



16805 - ULLYSES SMC O4 Supergiants - STIS

Cycle: 29, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Proposal 16805 (STScI Edit Number: 0, Created: Monday, August 29, 2022 at 11:01:22 AM Eastern Standard Time) - Overview

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
1S	(1) NGC346-MPG-435 WAVE	STIS/CCD STIS/FUV-MAMA	1	29-Aug-2022 12:01:20.0	yes
AS	(1) NGC346-MPG-435 WAVE	STIS/CCD STIS/FUV-MAMA	1	29-Aug-2022 12:01:21.0	yes

2 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 Å

COS/G130M/c1291: 30 / six-pixel resel at 1150 Å

COS/G160M/c1611: 30 / six-pixel resel at 1590 Å

COS/G185M/c1953: 30 / three-pixel resel at 1860 Å

COS/G185M/c1986: 30 / three-pixel resel at 1980 Å

STIS/E140M/c1425: 20 / two-pixel resel at 1200 Å

STIS/E230M/c1978: 20 / two-pixel resel at 1800 Å

STIS/E230M/c2707: 20 / two-pixel resel at 2800 Å

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->

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[research/research-topics-and-programs/ulyses/_documents/HSTUV-report-ULLYSES.pdf](#).

Visit

Proposal 16805, NGC346-MPG-435-STIS (1S), failed

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%

Comments: vstatus; 1S; NGC346-MPG-435; P/STIS approved for submission; P/LS 07/12/21 ; intrev: complete ; P/AF 15/03/22 vcheck; Enter targ name & Inst. & Resp. Sci.; NGC-346-MPG-435 'CI NGC 346 SSN 7' ; STIS ; LS vcheck; ETC numbers entered in APT?; Completed vcheck; Any screening violations?; None vcheck; S/N ETC calcs done & documented?; Y ...S/N = 14.8 (ETC number) and 18 in ETC S/N plot - may be lower than 20 at 1200 A vcheck; Field images checked & saved?; Yes NGC-346-MPG-435-ACSF555W.png, NGC-346-MPG-435-2MASS.png... GSC2 has no coverage in area of NGC 346 vcheck; Selected ACQ strategy?; STIS F28X50LP, 1 s vcheck; Possible ACQ or Sci spoilers?; No - brightest star at F220W (HRC)... See ACQ image in folder "ACQ images from.." for oec604yxq.png (ID 16230) vcheck; Field BOT clear?; Y... No GSC2 or GALEX available. Target is brightest source in HRC F220W - see png HRC-F220W.png with 2".5 radius circle vcheck; Visual BOT check for stars not in catalog?; OK ...but see above vcheck; Orbit packing finalized?; 1 orbit vcheck; Buffer times optimized?; Done vcheck; Verify visit grouping correct; N/A vcheck; Is visit ready for int. review?; YES Allocated STIS orbits = 1*

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC346-MPG-435 Alt Name1: NGC-346-W-1	RA: 00 59 4.4987 (14.7687446d) Dec: -72 10 24.77 (-72.17355d) Equinox: J2000	Proper Motion RA: 0.9732280954532695 mas/yr Proper Motion Dec: -1.2123560338066204 mas/yr Parallax: 0" Epoch of Position: 2015.5	V=12.43 SpT=O4 If + O5-6; E(B-V)=0.06; U=11.20; B=12.21; V=12.43; F1160=1.600e-12; F1360=1.400e-12; F1700=9.700e-13; F2200=6.000e-13	Reference Frame: ICRS

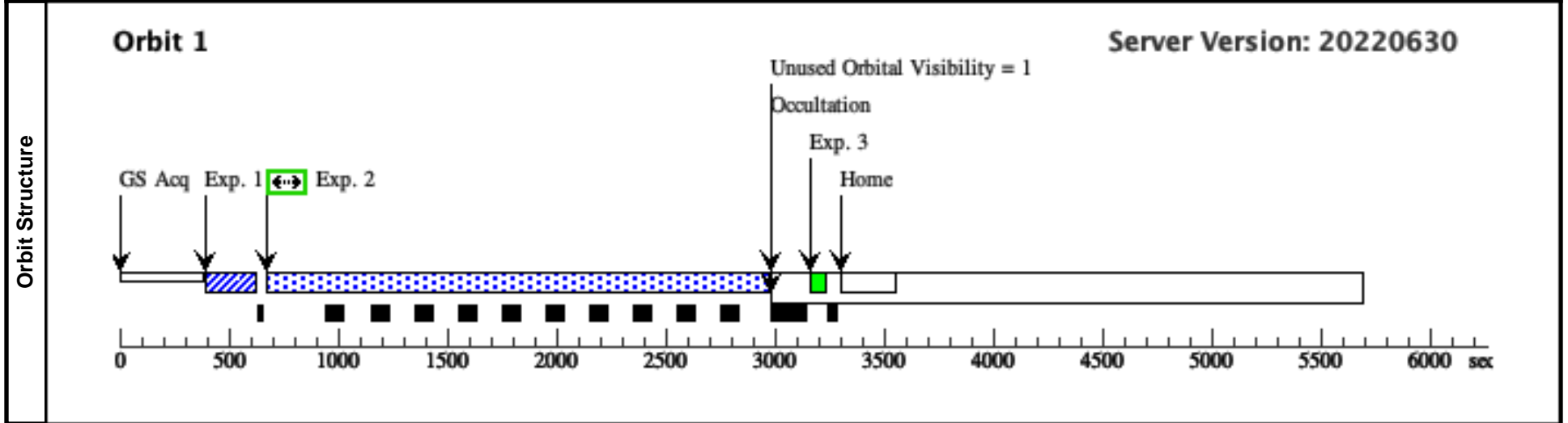
Comments: NGC346-MPG-435 : CI NGC 346 W 1
Previous name : NGC346-1
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O4 If + O5-6*

*Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:53:53, v0.9*

*tstatus: NGC346-MPG-435; P/STIS approved for submission; S/STIS not started; P/LS 12/11/21; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; NGC-346-MPG-435 'CI* NGC 346 SSN 7'
tcheck; Target info verification status?; OK ...
Spectral type is from Dufton et al. (2019) O4If+O4-6 and this is given in SIMBAD
tcheck; Coordinates & P.M. verified, epoch checked?; yes - used coords and PMs given in SNAP 16230 for epoch 2015.5...
Van Dixon noticed that I had the units of the PM wrong - Derck does not use the default. I have corrected this.
tcheck; Adopted SED compared to Observations?; OK - FUSE and NUV match good...
Target observed by PID 7437 using STIS echelle but peak-up failed. ACQ was done using offset. PID 16230 acquired target directly so used their coords and PMs.
Category=STAR
Description=[SUPERGIANT O, OF]
Extended=NO*

Proposal 16805 - NGC346-MPG-435-STIS (1S) - ULLYSES SMC O4 Supergiants - STIS

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1678809)	(1) NGC346-MPG-4 35	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs) [==>]	[1]
2	E140M/142 5 (1678807)	(1) NGC346-MPG-4 35	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=20 0			2210 Secs (2210 Secs) [==>]	[1]
<p>Comments: rn(PoWR-OB-new(PoWR_40000_3.80_m6.79_Z0.14.fits, smc-ob-i 40-38, Z=0.140 solar, Teff=40000, log_lum=5.62, log_g=3.80, log_mdots=-6.79) (extinction smcbar=0.060), flux1360 +- 2.0A flux=1.4e-12 Flam); stis.fuvmama,e140m,c1425,0.2x0.2,mjd#59670 From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv Spectral type: O4 If + O5-6 SED = NGC346-MPG-435-STIS_E140M_c1425_sed.fits For exptime=2619.3 s, spectral region: 1200.0 +- 0.5 A achieves SNR=20.0/resel global countrate (brightest segment): 8074.1 cts/s/segment brightest pixel: 0.100 cts/s/pix at 1243.5 A Calculation performed 2021-10-25T00:54:02, v0.9</p> <p>*Note: max exposure time for 1 orbit is 2200 s. This gives a S/N of 14.8 at 1200 Ang and 18 on plot.</p>									
3	E140M/142 5 WAVECAL (1678807)	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				[==>]	[1]



Proposal 16805, NGC346-MPG-435-STIS (AS)

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%

Comments: vstatus; AS; NGC346-MPG-435; P/STIS approved for submission; P/LS 07/12/21 ; intrev: complete ; P/AF 15/03/22
vcheck; Enter targ name & Inst. & Resp. Sci.; NGC-346-MPG-435 'CI NGC 346 SSN 7' ; STIS ; LS*
vcheck; ETC numbers entered in APT?; Completed
vcheck; Any screening violations?; None
vcheck; S/N ETC calcs done & documented?; Y
...S/N = 14.8 (ETC number) and 18 in ETC S/N plot - may be lower than 20 at 1200 A
vcheck; Field images checked & saved?; Yes NGC-346-MPG-435-ACSF555W.png, NGC-346-MPG-435-2MASS.png...
GSC2 has no coverage in area of NGC 346
vcheck; Selected ACQ strategy?; STIS F28X50LP, 1 s
vcheck; Possible ACQ or Sci spoilers?; No - brightest star at F220W (HRC)...
See ACQ image in folder "ACQ images from.." for oec604yxq.png (ID 16230)
vcheck; Field BOT clear?; Y...
No GSC2 or GALEX available. Target is brightest source in HRC F220W - see png HRC-F220W.png with 2".5 radius circle
vcheck; Visual BOT check for stars not in catalog?; OK
...but see above
vcheck; Orbit packing finalized?; 1 orbit
vcheck; Buffer times optimized?; Done
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; YES
Allocated STIS orbits = 1

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Fixed Targets	<p><i>Comments: NGC346-MPG-435 : CI* NGC 346 W 1</i> <i>Previous name : NGC346-1</i> <i>Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv</i> <i>SpT = O4 If + O5-6</i></p> <p><i>Coordinate pedigree: Gaia DR2</i> <i>Calculation performed 2021-10-25T00:53:53, v0.9</i></p> <p>----- <i>tstatus; NGC346-MPG-435; P/STIS approved for submission; S/STIS not started; P/LS 12/11/21; S/xx DD/MM/YY</i> <i>tcheck; APT/SIMBAD target names: ; NGC-346-MPG-435 'CI* NGC 346 SSN 7'</i> <i>tcheck; Target info verification status?; OK ...</i> <i>Spectral type is from Dufton et al. (2019) O4If+O4-6 and this is given in SIMBAD</i> <i>tcheck; Coordinates & P.M. verified, epoch checked?; yes - used coords and PMs given in SNAP 16230 for epoch 2015.5...</i> <i>Van Dixon noticed that I had the units of the PM wrong - Derck does not use the default. I have corrected this.</i> <i>tcheck; Adopted SED compared to Observations?; OK - FUSE and NUV match good...</i> <i>Target observed by PID 7437 using STIS echelle but peak-up failed. ACQ was done using offset. PID 16230 acquired target directly so used their coords and PMs.</i> <i>Category=STAR</i> <i>Description=[SUPERGIANT O, OF]</i> <i>Extended=NO</i></p>				

Proposal 16805 - NGC346-MPG-435-STIS (AS) - ULLYSES SMC O4 Supergiants - STIS

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<p>Comments: rn(PoWR-OB-new(PoWR_40000_3.80_m6.79_Z0.14.fits, smc-ob-i 40-38, Z=0.140 solar, Teff=40000, log_lum=5.62, log_g=3.80, log_mdott=-6.79) (extinction smcbar=0.060), flux1360 +- 2.0A flux=1.4e-12 Flam); stis.fuvmama,e140m,c1425,0.2x0.2,mjd#59670 From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv Spectral type: O4 If + O5-6 SED = NGC346-MPG-435-STIS_E140M_c1425_sed.fits For exptime=2619.3 s, spectral region: 1200.0 +- 0.5 A achieves SNR=20.0/resel global countrate (brightest segment): 8074.1 cts/s/segment brightest pixel: 0.100 cts/s/pix at 1243.5 A Calculation performed 2021-10-25T00:54:02, v0.9</p> <p>*Note: max exposure time for 1 orbit is 2200 s. This gives a S/N of 14.8 at 1200 Ang and 18 on plot.</p>									
3	E140M/142 (1678807)	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				[==>]	[1]

