



13708 - Following the rapid evolution of the central star of the Stingray Nebula in real time

Cycle: 22, 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	(1) NAME-STINGRAY-NEBULA	COS/FUV COS/NUV	5	17-Jul-2014 21:05:20.0	yes

5 Total Orbits Used

ABSTRACT

SAO 244567 is an unusually fast evolving star. Within twenty years only, it has turned from a B-type supergiant into the central star of the Stingray nebula. Space and ground-based observations obtained over the last decades have revealed that its spectrum changes noticeably over just a few years, showing stellar evolution in real time. Previous analysis indicates it must be a low mass star and thus the observed fast evolution is in strong

contradiction with canonical post-asymptotic giant branch (AGB) evolution. A late He-shell flash is able to account for the rapid evolution. This scenario would predict an evolution back to the AGB, e.g. a decrease of the effective temperature (which is already indicated by the FUSE observations in 2006) and an increase of luminosity. With COS spectroscopy we want to follow the evolution of the surface properties of SAO 244567 to verify this thesis. The very compact nebula of SAO 244567 makes it impossible to derive these parameters from optical spectra, because most of the photospheric lines are blended by nebular emission lines thus they are not suitable for a spectral analysis. The derived surface parameters will establish constraints for late thermal pulse evolutionary calculations. With these calculations we aim not only to explain the nature of SAO 244567, but they also will provide a deeper insight in the formation process of hydrogen deficient stars, which make up 25% of the post AGB-stars and white dwarfs.

OBSERVING DESCRIPTION

FUV (medium and low resolution) and NUV (low resolution) spectra of SAO244567 (star) shall be observed within 1 visit.

Orbit 1 to 4: COS/PSA G130M with central wavelength 1222 Å. One different FP-POS per orbit.

Orbit 5: COS/PSA G140L with central wavelength 1280 Å. COS/PSA G230L with central wavelengths 3360 Å and 2635 Å.

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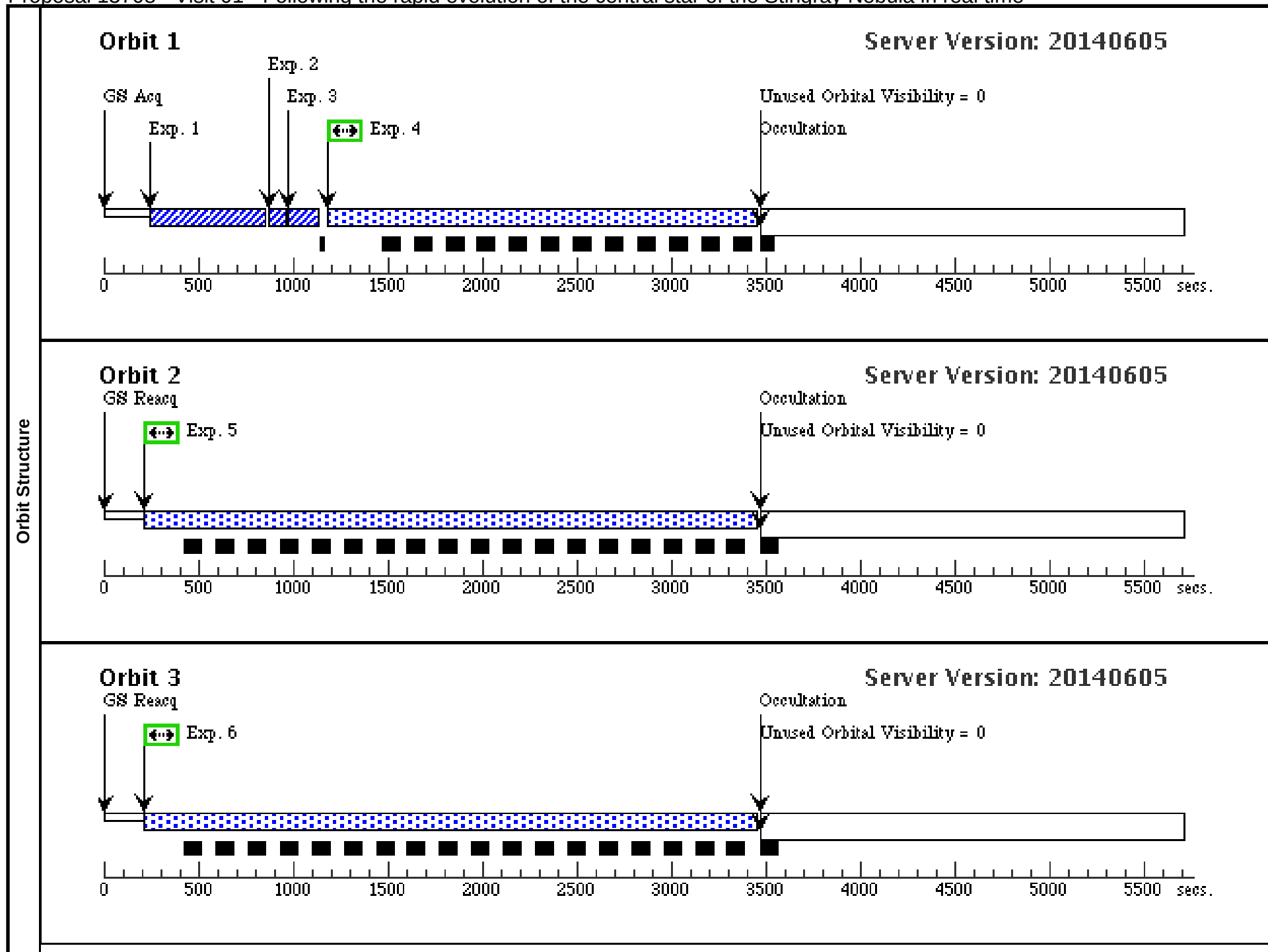
Visit	Proposal 13708, Visit 01					Fri Jul 18 01:05:22 GMT 2014
	Diagnostic Status: Warning					
	Scientific Instruments: COS/NUV, COS/FUV					
	Special Requirements: (none)					
Diagnos	(Visit 01) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NAME-STINGRAY-NEBULA	RA: 17 16 21.0800 (259.0878333d) Dec: -59 29 23.30 (-59.48981d) Equinox: J2000	Epoch of Position: 2000	V=15.0+/-0.8 f_max(at 1200A) = 3.2*10^-13 e rg cm^2 s^-1 A^-1, f_min (at 1200A) = 0.8 *10^-13 erg cm^2 s^-1 A^-1	Reference Frame: ICRS
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.					

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Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.sa.620 706)	(1) NAME-STINGR AY-NEBULA	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	CENTER=FLUX-W T-FLR; SCAN-SIZE=4; STEP-SIZE=1.767; SEGMENT=BOTH			0.7 Secs (0.7 Secs) [==>]	[1]
	2	(COS.sa.620 706)	(1) NAME-STINGR AY-NEBULA	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	SEGMENT=BOTH			0.7 Secs (0.7 Secs) [==>]	[1]
	3	(COS.sa.621 334)	(1) NAME-STINGR AY-NEBULA	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	SEGMENT=BOTH; CENTER=FLUX-W T-FLR; NUM-POS=5; STEP-SIZE=0.9			0.7 Secs (0.7 Secs) [==>]	[1]
	4	(COS.sp.621 698)	(1) NAME-STINGR AY-NEBULA	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=16 9; EXTENDED=NO; FLASH=YES; FP-POS=1; SEGMENT=BOTH			2138 Secs (2138 Secs) [==>]	[1]
	5	(COS.sp.621 698)	(1) NAME-STINGR AY-NEBULA	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=16 9; EXTENDED=NO; FLASH=YES; FP-POS=2; SEGMENT=BOTH			3184 Secs (3184 Secs) [==>]	[2]
	6	(COS.sp.621 698)	(1) NAME-STINGR AY-NEBULA	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=16 9; EXTENDED=NO; FLASH=YES; FP-POS=3; SEGMENT=BOTH			3184 Secs (3184 Secs) [==>]	[3]
	7	(COS.sp.621 698)	(1) NAME-STINGR AY-NEBULA	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=16 9; EXTENDED=NO; FLASH=YES; FP-POS=4; SEGMENT=BOTH			3184 Secs (3184 Secs) [==>]	[4]
	8	(COS.sp.621 737)	(1) NAME-STINGR AY-NEBULA	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=12 0; EXTENDED=NO; FLASH=YES; SEGMENT=BOTH; FP-POS=ALL			187 Secs (748 Secs) [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[5]

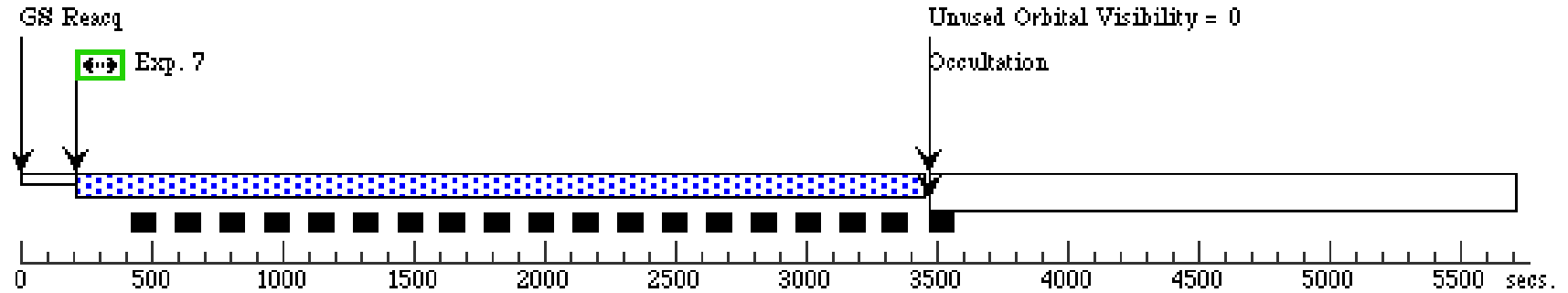
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	9	(COS.sp.621 702)	(1) NAME-STINGR AY-NEBULA	COS/NUV, TIME-TAG, PSA	G230L 3360 A	BUFFER-TIME=17 4; EXTENDED=NO; FLASH=YES; FP-POS=3	500 Secs (500 Secs)	
							[==>]	[5]
	10	(COS.sp.621 704)	(1) NAME-STINGR AY-NEBULA	COS/NUV, TIME-TAG, PSA	G230L 2635 A	BUFFER-TIME=37 4; EXTENDED=NO; FLASH=YES; FP-POS=3	494 Secs (494 Secs)	
							[==>]	[5]



Orbit 4

Server Version: 20140605



Orbit 5

Server Version: 20140605

