



12256 - The Ultraviolet and Optical Counterparts of the Intermediate Mass Black Hole Candidate ESO 243-49 HLX-1

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) HLX-1	ACS/SBC	1	03-Sep-2010 21:19:49.0	yes
02	(1) HLX-1	WFC3/IR WFC3/UVIS	2	03-Sep-2010 21:19:57.0	yes

3 Total Orbits Used

ABSTRACT

We request imaging observations of the record breaking hyper-luminous X-ray source and intermediate mass black hole candidate HLX-1 in the galaxy ESO 243-49, in order to investigate the nature of recent detections of UV emission and an optical counterpart. HLX-1 is currently the best candidate for an intermediate mass black hole, the possible building blocks of super-massive black holes found in the centres of galaxies. UV emission possibly associated with the X-ray source position was recently detected in lower resolution observations with the Swift and GALEX satellites. If this emission can be tied to HLX-1 and is point-like in nature, it will likely be dominated by emission from a hot accretion disc. By obtaining UV photometry we will be able to place constraints upon the temperature of the disc and therefore the mass of the black hole. The optical counterpart may be related to disc emission, though it is also possible that it is associated with a globular cluster or nucleated dwarf galaxy. By obtaining photometry of the counterpart in near-infrared to UV wavelengths we will be able to construct a broad-band SED, which will allow us to place firm constraints on the environment around this intriguing object.

OBSERVING DESCRIPTION

We will observe for 3 orbits in FUV, NUV, optical and NIR with the ACS/SBC, WFC3/UVIS and WFC3/IR

Proposal 12256 - Visit 01 - The Ultraviolet and Optical Counterparts of the Intermediate Mass Black Hole Candidate ES...

Visit	Proposal 12256, Visit 01, implementation Sat Sep 04 01:20:03 GMT 2010				
	Diagnostic Status: No Diagnostics Scientific Instruments: ACS/SBC Special Requirements: (none)				
Patterns	#	Primary Pattern		Secondary Pattern	Exposures
	(4)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.179 Line Spacing=0.116		Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false	(1)
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	HLX-1	RA: 01 10 28.3000 (17.6179167d) Dec: -46 04 22.30 (-46.07286d) Equinox: J2000	Redshift: 0.02	V=24.5+/-0.3 R = 23.8 +/- 0.25
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.
	1	far-UV	(1) HLX-1	ACS/SBC, ACCUM, SBC	F140LP
					Opt. Params.
					Special Reqs.
					Groups
					Exp. Time/[Actual Dur.]
					Orbit
					[1]
					Pattern 4, Exps 1-1 (4)
					700 Secs [==>620.0 Secs (Pattern 1)] [==>620.0 Secs (Pattern 2)] [==>620.0 Secs (Pattern 3)] [==>620.0 Secs (Pattern 4)]
Orbit Structure	Orbit 1 Server Version: 20100505				

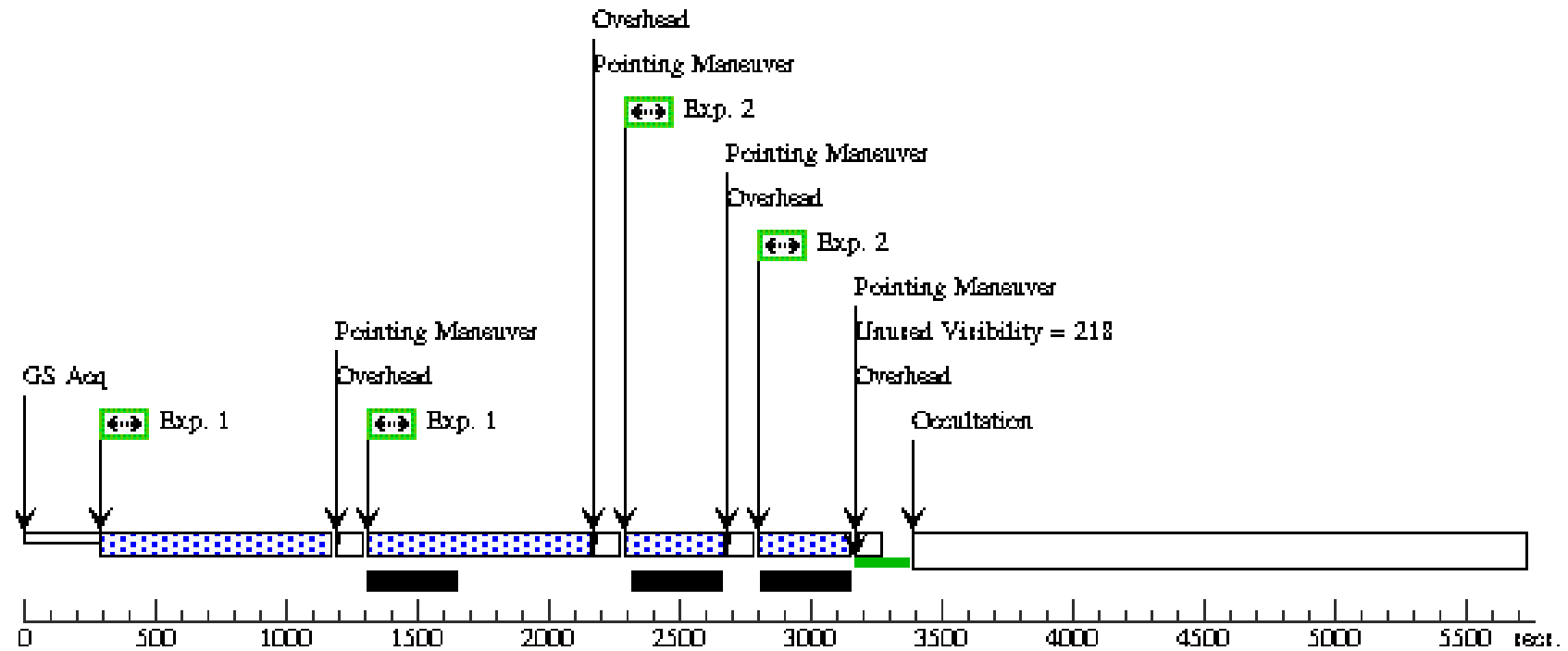
Proposal 12256 - Visit 01 - The Ultraviolet and Optical Counterparts of the Intermediate Mass Black Hole Candidate ES...

Visit	Proposal 12256, Visit 02, implementation Sat Sep 04 01:20:04 GMT 2010									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
Patterns	#	Primary Pattern				Secondary Pattern				Exposures
	(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false								(5)
	(3)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false								(1), (2), (3), (4)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	HLX-1	RA: 01 10 28.3000 (17.6179167d) Dec: -46 04 22.30 (-46.07286d) Equinox: J2000		Redshift: 0.02		V=24.5+/-0.3 R = 23.8 +/- 0.25		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	near-UV	(1) HLX-1	WFC3/UVIS, ACCUM, UVIS2	F300X			Pattern 3, Exps 1-1 (3)	900 Secs [==>855.0 Secs (Pattern 1)] [==>855.0 Secs (Pattern 2)]	[1]
	2	C-band	(1) HLX-1	WFC3/UVIS, ACCUM, UVIS2	F390W			Pattern 3, Exps 2-2 (3)	400 Secs [==>356.0 Secs (Pattern 1)] [==>356.0 Secs (Pattern 2)]	[1]
	3	V-band	(1) HLX-1	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 3, Exps 3-3 (3)	350 Secs [==>371.0 Secs (Pattern 1)] [==>371.0 Secs (Pattern 2)]	[2]
	4	I-band	(1) HLX-1	WFC3/UVIS, ACCUM, UVIS2	F775W			Pattern 3, Exps 4-4 (3)	350 Secs [==>370.0 Secs (Pattern 1)] [==>370.0 Secs (Pattern 2)]	[2]
	5	H-band	(1) HLX-1	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPAR S50		Pattern 2, Exps 5-5 (2)	[==>(Pattern 1)] [==>(Pattern 2)]	[2]
	Comments: A number of Science warnings are produced by the BOT for the WFC3/IR exposures, indicating minimal to extreme saturation is predicted. We don't feel this is a problem as all but two of the problem detections are associated with diffuse bright emission along the plane and bulge of the host galaxy. The other warnings are associated with bright stars well away from the target.									

Orbit 1

Server Version: 20100505

Orbit Structure



Orbit 2

Server Version: 20100505

