



12369 - Constraining the Transient Black Hole (Bh) Low-Mass X-Ray Binary (Lmxb) Population

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) NGC4649-POS1 ANY	ACS/WFC WFC3/IR	1	15-Apr-2011 21:00:47.0	yes
02	(2) NGC4649-POS2 ANY	ACS/WFC WFC3/IR	1	15-Apr-2011 21:00:53.0	yes
03	(3) NGC4649-POS3 ANY	ACS/WFC WFC3/IR	1	15-Apr-2011 21:00:58.0	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>
04	(4) NGC4649-POS4 (5) NGC4649-POS5 ANY	ACS/WFC WFC3/IR	2	15-Apr-2011 21:01:06.0	yes

5 Total Orbits Used

ABSTRACT

Observations of X-ray transients have posed crucial constraints to the processes and evolution of accretion disks in LMXB populations. Yet, the data to constrain the transient behavior of the most luminous BH LMXBs does not exist to date. We propose to study this rare component of the LMXB population, by observing the giant Virgo elliptical NGC4649 with ACIS-S (twice for 100 ks each). The extraordinarily rich population of ~58 BH candidates with $L_X > 2 \times 10^{38} \text{ erg s}^{-1}$ (40 with $L_X > 3 \times 10^{38} \text{ erg s}^{-1}$) of this galaxy provides the ideal sample for this study.

OBSERVING DESCRIPTION

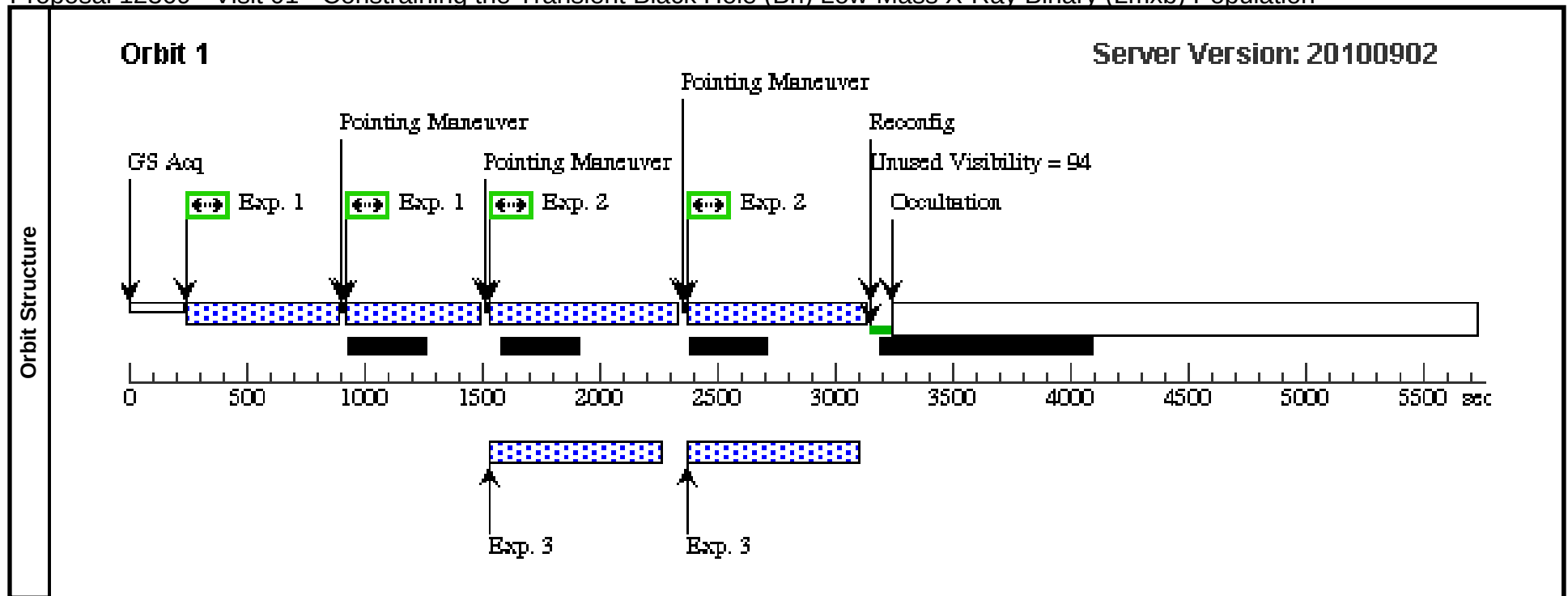
The primary observations with ACS/WFC are designed for photometry in F475W and F850LP of globular clusters in the massive elliptical galaxy NGC 4649. These observations complement deep Chandra imaging and the goal is to cross-match X-ray sources with HST-identified clusters. The use of two filters gives color information used to estimate rough metallicities of the clusters. For each filter we use two exposures and a simple line dither to cover the chip gap and correct pixel-level defects and cosmic rays. Given 54 min of visibility per orbit, 34 min are available after overheads for science exposures. Exposure times of 810 sec in F475W and 1200 sec in F850LP give approximately equal signal-to-noise in the two bands.

NGC 4649 has one archival ACS pointing. The five additional pointings in this proposal, arranged in a quasi-mosaic, cover the remainder of the Chandra field of view (excepting foreground spiral in the northwest corner). The need to match both Chandra and the existing HST imaging in a mosaic leads to the restrictive orientation requirements.

As described in the original proposal, we will make coordinated parallel observations with WFC3/IR in F160W during the latter part of each orbit. This will allow improved metallicity estimates for a subset of clusters.

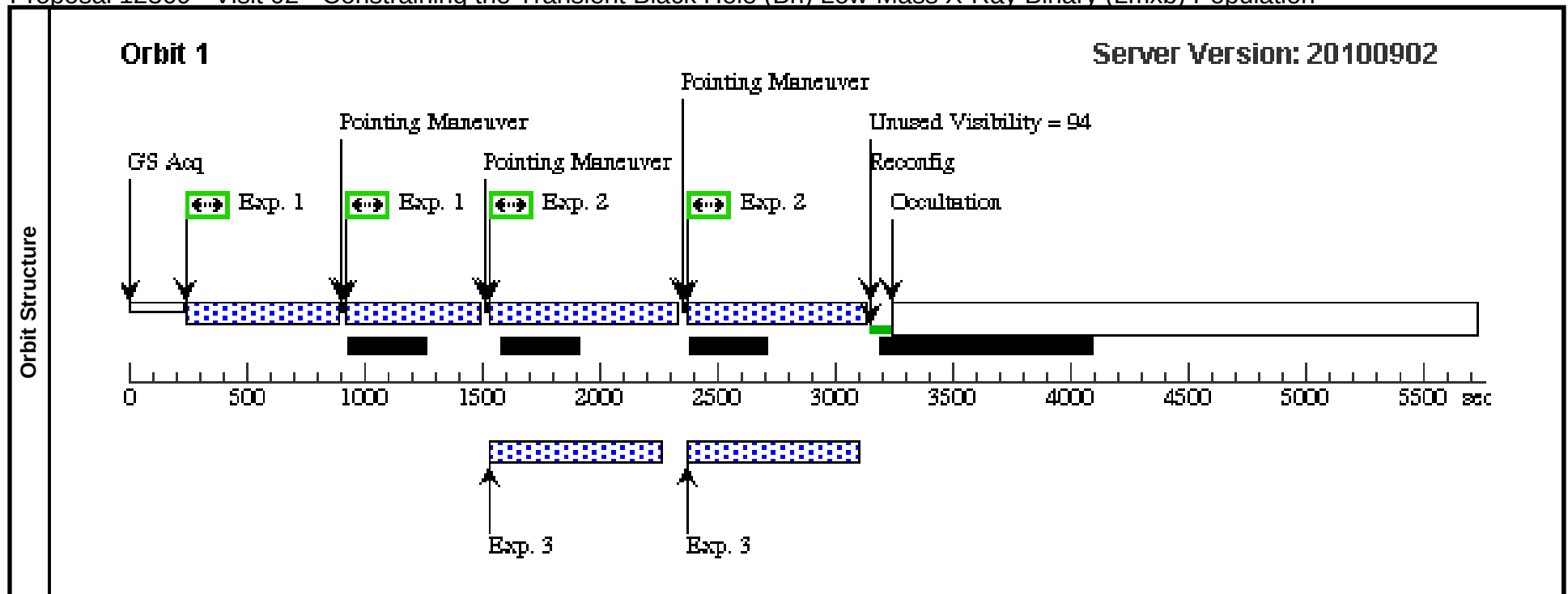
Proposal 12369 - Visit 01 - Constraining the Transient Black Hole (Bh) Low-Mass X-Ray Binary (Lmxb) Population

Visit	Proposal 12369, Visit 01, implementation Sat Apr 16 01:01:11 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 131D TO 133 D; SEQ 01,02,03,04 WITHIN 5 Orbits									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false							(1), (2-3)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	NGC4649-POS1	RA: 12 43 51.9540 (190.9664750d) Dec: +11 33 58.27 (11.56619d) Equinox: J2000		Radial Velocity: 1117 km/sec		V=10+/-0.2		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) NGC4649-POS1	ACS/WFC, ACCUM, WFCENTER	F475W		GS ACQ SCENARI O SINGLE	Pattern 1, Exps 1-1 i n Visit 01 (1)	405 Secs [==>444.0 Secs (Pattern 1)] [==>444.0 Secs (Pattern 2)]	[1]
	2		(1) NGC4649-POS1	ACS/WFC, ACCUM, WFCENTER	F850LP			Pattern 1, Exps 2-3 i n Visit 01 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 01	600 Secs [==>639.0 Secs (Pattern 1)] [==>639.0 Secs (Pattern 2)]	[1]
	3	ANY		WFC3/IR, MULTIACCUM, IR-UVIS-CENTER	F160W	NSAMP=13; SAMP-SEQ=STEP1 00		Pattern 1, Exps 2-3 i n Visit 01 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 01	[==>(Pattern 1)] [==>(Pattern 2)]	[1]



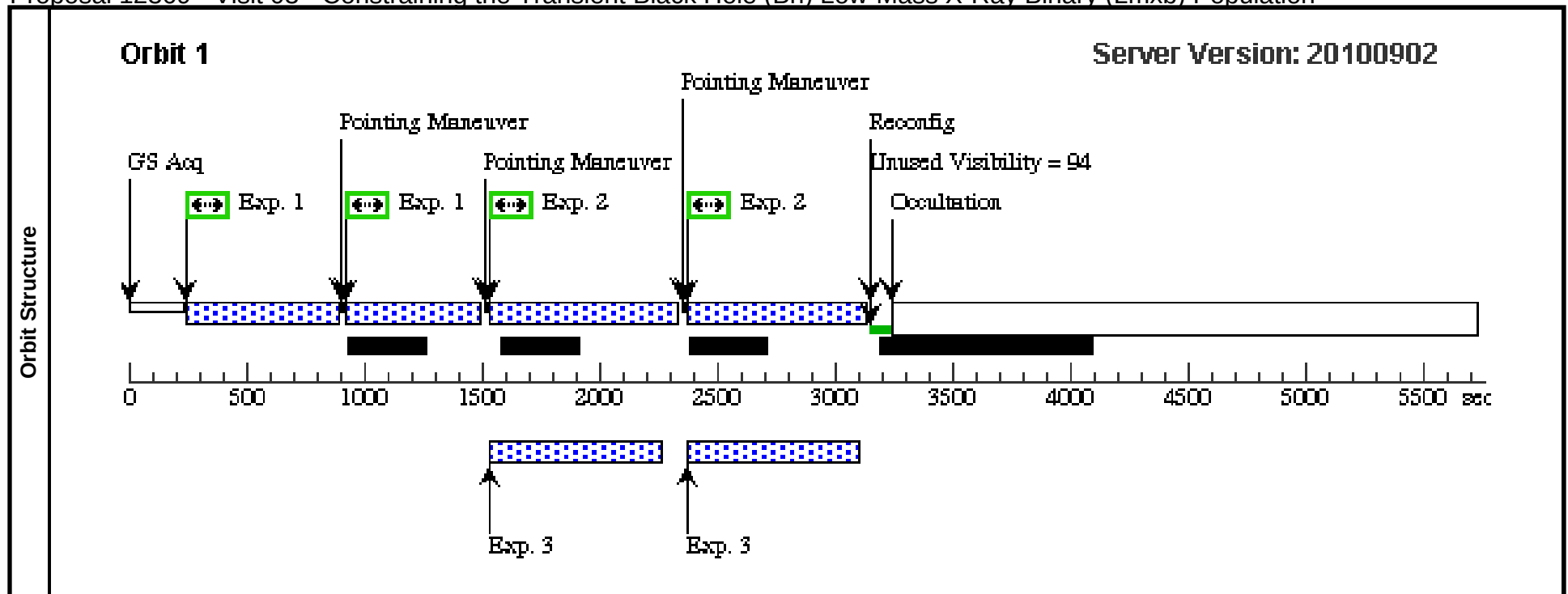
Proposal 12369 - Visit 02 - Constraining the Transient Black Hole (Bh) Low-Mass X-Ray Binary (Lmxb) Population

Visit	Proposal 12369, Visit 02, implementation Sat Apr 16 01:01:12 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 106D TO 108 D									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false							(1), (2-3)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(2)	NGC4649-POS2	RA: 12 43 48.9800 (190.9540833d) Dec: +11 31 12.38 (11.52011d) Equinox: J2000		Radial Velocity: 1117 km/sec		V=10+/-0.2		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) NGC4649-POS2	ACS/WFC, ACCUM, WFCENTER	F475W		GS ACQ SCENARI O SINGLE	Pattern 1, Exps 1-1 i n Visit 02 (1)	405 Secs [==>444.0 Secs (Pattern 1)] [==>444.0 Secs (Pattern 2)]	[1]
	2		(2) NGC4649-POS2	ACS/WFC, ACCUM, WFCENTER	F850LP			Pattern 1, Exps 2-3 i n Visit 02 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 02	600 Secs [==>639.0 Secs (Pattern 1)] [==>639.0 Secs (Pattern 2)]	[1]
	3		ANY	WFC3/IR, MULTIACCUM, IR-UVIS-CENTER	F160W	NSAMP=13; SAMP-SEQ=STEP1 00		Pattern 1, Exps 2-3 i n Visit 02 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 02	[==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 12369 - Visit 03 - Constraining the Transient Black Hole (Bh) Low-Mass X-Ray Binary (Lmxb) Population

Visit	Proposal 12369, Visit 03, implementation Sat Apr 16 01:01:13 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 124D TO 126 D									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false			(1), (2-3)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(3)	NGC4649-POS3	RA: 12 43 42.6430 (190.9276792d) Dec: +11 36 0.18 (11.60005d) Equinox: J2000		Radial Velocity: 1117 km/sec		V=10+/-0.2		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(3) NGC4649-POS3	ACS/WFC, ACCUM, WFCENTER	F475W		GS ACQ SCENARI O ONEB1B3	Pattern 1, Exps 1-1 i n Visit 03 (1)	405 Secs [==>444.0 Secs (Pattern 1)] [==>444.0 Secs (Pattern 2)]	[1]
	2		(3) NGC4649-POS3	ACS/WFC, ACCUM, WFCENTER	F850LP			Pattern 1, Exps 2-3 i n Visit 03 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 03	600 Secs [==>639.0 Secs (Pattern 1)] [==>639.0 Secs (Pattern 2)]	[1]
	3		ANY	WFC3/IR, MULTIACCUM, IR-UVIS-CENTER	F160W	NSAMP=13; SAMP-SEQ=STEP1 00		Pattern 1, Exps 2-3 i n Visit 03 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 03	[==>(Pattern 1)] [==>(Pattern 2)]	[1]

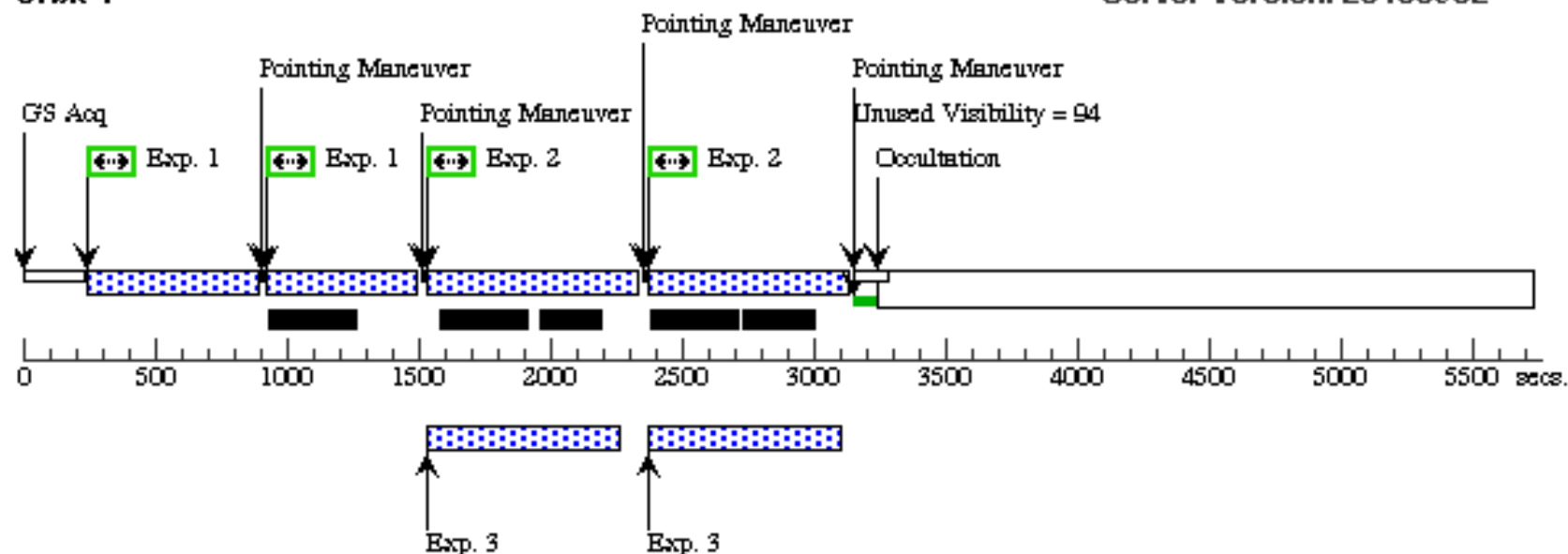


Proposal 12369 - Visit 04 - Constraining the Transient Black Hole (Bh) Low-Mass X-Ray Binary (Lmxb) Population

Visit	Proposal 12369, Visit 04, implementation Sat Apr 16 01:01:13 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 106D TO 108 D									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false			(1), (2-3), (4), (5-6)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(4)	NGC4649-POS4	RA: 12 43 35.0660 (190.8961083d) Dec: +11 30 43.16 (11.51199d) Equinox: J2000		Radial Velocity: 1117 km/sec		V=10+/-0.2		Reference Frame: ICRS	
	(5)	NGC4649-POS5	RA: 12 43 24.9200 (190.8538333d) Dec: +11 33 7.88 (11.55219d) Equinox: J2000		Radial Velocity: 1117 km/sec		V=10+/-0.2		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) NGC4649-POS4	ACS/WFC, ACCUM, WFCENTER	F475W		GS ACQ SCENARI O SINGLE	Pattern 1, Exps 1-1 i n Visit 04 (1)	405 Secs [==>444.0 Secs (Pattern 1)] [==>444.0 Secs (Pattern 2)]	[1]
	2		(4) NGC4649-POS4	ACS/WFC, ACCUM, WFCENTER	F850LP			Pattern 1, Exps 2-3 i n Visit 04 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 04	600 Secs [==>639.0 Secs (Pattern 1)] [==>639.0 Secs (Pattern 2)]	[1]
	3		ANY	WFC3/IR, MULTIACCUM, IR-UVIS-CENTER	F160W	NSAMP=13; SAMP-SEQ=STEP1 00		Pattern 1, Exps 2-3 i n Visit 04 (1) Prime + Parallel Gro up 2-3 in Pattern 1, E xps 2-3 in Visit 04	[==>(Pattern 1)] [==>(Pattern 2)]	[1]
	4		(5) NGC4649-POS5	ACS/WFC, ACCUM, WFCENTER	F475W		GS ACQ SCENARI O ONEB1B3	Pattern 1, Exps 4-4 i n Visit 04 (1)	405 Secs [==>444.0 Secs (Pattern 1)] [==>444.0 Secs (Pattern 2)]	[2]
	5		(5) NGC4649-POS5	ACS/WFC, ACCUM, WFCENTER	F850LP			Pattern 1, Exps 5-6 i n Visit 04 (1) Prime + Parallel Gro up 5-6 in Pattern 1, E xps 5-6 in Visit 04	600 Secs [==>639.0 Secs (Pattern 1)] [==>639.0 Secs (Pattern 2)]	[2]
	6		ANY	WFC3/IR, MULTIACCUM, IR-UVIS-CENTER	F160W	NSAMP=13; SAMP-SEQ=STEP1 00		Pattern 1, Exps 5-6 i n Visit 04 (1) Prime + Parallel Gro up 5-6 in Pattern 1, E xps 5-6 in Visit 04	[==>(Pattern 1)] [==>(Pattern 2)]	[2]

Orbit 1

Server Version: 20100902



Orbit 2

Server Version: 20100902

