16598 - ULLYSES T Tauri Survey Star WZ Cha in Cha I

Cycle: 29, Proposal Category: GO/DD

(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?***
2C	(2) V-WZ-CHA	COS/FUV COS/NUV	3	26-Oct-2021 11:00:25.0	yes
2D	(2) V-WZ-CHA	COS/FUV COS/NUV	3	26-Oct-2021 11:00:26.0	yes
2S	(2) V-WZ-CHA CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	26-Oct-2021 11:00:28.0	yes

7 Total Orbits Used

ABSTRACT

The Space Telescope Science Institute (STScI) Director has decided to devote up to 1000 orbits of Director's Discretionary time in observing Cycles 27-29 to a new Hubble Ultraviolet Legacy program focused on star formation and associated stellar physics. This new program, ULLYSES (UV Legacy Library of Young Stars as Essential Standards), will provide a UV spectroscopic reference sample of young (< 10 Myr) high- and low-mass stars. It will target over ~150 OB stars in the Magellanic Clouds and lower metallicity galaxies in the Local Group, and ~40 T Tauri stars and brown dwarfs in the Milky Way. In addition, ULLYSES will monitor 4 typical T Tauri stars over different rotational phases through at least three rotation periods, and over timescales of months to years. The resulting library will provide template spectra of massive stars at metallicities substantially

below the well studied, while the low mass sample will cover a wide range of ages, accretion rates, and masses, including objects down to well below 0.5 M_sun. The legacy of this large UV dataset on the first 10 Myr of stellar evolution will be enhanced by complementary datasets obtained by the scientific community. In addition to the core goals of the program related to stellar astrophysics of low and high mass stars, this data will also enable exciting science in the fields of ISM, CGM, jets, and exoplanets. ULLYSES will be modeled after the Frontier Fields program: all data obtained will be non-proprietary. The implementation team at STScI is developing high-level science data products and a sophisticated database and website for disseminating data from the ULLYSES program and ancillary datasets for the ULLYSES target sample from space and ground-based facilities.

OBSERVING DESCRIPTION

This proposal includes a subset of the low mass ULLYSES survey stars. Each target will be observed with the COS c1291 + c1589 + c1623 settings, as well as with STIS G230L, G430L, and G750L. All observations will normally be constrained to occur within 1 day.

Signal-to-noise requirements used to determine the desired exposures times were defined as follows:
COS/G130M/c1291: N V 1239 +- 1 A -- S/N=10/6-pix-resel at the peak of the line
COS/G160M/c1589: C IV 1549 +- 1 A -- S/N=20/6-pix-resel at the peak of the line (combined c1589 & c1623)
COS/G160M/c1623: C IV 1549 +- 1 A -- S/N=20/6-pix-resel at the peak of the line (combined c1589 & c1623)
STIS/G230L/52X2: Mg II 2800 +-15 A -- S/N=20/2-pix-resel at the peak of the line
STIS/G430L/52X2: continuum average 4000 +-5 A -- S/N=20/2-pix-resel (2 reads)
STIS/G750L/52X2: continuum average 5700 +-5 A -- S/N=20/2-pix-resel (2 reads)

Additional details about the scientific motivation and technical implementation strategy of the ULLYSES observations can be found at http://www.stsci.edu/stsci-research/research-topics-and-programs/ullyses. The ULLYSES program is based on the recommendations of a working group led by Sally Oey; the full text of that group's report can be found at http://www.stsci.edu/files/live/sites/www/files/home/stsci-research/research-topics-and-programs/ullyses/_documents/HSTUV-report-ULLYSES.pdf.

Visit

Proposal 16598, V-WZ-CHA-COS (2C), implementation Tue Oct 26 15:00:28 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 24-JAN-2022 AND 14-MAY-2022

Comments: vstatus; 2C; V-WZ-CHA; P/COS Approved for Submission; P/CRP 15/07/21 ; intrev: complete ; P/WF 29/07/21
vcheck; Enter targ name & Inst. & Resp. Sci.; V-WZ-CHA ; COS ; CRP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; no
vcheck; M-dwarf check complete and added to box folder?; yes ...
Most definitive Av is from Manara et al 2017 which gives Av=1.2. No other estimate in vizier is lower than +0.3. But even Av=0.15 is enough to make this target safe! see wzcha_bopscreening.xls and associated spectra. Note that since U band is dominated by the accretion flux, we instead normalize to V and derive the photospheric U from the spectral type to get these results.
vcheck; S/N ETC calcs done & documented?; yes
t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes.
But t48_lya2_etc.txt aggrees well, so redo S/N calcs with those numbers.
(See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png)
COS.sp.1522996 t48_lya2_etc.txt G160M=1243s S/N=20 at 1548.42
COS.sp.1522992 t48_lya2_etc.txt G130M=2270s S/N=10 at 1238.93
To compromise between this and original 12 orbits, do 6 orbits of COS.
Gets G130M total=7696s, G160M total = 4888s between all CENWAVE/FPPOS
vcheck; Field images checked & saved?; wzcha-cos-galex.png
vcheck; Selected ACQ strategy?; Dispersed G230L, based on t48_lya2_etc.txt, but double exposure time
vcheck; Possible ACQ or Sci spoilers?; non
vcheck; Field BOT clear?; Yes
vcheck; Visual BOT check for stars not in catalog?; clear
vcheck; Orbit packing finalized?; yes - deliberately swapped c1291 FP-POS order in 2D to allow both FP-POS in each visit, but with equal total exposure times.
vcheck; Buffer times optimized?; yes, set all COS buffer times to exptime-110s since cost is minimal
vcheck; Verify visit grouping correct; group 2C, 2D, 2S within 1 day
vcheck; phase constraint for ground based observations added?; N/A
vcheck; BETWEENS for coordinated observations added?; BETWEEN 24 Jan 2022 and 14 May 2022
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 12, but only use 6

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-WZ-CHA Alt Name1: T48 Alt Name2: J11105333-7634319	RA: 11 10 53.2215 (167.7217562d) Dec: -76 34 32.07 (-76.57558d) Equinox: J2000	Proper Motion RA: -21.720190245507002 mas/yr Proper Motion Dec: -0.833034185457 mas/yr Parallax: 0.005175260355346999" Epoch of Position: 2016	V=15.48 SpT=M3; A_V=1.20; U=15.6; V=15.5; B=16.41; I=13.07; G=14.27; galex, fuv=19.393; galex, nuv=17.677; uvgriz, skymapper=15.1, 15.15.84, 15.53, 14.58, 13.56, 12.95	Reference Frame: ICRS

Comments: V-WZ-Cha : T48, J11105333-7634319
Region: Cha I
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=WZ+Cha&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id
Target coordinates are from Gaia eDR3.
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
Input file: targets_up_to_May30-2022.csv
t48_lya2_etc_scaled_pAV0.50.txt
Calculation performed 2021-06-18T15:05:22, 0.24
---
tstatus; V-WZ-CHA; P/COS ready for internal review; S/STIS ready for internal review; P/CP 13/07/21; S/CP 13/07/21
tcheck; APT/SIMBAD target names: ; HBC 585, Sz 38, [FL2004] 74, Ass Cha T 2-48
tcheck; Target info verification status?; SIMBAD calls target M4 rather than M3, but not doubt as to target ID
tcheck; Coordinates & P.M. verified, epoch checked?; Coordinates supplied are actually Gaia EDR3 and are epoch 2016 not 2015.5.
tcheck; Adopted SED compared to Observations?; Yes....
The nominal scaling (without the extra 0.5 mags of Av) gives a very good fit to u band, galex FUV and galex NUV data, (See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png), so this should be used instead of the fainter alternative. However, in optical the target is much fainter than any of the scaled models. Manara 2017 x-shooter spectra show strong emission lines and strong emission in the Balmer continuum.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	NUV PEAK XD (COS.sa.152 2999)	(2) V-WZ-CHA	COS/NUV, ACQ/PEAKXD, PSA	G230L 2950 A	STRIPE=DEF			122 Secs (122 Secs) *[==>]*	***[1]***
Comments: COS.sa.152299 x 2 assuming t48_lya2_etc.txt									
2	NUV PEAK D (COS.sa.152 2998)	(2) V-WZ-CHA	COS/NUV, ACQ/PEAKD, PSA	G230L 2950 A	CENTER=DEF; NUM-POS=5; STEP-SIZE=0.9			156 Secs (156 Secs) *[==>]*	***[1]***
Comments: COS.sa.1522998 x2 assuming t48_lya2_etc.txt									
3	G130M/129 1-3 (COS.sp.152 4224)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=11 86; FP-POS=3			1296 Secs (1296 Secs) *[==>]*	***[1]***
Comments: t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes. But t48_lya2_etc.txt aggrees well, so redo S/N calcs with those numbers. COS.sp.1522996 t48_lya2_etc.txt G160M=1243s 1548.42 COS.sp.1524224 t48_lya2_x4.00_etc.txt G130M1291 buffer=7856s, bp=0.090 (lya) t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) Input file: targets_up_to_May30-2022.csv Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160 M: 0.3 ; log(dm/dt): -7.96 For exptime=11510.8 s, spectral region: 1239.0 +- 1.0 A achieves SNR=10.0 / 6-pix-resel A factor of 2.0 has been applied to the exptime in each exposure. global countrate (brightest segment): 282.2 cts/s/segment brightest pixel: 0.001 cts/s/pix at 1304.9 A Calculation performed 2021-06-18T15:05:22, v0.24*									
4	G130M/129 1-4 (COS.sp.152 4224)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=24 42; FP-POS=4			2552 Secs (2552 Secs) *[==>]*	***[2]***
Comments: t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes. But t48_lya2_etc.txt aggrees well, so redo S/N calcs with those numbers. COS.sp.1522996 t48_lya2_etc.txt G160M=1243s 1548.42 COS.sp.1524224 t48_lya2_x4.00_etc.txt G130M1291 buffer=7856s, bp=0.090 (lya) t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) Input file: targets_up_to_May30-2022.csv Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160 M: 0.3 ; log(dm/dt): -7.96 For exptime=11510.8 s, spectral region: 1239.0 +- 1.0 A achieves SNR=10.0 / 6-pix-resel A factor of 2.0 has been applied to the exptime in each exposure. global countrate (brightest segment): 282.2 cts/s/segment brightest pixel: 0.001 cts/s/pix at 1304.9 A Calculation performed 2021-06-18T15:05:22, v0.24*									

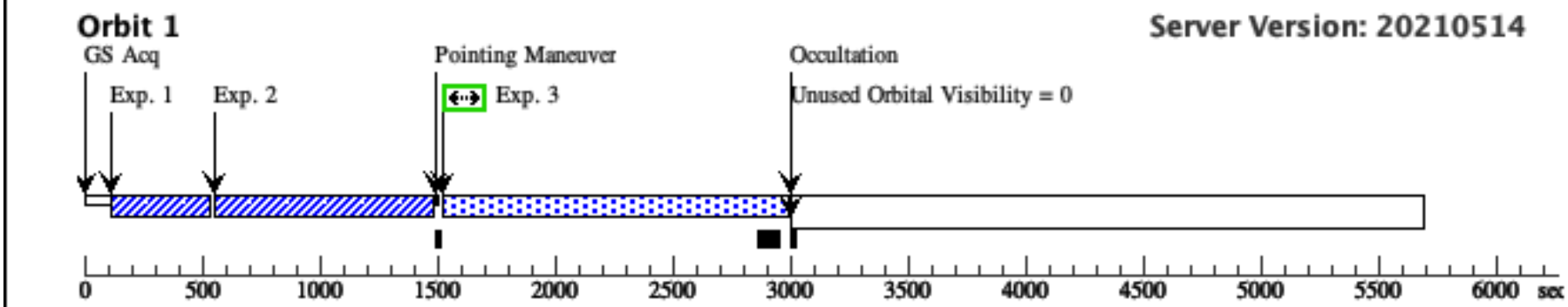
5	G160M/1589-3 (COS.sp.1524244)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1112; FP-POS=3	1222 Secs (1222 Secs)	
						[==>]	***[3]***

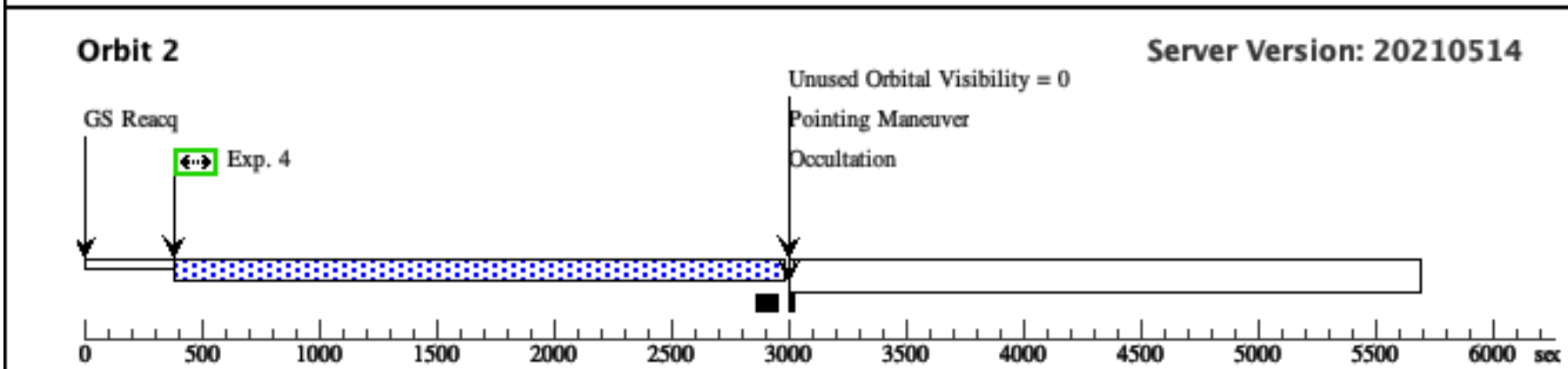
Comments: t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g160m,c1589,psa,mjd#59670; fp-pos=None, segment=None)
Input file: targets_up_to_May30-2022.csv
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
For exptime=2034.8 s, spectral region:
1549.0 +- 1.0 A achieves SNR=20.0 / 6-pix-resel for combined c1589 & c1623
The exptime for this c1589 exposure has been halved because c1589 & c1623 target the same line.
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 66.0 cts/s/segment
brightest pixel: 0.002 cts/s/pix at 1548.4 A
Calculation performed 2021-06-18T15:05:18, v0.24

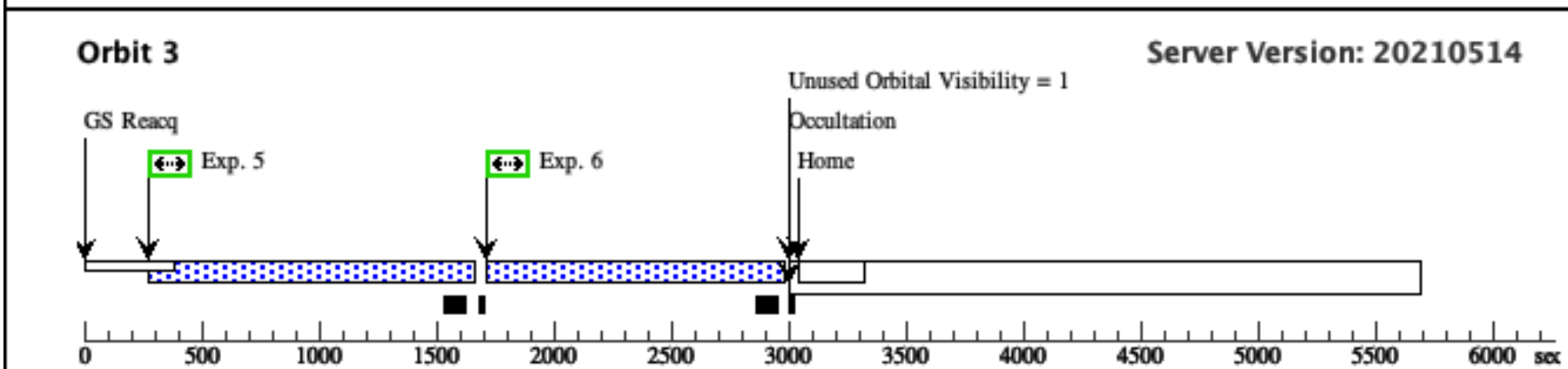
6	G160M/1589-4 (COS.sp.1524244)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1112; FP-POS=4	1222 Secs (1222 Secs)	
						[==>]	***[3]***

Comments: t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g160m,c1589,psa,mjd#59670; fp-pos=None, segment=None)
Input file: targets_up_to_May30-2022.csv
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
For exptime=2034.8 s, spectral region:
1549.0 +- 1.0 A achieves SNR=20.0 / 6-pix-resel for combined c1589 & c1623
The exptime for this c1589 exposure has been halved because c1589 & c1623 target the same line.
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 66.0 cts/s/segment
brightest pixel: 0.002 cts/s/pix at 1548.4 A
Calculation performed 2021-06-18T15:05:18, v0.24

Orbit Structure







Visit

Proposal 16598, V-WZ-CHA-COS (2D), implementation Tue Oct 26 15:00:28 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 24-JAN-2022 AND 14-MAY-2022

Comments: vstatus; 2D; V-WZ-CHA; P/COS Approved for Submission; P/CRP 15/07/21 ; intrev: complete ; P/WF 29/07/21
vcheck; Enter targ name & Inst. & Resp. Sci.; V-WZ-CHA ; COS ; CRP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; no
vcheck; M-dwarf check complete and added to box folder?; yes ...
Most definitive Av is from Manara et al 2017 which gives Av=1.2. No other estimate in vizier is lower than +0.3. But even Av=0.15 is enough to make this target safe! see wzcha_bopscreening.xls and associated spectra. Note that since U band is dominated by the accretion flux, we instead normalize to V and derive the photospheric U from the spectral type.
vcheck; S/N ETC calcs done & documented?; yes
t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes.
But t48_lya2_etc.txt agrees well, so redo S/N calcs with those numbers.
(See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png)
COS.sp.1522996 t48_lya2_etc.txt G160M=1243s S/N=20 at 1548.42
COS.sp.1522992 t48_lya2_etc.txt G130M=2270s S/N=10 at 1238.93
To compromise between this and original 12 orbits, do 6 orbits of COS.
Gets G130M total=7696s, G160M total = 4888s between all CENWAVE/FPPOS
vcheck; Field images checked & saved?; wzcha-cos-galex.png
vcheck; Selected ACQ strategy?; Dispersed G230L 2950, based on t48_lya2_etc.txt, but double exposure time
vcheck; Possible ACQ or Sci spoilers?; none
vcheck; Field BOT clear?; Yes
vcheck; Visual BOT check for stars not in catalog?; clear
vcheck; Orbit packing finalized?; yes - deliberately swapped c1291 FP-POS order in 2D to allow both FP-POS in each visit, but with equal total exposure times.
vcheck; Buffer times optimized?; yes, set all COS buffer times to exptime-110s since cost is minimal
vcheck; Verify visit grouping correct; group 2C, 2D, 2S within 1 day
vcheck; phase constraint for ground based observations added?; N/A
vcheck; BETWEENS for coordinated observations added?; BETWEEN 24 Jan 2022 and 14 May 202
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 12, but only use 6

Diagnostics

(V-WZ-CHA-COS (2D)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-WZ-CHA Alt Name1: T48 Alt Name2: J11105333-7634319	RA: 11 10 53.2215 (167.7217562d) Dec: -76 34 32.07 (-76.57558d) Equinox: J2000	Proper Motion RA: -21.720190245507002 mas/yr Proper Motion Dec: -0.833034185457 mas/yr Parallax: 0.005175260355346999" Epoch of Position: 2016	V=15.48 SpT=M3; A_V=1.20; U=15.6; V=15.5; B=16.41; I=13.07; G=14.27; galex, fuv=19.393; galex, nuv=17.677; uvgriz, skymapper=15.1, 15.15.84, 15.53, 14.58, 13.56, 12.95	Reference Frame: ICRS

Comments: V-WZ-Cha : T48, J11105333-7634319
Region: Cha I
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=WZ+Cha&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id
Target coordinates are from Gaia eDR3.
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
Input file: targets_up_to_May30-2022.csv
t48_lya2_etc_scaled_pAV0.50.txt
Calculation performed 2021-06-18T15:05:22, 0.24
---
tstatus; V-WZ-CHA; P/COS ready for internal review; S/STIS ready for internal review; P/CP 13/07/21; S/CP 13/07/21
tcheck; APT/SIMBAD target names: ; HBC 585, Sz 38, [FL2004] 74, Ass Cha T 2-48
tcheck; Target info verification status?; SIMBAD calls target M4 rather than M3, but not doubt as to target ID
tcheck; Coordinates & P.M. verified, epoch checked?; Coordinates supplied are actually Gaia EDR3 and are epoch 2016 not 2015.5.
tcheck; Adopted SED compared to Observations?; Yes....
The nominal scaling (without the extra 0.5 mags of Av) gives a very good fit to u band, galex FUV and galex NUV data, (See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png), so this should be used instead of the fainter alternative. However, in optical the target is much fainter than any of the scaled models. Manara 2017 x-shooter spectra show strong emission lines and strong emission in the Balmer continuum.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	NUV PEAK XD (COS.sa.1522999)	(2) V-WZ-CHA	COS/NUV, ACQ/PEAKXD, PSA	G230L 2950 A	STRIPE=DEF			122 Secs (122 Secs) *[==>]*	***[1]***
Comments: Exposure time not yet calculated.									
2	NUV PEAK D (COS.sa.1522998)	(2) V-WZ-CHA	COS/NUV, ACQ/PEAKD, PSA	G230L 2950 A	CENTER=DEF; NUM-POS=5; STEP-SIZE=0.9			156 Secs (156 Secs) *[==>]*	***[1]***
Comments: Exposure time not yet calculated.									
3	G130M/1291-4 (COS.sp.1524224)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1186; FP-POS=4			1296 Secs (1296 Secs) *[==>]*	***[1]***
Comments: t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *Input file: targets_up_to_May30-2022.csv* *Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160* *M*: 0.3 ; log(dm/dt): -7.96* *For exptime=11510.8 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=10.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 282.2 cts/s/segment* *brightest pixel: 0.001 cts/s/pix at 1304.9 A* *Calculation performed 2021-06-18T15:05:22, v0.24*									
4	G130M/1291-3 (COS.sp.1524224)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2442; FP-POS=3			2552 Secs (2552 Secs) *[==>]*	***[2]***
Comments: t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *Input file: targets_up_to_May30-2022.csv* *Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160* *M*: 0.3 ; log(dm/dt): -7.96* *For exptime=11510.8 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=10.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 282.2 cts/s/segment* *brightest pixel: 0.001 cts/s/pix at 1304.9 A* *Calculation performed 2021-06-18T15:05:22, v0.24*									

5	G160M/162 3-1 (COS.sp.152 4226)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=11 12; FP-POS=1	1222 Secs (1222 Secs)	
						[==>]	***[3]***

Comments: t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes.
But t48_lya2_etc.txt aggrees well, so redo S/N calcs with those numbers.
COS.sp.1522996 t48_lya2_etc.txt G160M=1243s S/N=20 at 1548.42
COS.sp.1524226 t48_lya2_x4.00_etc.txt G160M/1611 buffer=22020s, bp=0.032

To compromise between this and original 12 orbits, do 6 orbits of COS.
Gets G130M total=7696s, G160M total = 4888s between all CENWAVE/FPPOS

t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g160m,c1623,psa,mjd#59670; fp-pos=None, segment=None)
Input file: targets_up_to_May30-2022.csv
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
For exptime=2021.2 s, spectral region:
1549.0 +- 1.0 A achieves SNR=20.0 / 6-pix-resel for combined c1589 & c1623
The exptime for this c1623 exposure has been halved because c1589 & c1623 target the same line.
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 65.7 cts/s/segment
brightest pixel: 0.002 cts/s/pix at 1548.4 A
Calculation performed 2021-06-18T15:05:20, v0.24

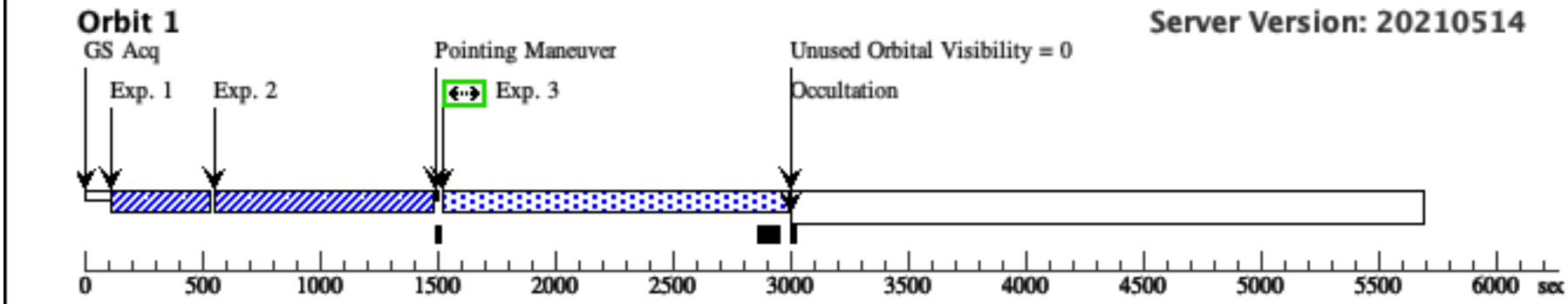
6	G160M/162 3-2 (COS.sp.152 4226)	(2) V-WZ-CHA	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=11 12; FP-POS=2	1222 Secs (1222 Secs)	
						[==>]	***[3]***

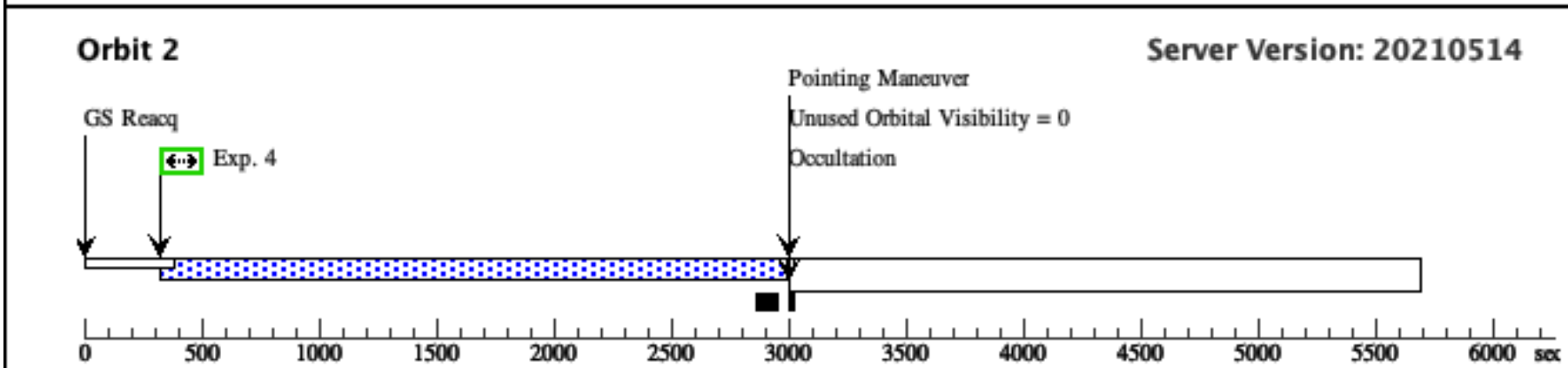
Comments: t48_lya2_etc_scaled_pAV0.50.txt much fainter than observed u band and galex fluxes.
But t48_lya2_etc.txt aggrees well, so redo S/N calcs with those numbers.
COS.sp.1522996 t48_lya2_etc.txt G160M=1243s S/N=20 at 1548.42
COS.sp.1524226 t48_lya2_x4.00_etc.txt G160M/1611 buffer=22020s, bp=0.032

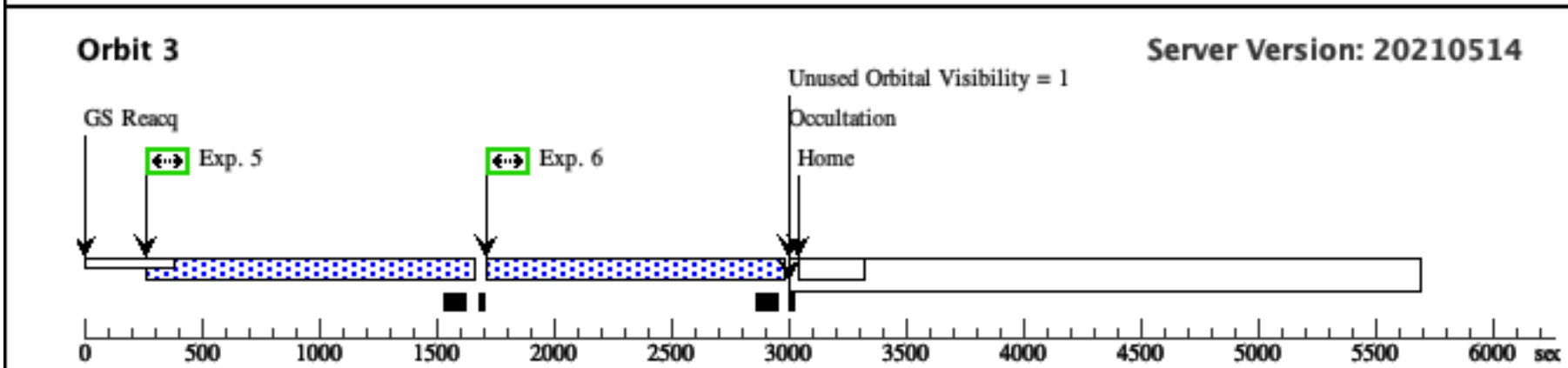
To compromise between this and original 12 orbits, do 6 orbits of COS.
Gets G130M total=7696s, G160M total = 4888s between all CENWAVE/FPPOS

t48_lya2_etc_scaled_pAV0.50.txt; cos,fuv,g160m,c1623,psa,mjd#59670; fp-pos=None, segment=None)
Input file: targets_up_to_May30-2022.csv
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
For exptime=2021.2 s, spectral region:
1549.0 +- 1.0 A achieves SNR=20.0 / 6-pix-resel for combined c1589 & c1623
The exptime for this c1623 exposure has been halved because c1589 & c1623 target the same line.
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 65.7 cts/s/segment
brightest pixel: 0.002 cts/s/pix at 1548.4 A
Calculation performed 2021-06-18T15:05:20, v0.24

Orbit Structure







Visit

Proposal 16598, V-WZ-CHA-STIS (2S), implementation Tue Oct 26 15:00:29 GMT 2021

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; BETWEEN 24-JAN-2022 AND 14-MAY-2022; GROUP 2S,2C,2D WITHIN 1D

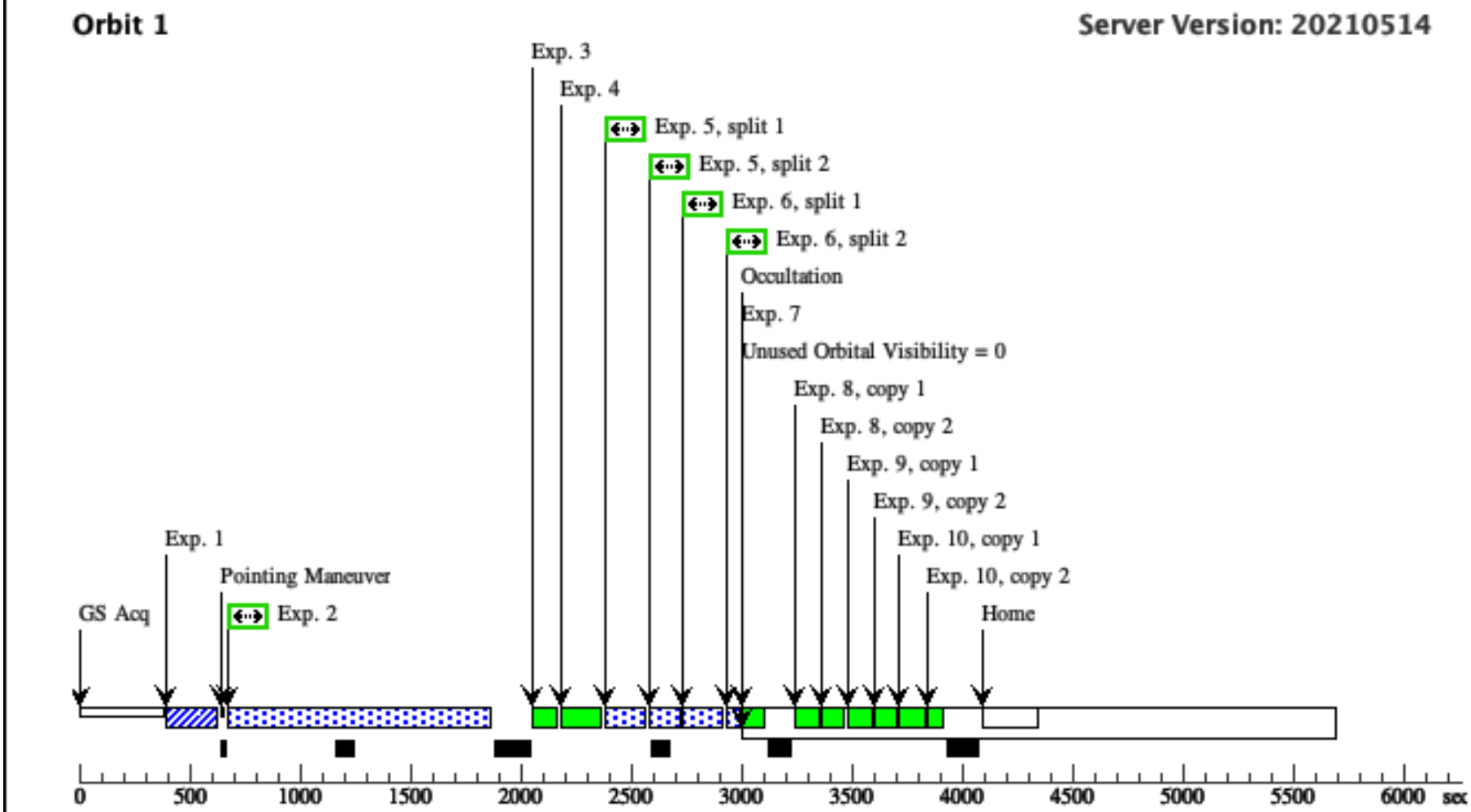
Comments: vstatus; 2S; V-WZ-CHA; S/STIS Approved for Submission; P/CRP 15/07/21 ; intrev: complete ; S/WF 29/07/21
vcheck; Enter targ name & Inst. & Resp. Sci.; V-WZ-CHA ; STIS ; CRP
vcheck; ETC numbers entered in APT?; yes
vcheck; Any screening violations?; no
vcheck; M-dwarf check complete and added to box folder?; yes
vcheck; S/N ETC calcs done & documented?; yes ...
Use default accretion model in NUV, observed photometry in the optical.
(See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png)
vcheck; Field images checked & saved?; yes
vcheck; Selected ACQ strategy?; F28X50LP, S/N=150 in 1.5s
vcheck; Possible ACQ or Sci spoilers?; none
vcheck; Field BOT clear?; yes
vcheck; Visual BOT check for stars not in catalog?; clear
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; yes
vcheck; Verify visit grouping correct; yes
vcheck; phase constraint for ground based observations added?; N/A
vcheck; BETWEENS for coordinated observations added?; yes, 24 Jan to 14 May 2022
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-WZ-CHA Alt Name1: T48 Alt Name2: J11105333-7634319	RA: 11 10 53.2215 (167.7217562d) Dec: -76 34 32.07 (-76.57558d) Equinox: J2000	Proper Motion RA: -21.720190245507002 mas/yr Proper Motion Dec: -0.833034185457 mas/yr Parallax: 0.005175260355346999" Epoch of Position: 2016	V=15.48 SpT=M3; A_V=1.20; U=15.6; V=15.5; B=16.41; I=13.07; G=14.27; galex, fuv=19.393; galex, nuv=17.677; uvgriz, skymapper=15.1, 15.15.84, 15.53, 14.58, 13.56, 12.95	Reference Frame: ICRS

Comments: V-WZ-Cha : T48, J11105333-7634319
Region: Cha I
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=WZ+Cha&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id
Target coordinates are from Gaia eDR3.
Spectral type: M3 ; A_V: 1.2 ; Distance (pc): 160
M: 0.3 ; log(dm/dt): -7.96*
Input file: targets_up_to_May30-2022.csv
t48_lya2_etc_scaled_pAV0.50.txt
Calculation performed 2021-06-18T15:05:22, 0.24
----
tstatus; V-WZ-CHA; P/COS ready for internal review; S/STIS ready for internal review; P/CP 13/07/21; S/CP 13/07/21
tcheck; APT/SIMBAD target names: ; HBC 585, Sz 38, [FL2004] 74, Ass Cha T 2-48
tcheck; Target info verification status?; SIMBAD calls target M4 rather than M3, but not doubt as to target ID
tcheck; Coordinates & P.M. verified, epoch checked?; Coordinates supplied are actually Gaia EDR3 and are epoch 2016 not 2015.5.
tcheck; Adopted SED compared to Observations?; Yes....
The nominal scaling (without the extra 0.5 mags of Av) gives a very good fit to u band, galex FUV and galex NUV data, (See /box/ullyses_tech/ullyses_proposals/survey_c29/16598/wzcha/wzcha-vs-default.png), so this should be used instead of the fainter alternative. However, in optical the target is much fainter than any of the scaled models. Manara 2017 x-shooter spectra show strong emission lines and strong emission in the Balmer continuum.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.sp.1524195)	(2) V-WZ-CHA	STIS/CCD, ACQ, F28X50LP	MIRROR				1.5 Secs (1.5 Secs) *[==>]*	***[1]***
Comments: STIS.sp.1524195, F28X50LP, M2V norm I=13.07, S/N=150 in 1.5s.									
2	G230L/2376 (STIS.sp.1543442)	(2) V-WZ-CHA	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=345			1033 Secs (1033 Secs) *[==>]*	***[1]***
Comments: t48_lya2_etc_scaled_pAV0.50.txt is well below observed galex and u band fluxes. But t48_lya2_etc.txt agrees well so use that instead for S/N and x4 spectrum for BOP 0.8x buffer time for x4 spectrum < 1/2 exposure length, so set buffer to exptime/3 rounded up STIS.sp.1543442, t48_lya2_x4.00_etc_sed.fits G230L, BP=3.7 c/s, global = 3312, BUFFER=603s STIS.sp.1543443, t48_lya2_etc.txt S/N=74 at 2788.89 in 1033s.									
3	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	***[1]***
4	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	***[1]***
5	G430L/4300 (STIS.sp.1524180)	(2) V-WZ-CHA	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			212 Secs (212 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Optical photometry much fainter than scaled accretion model Renormalize M2 spectrum to observed B mag, but allow for emission lines in 4X accretion model STIS.sp.1524180 M2V B=16.41, G430L gain=4 SN=20 at 4000 in 212.1s STIS.sp.1524187 t48_lya2_x4.00_etc_sed.fits G430L gain=4 saturates in 683.6s/expo STIS.sp.1524187 t48_lya2_x4.00_etc_sed.fits G430L gain=1 saturates in 188s/expo									
6	G750L/7751 (STIS.sp.1524182)	(2) V-WZ-CHA	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			58.6 Secs (58.6 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Optical photometry much fainter than scaled accretion model Renormalize M2 spectrum to observed V mag. STIS.sp.1524182 M2V V=15.5, G750L gain=4 SN=20 at 5700 in 58.6s STIS.sp.1524184 t48_lya2_x4.00_etc_sed.fits G750L gain=4 saturates in 81.8s/expo									
7	G750L/7751 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A				*[==>]*	***[1]***
8	G750L/7751 CCDFLAT 1	CCDFLAT	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A				*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
9	G750L/7751 CCDFLAT 2	CCDFLAT	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A				*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
10	G750L/7751 CCDFLAT 3	CCDFLAT	STIS/CCD, ACCUM, 52X2	G750L 7751 A				*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Orbit Structure