13380 - Probing Black Hole Disk Atmospheres with EPIC and RGS Observations of 4U 1957+11

Cycle: 21, 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) 4U1957+11	COS/FUV COS/NUV	3	19-Sep-2013 21:37:31.0	yes

3 Total Orbits Used

ABSTRACT

We propose contemporaneous XMM-Newton and HST-COS observations of the black hole candidate 4U1957+11. We plan to search both the X-ray and UV spectra for evidence of a blue-shifted, magnetized wind, similar to that observed in high-resolution X-ray spectra of GRO J1655-40.

OBSERVING DESCRIPTION

The observation is to be a single visit, comprised of 3 HST-orbits, employing HST-COS with the G140L grating, centered on 1280 A, to observe the UV spectrum of the Low Mass X-ray binary 4U 1957+11 (also known as V1408 Aql). All four focal plane positions are to be employed. The HST-COS observation is to be coordinated with a contemporaneous XMM-RGS observation of the X-ray spectrum. A strictly simultaneous observation with XMM-RGS is not required; the HST-COS observation can be scheduled to start within +/- 24 hours of the start of the XMM-Newton observation. Target acquisition for HST-COS is to be obtained using near UV imaging. The current best estimated position for the source has been taken from Russell et al. (2011; ApJ, 739, L19), who used DSS images (USNO-B1, GSC 2.3, and 2MASS) to arrive at the source position. This position is within 0.2" of the mean position determined from two previous sets of Chandra-HETG observations (each with 90% confidence positional uncertainties of 0.6"). The source positional uncertainty thus falls within the range of 0.4"-0.7", and we therefore use a 2X2 near UV search mode followed by near UV imaging mode. Flux estimates are derived from the median value of Swift u-band measurements, converted to Johnson U-band, assuming a flat spectrum in F_\lambda. Variability about this median is expected to be +/-40%. These flux limits are too high for FUV imaging acquisition, but even under the most liberal assumptions are a factor of several below the near UV imaging flux limits.

ADDITIONAL COMMENTS

Scheduling should be coordinated with the XMM-Newton GOF.

Visit

Proposal 13380, 4U1957/HSTCOS/XMMRGS (01), implementation Fri Sep 20 01:37:39 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Comments: HST-COS observation of LMXB 4U 1957+11, occuring within +/-1day of XMM-RGS observation.

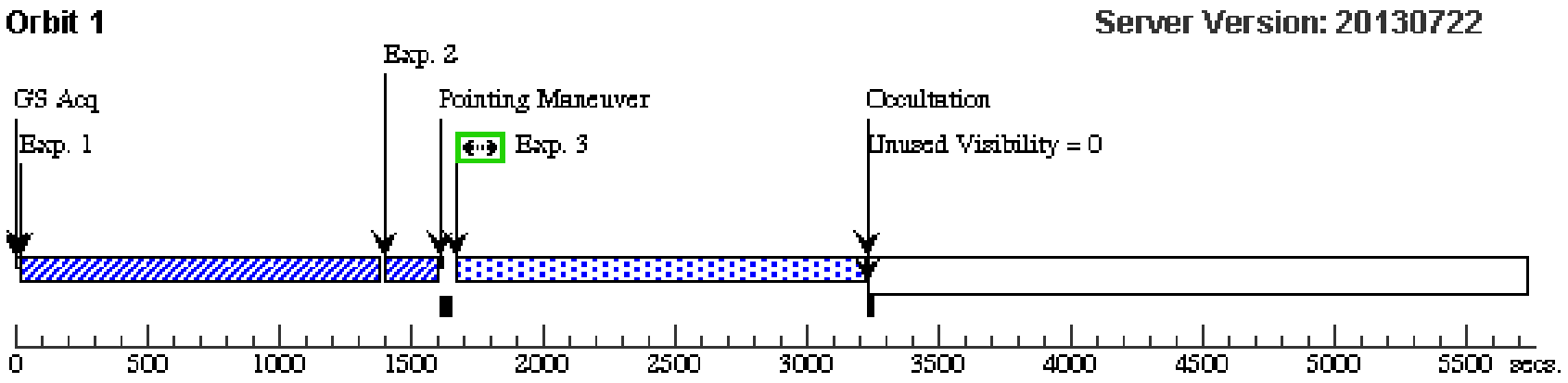
Fixed Targets

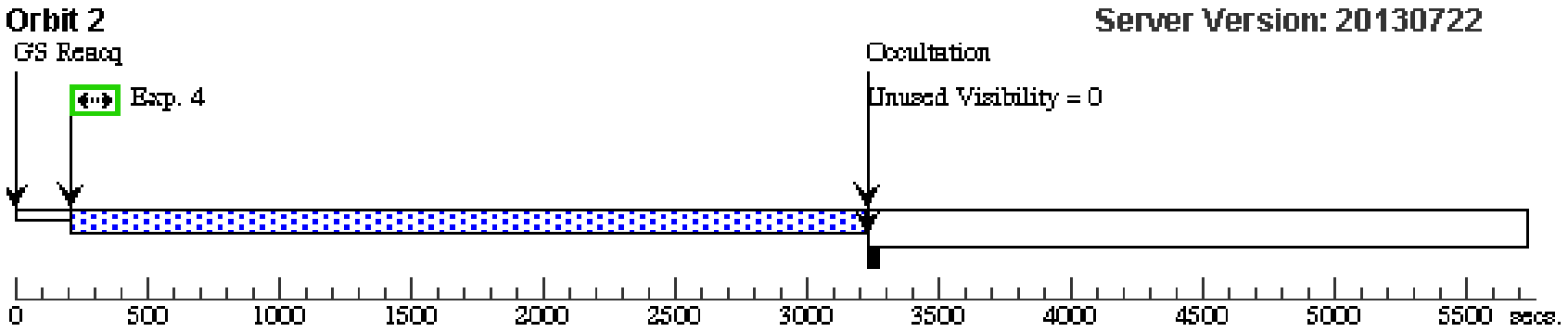
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	4U1957+11	RA: 19 59 24.0000 (299.8500000d)		V=18.8+/-0.4	Reference Frame: ICRS
	Alt Name1: V1408AQL	Dec: +11 42 29.80 (11.70828d)		U-magnitude: 18+/-0.4	
		Equinox: J2000			

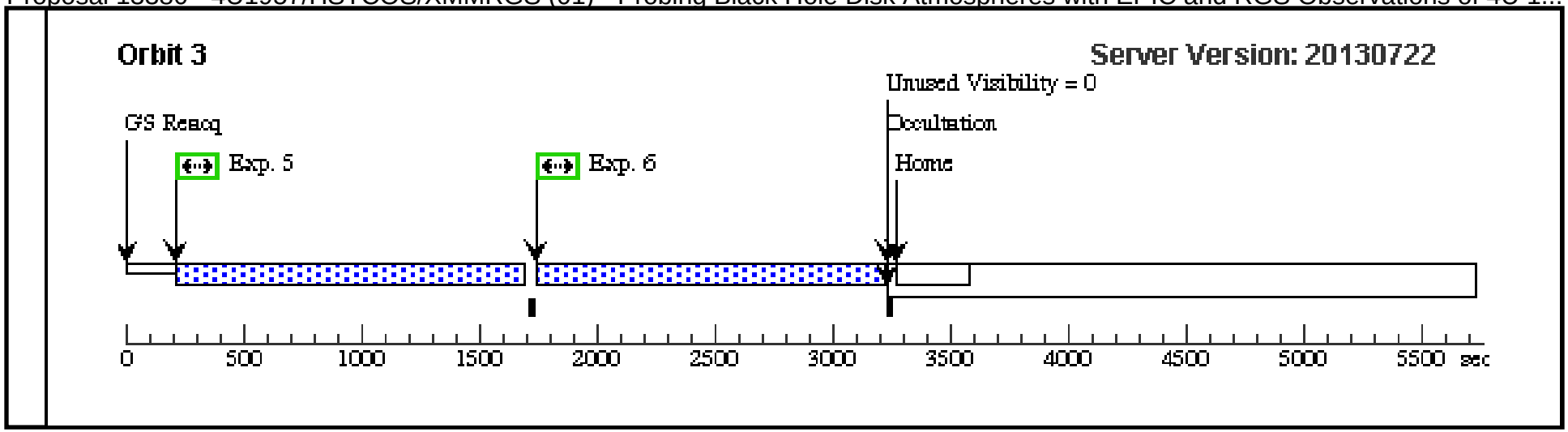
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	4U1957/SEARCH (COS.ta.532870)	(1) 4U1957+11	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	SCAN-SIZE=2; STEP-SIZE=1.767; CENTER=FLUX-WT			227 Secs (227 Secs) *[==>]*	***[1]***
Comments: Initial search for source postion.									
2	4U1957/ACQUIRE (COS.ta.507646)	(1) 4U1957+11	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				53 Secs (53 Secs) *[==>]*	***[1]***
Comments: Refined search for source postion.									
3	4U1957/SCIENCE/FP1A (COS.sp.532934)	(1) 4U1957+11	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=1; BUFFER-TIME=13000; FLASH=YES; SEGMENT=BOTH			1372 Secs (1372 Secs) *[==>]*	***[1]***
Comments: Science integrations.									
4	4U1957/SCIENCE/FP2A (COS.sp.532935)	(1) 4U1957+11	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=2; BUFFER-TIME=13000; SEGMENT=BOTH; FLASH=YES			2953 Secs (2953 Secs) *[==>]*	***[2]***
Comments: Science Integrations.									
5	4U1957/SCIENCE/FP3A (COS.sp.532936)	(1) 4U1957+11	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=13000; FLASH=YES; SEGMENT=BOTH			1424 Secs (1424 Secs) *[==>]*	***[3]***
Comments: Science Integrations.									
6	4U1957/SCIENCE/FP4A (COS.sp.532936)	(1) 4U1957+11	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=4; BUFFER-TIME=13000; FLASH=YES; SEGMENT=BOTH			1424 Secs (1424 Secs) *[==>]*	***[3]***
Comments: Science Integrations.									

Orbit Structure



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