14059 - State transitions of the ULX in M83

Cycle: 23, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) M-83-ULX	WFC3/UVIS	3	01-May-2015 21:07:53.0	yes

3 Total Orbits Used

ABSTRACT

We will study a transient ultraluminous X-ray source (ULX) in M83, which went into outburst in 2010 and is now evolving towards the luminosity range of ordinary stellar-mass black holes. We propose an XMM-Newton and HST study: a) to model the spectral state evolution during the decline, and discover how the ULX regime is linked to the sub-Eddington accretion states of Galactic BHs; b) to determine or constrain the mass of the BH, from X-ray spectroscopy; c) to quantify the properties of the irradiated disk, and its response to variable X-ray illumination from new HST WFC3

imagery.

Proposal 14059 - Visit 01 - State transitions of the ULX in M83

Visit

Proposal 14059, Visit 01, implementation Sat May 02 01:07:55 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=2.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.119 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=33.606 Angle Between Sides= Center Pattern=false	(1), (2), (3), (4)

Fixed Targets

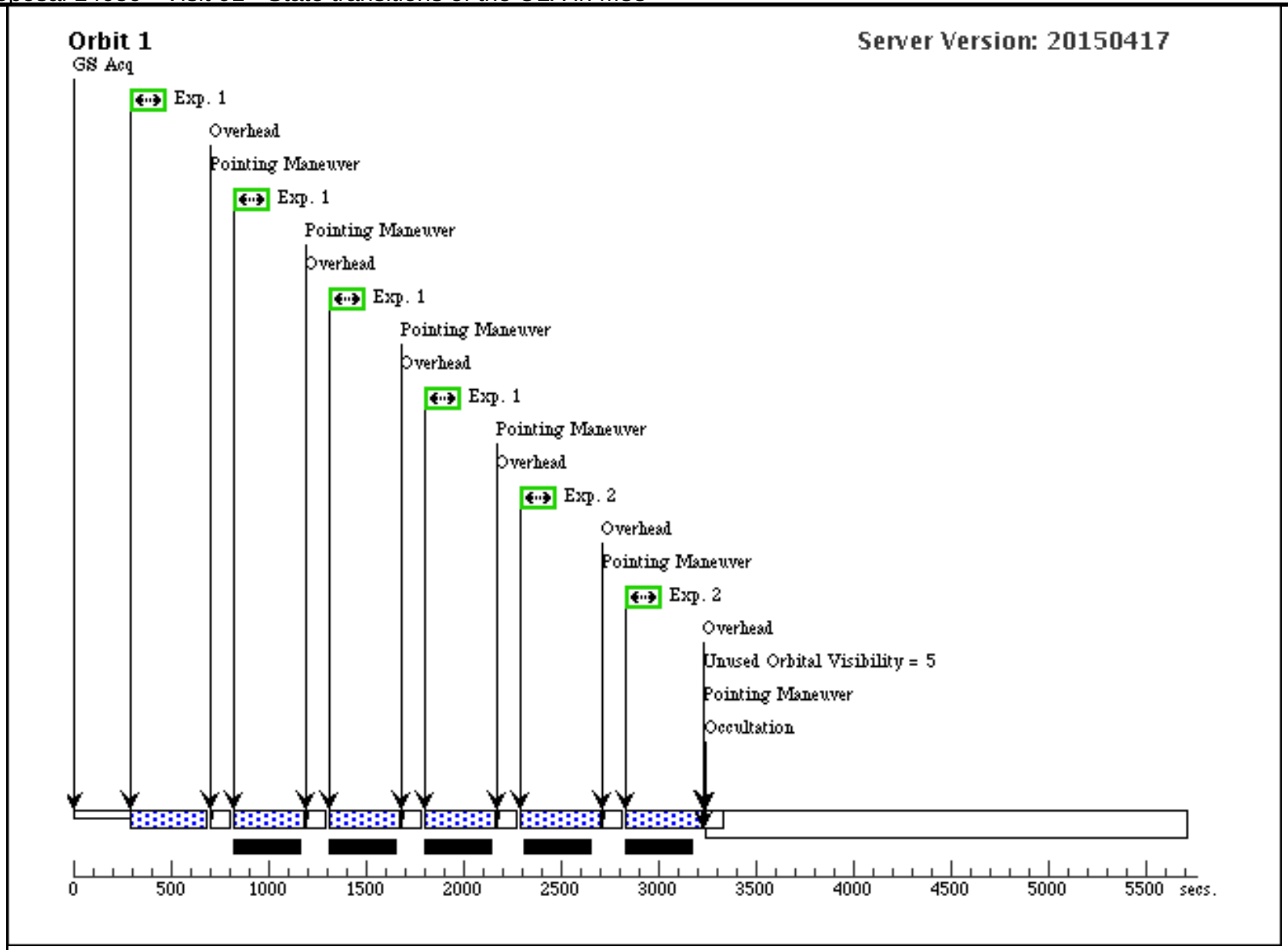
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M-83-ULX	RA: 13 37 5.1400 (204.2714167d) Dec: -29 52 7.10 (-29.86864d) Equinox: J2000	Epoch of Position: 2000	V=23.7+/-0.5	Reference Frame: ICRS

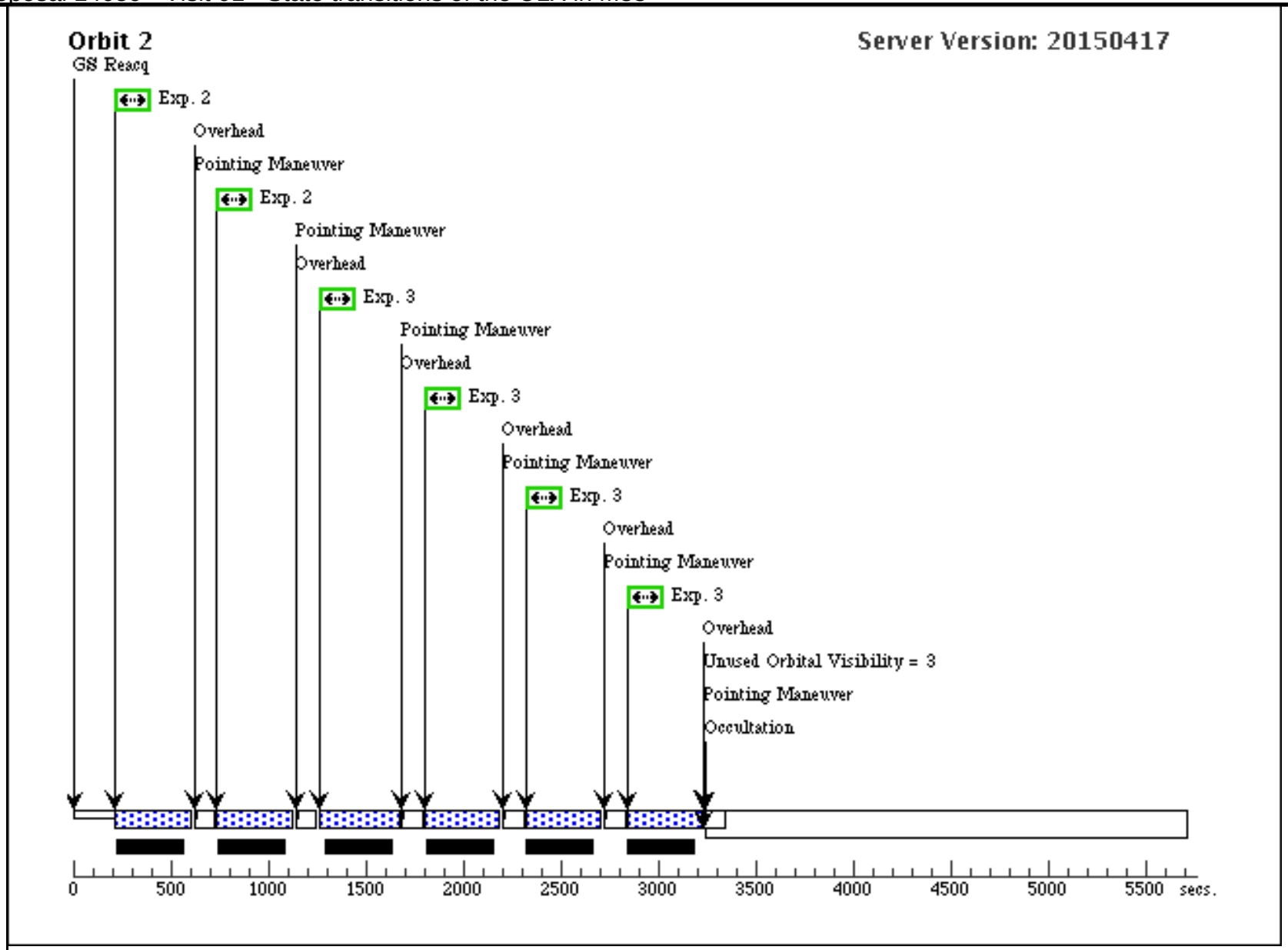
Comments: Source is likely variable at the 0.5 mag level as the X-ray flux varies. (The light arises from reprocessing of the X-ray emission in an accretion disk around a black hole.)

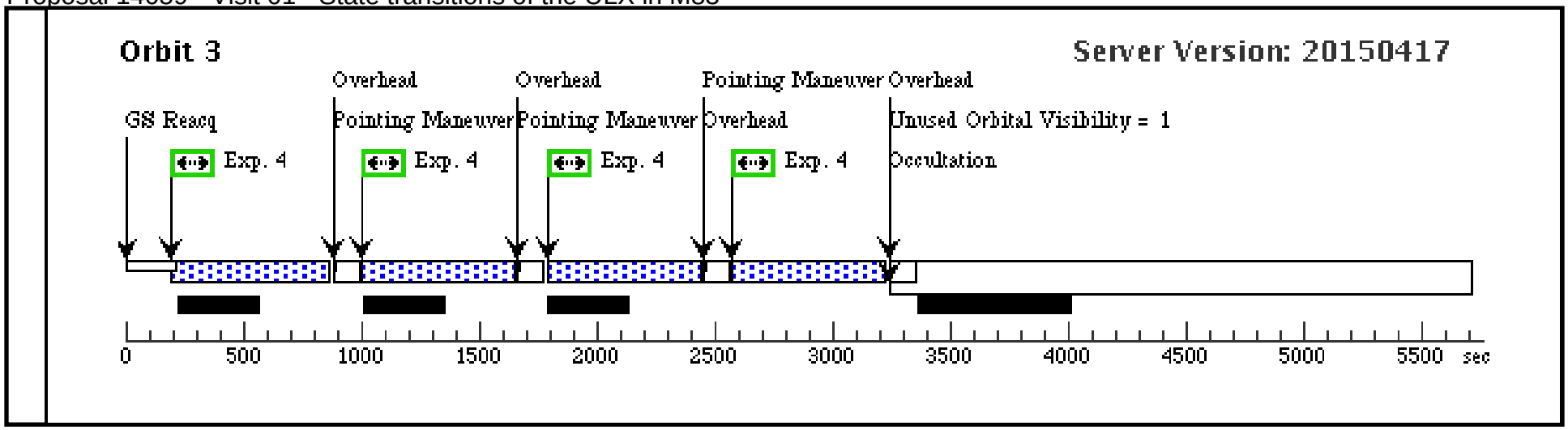
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) M-83-ULX	WFC3/UVIS, ACCUM, UVIS	F555W			Pattern 1, Exps 1-1 in Visit 01 (1)	350 Secs (1452 Secs)	
								[==>363.0 Secs (Pattern 1,1)] *[==>363.0 Secs (Pattern 1,2)]* *[==>363.0 Secs (Pattern 2,1)]* *[==>363.0 Secs (Pattern 2,2)]*	***[1]***
2		(1) M-83-ULX	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 2-2 in Visit 01 (1)	380 Secs (1572 Secs)	
								[==>393.0 Secs (Pattern 1,1)] *[==>393.0 Secs (Pattern 1,2)]*	***[1]***
								[==>393.0 Secs (Pattern 2,1)] *[==>393.0 Secs (Pattern 2,2)]*	***[2]***
3		(1) M-83-ULX	WFC3/UVIS, ACCUM, UVIS	F438W	FLASH=5		Pattern 1, Exps 3-3 in Visit 01 (1)	365 Secs (1544 Secs)	
								[==>386.0 Secs (Pattern 1,1)] *[==>386.0 Secs (Pattern 1,2)]* *[==>386.0 Secs (Pattern 2,1)]* *[==>386.0 Secs (Pattern 2,2)]*	***[2]***
4		(1) M-83-ULX	WFC3/UVIS, ACCUM, UVIS	F336W	FLASH=10		Pattern 1, Exps 4-4 in Visit 01 (1)	530 Secs (2608 Secs)	
								[==>652.0 Secs (Pattern 1,1)] *[==>652.0 Secs (Pattern 1,2)]* *[==>652.0 Secs (Pattern 2,1)]* *[==>652.0 Secs (Pattern 2,2)]*	***[3]***

Orbit Structure




Orbit 2
Server Version: 20150417
GS Reacq
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Pointing Maneuver
Overhead
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Unused Orbital Visibility = 3
Pointing Maneuver
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 3
Server Version: 20150417
GS Reacq
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Overhead
Unused Orbital Visibility = 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec