



# 16170 - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar metallicity

Cycle: 28, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

## INVESTIGATORS

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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>
01	(7) NM2011-J013241.39+303416.2	COS/FUV COS/NUV	3	15-Oct-2020 08:00:23.0	yes

<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>
02	(178) NM2011-J013425.11+301950.3	COS/FUV COS/NUV	3	15-Oct-2020 08:00:24.0	yes
03	(201) NM2011-J013447.32+310748.8	COS/FUV COS/NUV	2	15-Oct-2020 08:00:25.0	yes
04	(204) NM2011-J013507.24+304500.9	COS/FUV COS/NUV	2	15-Oct-2020 08:00:25.0	yes
05	(205) NAME-ROMANOS-STAR	COS/FUV COS/NUV	1	15-Oct-2020 08:00:26.0	yes
06	(206) NM2011-J013510.27+304522.9	COS/FUV COS/NUV	4	15-Oct-2020 08:00:27.0	yes
07	(206) NM2011-J013510.27+304522.9	COS/FUV COS/NUV	5	15-Oct-2020 08:00:28.0	yes

20 Total Orbits Used

## **ABSTRACT**

Massive stars are important drivers of the evolution of galaxies. They shape the structures around them and enrich the interstellar medium with metals due to their strong stellar winds. They ionize their environment and transfer momentum from the UV-dominated radiation field to metals. As the progenitors of heavy black holes, evolved massive stars have become a keystone of modern astrophysics. The masses of their black hole remnants predominantly depend on the wind mass loss of envelope-stripped helium (He) stars. The mass loss of these He-burning stars and its metallicity-dependence mark a crucial, yet poorly constrained astrophysical quantity.

He stars with a sufficiently high mass loss appear as Wolf-Rayet (WR) stars, detectable even in unresolved stellar populations and distant galaxies due to their strong emission lines. While the general presence of WR stars is known to be correlated with metallicity, recent studies show that current assumptions in stellar evolution and population models are too simplistic. Thus, a proper empirical determination of WR mass loss as a function of mass and metallicity is necessary to understand the true nature and complex metallicity-dependent behaviour of He star mass loss. The diagnostics to determine the metallicity of He stars can only be obtained from UV spectroscopy. We therefore propose COS UV observations of six WR stars in the outskirts of M33, providing a unique opportunity to study very massive evolved He stars at subsolar metallicity. By anchoring mass loss of WR stars in this crucial environment, our observations will deliver one of the most important ingredients needed for realistic stellar evolution and feedback

## **OBSERVING DESCRIPTION**

We propose to observe six WR stars in the outskirts of M33 with FUV spectroscopy, aiming at a S/N of 20 at 1310 Angstrom. The spectral observations will be performed with the G140L grating with pass band 770 - 1950. This relatively new setting covers the far UV range in one arm, including even strong emission lines below Lyman alpha. Furthermore, this spectral range contains important wind lines, such as the resonance lines of C iv, N v, and O vi which act as crucial indicators in order to determine the correct wind parameters and properly constrain the stellar temperature below the expanding layers.

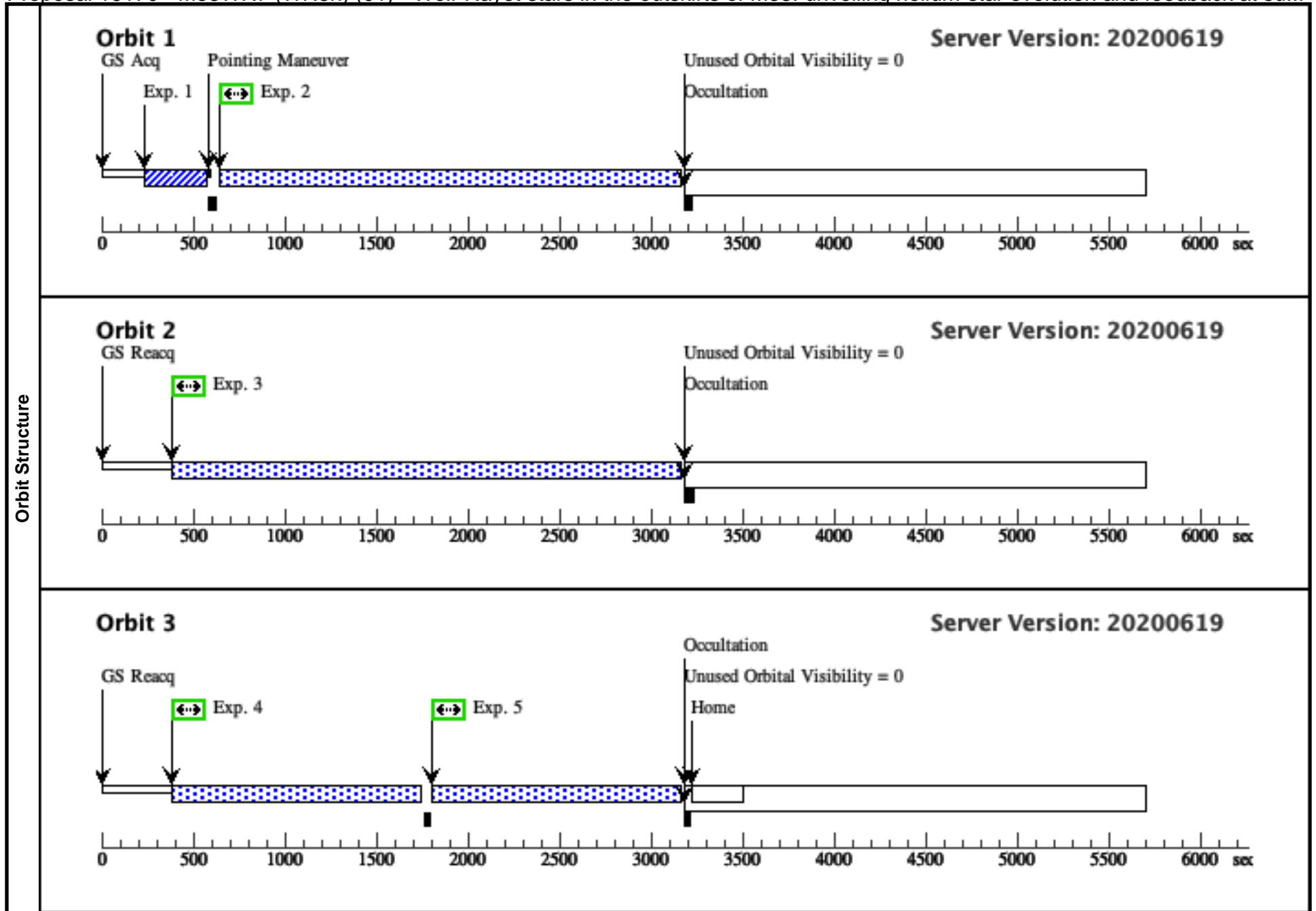
Due to the broad lines, the resolution of the G140L grating is sufficient for our spectral analyses with stellar atmospheres, while a S/N of 20 is required to resolve weaker metal lines, detect absorption troughs, and to constrain the iron abundance. All targets combined, we will require 20 orbits to achieve our science goals. The UV provides a unique chance to establish the iron abundance, which is the main driver of massive star winds. While most targets will show only imprints of Fe VI and higher at wavelengths below 1300 Angstrom, the cooler WN8h target (Romano's star) will provide us with a detailed iron forest down to Fe iv, spanning all over the proposed pass band and acting as a crucial benchmark.

Our brightest target has a magnitude of  $m_V = 18.7$  and an estimated reddening of  $E(B-V) = 0.05$ , bringing the object safely below the brightness limit of the COS detector. This was confirmed by ETC calculations with an atmosphere model spectrum. As an additional layer of security, we also cross-checked this with a much hotter, unreddened 200 kK black body input normalized to  $m_V$ . We will follow the recommended observing strategy and request that the default wavelength-calibration procedure is applied. The observations shall be performed in TIME-TAG mode and use all four FP-POS positions for each target as recommended to enhance the detector's lifetime.

Proposal 16170 - M33WR7 (WN3h) (01) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at su...

Thu Oct 15 12:00:29 GMT 2020

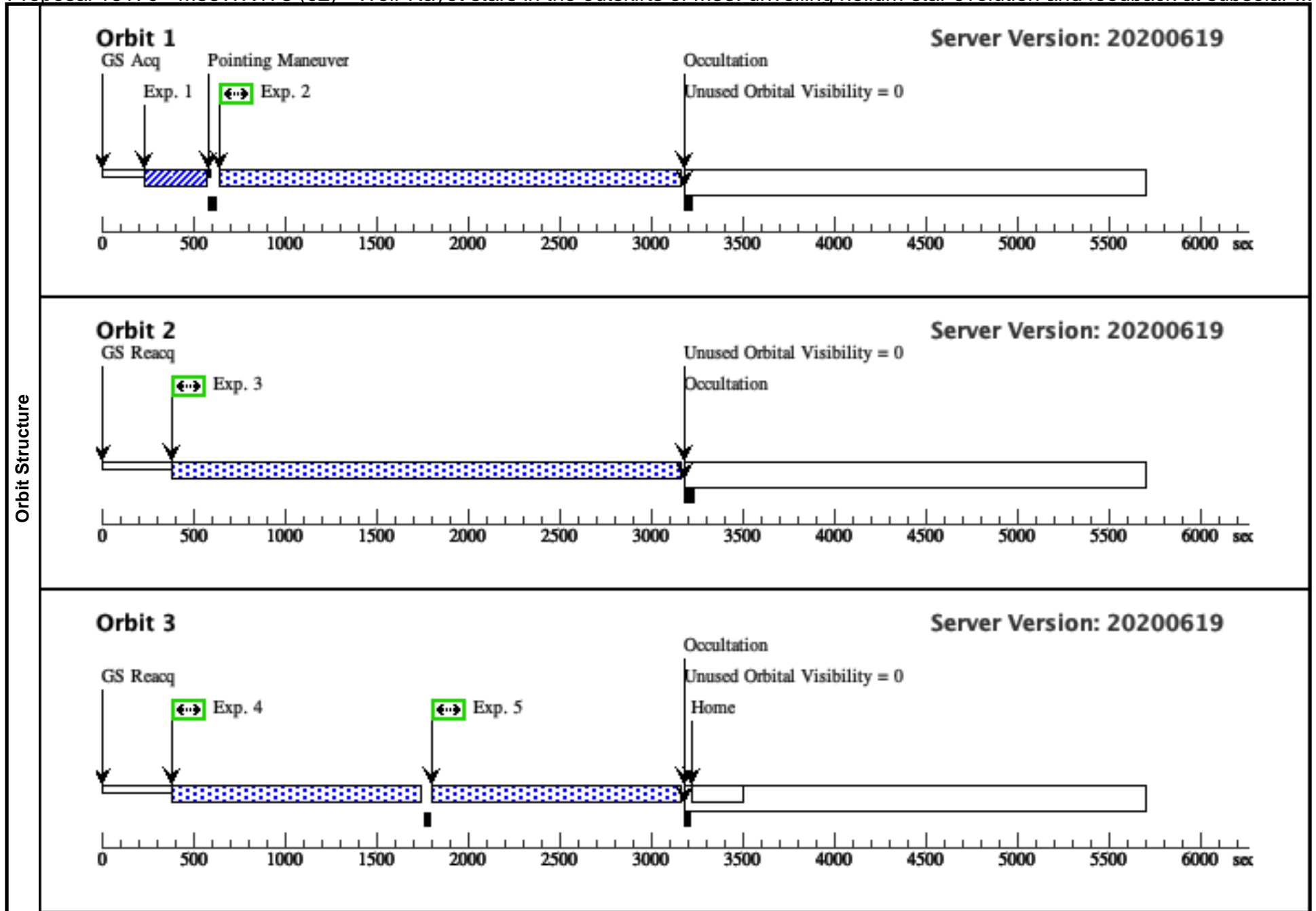
Visit	<b>Proposal 16170, M33WR7 (WN3h) (01), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																																																																					
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(7)</td> <td>NM2011-J013241.39+303416.2 Alt Name1: GAIA-DR2-303287470635776000</td> <td>RA: 01 32 41.3474 (23.1722808d) Dec: +30 34 15.90 (30.57108d) Equinox: J2000</td> <td>Epoch of Position: 2015.5</td> <td>V=20.75</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6">                     Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.                      Coordinate uncertainties from Gaia DR2                      Category=EXT-STAR                      Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WN]                      Extended=NO                 </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(7)	NM2011-J013241.39+303416.2 Alt Name1: GAIA-DR2-303287470635776000	RA: 01 32 41.3474 (23.1722808d) Dec: +30 34 15.90 (30.57108d) Equinox: J2000	Epoch of Position: 2015.5	V=20.75	Reference Frame: ICRS	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Coordinate uncertainties from Gaia DR2 Category=EXT-STAR Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WN] Extended=NO																																														
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Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TA (COS.ta.144 9221)</td> <td>(7) NM2011-J01324 1.39+303416.2</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORA</td> <td></td> <td></td> <td></td> <td>60 Secs (60 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>(COS.sp.144 9223)</td> <td>(7) NM2011-J01324 1.39+303416.2</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G140L 800 A</td> <td>FP-POS=1; BUFFER-TIME=79 70</td> <td></td> <td></td> <td>2324 Secs (2324 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>(COS.sp.144 9224)</td> <td>(7) NM2011-J01324 1.39+303416.2</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G140L 800 A</td> <td>BUFFER-TIME=79 70; FP-POS=2</td> <td></td> <td></td> <td>2724 Secs (2724 Secs) [==&gt;]</td> <td>[2]</td> </tr> <tr> <td>4</td> <td>(COS.sp.144 9226)</td> <td>(7) NM2011-J01324 1.39+303416.2</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G140L 800 A</td> <td>BUFFER-TIME=79 70; FP-POS=3</td> <td></td> <td></td> <td>1304 Secs (1304 Secs) [==&gt;]</td> <td>[3]</td> </tr> <tr> <td>5</td> <td>(COS.sp.144 9227)</td> <td>(7) NM2011-J01324 1.39+303416.2</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G140L 800 A</td> <td>BUFFER-TIME=79 70; FP-POS=4</td> <td></td> <td></td> <td>1305 Secs (1305 Secs) [==&gt;]</td> <td>[3]</td> </tr> </tbody> </table>										#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	TA (COS.ta.144 9221)	(7) NM2011-J01324 1.39+303416.2	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs) [==>]	[1]	2	(COS.sp.144 9223)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	FP-POS=1; BUFFER-TIME=79 70			2324 Secs (2324 Secs) [==>]	[1]	3	(COS.sp.144 9224)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=79 70; FP-POS=2			2724 Secs (2724 Secs) [==>]	[2]	4	(COS.sp.144 9226)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=79 70; FP-POS=3			1304 Secs (1304 Secs) [==>]	[3]	5	(COS.sp.144 9227)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=79 70; FP-POS=4			1305 Secs (1305 Secs) [==>]	[3]
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																													
1	TA (COS.ta.144 9221)	(7) NM2011-J01324 1.39+303416.2	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs) [==>]	[1]																																																													
2	(COS.sp.144 9223)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	FP-POS=1; BUFFER-TIME=79 70			2324 Secs (2324 Secs) [==>]	[1]																																																													
3	(COS.sp.144 9224)	(7) NM2011-J01324 1.39+303416.2	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=79 70; FP-POS=2			2724 Secs (2724 Secs) [==>]	[2]																																																													
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Proposal 16170 - M33WR178 (02) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar ...

Thu Oct 15 12:00:29 GMT 2020

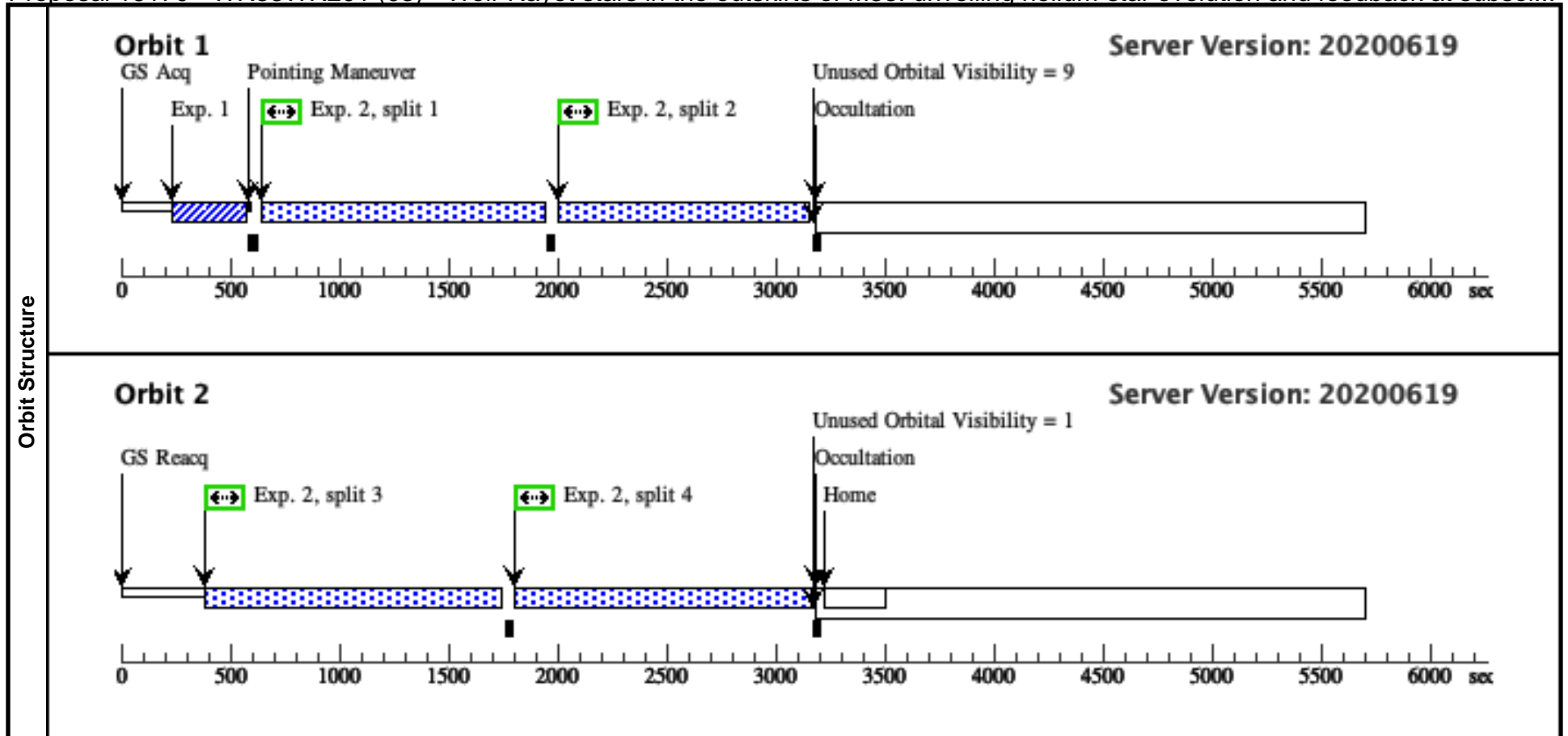
Visit	<b>Proposal 16170, M33WR178 (02), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(178)	NM2011-J013425.11+301950.3 Alt Name1: GAIA-DR2-303312480229584384	RA: 01 34 25.0843 (23.6045179d) Dec: +30 19 50.14 (30.33059d) Equinox: J2000	Epoch of Position: 2015.5	V=21.01	Reference Frame: ICRS			
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Coordinate uncertainties from Gaia DR2</i> Category=EXT-STAR Description=[EMISSION LINE STAR, WOLF RAYET, 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	TA (COS.ta.144 9229)	(178) NM2011-J013 425.11+301950.3	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs) [==>]	[1]
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	4	(COS.sp.144 9238)	(178) NM2011-J013 425.11+301950.3	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=72 96; FP-POS=3			1304 Secs (1304 Secs) [==>]	[3]
	5	(COS.sp.144 9239)	(178) NM2011-J013 425.11+301950.3	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=72 96; FP-POS=4			1305 Secs (1305 Secs) [==>]	[3]



Proposal 16170 - WR33WR201 (03) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsol...

Thu Oct 15 12:00:29 GMT 2020

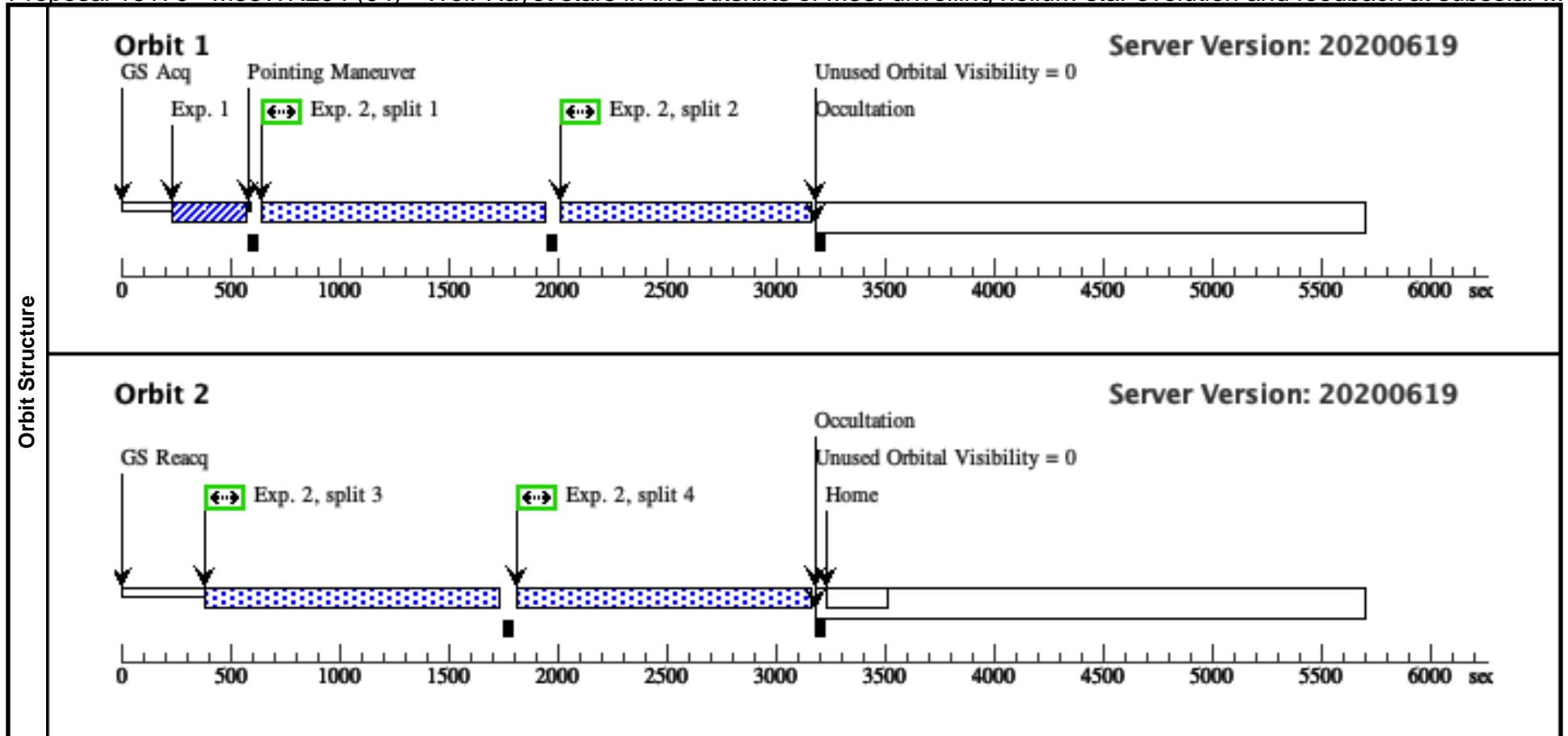
Visit	<b>Proposal 16170, WR33WR201 (03), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none) <i>Comments: Automatic exposure time adjustment used to distribute the four FP-POS over two orbits</i>																					
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(201)</td> <td>NM2011-J013447.32+310748.8 Alt Name1: GAIA-DR2-303420335449835392</td> <td>RA: 01 34 47.2940 (23.6970583d) Dec: +31 07 48.74 (31.13021d) Equinox: J2000</td> <td>Epoch of Position: 2015.5</td> <td>V=20.79</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Coordinate uncertainties from Gaia DR2 Category=EXT-STAR Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WN] Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(201)	NM2011-J013447.32+310748.8 Alt Name1: GAIA-DR2-303420335449835392	RA: 01 34 47.2940 (23.6970583d) Dec: +31 07 48.74 (31.13021d) Equinox: J2000	Epoch of Position: 2015.5	V=20.79
#		Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																
(201)	NM2011-J013447.32+310748.8 Alt Name1: GAIA-DR2-303420335449835392	RA: 01 34 47.2940 (23.6970583d) Dec: +31 07 48.74 (31.13021d) Equinox: J2000	Epoch of Position: 2015.5	V=20.79	Reference Frame: ICRS																	
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit												
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Proposal 16170 - M33WR204 (04) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar ...

Thu Oct 15 12:00:29 GMT 2020

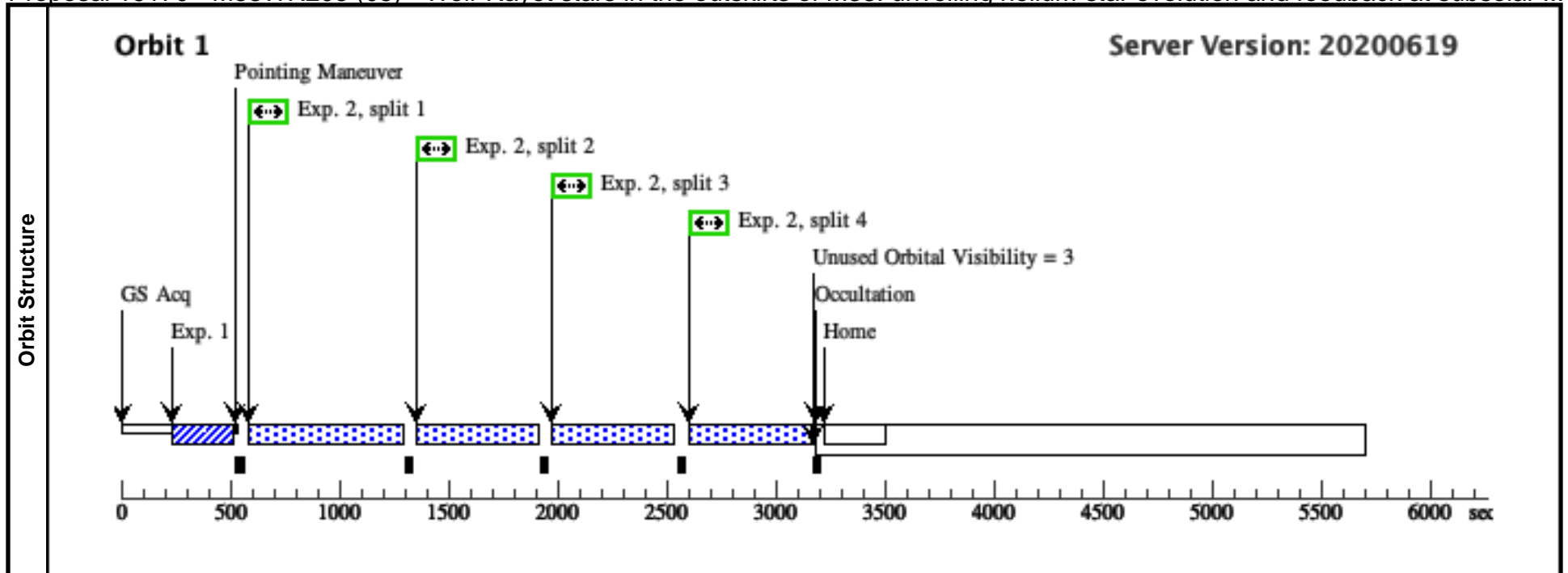
<b>Visit</b>	<b>Proposal 16170, M33WR204 (04), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none) <i>Comments: Automatic exposure time adjustment used to distribute the four FP-POS over two orbits</i>									
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>			
(204)		NM2011-J013507.24+304500.9 Alt Name1: GAIA-DR2-303375599069698816	RA: 01 35 7.2188 (23.7800783d) Dec: +30 45 0.82 (30.75023d) Equinox: J2000	Proper Motion RA: 6.314451034371785E-5 sec of time/yr Proper Motion Dec: 8.87E-4 arcsec/yr Epoch of Position: 2015.5	V=20.3	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.                  Coordinate uncertainties from Gaia DR2                  Category=EXT-STAR                  Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WC]                  Extended=NO</i>										
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	TA (COS.ta.144 9243)	(204) NM2011-J013 507.24+304500.9	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs) [==>]	[1]
	2	(COS.sp.144 9245)	(204) NM2011-J013 507.24+304500.9	COS/FUV, TIME-TAG, PSA	G140L 800 A	FP-POS=ALL; BUFFER-TIME=45 77			1100 Secs (4800 Secs) [==>(Split 1)] [==>(Split 2)]	[1]
									[==>1300.0 Secs (Split 3)] [==>1300.0 Secs (Split 4)]	[2]



Proposal 16170 - M33WR205 (05) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar ...

Thu Oct 15 12:00:29 GMT 2020

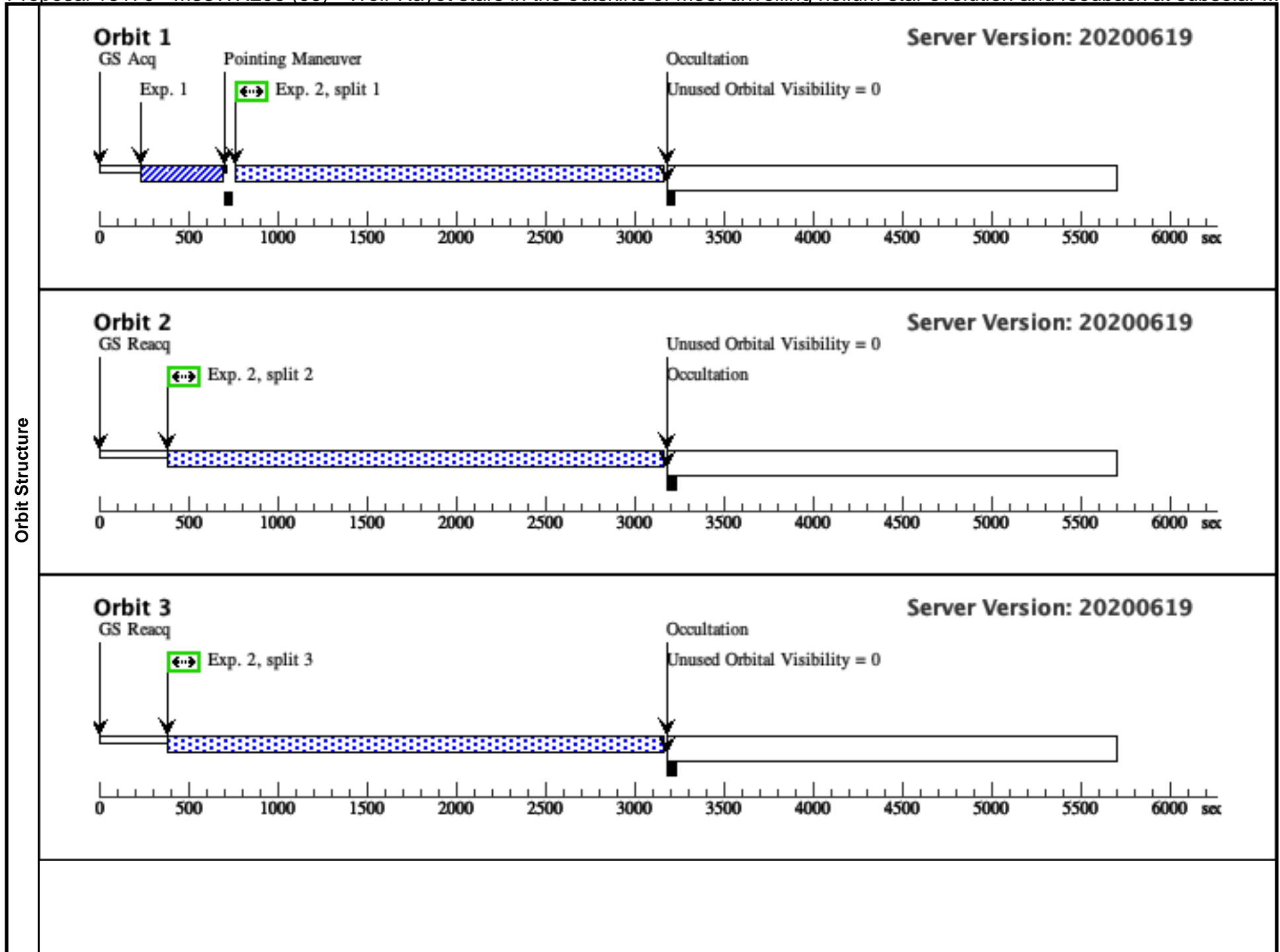
Visit	<b>Proposal 16170, M33WR205 (05), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(205)	NAME-ROMANOS-STAR	RA: 01 35 9.7011 (23.7904213d) Dec: +30 41 57.17 (30.69921d) Equinox: J2000	Proper Motion RA: 2.0933657342546564E-6 sec of time/yr Proper Motion Dec: -8.990000424091704E-4 arcsec/yr Epoch of Position: 2015.5	V=18.77	Reference Frame: ICRS				
	Alt Name1: NM2011-J013509.73+304157.3 Alt Name2: GAIA-DR2-303371991297027328 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Coordinate uncertainties from Gaia DR2 BOT lists the star as a bright object exceeding the local pixel maximum, but this is based on a 16.x magnitude from the early 1990s. In recent years, the star has a more stable magnitude of around 18.7 (see, e.g., the review by Maryeva et al. 2019) Category=EXT-STAR Description=[EMISSION LINE STAR, LUMINOUS BLUE VARIABLE, WOLF RAYET, 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	TA (COS.ta.1469602)	(205) NAME-ROMANOS-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				30 Secs (30 Secs) [==>]	[1]
	Comments: Update of the the ETC run: COS.ta.1449252 was replaced with COS.ta.1469602 to resolve an artefact occuring in the atmosphere model used for the former run. The artefact lead to a bright pixel warning which no longer occured when the atmosphere model without these issues was used. The new model entering the ETC also takes a recent analysis of the optical spectra into account. The resulting TA time is not affected.									
	2	(COS.sp.1469604)	(205) NAME-ROMANOS-STAR	COS/FUV, TIME-TAG, PSA	G140L 800 A	FP-POS=ALL; BUFFER-TIME=44 80			500 Secs (2036 Secs) [==>509.0 Secs (Split 1)] [==>509.0 Secs (Split 2)] [==>509.0 Secs (Split 3)] [==>509.0 Secs (Split 4)]	[1]
	Comments: Update of the the ETC run: COS.sp.1449254 was replaced with COS.sp.1469604 to resolve an artefact occuring in the atmosphere model used for the former run. The new model also takes a recent analysis of the optical spectra into account. The resulting observation time is not affected.									

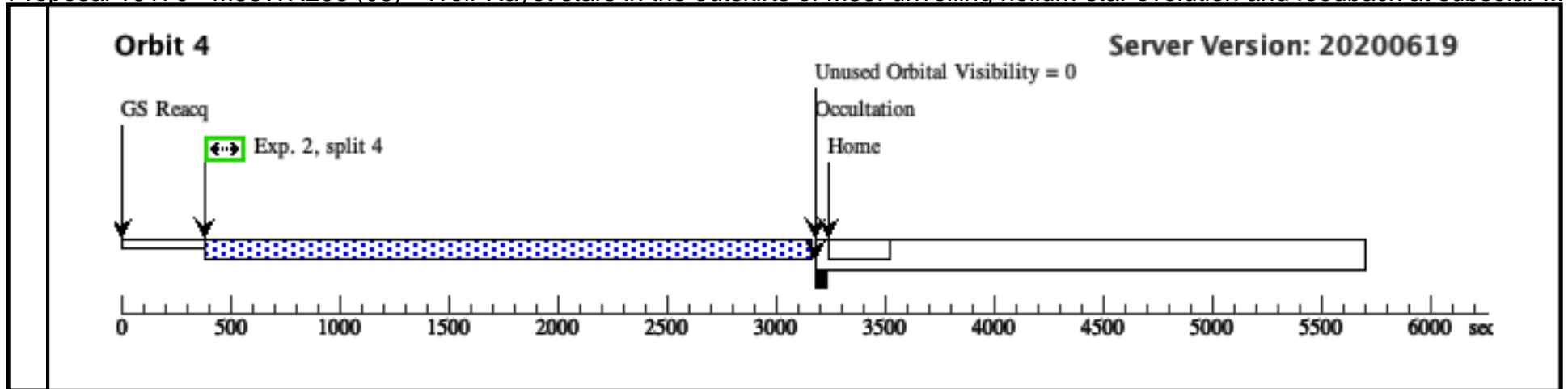


Proposal 16170 - M33WR206 (06) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar ...

Thu Oct 15 12:00:29 GMT 2020

Visit	<b>Proposal 16170, M33WR206 (06), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none) <i>Comments: Observation of M33WR 206 is split into 2 visits due to Phase II visit length recommendations</i> <i>Visits 6 and 7 are intended to be added up eventually to get a higher S/N</i>																																																	
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(206)</td> <td>NM2011-J013510.27+304522.9 Alt Name1: M33WR-206</td> <td>RA: 01 35 10.2507 (23.7927113d) Dec: +30 45 22.97 (30.75638d) Equinox: J2000</td> <td>Epoch of Position: 2015.5</td> <td>V=21.81</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Coordinates from II/349/psI aka Pan-STARRS release 1 (PS1) Survey - DR1 (Chambers+, 2016) as they are the only ones with precise coordinates. (Too faint for Gaia DR2) PS1 Photometry for g and r agree with the model SED and are in line with Massey and XMM-OM Uncertainties not given in J/AJ/152/62/catalog (Revised LGGS UBVRI photometry of M31 and M33 stars from Massey et al. 2016) but their location is only 0.257 from the PS1 data Correlation with Galex data (J/MNRAS/450/3811/table2) has 0.78 arcsec shift to Neugent+ 2011, but both values should have severe uncertainties. Category=EXT-STAR Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WN] Extended=NO</i></p>									#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(206)	NM2011-J013510.27+304522.9 Alt Name1: M33WR-206	RA: 01 35 10.2507 (23.7927113d) Dec: +30 45 22.97 (30.75638d) Equinox: J2000	Epoch of Position: 2015.5	V=21.81	Reference Frame: ICRS																												
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Proposal 16170 - M33WR206 (07) - Wolf-Rayet stars in the outskirts of M33: unveiling helium-star evolution and feedback at subsolar ...

Thu Oct 15 12:00:29 GMT 2020

<b>Visit</b>	<b>Proposal 16170, M33WR206 (07), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none) <i>Comments: Observation of M33WR 206 split into 2 visits due to Phase II visit length recommendations</i> <i>Visits 6 and 7 are intended to be added up eventually to get a higher S/N</i>										
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
(206)		NM2011-J013510.27+304522.9 Alt Name1: M33WR-206	RA: 01 35 10.2507 (23.7927113d) Dec: +30 45 22.97 (30.75638d) Equinox: J2000	Epoch of Position: 2015.5	V=21.81	Reference Frame: ICRS					
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Coordinates from II/349/ps1 aka Pan-STARRS release 1 (PS1) Survey - DR1 (Chambers+, 2016) as they are the only ones with precise coordinates. (Too faint for Gaia DR2)</i> <i>PS1 Photometry for g and r agree with the model SED and are in line with Massey and XMM-OM</i> <i>Uncertainties not given in J/AJ/152/62/catalog (Revised LGGS UBVRI photometry of M31 and M33 stars from Massey et al. 2016) but their location is only 0.257 from the PS1 data</i> <i>Correlation with Gaia data (J/MNRAS/450/3811/table2) has 0.78 arcsec shift to Neugent+ 2011, but both values should have severe uncertainties.</i> Category=EXT-STAR Description=[EMISSION LINE STAR, WOLF RAYET, WOLF RAYET - WN] Extended=NO											
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>	
	1	TA (COS.ta.144 9357)	(206) NM2011-J013 510.27+304522.9	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				500 Secs (500 Secs) [==>]	[1]	
	<i>Comments: 1150 Wavelength setting as 800 is not available for TA</i>										
	2	(COS.sp.144 9368)	(206) NM2011-J013 510.27+304522.9	COS/FUV, TIME-TAG, PSA	G140L 800 A	BUFFER-TIME=78 02; FP-POS=ALL			1400 Secs (9616 Secs) [==>1444.0 Secs (Split 1)] [==>2724.0 Secs (Split 2)] [==>2724.0 Secs (Split 3)] [==>2724.0 Secs (Split 4)]	[1] [2] [3] [4]	
	3	(COS.sp.144 9367)	(206) NM2011-J013 510.27+304522.9	COS/FUV, TIME-TAG, PSA	G140L 800 A	FP-POS=4; BUFFER-TIME=78 02			2724 Secs (2724 Secs) [==>]	[5]	

