



# 14450 - Ultraviolet Spectroscopy of the Unprecedented Rebrightening of the Most Luminous Supernova

Cycle: 23, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. Peter J. Brown (PI) (Contact)</b>	<b>Texas A &amp; M University</b>	<b>pbrown@physics.tamu.edu</b>
Dr. Jeff Cooke (CoI)	Swinburne University of Technology	jeffreycooke@swin.edu.au
Dr. Jeremy R. Mould (CoI)	Swinburne University of Technology	jmould@unimelb.edu.au
Dr. Lifan Wang (CoI)	Texas A & M University	lifanwang@gmail.com
Mr. Yi Yang (CoI)	Texas A & M University	ngc4594@physics.tamu.edu

## 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) ASASSN-15LH	COS/FUV COS/NUV STIS/CCD STIS/NUV-MAMA	2	15-Dec-2015 21:19:53.0	yes

2 Total Orbits Used

## ABSTRACT

ASASSN-15lh/SN2015L has been classified as a hydrogen-poor superluminous supernova (SLSN-I) which is more luminous than any supernova previously observed. It has already emitted more than  $3 \times 10^{51}$  ergs of luminosity, most of which was emitted at UV wavelengths. After fading for two months it began rebrightening in the UV, a behavior never before seen. We propose to obtain HST/STIS UV spectroscopy in order to determine

the nature of the UV emission (thermal or line emission) and the composition of the ejecta and intervening material. While this phase is not yet understood--and the motivation for this proposal--we do not expect it to last long. For this reason we request Director's Discretionary Time for a non-disruptive Target of Opportunity observation.

### **OBSERVING DESCRIPTION**

We will use STIS/MAMA with G230L to obtain NUV spectroscopy of the SN covering the bulk of the flux seen with Swift/UVOT photometry. We will use STIS/CCD with G430L to obtain NUV/optical spectroscopy bridging the UV with optical. We will use COS/FUV with G140L to cover the spectral region around Lyman alpha.

The target becomes unobservable from January 2-Feb 20, so we desire to observe the last week of December as the source may fade before it becomes observable again.

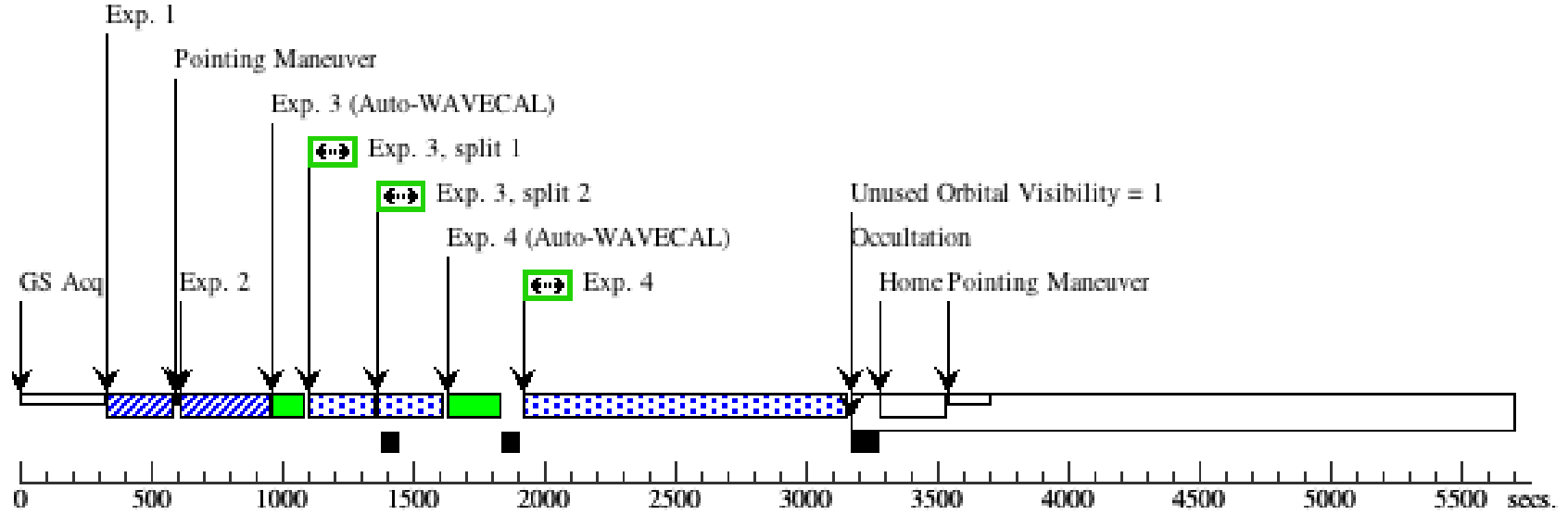
# Proposal 14450 - Visit 01 - Ultraviolet Spectroscopy of the Unprecedented Rebrightening of the Most Luminous Supernova

Wed Dec 16 02:19:54 GMT 2015

Visit	<b>Proposal 14450, Visit 01, implementation</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: STIS/NUV-MAMA, STIS/CCD, COS/FUV, COS/NUV Special Requirements: SCHED 80%: BETWEEN 20-DEC-2015:00:00:00 AND 02-JAN-2016:00:00:00										
Diagnostics	(Visit 01) Warning (Form): If the target coordinates are not known to 0.4" (or better), an ACQ/SEARCH should precede the ACQ/IMAGE.										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	ASASSN-15LH Alt Name1: SN2015L	RA: 22 02 15.4200 (330.5642500d) Dec: -61 39 34.70 (-61.65964d) Equinox: J2000		V=18+/-0.1 uvm2=17 (vega)	Reference Frame: ICRS					
	<i>Comments: Extended=NO</i>										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(757203)	(1) ASASSN-15LH	STIS/CCD, ACQ, F28X50LP	MIRROR				7 Secs (7 Secs)		
									[==>]		[1]
	2	(757204)	(1) ASASSN-15LH	STIS/CCD, ACQ/PEAK, 52X0.1	MIRROR				10 Secs (10 Secs)		
									[==>]		[1]
	3	(754363)	(1) ASASSN-15LH	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				400 Secs (434 Secs)		
									[==>217.0 Secs (Split 1)]		
									[==>217.0 Secs (Split 2)]		[1]
	4	(753714)	(1) ASASSN-15LH	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				800 Secs (1217 Secs)		
									[==>1217.0 Secs ]		[1]
	5	(757214)	(1) ASASSN-15LH	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				10 Secs (10 Secs)		
									[==>]		[2]
	6	(757011)	(1) ASASSN-15LH	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=1800			2200 Secs (2121 Secs)		
									[==>523.0 Secs (Split 1)]		
									[==>523.0 Secs (Split 2)]		
									[==>523.0 Secs (Split 3)]		
									[==>552.0 Secs (Split 4)]		[2]

**Orbit 1**

Server Version: 20150609



Orbit Structure

**Orbit 2**

