16092 - ULLYSES LMC Wolf-Rayet STIS

Cycle: 27, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
1S	(1) SK-67D20 WAVE	STIS/CCD STIS/FUV-MAMA	3	16-Jul-2020 12:00:48.0	yes
2S	(2) SK-68D15 WAVE	STIS/CCD STIS/FUV-MAMA	2	16-Jul-2020 12:00:49.0	yes
3S	(3) SK-69D191 WAVE	STIS/CCD STIS/FUV-MAMA	3	16-Jul-2020 12:00:51.0	yes

8 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 massive ULLYSES stars being observed in the Magellanic clouds.

Depending on target brightness, the main FUV spectral range will generally use either the STIS E140M setting or the combination of the COS c1291 + c1611 settings. Sufficiently bright stars without good FUSE data in the archive will also be observed with the COS c1096 setting to provide coverage at shorter wavelengths. Where time permits, stars of type O9 or later will also be observed with STIS E230M/1978, while for supergiants of spectral type B5 or later E230M/2707 may also be included. Where possible, targets of a given spectral type were selected to span both a range in extinction and in rotation rates to support a variety of stellar and ISM studies.

Signal-to-noise requirements used to determine the desired exposures times were defined as follows:
COS/G130M/c1096: 20 / nine-pixel resel at 1080 A
COS/G130M/c1291: 30 / six-pixel resel at 1150 A
COS/G160M/c1611: 30 / six-pixel resel at 1590 A
COS/G185M/c1953: 30 / three-pixel resel at 1860 A
COS/G185M/c1986: 30 / three-pixel resel at 1980 A
STIS/E140M/c1425: 20 / two-pixel resel at 1200 A
STIS/E230M/c1978: 20 / two-pixel resel at 1800 A
STIS/E230M/c2707: 20 / two-pixel resel at 2800 A
The actual implemented exposure times may be adjusted to efficiently use HST orbits, but should always provide at least 80% of the desired time as defined by the above requirements.

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 16092, SK-67D20-STIS (1S) Thu Jul 16 16:00:51 GMT 2020

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%

Comments: vstatus; 1S; SK-67D20; P/STIS approved for submission; P/DW 27/06/20 ; intrev: complete ; P/CP 16/07/20
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-67D20 ; STIS ; DW
vcheck; ETC numbers entered in APT?; yes
vcheck; Any screening violations?; no -- ...
both GSC2, GALEX have 1 safe object (the target) -- confirmed with ETC
vcheck; S/N ETC calcs done & documented?; yes -- ...
for science exposures, use of the new SED yields max count rate 0.036 cts/s near 1334 A (and probably about 20% higher for the strong emission line near 1645 A, based on comparisons with the total counts list) -- rate for entire detector ~2540 cts/s -- both are well below the limiting rates -- similar results if the IUE swp spectrum is used instead of the new SED
vcheck; Field images checked & saved?; yes -- ...
DSS, 2MASS, GALEX -- target is brightest object within 20" in all three
vcheck; Selected ACQ strategy?; yes -- ...
direct acq with F28x50LP, 2 sec -- yields S/N~173 (and saturation in ~20 sec)
vcheck; Possible ACQ or Sci spoilers?; no -- ...
target appears symmetric and unblended in both DSS and 2MASS -- no HST images are available, however
vcheck; Field BOT clear?; yes
vcheck; Visual BOT check for stars not in catalog?; yes
vcheck; Orbit packing finalized?; yes -- ...
2 orbits yield S/N~15 near 1200 A -- so increase to 3 orbits to get S/N~18
vcheck; Buffer times optimized?; yes -- 0.8 x 787 sec (ETC) = 630 sec
vcheck; Verify visit grouping correct; there is only 1 visit (3 orbits)
vcheck; Is visit ready for int. review?; yes -- but need to check number of orbits
Allocated STIS orbits = 2 (constrained in input CSV) -- probably need at least 3 orbits

Diagnostics

(SK-67D20-STIS (1S)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(SK-67D20-STIS (1S)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SK-67D20	RA: 04 55 31.3420 (73.8805917d)	Proper Motion RA: 0.0 sec of time/yr	V=13.81	Reference Frame: ICRS
	Alt Name1: HD-32109	Dec: -67 30 2.68 (-67.50074d)	Proper Motion Dec: 0.0 arcsec/yr	SpT=WN4b; E(B-V)=0.10; U=12.9; B=13.5; V=13.8; F1160=7.50e-13; F1360=4.20e-13; F1700=2.10e-13; F2200=9.40e-14	
		Equinox: J2000			

Comments: SK-67D20 : HD 32109
Previous name : HD 32109
Input file: LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv
SIMBAD link (HD 32109): https://simbad.u-strasbg.fr/simbad/sim-id?Ident=HD+32109&submit=submit+id
SpT = WN4b
COS/G130M/c1096 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1160 +- 30.0A flux=7.5e-13 Flam)
COS/G130M/c1291 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1360 +- 30.0A flux=4.2e-13 Flam)
COS/G160M/c1611 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1700 +- 5.0A flux=2.1e-13 Flam)
COS/G185M/c1921 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1700 +- 5.0A flux=2.1e-13 Flam)
COS/G185M/c1953 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1700 +- 5.0A flux=2.1e-13 Flam)
COS/G185M/c1986 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux2200 +- 5.0A flux=9.4e-14 Flam)
STIS/E140M/c1425 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1360 +- 30.0A flux=4.2e-13 Flam)
STIS/E230M/c1978 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux2200 +- 5.0A flux=9.4e-14 Flam)
STIS/E230M/c2707 : rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux2200 +- 5.0A flux=9.4e-14 Flam)
Coordinate pedigree: Gaia
Calculation performed 2020-02-24T18:10:00, v0.4
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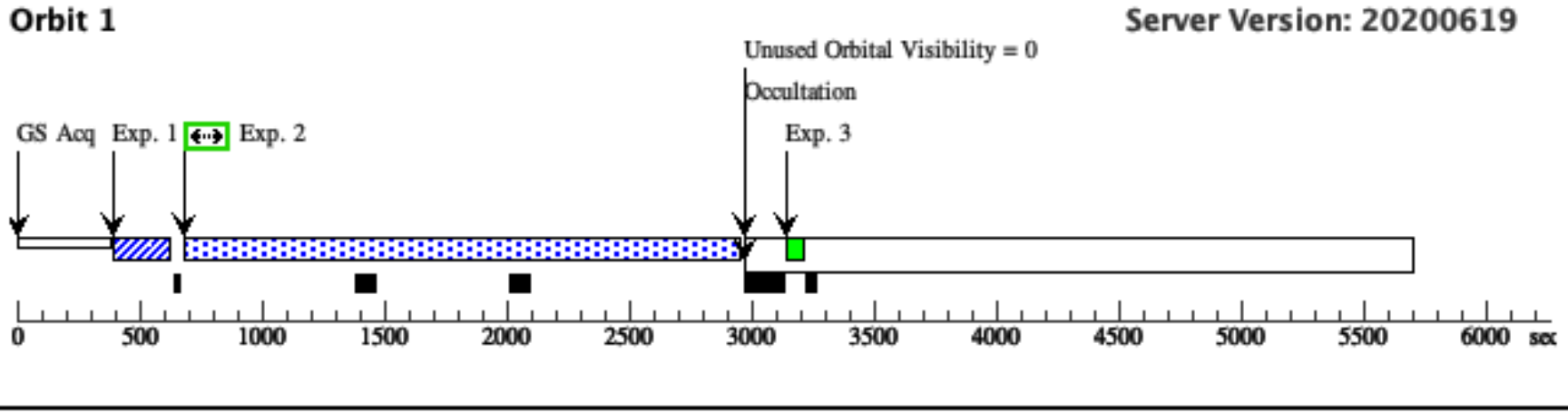
tstatus; SK-67D20; P/STIS approved for submission; S/COS not started; P/DW 27/06/20; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-67D20 'Sk-67 20' ...
default SIMBAD name is HD 32109; aka BAT99 7, Brey 6, [M2002] LMC 25077
tcheck; Target info verification status?; ok ...
SIMBAD lists WN4b, UBV = 12.89, 13.46, 13.81 -- M2002 lists UBV = 12.89, 13.53, 13.79
tcheck; Coordinates & P.M. updated?; yes -- coords updated to Gaia DR2, pm set to zero
tcheck; Adopted SED compared to Observations?; yes ...
the original SED underestimated the UV continuum flux (IUE) by 20-30% (and optical photometry by more than that) and the strong emission line near 1640 A by factor of 2 -- the normalization was therefore adjusted (a bit tricky, as the narrow band near 1360 A falls within an absorption line) so that the UV continuum flux is better reproduced -- but the 1640 line is still underestimated by about 40% -- new SED uses CMFGEN-WN model 9, with flux(1360+/-5)=3e-13 and E(B-V)=0.10
Category=EXT-STAR
Description=[WOLF RAYET - WN]
Extended=NO

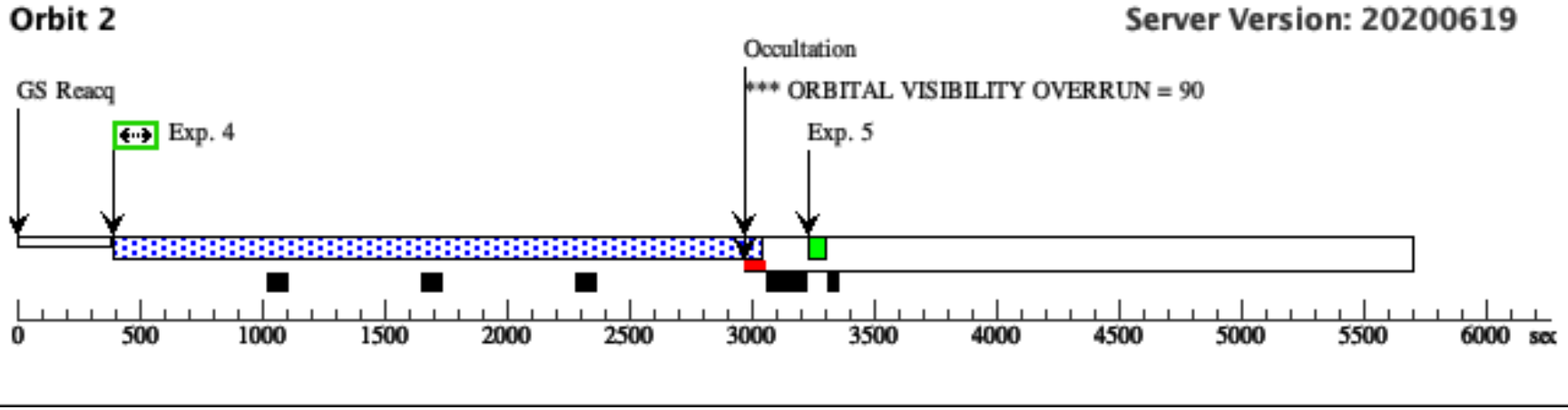
Exposures

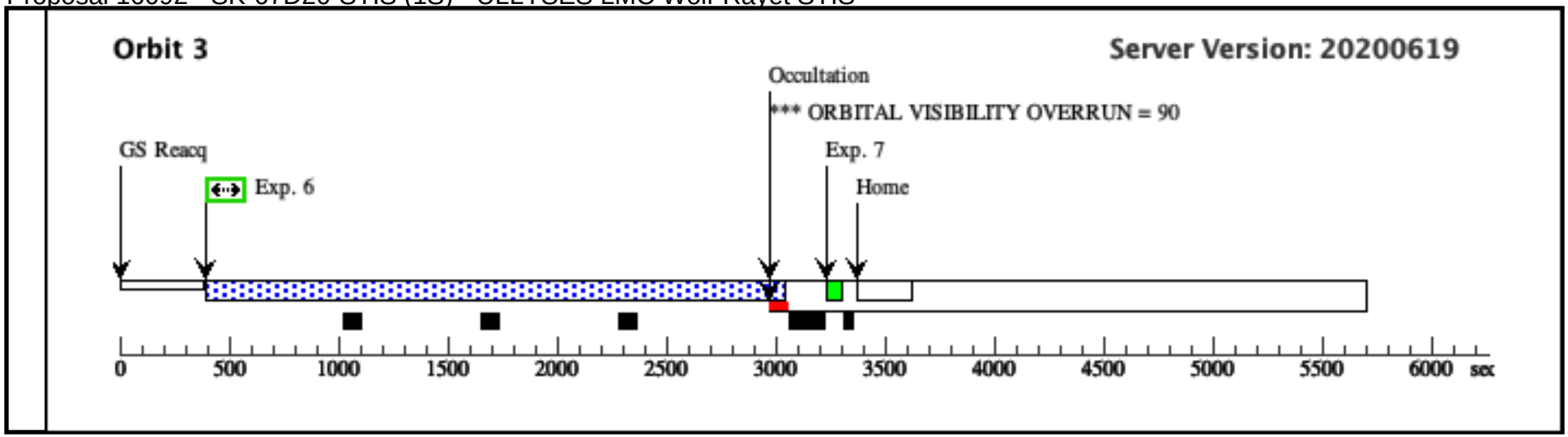
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1451609)	(1) SK-67D20	STIS/CCD, ACQ, F28X50LP	MIRROR				2.0 Secs (2 Secs) *[==>]*	*[1]*
Comments: used new SED, but normalized to V=13.8									
2	E140M/1425 (1451668)	(1) SK-67D20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=630.0		Sequence 2-3 Non-Int in SK-67D20-STIS (1S)	2188 Secs (2188 Secs) *[==>]*	*[1]*
Comments: rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1360 +- 30.0A flux=4.2e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WN4b --> WN #9* *SED = SK-67D20_STIS_E140M_c1425_sed.fits* *For exptime=15463.0 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 2115.0 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1333.4 A* *Calculation performed 2020-02-24T18:10:10, v0.4* *DW: used new SED -- CMFGEN-WN model 9, with flux(1360+/-5)=3e-13 and E(B-V)=0.10* *obtain brightest pixel 0.036 cts/s near 1334 A (but probably 20% more for strong line near 1645 A)* *global count rate 2540 cts/s*									
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 2-3 Non-Int in SK-67D20-STIS (1S)	*[==>]*	*[1]*
4	E140M/1425 (1451668)	(1) SK-67D20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=630.0		Sequence 4-5 Non-Int in SK-67D20-STIS (1S)	2638 Secs (2638 Secs) *[==>]*	*[2]*
Comments: rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1360 +- 30.0A flux=4.2e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WN4b --> WN #9* *SED = SK-67D20_STIS_E140M_c1425_sed.fits* *For exptime=15463.0 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 2115.0 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1333.4 A* *Calculation performed 2020-02-24T18:10:10, v0.4* *DW: used new SED -- CMFGEN-WN model 9, with flux(1360+/-5)=3e-13 and E(B-V)=0.10* *obtain brightest pixel 0.036 cts/s near 1334 A (but probably 20% more for strong line near 1645 A)* *global count rate 2540 cts/s*									
5	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 4-5 Non-Int in SK-67D20-STIS (1S)	*[==>]*	*[2]*
6	E140M/1425 (1451668)	(1) SK-67D20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=630.0		Sequence 6-7 Non-Int in SK-67D20-STIS (1S)	2638 Secs (2638 Secs) *[==>]*	*[3]*
Comments: rn-max(CMFGEN-WN(model=9, Z=0.008, Teff=80000) (extinction lmcavg=0.100), flux1360 +- 30.0A flux=4.2e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WN4b --> WN #9* *SED = SK-67D20_STIS_E140M_c1425_sed.fits* *For exptime=15463.0 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 2115.0 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1333.4 A* *Calculation performed 2020-02-24T18:10:10, v0.4* *DW: used new SED -- CMFGEN-WN model 9, with flux(1360+/-5)=3e-13 and E(B-V)=0.10* *obtain brightest pixel 0.036 cts/s near 1334 A (but probably 20% more for strong line near 1645 A)* *global count rate 2540 cts/s*									

	7	E140M/1425 WAVE WAVECAL	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A		Sequence 6-7 Non-Int in SK-67D20-STIS (1S)	*[==>]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20200619
Occultation
*** ORBITAL VISIBILITY OVERRUN = 90
GS Reacq
Exp. 6
Exp. 7
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16092, SK-68D15-STIS (2S) Thu Jul 16 16:00:52 GMT 2020

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%

Comments: vstatus; 2S; SK-68D15; P/STIS approved for submission; P/DW 08/07/20; intrev: complete ; P/CP 16/07/20
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-68D15 ; STIS ; DW
vcheck; ETC numbers entered in APT?; yes
vcheck; Any screening violations?; no
vcheck; S/N ETC calcs done & documented?; yes ...
ACQ -- direct acq, F28x50LP, 1 sec, new SED yields S/N~195 (saturation in 7.8 sec) -- similar if nomalize to V=12.7-13.3
SCI -- new SED yields S/N~14 near 1250A in 1 orbit, S/N~20 near 1250A in 2 orbits -- somewhat less near 1200A --
IUE swp yields S/N~20 near 1250A in 1 orbit, S/N~30 near 1250A in 2 orbits -- but IUE flux may be too high (may include contamination from nearby O8 II star) --
FOS would yield even lower S/N than SED -- but some of the FOS spectra appear to have spuriously lower fluxes
vcheck; Field images checked & saved?; yes ...
DSS shows target, another slightly fainter star about 9" ENE, no other significant objects within 20" --
2MASS shows target, another bluer star about 9" ENE, no other significant objects within 20" --
GALEX shows blend of target and star 9" ENE
WFC3 shows target, other similarly bright star about 9" ENE, nothing else within 20" --
SIMBAD classifies the star at 9" ENE as O8 II, with BV=13.19/13.19 (Zaritsky+2004 has UBV=12.02/13.01/13.11)
vcheck; Selected ACQ strategy?; yes -- direct acq, F28x50LP, 1 sec
vcheck; Possible ACQ or Sci spoilers?; no
vcheck; Field BOT clear?; yes -- no objects found in GSC2 or GALEX catalogs
vcheck; Visual BOT check for stars not in catalog?; yes -- only target, nearby O8 II star are significant
vcheck; Orbit packing finalized?; yes
vcheck; Buffer times optimized?; yes -- assuming IUE swp flux (higher than new SED and FOS)
vcheck; Verify visit grouping correct; only 1 visit
vcheck; Is visit ready for int. review?; yes
Allocated STIS orbits = 1 (constrained in input CSV) -- but 2 (or perhaps 3?) orbits may be needed for desired S/N

Diagnostics

(SK-68D15-STIS (2S)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SK-68D15	RA: 04 57 24.0825 (74.3503438d)	Proper Motion RA: 0.0 sec of time/yr	V=12.69	Reference Frame: ICRS
	Alt Name1: HD-32402	Dec: -68 23 57.12 (-68.39920d)	Proper Motion Dec: 0.0 arcsec/yr	SpT=WC4; E(B-V)=0.24; B=12.5; V=12.7; F1160=1.00e-12; F1360=7.00e-13; F1700=5.00e-13; F2200=2.70e-13	
	Alt Name2: BAT99-11	Equinox: J2000			

Comments: SK-68D15 : HD 32402, BAT99 11
Previous name : HD 32402
Input file: LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv
SIMBAD link (BAT99 11): https://simbad.u-strasbg.fr/simbad/sim-id?Ident=BAT99+11&submit=submit+id
SpT = WC4
COS/G130M/c1096 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1160 +- 30.0A flux=1e-12 Flam)
COS/G130M/c1291 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1360 +- 30.0A flux=7e-13 Flam)
COS/G160M/c1611 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1700 +- 5.0A flux=5e-13 Flam)
COS/G185M/c1921 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1700 +- 5.0A flux=5e-13 Flam)
COS/G185M/c1953 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1700 +- 5.0A flux=5e-13 Flam)
COS/G185M/c1986 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux2200 +- 5.0A flux=2.7e-13 Flam)
STIS/E140M/c1425 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1360 +- 30.0A flux=7e-13 Flam)
STIS/E230M/c1978 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux2200 +- 5.0A flux=2.7e-13 Flam)
STIS/E230M/c2707 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux2200 +- 5.0A flux=2.7e-13 Flam)
Coordinate pedigree: Gaia
Calculation performed 2020-02-24T18:10:23, v0.4
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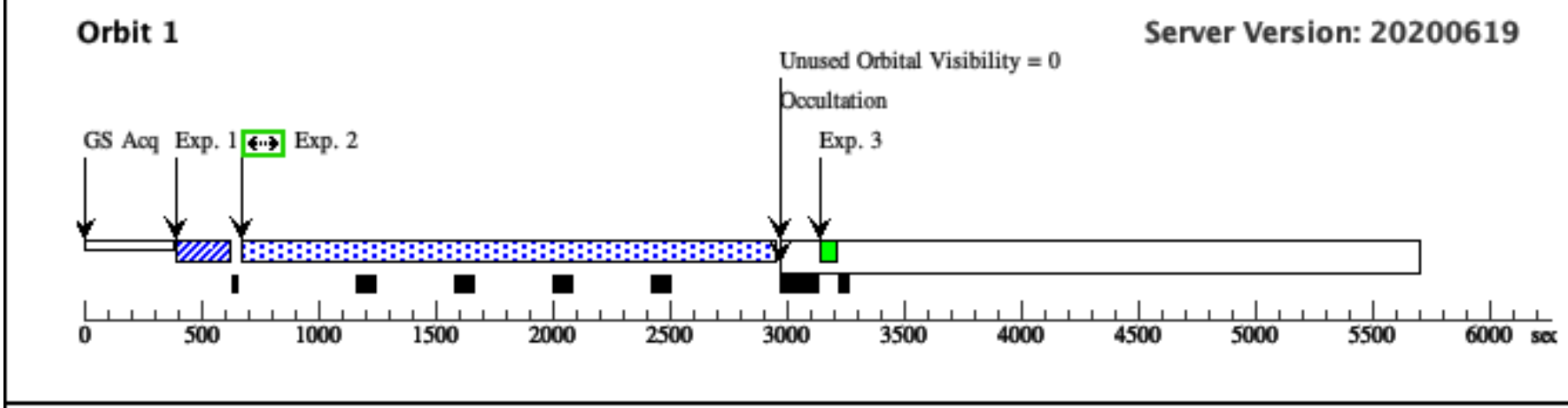
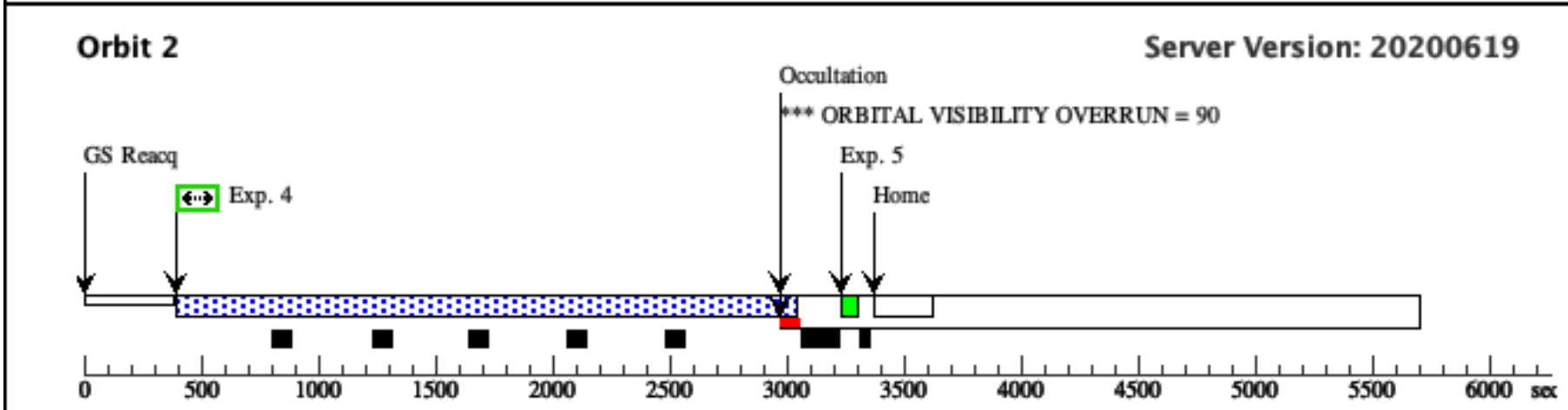
tstatus; SK-68D15; P/STIS approved for submission; S/COS not started; P/DW 06/07/20; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-68D15 'Sk-68 15' ...
aka HD32402, BAT99 11, Brey 10, [M2002] LMC 33780, [L72] LH 12-17
tcheck; Target info verification status?; OK ...
but photometry (from SIMBAD/UCAC4) BVR=12.53/12.69/13.24 --
differs somewhat from M2002 (UBVR=12.19/12.77/12.90/12.73) --
and from Zaritsky et al. (2004) (UBV=12.19/12.82/12.96) -- though B-V is similar for all three --
and Feitzinger & Isserstedt (1983) (UBV=12.10/13.11/13.30)
tcheck; Coordinates & P.M. updated?; yes -- coords updated to Gaia DR2, PM set to zero
tcheck; Adopted SED compared to Observations?; yes ...
but there can be some confusion, as there is another, slightly fainter early-type star about 9" to the ENE of the target --
some of the IUE spectra refer to that second star, while the IUE position angles suggest that others include both stars --
and some of the FOS spectra appear to have anomalously low fluxes (even within the same visit) --
the FUSE lwrs spectra appear to include both stars, but the mdrs spectra should be ok (given the position angle) --
even the "good" FOS spectra seem lower in flux than the "good" IUE spectra --
strong C IV emission in model slightly stronger than in observed IUE, FOS spectra --
adopted new SED could be too low by 50% (if IUE correct) or too high by 20% (if FOS correct) over E140M range --
and it is high, relative to the FUSE spectrum
Category=EXT-STAR
Description=[WOLF RAYET - WC]
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 (1454449)	(2) SK-68D15	STIS/CCD, ACQ, F28X50LP	MIRROR				1.0 Secs (1 Secs) *[==>]*	***[1]***
	Comments: used new SED -- normalization to V=12.7-13.3 yielded similar results								
2	E140M/1425 (1454458)	(2) SK-68D15	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=418.0		Sequence 2-3 Non-Int in SK-68D15-STIS (2S)	2192 Secs (2192 Secs) *[==>]*	***[1]***
	Comments: rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1360 +- 30.0A flux=7e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WC4 --> WC #11* *SED = SK-68D15_STIS_E140M_c1425_sed.fits* *For exptime=9196.8 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 3686.3 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1555.0 A* *Calculation performed 2020-02-24T18:10:33, v0.4* *DW: using new SED with CMFGEN_wc model 11 (WC4), flux(1360+/-5A)=4e-13, E(B-V)=0.24* *brightest pixel has 0.065 cts/s near 1555A, and 3002 cts/s over entire detector* *global count rate 1714 cts/s for source, 157 cts/s for background* *near 1250A: S/N~14 in 2200 s (1 orbit) and S/N~20 in 4800 s (2 orbits) -- and somewhat lower S/N near 1200A* *using IUE swp spectrum yields somewhat higher S/N (but that IUE spectrum may include flux from a nearby O8 II star)* *using FOS spectra yields somewhat lower S/N (but some of the FOS spectra appear to have spuriously low fluxes)* *the new SED was adopted as a compromise, but the buffer time was set based on the higher IUE flux* *note that the model does not include all the observed emission lines*								
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 2-3 Non-Int in SK-68D15-STIS (2S)	*[==>]*	***[1]***
4	E140M/1425 (1454458)	(2) SK-68D15	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=418.0		Sequence 4-5 Non-Int in SK-68D15-STIS (2S)	2638 Secs (2638 Secs) *[==>]*	***[2]***
	Comments: rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.240), flux1360 +- 30.0A flux=7e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WC4 --> WC #11* *SED = SK-68D15_STIS_E140M_c1425_sed.fits* *For exptime=9196.8 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 3686.3 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1555.0 A* *Calculation performed 2020-02-24T18:10:33, v0.4*								
5	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 4-5 Non-Int in SK-68D15-STIS (2S)	*[==>]*	***[2]***

Orbit Structure





Visit

Proposal 16092, SK-69D191-STIS (3S) Thu Jul 16 16:00:52 GMT 2020

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%

Comments: vstatus; 3S; SK-69D191; P/STIS approved for submission; P/DW 08/07/20; intrev: complete ; P/CP 16/07/20
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-69D191 ; STIS ; DW
vcheck; ETC numbers entered in APT?; yes
vcheck; Any screening violations?; no
vcheck; S/N ETC calcs done & documented?; yes ...
ACQ -- direct acq, F28x50LP, 1.5 sec, new SED gives S/N~144, saturation in 20.9 sec -- similar if normalize to V=13.1-13.4
SCI -- new SED yields S/N~27 near 1250A and S/N~20 near 1200 in 7500 sec (3 orbits) --
similar results for IUE swp spectrum (but hard to define continuum near 1200A)
vcheck; Field images checked & saved?; yes ...
DSS shows target, no other significant objects within 20" --
2MASS shows target, no other significant objects within 20" --
GALEX has no coverage
WFC3 shows target (near edge of field), no other object within a few arcsec
vcheck; Selected ACQ strategy?; yes -- direct acq, F28x50LP, 1.5 sec
vcheck; Possible ACQ or Sci spoilers?; no
vcheck; Field BOT clear?; yes -- GSC2 has 1 safe (target)
vcheck; Visual BOT check for stars not in catalog?; yes -- nothing significant within 20" of target in GSC2 or 2MASS
vcheck; Orbit packing finalized?; yes
vcheck; Buffer times optimized?; yes -- using new SED (slightly higher flux than IUE swp)
vcheck; Verify visit grouping correct; N/A (only 1 visit)
vcheck; Is visit ready for int. review?; yes
Allocated STIS orbits = 3 (constrained in input CSV) -- should be sufficient

Diagnostics

(SK-69D191-STIS (3S)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(SK-69D191-STIS (3S)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

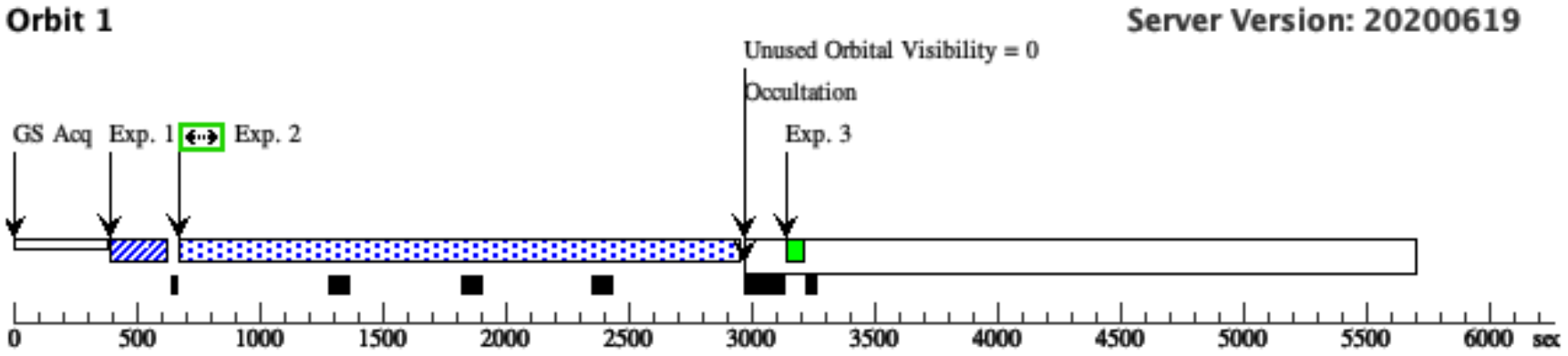
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SK-69D191	RA: 05 34 19.2498 (83.5802075d)	Proper Motion RA: 0.0 sec of time/yr	V=13.25	Reference Frame: ICRS
	Alt Name1: HD-37680	Dec: -69 45 10.30 (-69.75286d)	Proper Motion Dec: 0.0 arcsec/yr	SpT=WC4; E(B-V)=0.05; U=12.8; B=13.0; V=13.2; F1160=1.20e-12; F1360=3.50e-13; F1700=1.69e-13; F2200=8.73e-14	
	Alt Name2: BAT99-61	Equinox: J2000			

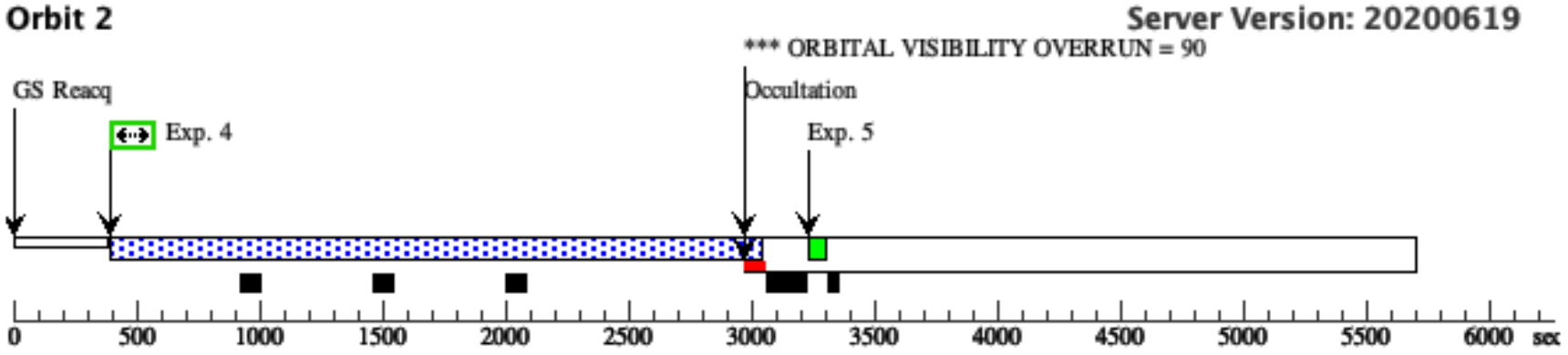
Comments: SK-69D191 : HD 37680, BAT99 61
Previous name : HD 37680
Input file: LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv
SIMBAD link (BAT99 61): https://simbad.u-strasbg.fr/simbad/sim-id?Ident=BAT99+61&submit=submit+id
SpT = WC4
COS/G130M/c1096 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1160 +- 30.0A flux=1.2e-12 Flam)
COS/G130M/c1291 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1360 +- 30.0A flux=3.5e-13 Flam)
COS/G160M/c1611 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1700 +- 5.0A flux=1.7e-13 Flam)
COS/G185M/c1921 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1700 +- 5.0A flux=1.7e-13 Flam)
COS/G185M/c1953 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1700 +- 5.0A flux=1.7e-13 Flam)
COS/G185M/c1986 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux2200 +- 5.0A flux=8.7e-14 Flam)
STIS/E140M/c1425 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1360 +- 30.0A flux=3.5e-13 Flam)
STIS/E230M/c1978 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux2200 +- 5.0A flux=8.7e-14 Flam)
STIS/E230M/c2707 : rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux2200 +- 5.0A flux=8.7e-14 Flam)
Coordinate pedigree: Gaia
Calculation performed 2020-02-24T18:10:34, v0.4
---
tstatus; SK-69D191; P/STIS approved for submission; S/COS not started; P/DW 07/07/20; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-69D191 'Sk-69 191' ...
aka HD 37680, BAT99 61, Brey 50
tcheck; Target info verification status?; yes ...
SIMBAD lists WC, UBVR = 12.81/12.98/13.25/13.21 (SAGE/UCAC4) --
Feitzinger & Isserstedt (1983) give UBV = 12.58/13.15/13.35 --
Schmidt-Kaler et al. (1999) give UBV = 12.57/13.11/13.20 --
Zaritsky et al. (2004) give UBV = 12.81/12.97/13.12, with uncertainties 0.16/0.18/0.09 --
the corresponding B-V are -0.27/-0.20/-0.09/-0.15, and E(B-V) is likely larger than 0.05
tcheck; Coordinates & P.M. updated?; updated to Gaia DR2, set PM = zero
tcheck; Adopted SED compared to Observations?; yes ...
FUSE (lwrs), IUE (swp, lwr), FOS (1600, 2300, 2650) in good agreement --
original SED underestimates flux throughout UV --
new SED (slightly higher flux at 1360, higher EBV) fits UV continuum reasonably well --
new SED also fits strongest C IV emission line, but some weaker emission lines are missing --
and Ly alpha emission seen in model appears to be strongly attenuated by interstellar absorption (in IUE swp)
Category=EXT-STAR
Description=[WOLF RAYET - WC]
Extended=NO

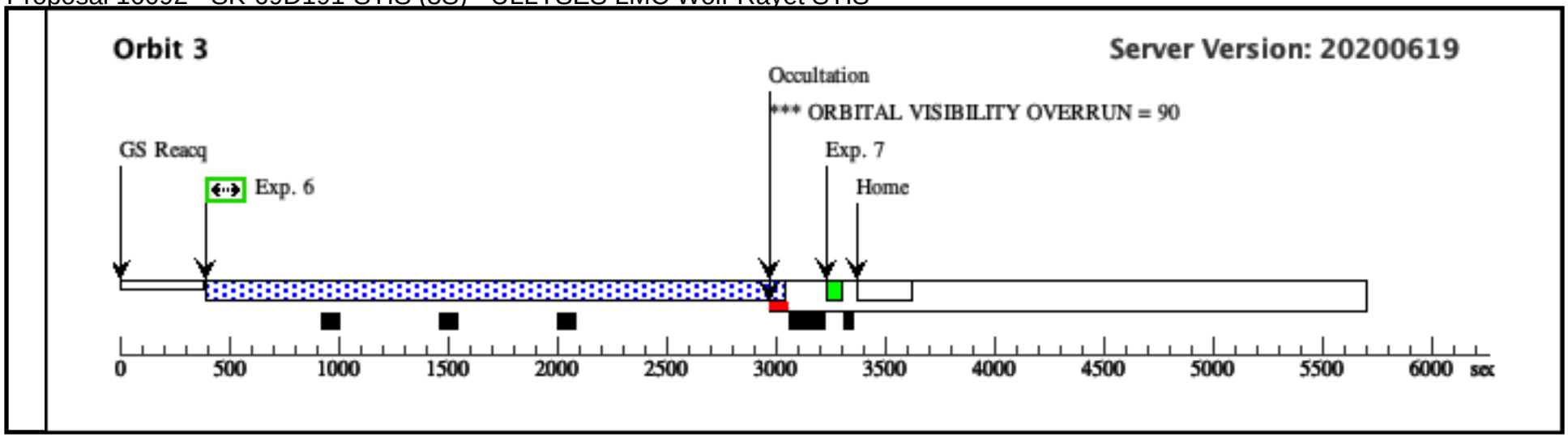
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1454455)	(3) SK-69D191	STIS/CCD, ACQ, F28X50LP	MIRROR				1.5 Secs (1.5 Secs) *[==>]*	***[1]***
	Comments: used new SED -- normalization to V=13.1-13.4 yielded similar results								
2	E140M/1425 (1454490)	(3) SK-69D191	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=535.0		Sequence 2-3 Non-Int in SK-69D191-STIS (3S)	2190 Secs (2190 Secs) *[==>]*	***[1]***
	Comments: rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1360 +- 30.0A flux=3.5e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WC4 --> WC #11* *SED = SK-69D191_STIS_E140M_c1425_sed.fits* *For exptime=13081.4 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 1928.2 cts/s/segment* *brightest pixel: 0.033 cts/s/pix at 1555.0 A* *Calculation performed 2020-02-24T18:10:44, v0.4* *DW: using new SED -- CMFGEN_WC model 11 (WC4), with E(B-V)=0.10 (could be higher?)* *brightest pixel 0.056 cts/s (near 1555A) -- entire detector 2989 cts/s* *global rates: 1706 cts/s (source) and 157 cts/s (background)* *S/N~27 near 1250A, S/N~20 near 1200A* *note that the model does not include all observed emission lines*								
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 2-3 Non-Int in SK-69D191-STIS (3S)	*[==>]*	***[1]***
4	E140M/1425 (1454490)	(3) SK-69D191	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=535.0		Sequence 4-5 Non-Int in SK-69D191-STIS (3S)	2638 Secs (2638 Secs) *[==>]*	***[2]***
	Comments: rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1360 +- 30.0A flux=3.5e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WC4 --> WC #11* *SED = SK-69D191_STIS_E140M_c1425_sed.fits* *For exptime=13081.4 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 1928.2 cts/s/segment* *brightest pixel: 0.033 cts/s/pix at 1555.0 A* *Calculation performed 2020-02-24T18:10:44, v0.4*								
5	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 4-5 Non-Int in SK-69D191-STIS (3S)	*[==>]*	***[2]***
6	E140M/1425 (1454490)	(3) SK-69D191	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=535.0		Sequence 6-7 Non-Int in SK-69D191-STIS (3S)	2638 Secs (2638 Secs) *[==>]*	***[3]***
	Comments: rn-max(CMFGEN-WC(model=11, Z=0.008, Teff=120000) (extinction lmcavg=0.050), flux1360 +- 30.0A flux=3.5e-13 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59305 *From file LMC_2020Feb20/input/LMC_all_do1_fixed_wr_NewCoords_pids.csv* *Spectral type: WC4 --> WC #11* *SED = SK-69D191_STIS_E140M_c1425_sed.fits* *For exptime=13081.4 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 1928.2 cts/s/segment* *brightest pixel: 0.033 cts/s/pix at 1555.0 A* *Calculation performed 2020-02-24T18:10:44, v0.4*								
7	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A			Sequence 6-7 Non-Int in SK-69D191-STIS (3S)	*[==>]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20200619
Occultation
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Exp. 6
Exp. 7
Home
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sec