



11338 - Continued M31 Monitoring for Black Hole X-ray Nova

Cycle: 16, 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>
15	(1) M31-BH	ACS/WFC	2	03-Nov-2009 21:04:29.0	yes
16	(1) M31-BH	ACS/WFC	2	03-Nov-2009 21:04:35.0	yes

4 Total Orbits Used

ABSTRACT

During A01-7 we found >16 Black Hole X-ray Novae (BHXN) in M31 using Chandra, and with HST followup have estimated orbital periods for 6 of these. Observations are underway with HST to attempt to estimate additional periods. We propose to continue this program, concentrating our scarce HST resources on a single transient which exceeds the NS Eddington limit. Only uninterrupted monitoring can yield the duty cycles and long-

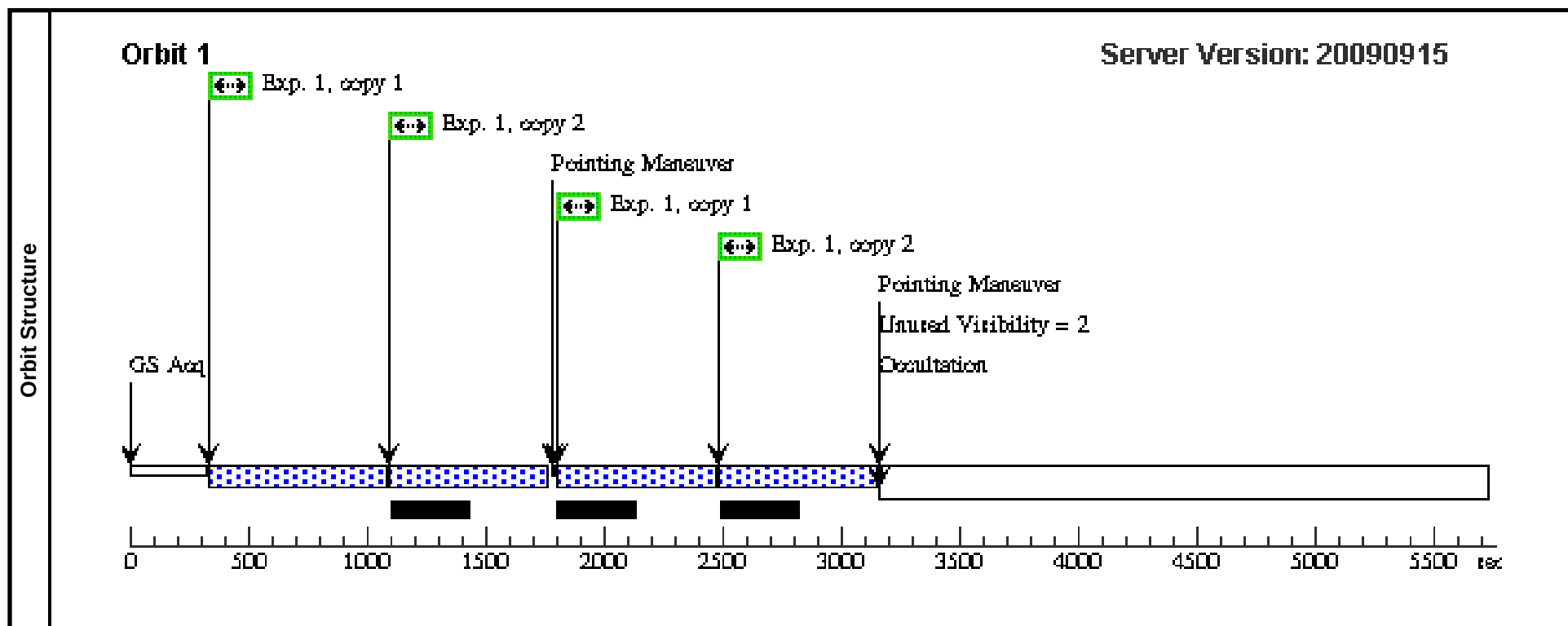
term lightcurves of BHXN (and other variables) in M31. Our GO+GTO programs have accumulated 300ks (ACIS) near the M31 bulge, and total ACIS exposure on M31 is now 620ks. Our monitoring program alone can amass 500ks on the bulge if continued through AO12, and combined with other programs will reach >1Msec ACIS exposure on the bulge.

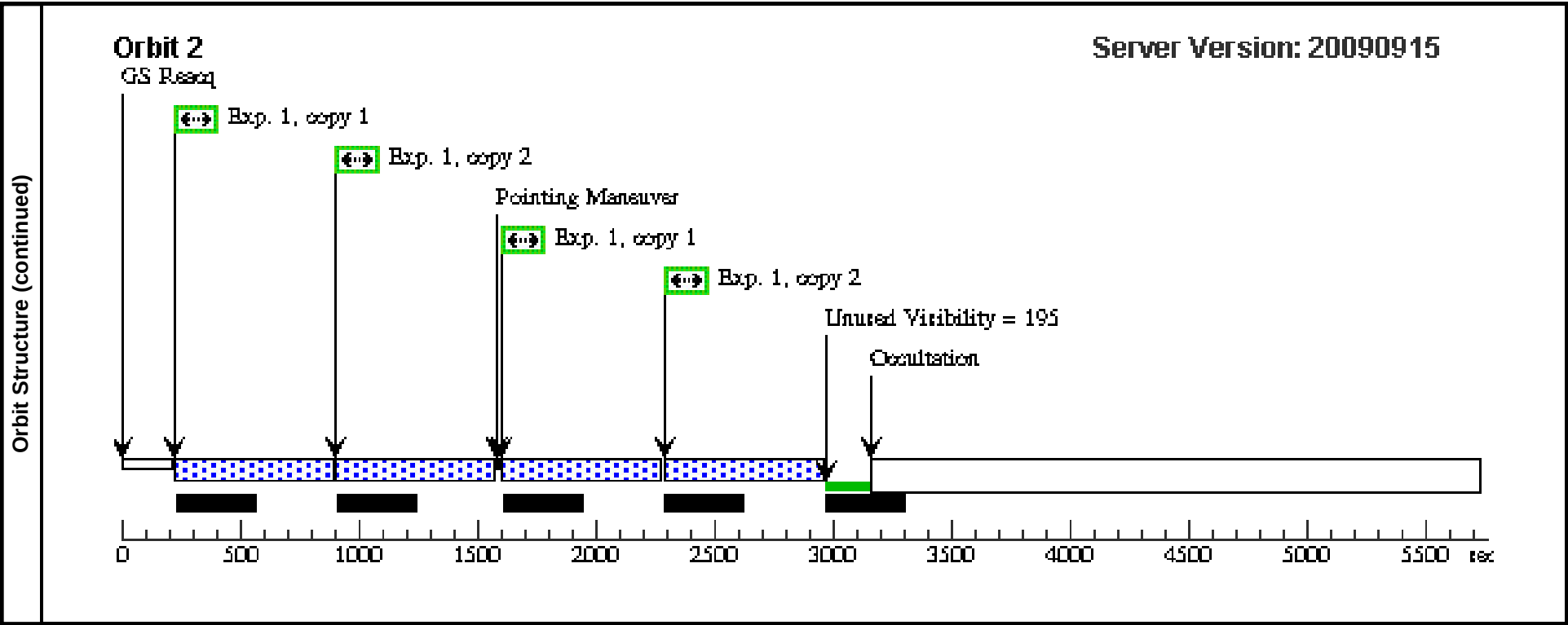
OBSERVING DESCRIPTION

We will use the WFPC2 camera to obtain images of an active Black Hole X-ray Nova (BHXN) in M31. This BHXNe will be chosen from one of 6 Chandra-ACIS observations from the AO9. We will wait until a super-Eddington source is detected ($L_x > 3e38$ erg/s) to trigger the first HST observation, which will take place ~4 weeks later; this will capture the counterpart in a bright optical state. A second HST observation will be carried out ~6 months later to study the source in quiescence.

Proposal 11338 - Visit 15 - Continued M31 Monitoring for Black Hole X-ray Nova

Visit	Proposal 11338, Visit 15, implementation Wed Nov 04 02:04:39 GMT 2009									
	Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: GYRO MODE 3GOBAD; BETWEEN 16-NOV-2009:00:00:00 AND 22-NOV-2009:00:00:00									
Diagnostics	(Visit 15) Warning (Form): Gyro Mode overrides default value of 2G.									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187				Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false			(1)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	M31-BH	RA: 00 41 59.3000 (10.4970833d) Dec: +41 05 39.00 (41.09417d) Equinox: J2000				V=25+/-5		Reference Frame: Chandra Observation	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	BH1-on	(1) M31-BH	ACS/WFC, ACCUM, WFC	F435W	GAIN=2.0; CR-SPLIT=NO		Pattern 2, Exps 1-1 (2)	545 Secs X 2	
									[==>(Pattern 1, Copy 1)]	[1]
									[==>(Pattern 1, Copy 2)]	
									[==>(Pattern 2, Copy 1)]	
									[==>(Pattern 2, Copy 2)]	[2]
									[==>(Pattern 3, Copy 1)]	
									[==>(Pattern 3, Copy 2)]	
									[==>(Pattern 4, Copy 1)]	
									[==>(Pattern 4, Copy 2)]	





Proposal 11338 - Visit 16 - Continued M31 Monitoring for Black Hole X-ray Nova

Visit	Proposal 11338, Visit 16, implementation Wed Nov 04 02:04:40 GMT 2009									
	Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: GYRO MODE 3GOBAD; AFTER 15 BY 180.0 D TO 210.0 D									
Diagnostics	(Visit 16) Warning (Form): Gyro Mode overrides default value of 2G.									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187				Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false			(1)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	M31-BH	RA: 00 41 59.3000 (10.4970833d) Dec: +41 05 39.00 (41.09417d) Equinox: J2000				V=25+/-5		Reference Frame: Chandra Observation	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	BH1-off	(1) M31-BH	ACS/WFC, ACCUM, WFC	F435W	GAIN=2.0; CR-SPLIT=NO		Pattern 2, Exps 1-1 (2)	545 Secs X 2	
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)]	[1]
									[==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[2]

