



12188 - Tests of Extreme Physics in Very Cool White Dwarfs

Cycle: 18, Proposal Category: GO

(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) GJ3162	STIS/CCD STIS/NUV-MAMA	1	26-Apr-2012 21:01:16.0	yes
02	(2) GJ3259	STIS/CCD STIS/NUV-MAMA	1	26-Apr-2012 21:01:24.0	yes
09	(3) GJ3420	STIS/CCD STIS/NUV-MAMA	1	26-Apr-2012 21:01:29.0	yes
04	(4) GJ1102B (5) GJ1102A	STIS/CCD STIS/NUV-MAMA	2	26-Apr-2012 21:01:37.0	yes
06	(6) GJ3866	STIS/CCD STIS/NUV-MAMA	1	26-Apr-2012 21:01:43.0	yes
07	(7) GJ4054	STIS/CCD STIS/NUV-MAMA	1	26-Apr-2012 21:01:47.0	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>
08	(8) GJ812B	STIS/CCD STIS/NUV-MAMA	2	26-Apr-2012 21:01:54.0	yes

9 Total Orbits Used

ABSTRACT

A program of low resolution Near UV STIS spectroscopy is proposed that will critically test new improved models of photospheric opacity in cool ($T_{\text{eff}} < 6000$ K) DA and DC white dwarf stars. Such stars possess either weak or no Balmer lines from which spectroscopic information such as temperature, surface gravity and photospheric composition can be determined. These critical parameters must be estimated from fits to the overall Spectral Energy Distribution (SED), a method that is inherently less sensitive than spectroscopic methods. Our new models implement a detailed treatment of collisional perturbations to H atoms in cool dense WD photospheres that naturally account for an acknowledged missing opacity, due the red wing of the H I Lyman alpha transition. This in turn modifies the SED in the wavelength region from 2500 Å to 4000 Å. A full validation of these models over a significant range of temperature and gravity will greatly improve the analysis of the cool white dwarfs and provide new insights into atmospheric compositions, cooling ages, and luminosities of this important component of the white dwarf population.

OBSERVING DESCRIPTION

This proposal will obtain single STIS observations of seven of our targets and two observations of the eighth and weakest target. All observations will use the STIS NUV MAMA with the G230L grating and the 52x2 slit since our observations are primarily spectrophotometric. All targets are cool white dwarf stars with spectral energy distributions that rapidly fall towards short wavelengths. We have simulated expected count rates and S/N for each target, using an appropriate model atmosphere and the STIS Spectroscopic ETC. Maximum signal levels are expected between 2800 Å and 3000 Å, with useful signals extending as short as 2400 Å for the strongest targets. Our observations will be most sensitive to the NUV MAMA dark count.

Proposal 12188 - Visit 01 - Tests of Extreme Physics in Very Cool White Dwarfs

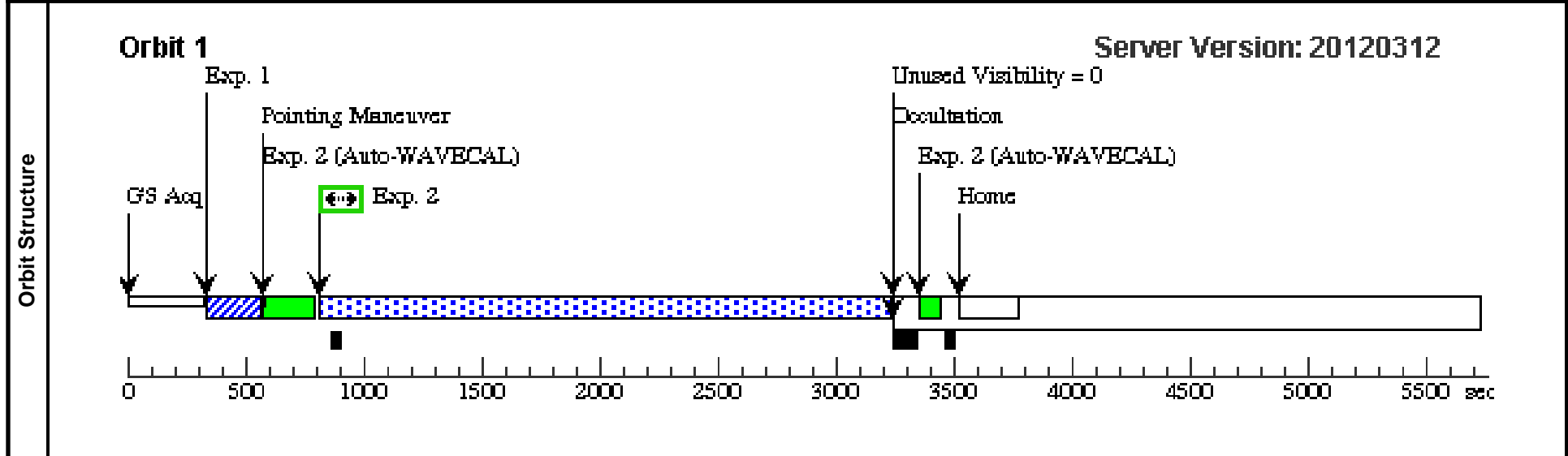
Fri Apr 27 01:02:00 GMT 2012

Visit	Proposal 12188, Visit 01, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	GJ3162	RA: 02 32 37.9000 (38.1579167d)	Proper Motion RA: 34 mas/yr	V=15.76+/-0.03	Reference Frame: ICRS
			Alt Name1: WD0230-144 Dec: -14 11 50.80 (-14.19744d)	Proper Motion Dec: -686 mas/yr		
			Equinox: J2000	Parallax: 0.0646"		
				Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) GJ3162	STIS/CCD, ACQ, F28X50LP	MIRROR				1.1 Secs	
									[==>]	[1]
	2		(1) GJ3162	STIS/NUV-MAMA, ACCUM, 52X2	G230L				2000 Secs	
									[==>2379.0 Secs]	[1]



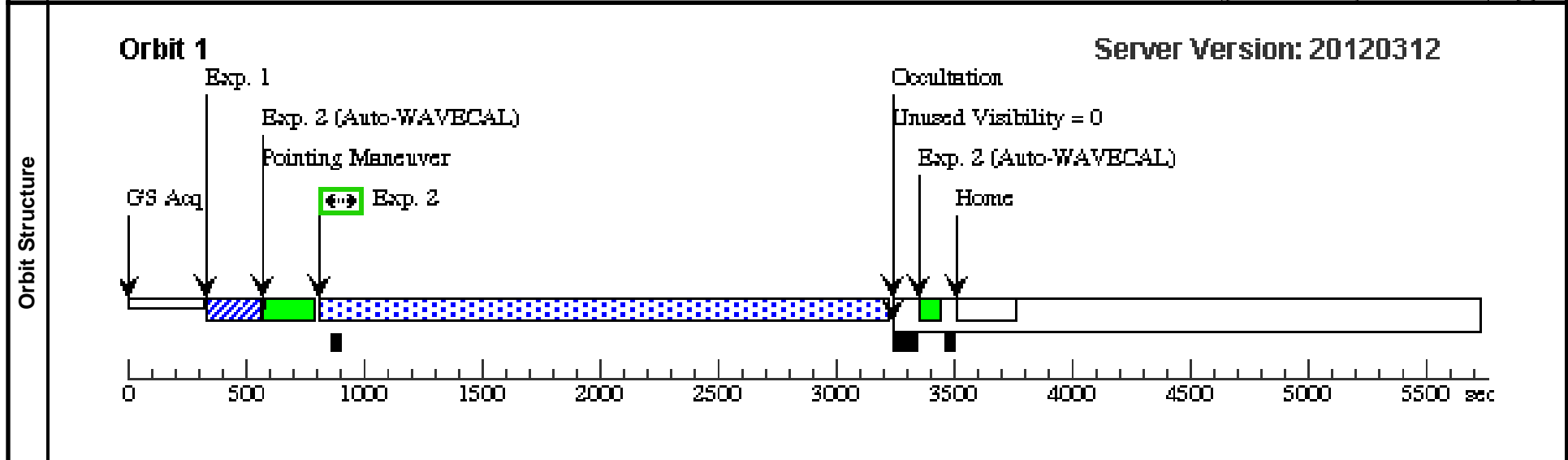
Proposal 12188 - Visit 02 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:01 GMT 2012

Visit	Proposal 12188, Visit 02, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	GJ3259	RA: 04 00 26.6810 (60.1111708d)	Proper Motion RA: -360 mas/yr	V=15.87+/-0.03	Reference Frame: ICRS
		Alt Name1: WD0357+081	Dec: +08 14 6.90 (8.23525d)	Proper Motion Dec: -396 mas/yr		
			Equinox: J2000	Parallax: 0.0567"		
				Epoch of Position: 2000		

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) GJ3259	STIS/CCD, ACQ, F28X50LP	MIRROR				1.3 Secs	
									[==>]	[1]
	2		(2) GJ3259	STIS/NUV-MAMA, ACCUM, 52X2	G230L				2000 Secs	
					2376 A				[==>2376.0 Secs]	[1]



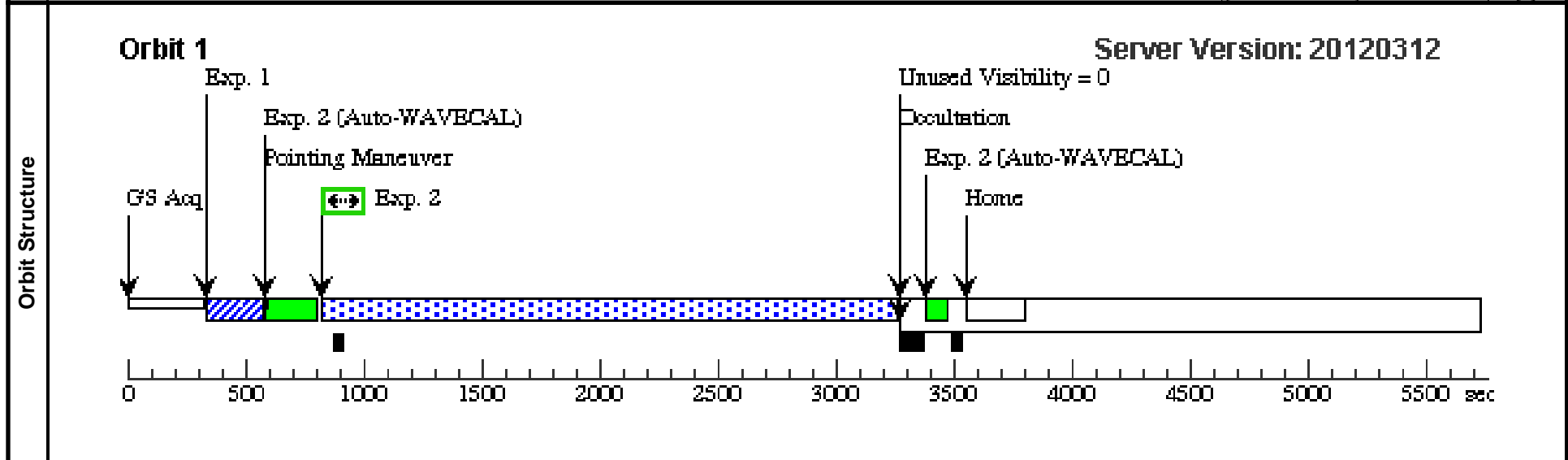
Proposal 12188 - Visit 09 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:02 GMT 2012

Visit	Proposal 12188, Visit 09, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	GJ3420	RA: 07 00 51.6200 (105.2150833d) Dec: +31 57 45.00 (31.96250d) Equinox: J2000	Proper Motion RA: 344 mas/yr Proper Motion Dec: -600 mas/yr Parallax: 0.0536" Epoch of Position: 2000	V=16.56+/-0.03	Reference Frame: ICRS
		Alt Name1: WD0657+320				

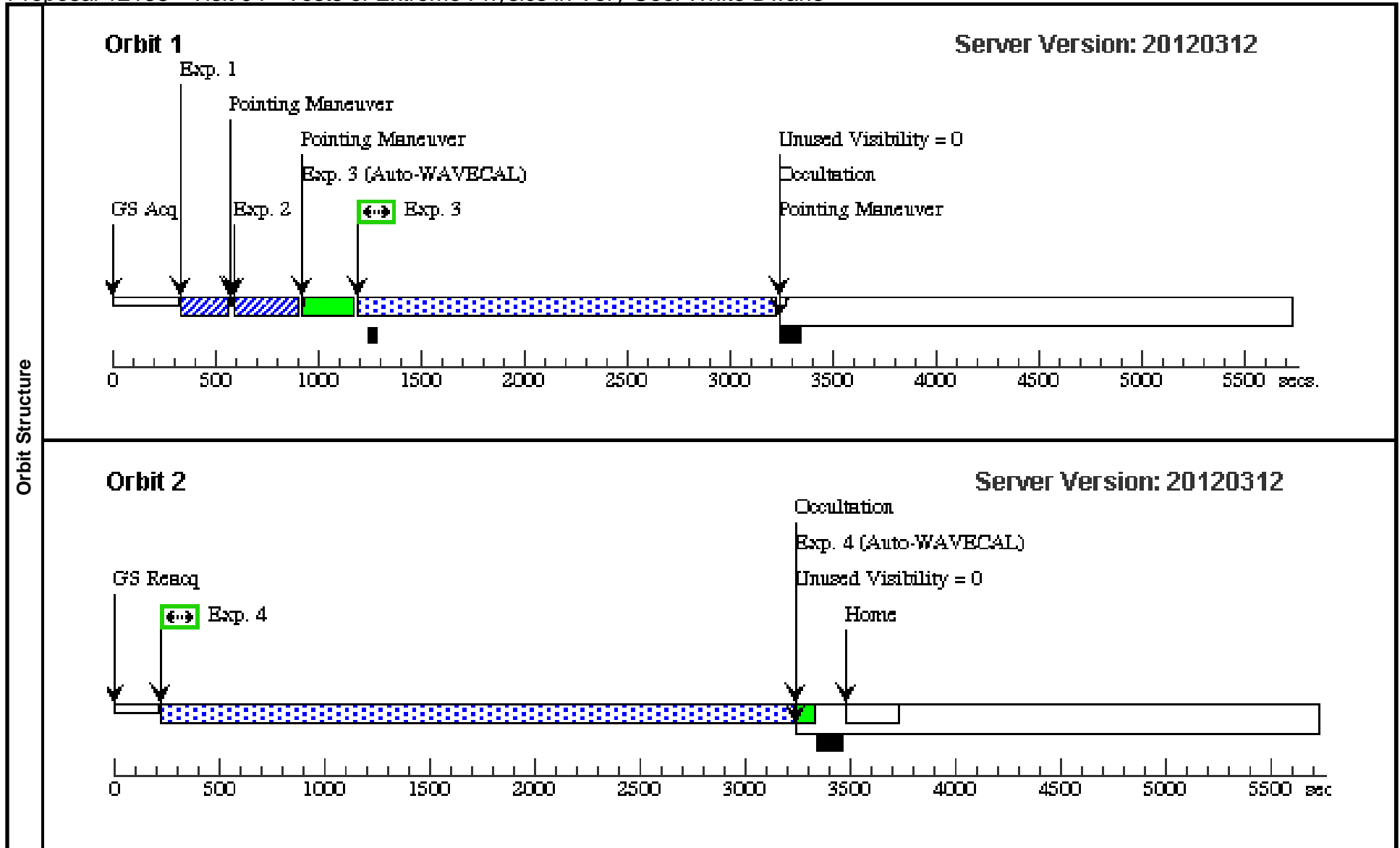
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(3) GJ3420	STIS/CCD, ACQ, F28X50LP	MIRROR				3.6 Secs [=>]	[1]
	2		(3) GJ3420	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2035 Secs [=>2399.0 Secs]	[1]



Proposal 12188 - Visit 04 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:02 GMT 2012

Visit	Proposal 12188, Visit 04, completed Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: (none)									
	(Visit 04) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE (Visit 04) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS (Visit 04) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS									
Diagnosics										
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(4)	GJ1102B Alt Name1: WD0747+073.1	RA: 07 50 14.5800 (117.5607500d) Dec: +07 11 49.10 (7.19697d) Equinox: J2000	Proper Motion RA: 207 mas/yr Proper Motion Dec: -1793 mas/yr Parallax: 0.0547" Epoch of Position: 2000	V=16.98+/-0.03	Reference Frame: ICRS			
(5)	GJ1102A Alt Name1: WD0747+073.2	RA: 07 50 15.3400 (117.5639167d) Dec: +07 11 37.30 (7.19369d) Equinox: J2000	Proper Motion RA: 207 mas/yr Proper Motion Dec: -1793 mas/yr Parallax: 0.0547" Epoch of Position: 2000	V=16.98	Reference Frame: ICRS					
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) GJ1102B	STIS/CCD, ACQ, F28X50LP	MIRROR				1.23 Secs [=>]	[1]
	2		(4) GJ1102B	STIS/CCD, ACQ/PEAK, 52X0.1	G430L 4300 A				3.51 Secs [=>]	[1]
	3		(4) GJ1102B	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2000 Secs [=>1995.0 Secs]	[1]
	4		(5) GJ1102A	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A		POS TARG 11.293,- 11.800		2500 Secs [=>2992.0 Secs]	[2]
<i>Comments: Offset to second component of WD binary.</i>										



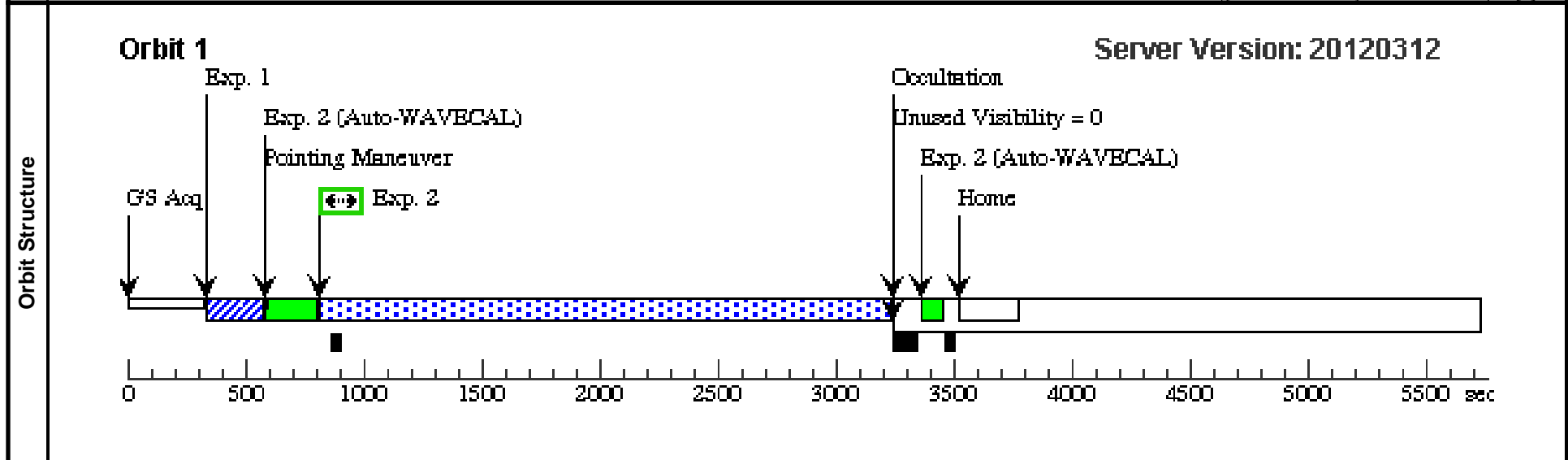
Proposal 12188 - Visit 06 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:03 GMT 2012

Visit	Proposal 12188, Visit 06, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	GJ3866	RA: 14 47 25.4800 (221.8561667d) Dec: -17 42 15.20 (-17.70422d) Equinox: J2000	Proper Motion RA: -1092 mas/yr Proper Motion Dec: -341 mas/yr Parallax: 0.0690" Epoch of Position: 2000	V=16.44+/-0.03	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(6) GJ3866	STIS/CCD, ACQ, F28X50LP	MIRROR				2.8 Secs [=>]	[1]
	2		(6) GJ3866	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2000 Secs [=>2377.0 Secs]	[1]



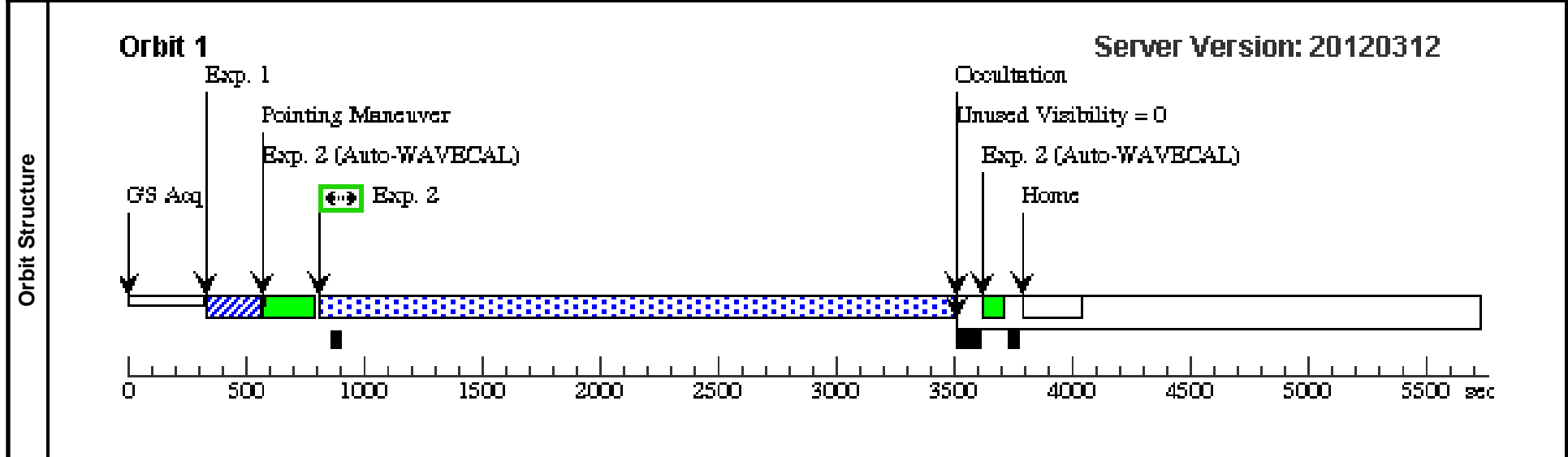
Proposal 12188 - Visit 07 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:04 GMT 2012

Visit	Proposal 12188, Visit 07, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/NUV-MAMA				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	GJ4054	RA: 18 21 19.8300 (275.3326250d) Dec: +61 01 7.90 (61.01886d) Equinox: J2000	Proper Motion RA: 142 mas/yr Proper Motion Dec: -699 mas/yr Parallax: 0.0781" Epoch of Position: 2000	V=15.69+/-0.03	Reference Frame: ICRS
		Alt Name1: WD1820+609				

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(7) GJ4054	STIS/CCD, ACQ, F28X50LP	MIRROR				1.3 Secs [=>]	[1]
	2		(7) GJ4054	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2000 Secs [=>2650.0 Secs]	[1]



Proposal 12188 - Visit 08 - Tests of Extreme Physics in Very Cool White Dwarfs

Fri Apr 27 01:02:04 GMT 2012

Visit	<p>Proposal 12188, Visit 08, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 105D TO 255 D; ORIENT 285D TO 75 D</p> <p><i>Comments: This avoids having the dMe companion in the slit. The position angle of the companion is 135D, so slit orientations of 135+/- 15D and 315 +/- 15D are to be avoided. The corresponding permitted U3 orientations are 285D to 75D and 105D to 255D.</i></p>									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(8)	GJ812B Alt Name1: WD2054-050	RA: 20 56 47.7200 (314.1988333d) Dec: -04 50 39.50 (-4.84431d) Equinox: J2000	Proper Motion RA: 787.22 mas/yr Proper Motion Dec: -218.69 mas/yr Parallax: 0.05656" Epoch of Position: 2000	V=16.67+/-0.03	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(8) GJ812B	(8) GJ812B	STIS/CCD, ACQ, F28X50LP	MIRROR				3.2 Secs	
									[==>]	[1]
	2	(8) GJ812B	(8) GJ812B	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2000 Secs	
								[==>2360.0 Secs]	[1]	
3	(8) GJ812B	(8) GJ812B	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A				2900 Secs		
								[==>2959.0 Secs]	[2]	

