



12973 - UV Spectroscopy of a Peculiar White Dwarf Supernova

Cycle: 20, 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	(2) SN2013DH CCDFLAT	STIS/CCD STIS/NUV-MAMA	2	22-Jun-2013 21:01:12.0	yes
51	(2) SN2013DH CCDFLAT	STIS/CCD STIS/NUV-MAMA	2	22-Jun-2013 21:01:27.0	yes
61	(2) SN2013DH	STIS/CCD STIS/NUV-MAMA	2	22-Jun-2013 21:01:37.0	yes
02	(2) SN2013DH CCDFLAT	STIS/CCD STIS/NUV-MAMA	4	22-Jun-2013 21:01:50.0	yes

10 Total Orbits Used

ABSTRACT

While type Ia supernovae (SNe Ia) have been extremely useful for studying the cosmic expansion history, their explosion mechanism and progenitor system remain unsolved problems. Moreover, as large samples of SNe are observed, the diversity among these explosions has grown: not all

exploding white dwarfs look like normal SNe Ia. Understanding why these "peculiar" objects are different from the normal ones can help explain the standard SN Ia scenario, as well as give us a better understanding of the many endpoints of stellar evolution. Connecting observations to physical models has been difficult for both normal and peculiar white dwarf supernovae. The ultraviolet is an unexplored wavelength region for peculiar SNe Ia; the high opacity in the UV from typical thermonuclear burning products means that the UV flux in white dwarf supernovae is very sensitive to the outermost layers of ejecta. This material is the least processed, and is thus an ideal place to look for clues to progenitors and explosion mechanisms. Here we propose target-of-opportunity UV spectroscopy of a peculiar white dwarf SN using the STIS NUV-MAMA instrument to add a unique piece of the puzzle connecting peculiar SNe Ia and their progenitors.

OBSERVING DESCRIPTION

Our goal is to observe a single peculiar white-dwarf supernova using the STIS CCD for optical spectra and the STIS NUV_MAMA instrument for the near-UV. Many peculiar SNe Ia are faint, so we will restrict ourselves to low redshift events ($z < 0.03$). Peculiar SNe Ia evolve differently in the UV than their normal counterparts; we will therefore have two visits on our object. The first will be 2 of our 6 allotted orbits, with approximately half of an orbit being used for the optical spectrum using the STIS CCD, and the other 1.5 orbits being used for the STIS NUV-MAMA spectrum. This visit should cover the SN at maximum or preferably a few days before maximum. By the time of the second visit, the SN will have faded considerably. The second visit will consist of 4 orbits: 0.5 orbits for the STIS CCD optical spectrum and 3.5 orbits with the NUV-MAMA instrument. We request that the second visit be scheduled approximately 1 week after the initial visit.

This is a ToO proposal - we would like to trigger on SN 2013dh in NGC 5936.

REAL TIME JUSTIFICATION

No realtime requirements.

CALIBRATION JUSTIFICATION

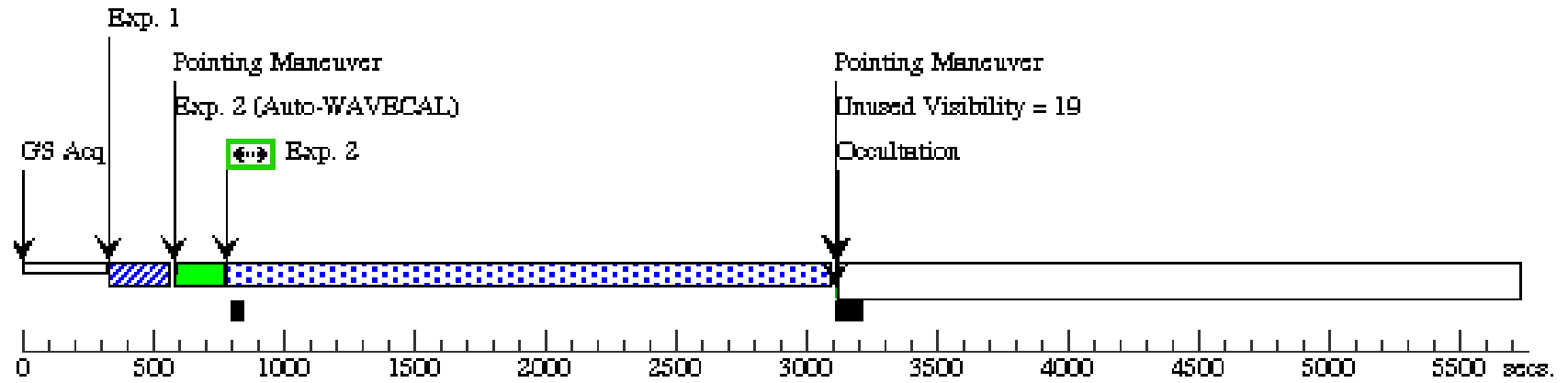
No special calibrations required.

Proposal 12973 - Visit 01 - UV Spectroscopy of a Peculiar White Dwarf Supernova

Sun Jun 23 01:02:00 GMT 2013

Visit	Proposal 12973, Visit 01, scheduled Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 70%; ON HOLD <i>On Hold Comments: Target of Opportunity</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	SN2013DH	RA: 15 30 1.0900 (232.5045417d) Dec: +12 59 13.00 (12.98694d) Equinox: J2000		V=18.0+/-1.5	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Target Acquisition	(2) SN2013DH	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			2 Secs (2 Secs) [==>]	[1]
	2	MAMA_2 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.5		2300 Secs (2300 Secs) [==>]	[1]
	3	MAMA_3 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.0		1392 Secs (1392 Secs) [==>]	[2]
	4	CCD_430L_4	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=2			400 Secs (400 Secs) [==>(Split 1)] [==>(Split 2)]	[2]
	5	CCD_750L_5	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=2			400 Secs (400 Secs) [==>(Split 1)] [==>(Split 2)]	[2]
	6	CCD_750L_FLAT	CCDFLAT	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A				[==>(Copy 1)] [==>(Copy 2)]	[2]

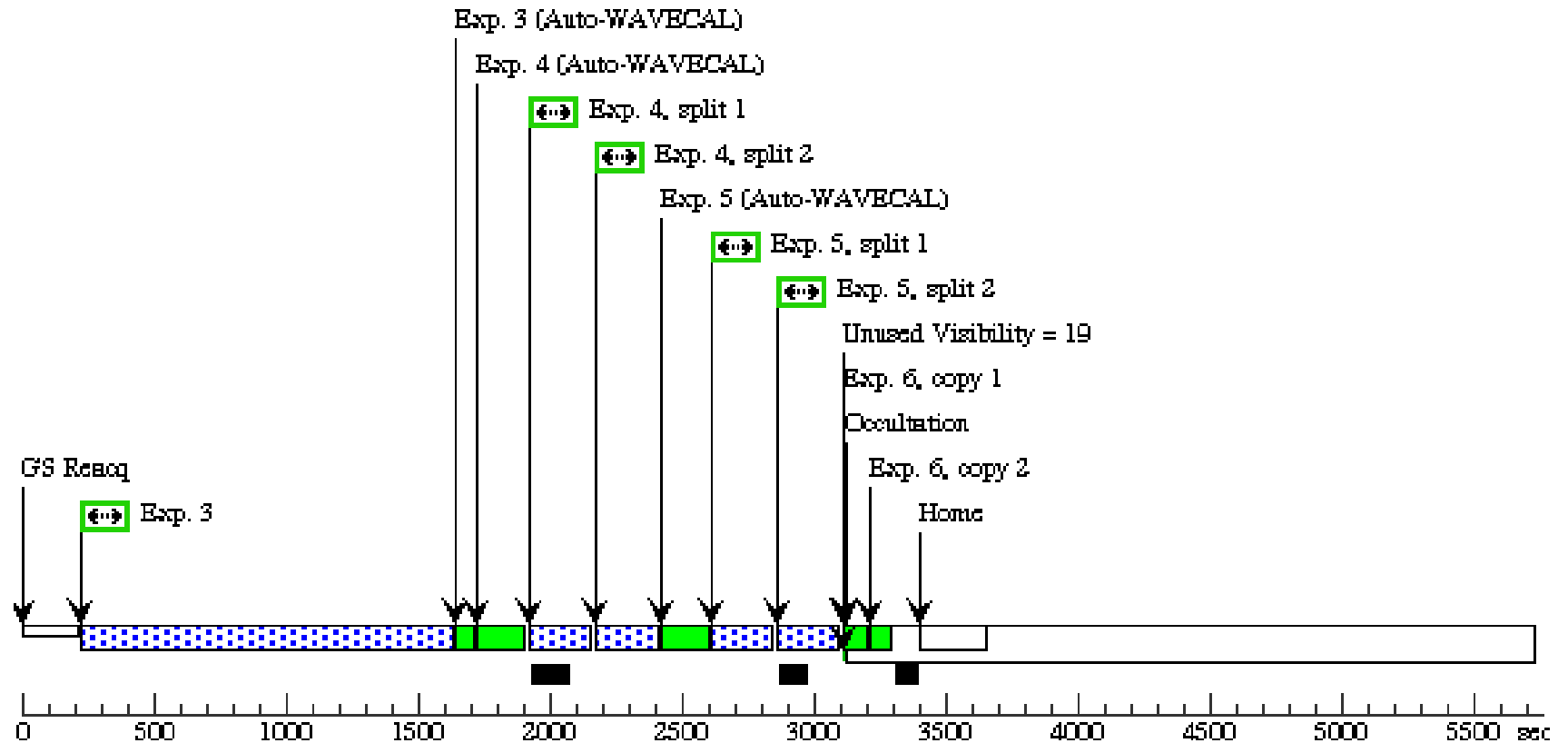
Orbit 1



Orbit Structure

Orbit 2

Server Version: 20130502



Proposal 12973 - Visit 51 - UV Spectroscopy of a Peculiar White Dwarf Supernova

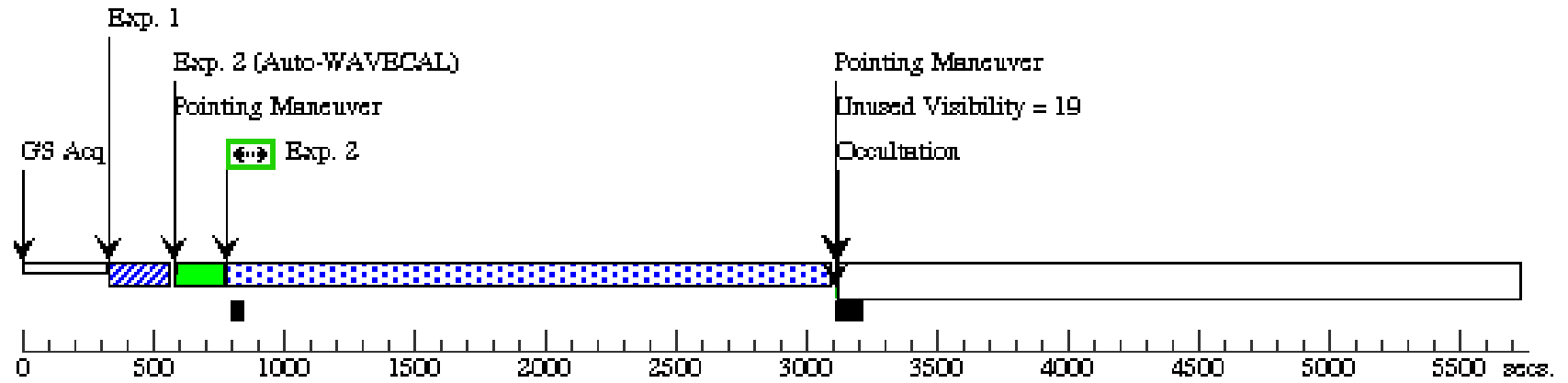
Sun Jun 23 01:02:03 GMT 2013

Visit	Proposal 12973, Visit 51, implementation Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 70%; ON HOLD <i>On Hold Comments: Target of Opportunity</i>				
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SN2013DH	RA: 15 30 1.0900 (232.5045417d) Dec: +12 59 13.00 (12.98694d) Equinox: J2000		V=18.0+/-1.5	Reference Frame: ICRS	

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target Acquisition	(2) SN2013DH	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			2 Secs (2 Secs) [==>]	[1]	
2	MAMA_2 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.5		2300 Secs (2300 Secs) [==>]	[1]	
3	MAMA_3 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.0		1392 Secs (1392 Secs) [==>]	[2]	
4	CCD_430L_4	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=2			400 Secs (400 Secs) [==>(Split 1)] [==>(Split 2)]	[2]	
5	CCD_750L_5	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=2			400 Secs (400 Secs) [==>(Split 1)] [==>(Split 2)]	[2]	
6	CCD_750L_FLAT	CCDFLAT	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A				[==>(Copy 1)] [==>(Copy 2)]	[2]	

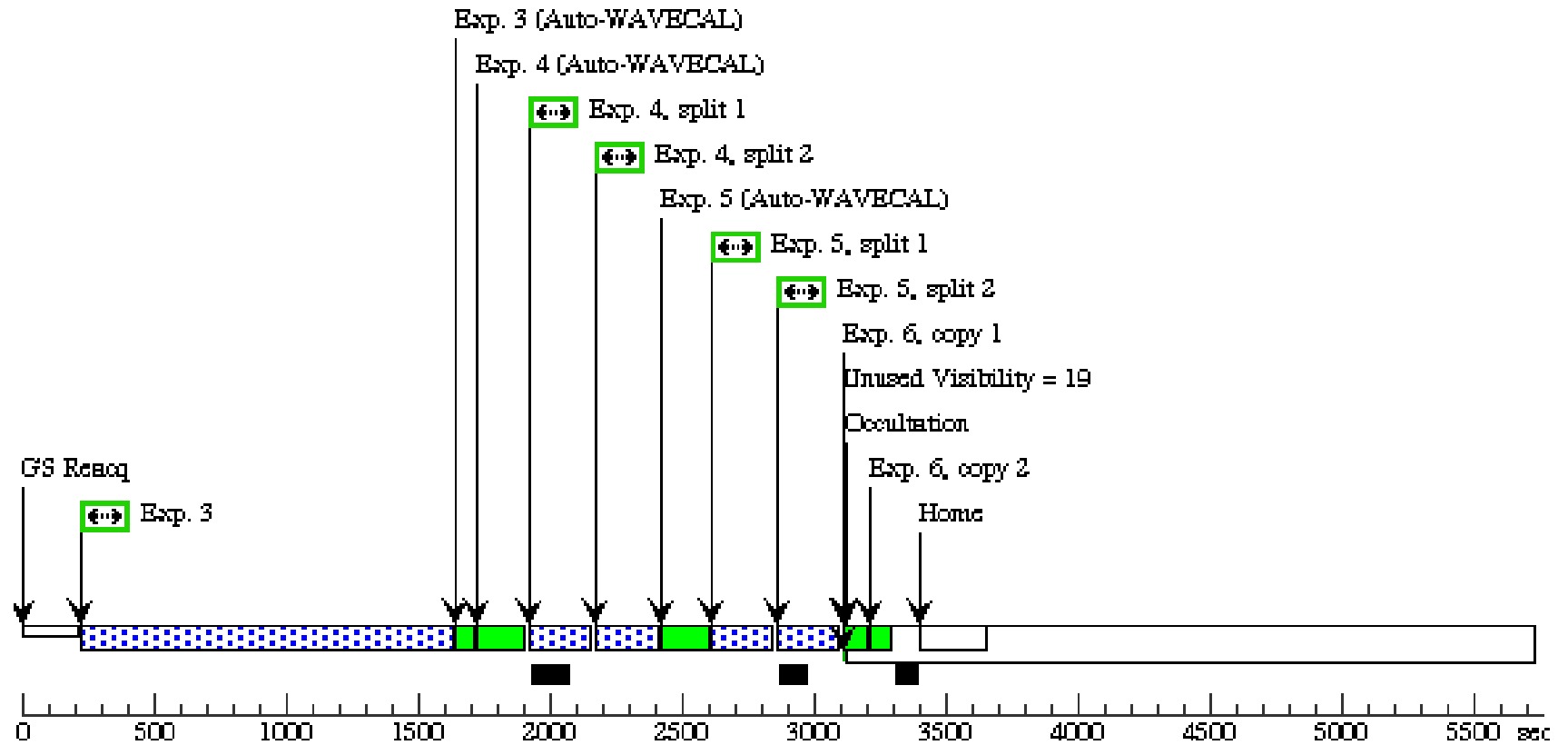
Orbit 1



Orbit Structure

Orbit 2

Server Version: 20130502

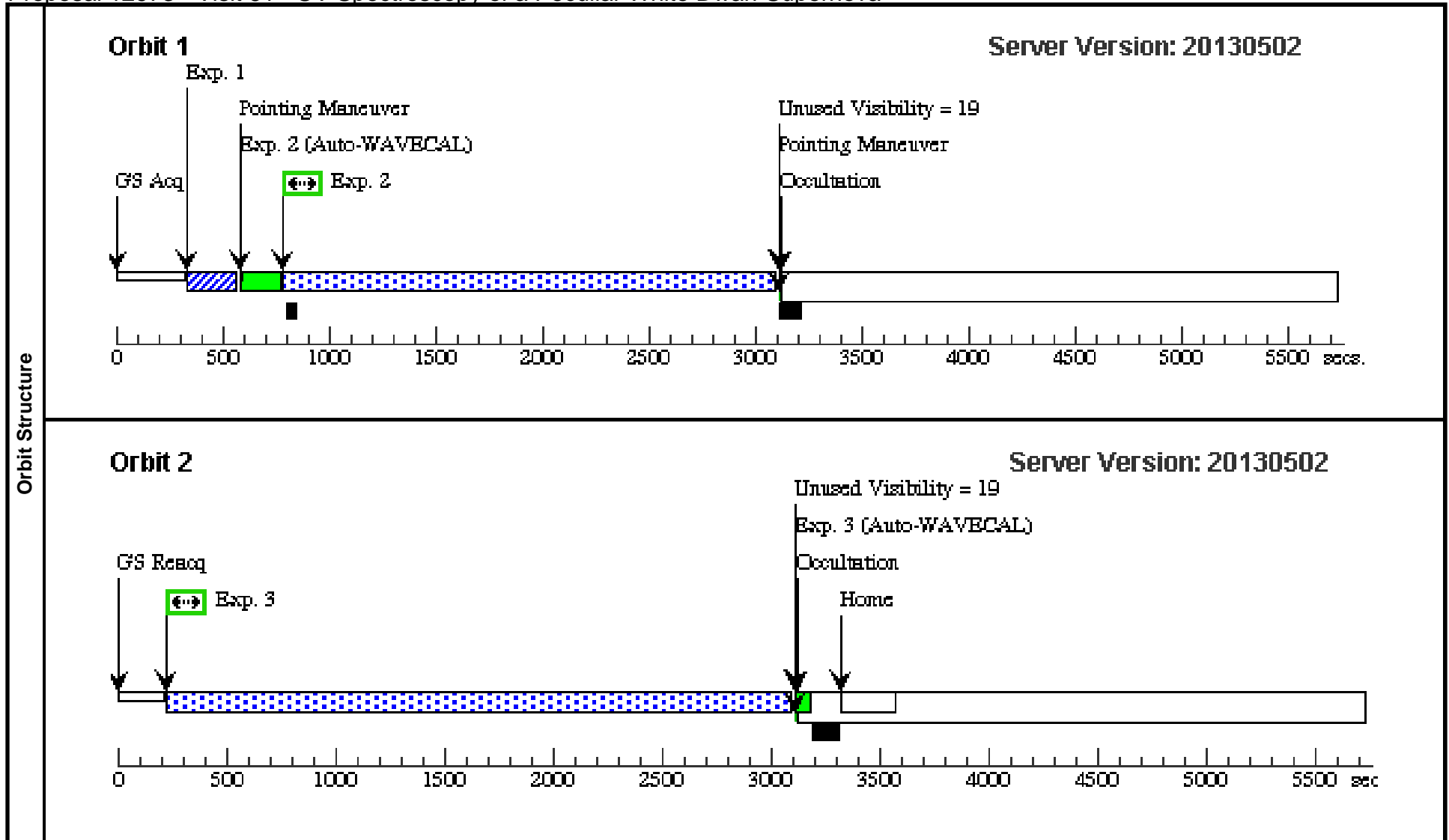


Proposal 12973 - Visit 61 - UV Spectroscopy of a Peculiar White Dwarf Supernova

Sun Jun 23 01:02:07 GMT 2013

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	SN2013DH	RA: 15 30 1.0900 (232.5045417d) Dec: +12 59 13.00 (12.98694d) Equinox: J2000		V=18.0+/-1.5	Reference Frame: ICRS

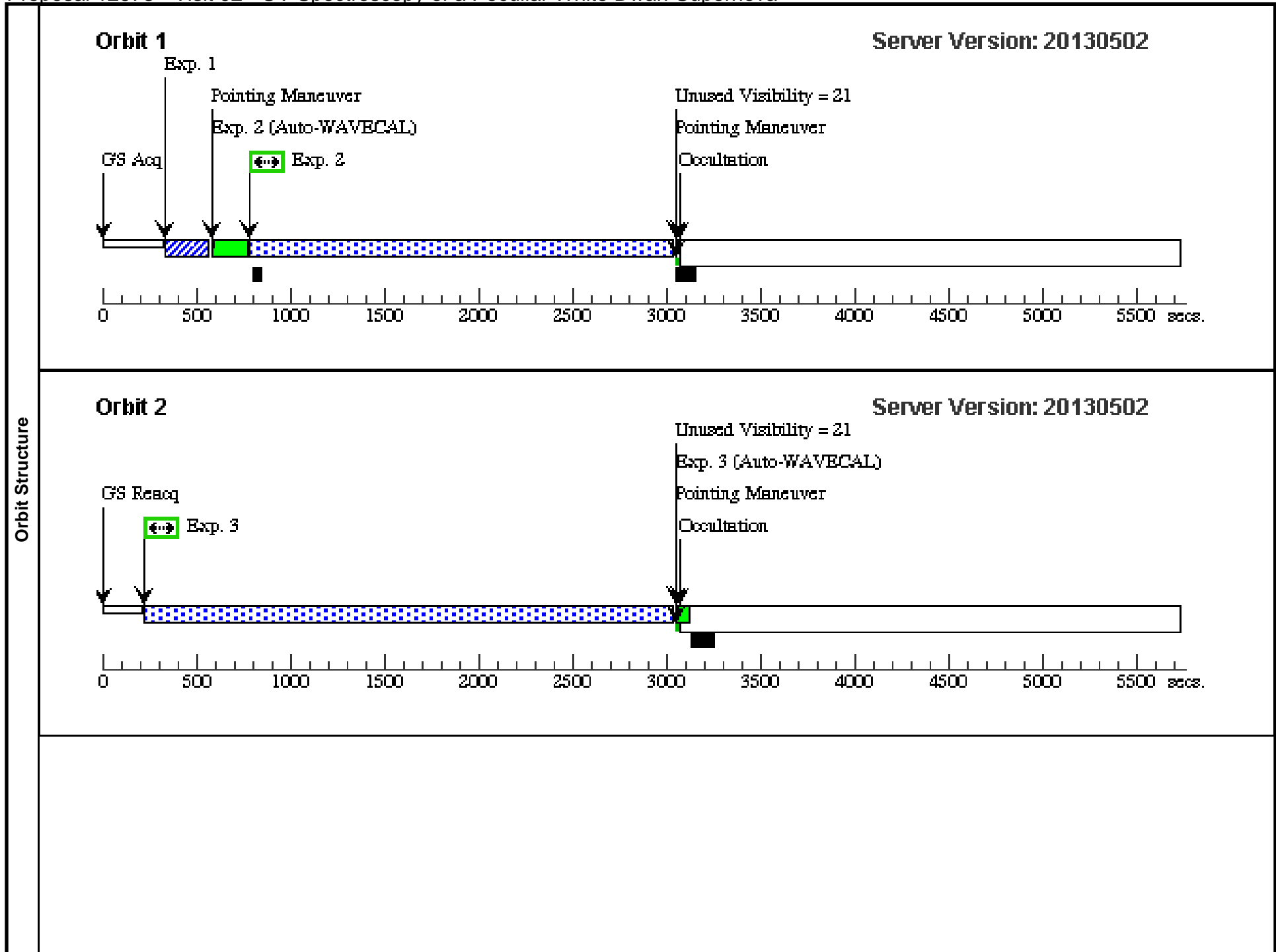
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Target Acquisition	(2) SN2013DH	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT				2 Secs (2 Secs) [==>]
2	MAMA_2 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			POS TARG 0.0,0.5		2300 Secs (2300 Secs) [==>]	[1]
3	MAMA_3 (STIS.sp.41 5137)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A			POS TARG 0.0,0.0		2860 Secs (2860 Secs) [==>]	[2]



Proposal 12973 - Visit 02 - UV Spectroscopy of a Peculiar White Dwarf Supernova

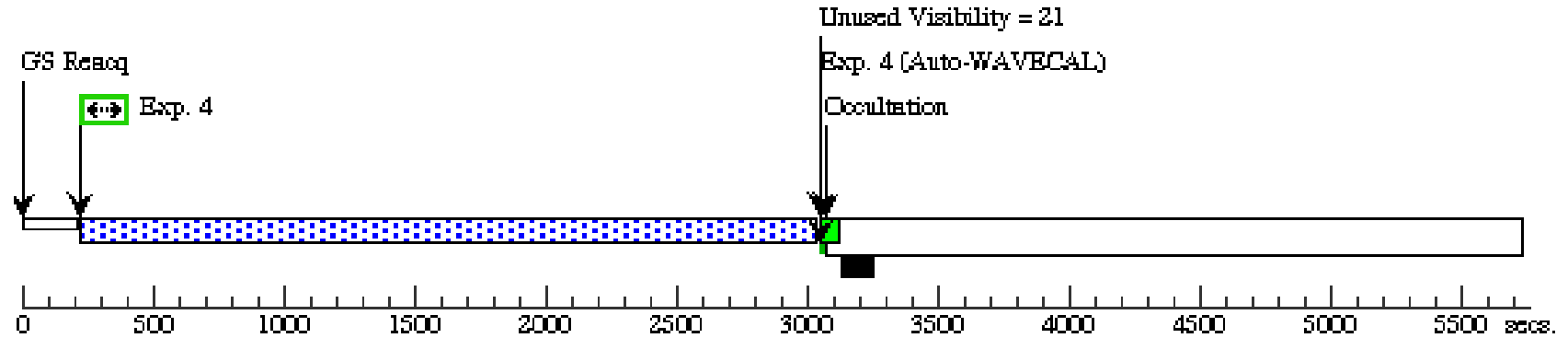
Sun Jun 23 01:02:09 GMT 2013

Visit	Proposal 12973, Visit 02, scheduled Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/NUV-MAMA Special Requirements: SCHED 80%; AFTER 01 BY 5 D TO 9 D; ON HOLD <i>On Hold Comments: Target of Opportunity</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	SN2013DH	RA: 15 30 1.0900 (232.5045417d) Dec: +12 59 13.00 (12.98694d) Equinox: J2000		V=18.0+/-1.5	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Target Acquisition	(2) SN2013DH	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			2 Secs (2 Secs) [==>]	[1]
	2	MAMA_2 (STIS.sp.41 5140)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,-0.5		2240 Secs (2240 Secs) [==>]	[1]
	3	MAMA_3 (STIS.sp.41 5140)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.5		2800 Secs (2800 Secs) [==>]	[2]
	4	MAMA_4 (STIS.sp.41 5140)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.0		2800 Secs (2800 Secs) [==>]	[3]
	5	MAMA_5 (STIS.sp.41 5140)	(2) SN2013DH	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A		POS TARG 0.0,0.0		1067 Secs (1067 Secs) [==>]	[4]
	6	CCD_430L_6	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=2			700 Secs (700 Secs) [==>(Split 1)] [==>(Split 2)]	[4]
	7	CCD_750L_7	(2) SN2013DH	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=2			450 Secs (450 Secs) [==>(Split 1)] [==>(Split 2)]	[4]
	8	CCD_750L_FLAT_8	CCDFLAT	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A				[==>(Copy 1)] [==>(Copy 2)]	[4]



Orbit 3

Server Version: 20130502



Orbit 4

Server Version: 20130502

