the target is on the faint end of the observed range when the observations are executed.								
8	H1821_SCIENCE (STIS.sp.1012439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1453 A	BUFFER-TIME=1195			2390 Secs (2390 Secs) *[==>]*	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 640 counts/sec [STIS.sp.1013012]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.								

	9	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[3]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	10	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							
	11	H1821_SCIENCE (STIS.sp.10 12439)	(1) H1821+643	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140H 1343 A	BUFFER-TIME=11 00	2200 Secs (2200 Secs)	
							[==>]	***[4]***
	Comments: Assuming STIS glow = high (i.e., warm detector and high dark rate) and highest observed UV flux from the QSO, STIS ETC indicates that the count rate for the entire detector = 742 counts/sec [STIS.sp.10 12439]. Following Figure 11.6 in the STIS Instrument Handbook, this indicates that a buffer time = t(exp)/2 should be used.							

Orbit Structure






Orbit 3
Server Version: 20180409
Exp. 6 (cont'd) (Auto-WAVECAL)
Exp. 7
Pointing Maneuver
Exp. 8 (Auto-WAVECAL)
Exp. 7
Exp. 8
Exp. 8 (Auto-WAVECAL)
Exp. 9 (Auto-WAVECAL)
Exp. 9
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec
Orbit 4
Server Version: 20180409
Exp. 9 (cont'd)
Exp. 10
Exp. 10 (Auto-WAVECAL)
Exp. 11
Home
0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec