17477 - HST Spectroscopy of a Fast-Rising Luminous Ultraviolet Transient

Cycle: 31, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
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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	(2) AT2024WPP	COS/FUV COS/NUV	2	07-Oct-2024 15:00:15.0	yes
02	(2) AT2024WPP	COS/FUV COS/NUV	2	07-Oct-2024 15:00:15.0	yes
03	(2) AT2024WPP	STIS/CCD STIS/NUV-MAMA	2	07-Oct-2024 15:00:16.0	yes

6 Total Orbits Used

ABSTRACT

High-cadence time-domain surveys have unveiled a population of fast-evolving, luminous extragalactic transients with SEDs that remain dominated by ultraviolet emission for long after peak and also exhibit luminous X-ray and radio counterparts. While they show some observational similarities with strongly-interacting supernovae, optical follow-up has failed to identify any recognizable supernova features and the extreme properties of these events strain theoretical models for what is possible in a supernova explosion. Ultraviolet spectroscopy has the power to reveal similarities or differences betwen this event and other supernova classes not apparent from optical observations alone, and offers a means of identifying the progenitor star via transmission spectroscopy of the dense stellar wind before the explosion sweeps it up. We propose to obtain target-of-opportunity UV spectroscopy of a new event of this type in Cycle 31 or 32 to secure the physical origins of this class while HST's unique UV spectroscopic resource is still available.

OBSERVING DESCRIPTION

Our objective is to carry out low-resolution FUV and NUV spectroscopy of a fast-luminous UV transient with COS (G140L) and STIS (G230L). Fast turnaround is helpful for many reasons - both to optimize the S/N (the target will not be bright) and to decrease the risk of acquisition failure if the target's UV flux evolution is different than expected. A turnaround of up to 1 week is acceptable, although for a sufficiently nearby event we may accept a longer delay. Using fewer guide stars may be acceptable to achieve faster turnaround. It is desirable in principle to obtain the COS and STIS observations close in time to each other but observing sooner in one band will almost always be preferred if the option is available.

Rapid two-way communication with STScI will be necessary to correctly configure the observations and perform all safety checks to ensure a successful acquisition. The PI's mobile number is +44 745 6339330 and can be contacted 24 hours a day.

Visit

Proposal 17477, COS FUV spectrum (01), implementation Mon Oct 07 19:00:17 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: TOO RESPONSE TIME 4.0D

Diagnostics

(COS FUV spectrum (01)) Warning (Form): If the target position is not known to 0.4" (or better), an ACQ/SEARCH should precede the ACQ/IMAGE.

Fixed Targets

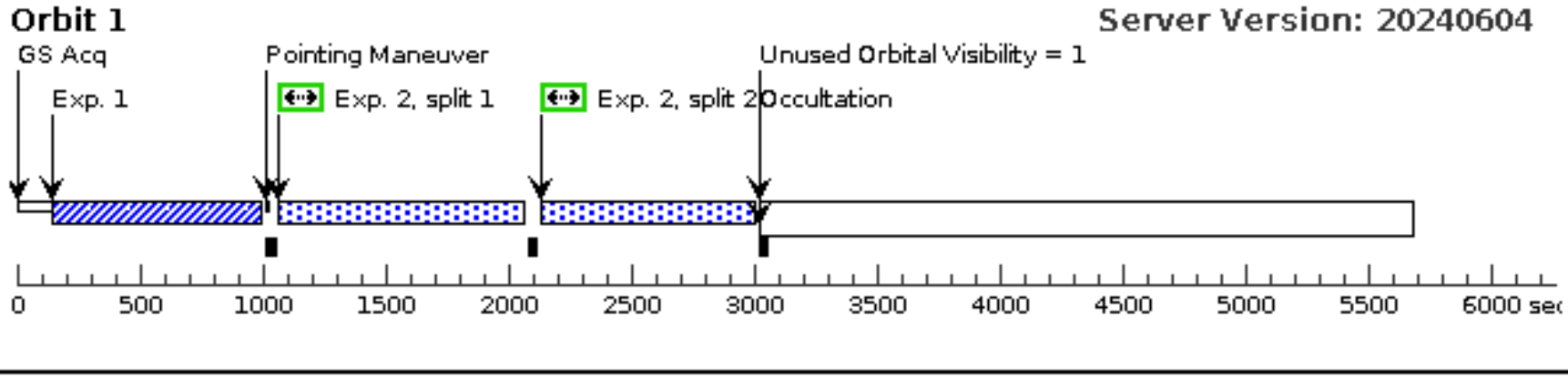
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	AT2024WPP Alt Name1: ZTF24ABJJPBO	RA: 02 42 5.4850 (40.5228542d) Dec: -16 57 23.04 (-16.95640d) Equinox: J2000	Epoch of Position: 2000 Redshift: 0.0868	V=19 UVM2 = 19.8 (AB, expected)	Reference Frame: ICRS

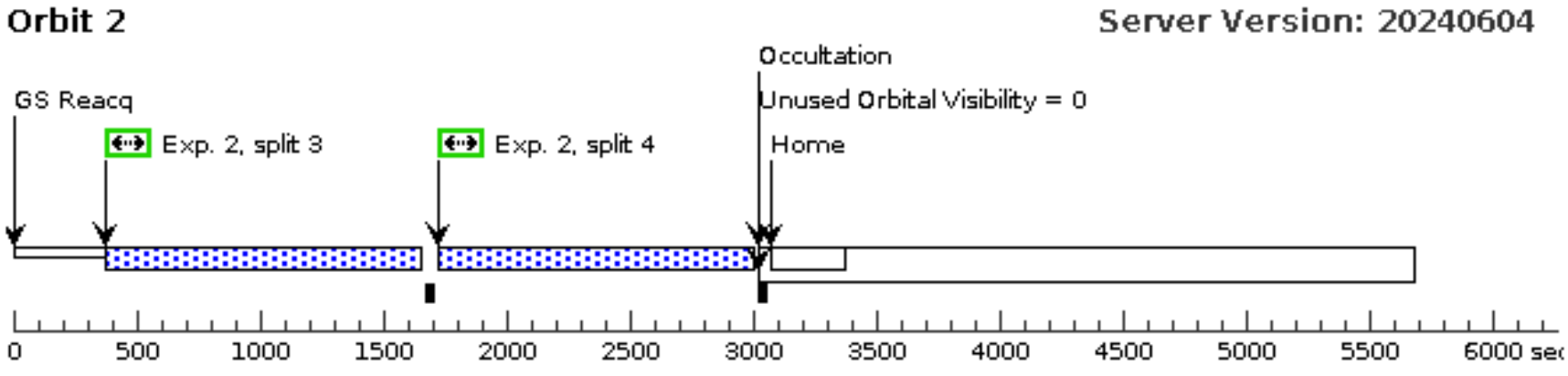
Comments: This is a projection of the magnitude based on information available as of October 4th. The source is evolving, and updated/improved estimates can be provided later.
Category=STAR
Description=[SUPERNOVA, X-RAY TRANSIENT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition (COS.ta.1937000)	(2) AT2024WPP	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				280 Secs (280 Secs) *[==>]*	 ***[1]***
Comments: MirrorB acquisition strategy.									
2	COS spectrum (COS.sp.1529625)	(2) AT2024WPP	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FLASH=YES; BUFFER-TIME=6400; FP-POS=ALL			1000 Secs (4104 Secs) *[==>820.0 Secs (Split 1)]* *[==>820.0 Secs (Split 2)]* *[==>1232.0 Secs (Split 3)]* *[==>1232.0 Secs (Split 4)]*	 ***[1]*** ***[2]***

Orbit Structure





Visit

Proposal 17477, COS FUV spectrum (02), implementation Mon Oct 07 19:00:17 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: TOO RESPONSE TIME 4.0D

Diagnostics

(COS FUV spectrum (02)) Warning (Form): If the target position is not known to 0.4" (or better), an ACQ/SEARCH should precede the ACQ/IMAGE.

Fixed Targets

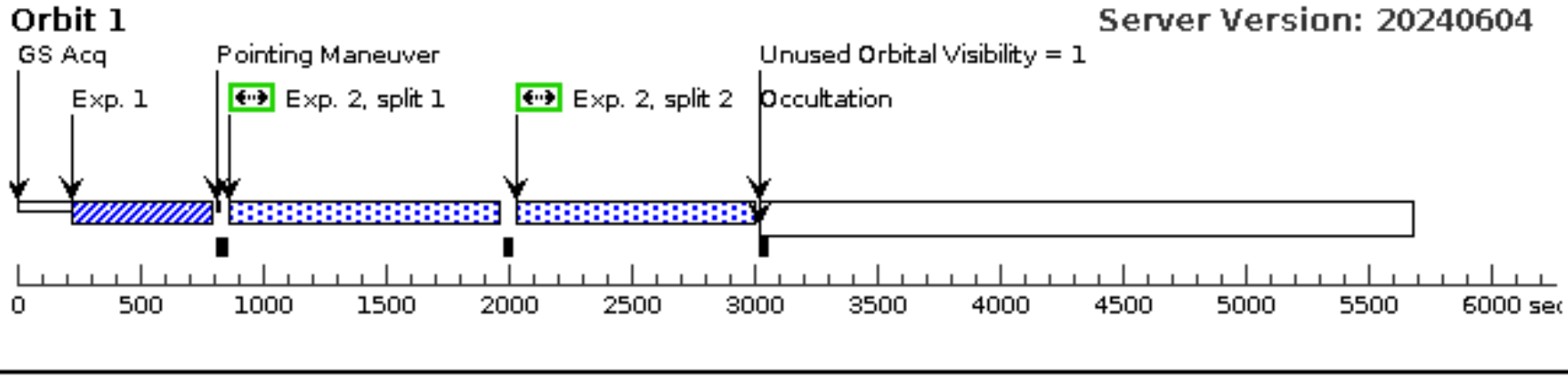
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	AT2024WPP Alt Name1: ZTF24ABJJPBO	RA: 02 42 5.4850 (40.5228542d) Dec: -16 57 23.04 (-16.95640d) Equinox: J2000	Epoch of Position: 2000 Redshift: 0.0868	V=19 UVM2 = 19.8 (AB, expected)	Reference Frame: ICRS

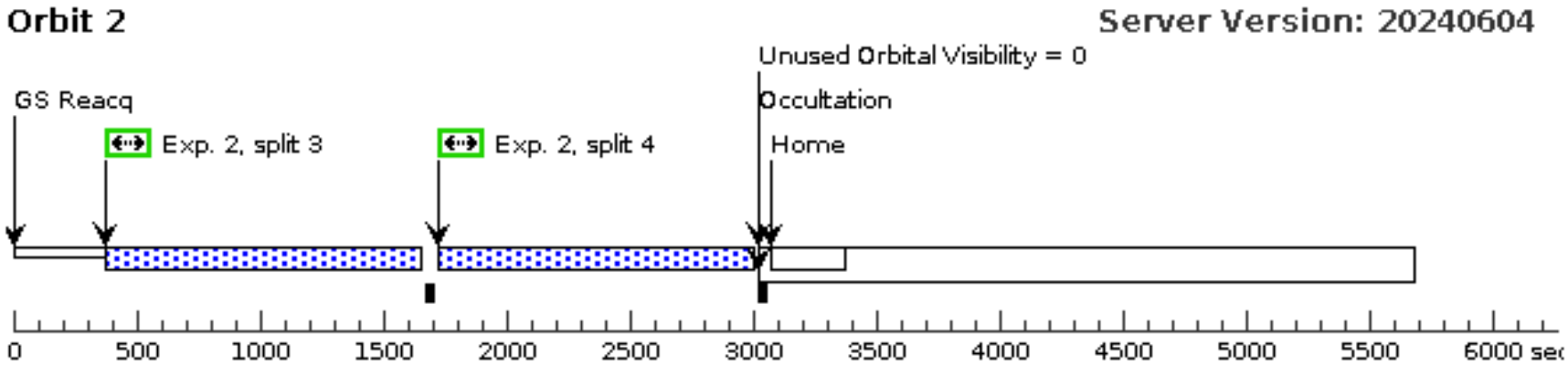
Comments: This is a projection of the magnitude based on information available as of October 4th. The source is evolving, and updated/improved estimates can be provided later.
Category=STAR
Description=[SUPERNOVA, X-RAY TRANSIENT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition (COS.ta.1936997)	(2) AT2024WPP	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				180 Secs (180 Secs) *[==>]*	 ***[1]***
Comments: MirrorA acquisition strategy.									
2	COS spectrum (COS.sp.1529625)	(2) AT2024WPP	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FLASH=YES; BUFFER-TIME=6400; FP-POS=ALL			1000 Secs (4304 Secs) *[==>920.0 Secs (Split 1)]* *[==>920.0 Secs (Split 2)]* *[==>1232.0 Secs (Split 3)]* *[==>1232.0 Secs (Split 4)]*	 ***[1]*** ***[2]***

Orbit Structure





Visit

Proposal 17477, STIS NUV spectrum (03), implementation Mon Oct 07 19:00:17 GMT 2024

Diagnostic Status: No Diagnostics

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

Special Requirements: TOO RESPONSE TIME 4.0D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	AT2024WPP Alt Name1: ZTF24ABJJPBO	RA: 02 42 5.4850 (40.5228542d) Dec: -16 57 23.04 (-16.95640d) Equinox: J2000	Epoch of Position: 2000 Redshift: 0.0868	V=19 UVM2 = 19.8 (AB, expected)	Reference Frame: ICRS

Comments: This is a projection of the magnitude based on information available as of October 4th. The source is evolving, and updated/improved estimates can be provided later.
Category=STAR
Description=[SUPERNOVA, X-RAY TRANSIENT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition (STIS.ta.1936989)	(2) AT2024WPP	STIS/CCD, ACQ, 50CCD	MIRROR				60 Secs (60 Secs) *[==>]*	*[1]*
Comments: Updated to use 50CCD acquisition aperture in case the target is fainter than anticipated.									
2	STIS orbit 1 (STIS.sp.1527040)	(2) AT2024WPP	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=663			2100 Secs (1859 Secs) *[==>1859.0 Secs]*	*[1]*
3	STIS orbit 2 (STIS.sp.1527040)	(2) AT2024WPP	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=663			2100 Secs (2615 Secs) *[==>2615.0 Secs]*	*[2]*

Orbit Structure