



18486 - Luminous X-ray Sources Below 0.3 keV in Galaxies: A New Population

Cycle: 34, 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) M-94	WFC3/UVIS	3	16-Oct-2026 11:00:28.0	yes
02	(1) M-94	WFC3/UVIS	2	16-Oct-2026 11:00:29.0	yes

5 Total Orbits Used

ABSTRACT

An exciting new class of luminous X-ray emitters with little to no detectable emission above 0.3 keV has recently been discovered within galaxies observed with early ACIS-S data, dubbed 'hypersoft' X-ray sources. Within the narrow 0.15-0.3 keV bandpass these sources emit up to $1e38$ erg/s with bolometric luminosities potentially exceeding $1e39$ erg/s. We propose to utilize the very soft response of HRC-I coupled with a far UV HST/UVIS/F225W exposure of the nearby galaxy M94 which has previously been observed to harbor luminous hypersoft sources to determine the sources' temperatures and therefore the crucial bolometric correction. We also request ACIS-S observations of a very hot Milky Way dwarf with a

known blackbody temperature to translate X-ray hardness ratios into temperatures.

OBSERVING DESCRIPTION

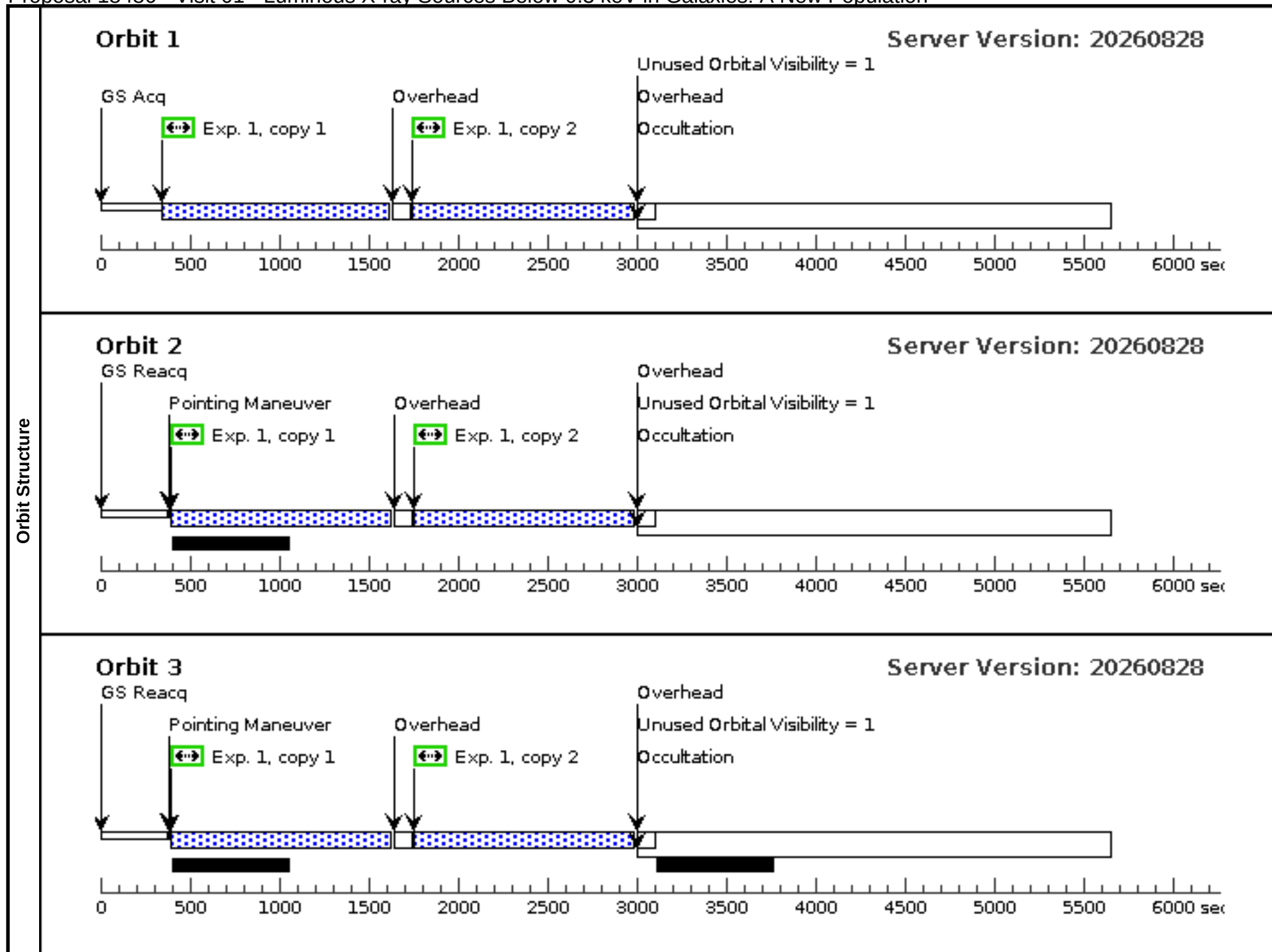
Our observations are designed to mimic the WFC3/UVIS/F225W observations of previous HST programs (11583; PI: Bregman, 18091; PI: Irwin) of the galaxies NGC 4697 and NGC 3379 as closely as possible, except that we break the 5-orbit F225W observation into two visits of 3 and 2 orbits, separated by 25-40 days if possible. We use the UVIS-CENTER aperture and CR-SPLIT=NO to match Programs 11583/18091, and remove cosmic rays by combining the dithered frames.

Visit 01 (3 orbits) uses the WFC3-UVIS-DITHER-LINE-3PT pattern with two exposures of 1242 s at each of its three dither points, for 6 exposures and 7452 s in total. Visit 02 (2 orbits) uses the WFC3-UVIS-DITHER-BOX pattern with a single exposure of 1232 s at each of its four points, for 4 exposures and 4928 s in total. In both visits two exposures are obtained per orbit. Exposure durations were packed to fill each orbit using the Orbit Planner's Auto-Adjust. Because the exposures are long (more than 348 s), buffer dumps are hidden during the following exposure, maximizing on-target time.

Since Program 11583 did not increase the flash level, we did not add post-flash either, so the APT diagnostic that the FLASH level may be too low is expected.

Proposal 18486 - Visit 01 - Luminous X-ray Sources Below 0.3 keV in Galaxies: A New Population

Visit	Proposal 18486, Visit 01										Fri Oct 16 15:00:29 GMT 2026			
	Diagnostic Status: Warning													
	Scientific Instruments: WFC3/UVIS													
	Special Requirements: (none)													
Diagnostics	(Exposure 1 (Pattern 2, Exps 1-1 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser													
Patterns	#	Primary Pattern				Secondary Pattern					Exposures			
	(2)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false								
Fixed Targets	#	Name		Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous				
	(1)	M-94		RA: 12 50 53.0738 (192.7211408d) Dec: +41 07 12.90 (41.12025d) Equinox: J2000		Proper Motion RA: 0.714 mas/yr Proper Motion Dec: 0.8 mas/yr Epoch of Position: 2000		V=8.24		Reference Frame: ICRS				
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.													
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.													
	Category=GALAXY Description=[SPIRAL] Extended=YES													
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit		
	1		(1) M-94	WFC3/UVIS, ACCUM, UVIS-CENTER		F225W			Pattern 2, Exps 1-1 i n Visit 01 (2)	1200 Secs X 2 (7412 Secs)				
										[==>1242.0 Secs (Pattern 1, Copy 1)]				
										[==>1242.0 Secs (Pattern 1, Copy 2)]		[1]		
										[==>1232.0 Secs (Pattern 2, Copy 1)]				
										[==>1232.0 Secs (Pattern 2, Copy 2)]		[2]		
										[==>1232.0 Secs (Pattern 3, Copy 1)]				
									[==>1232.0 Secs (Pattern 3, Copy 2)]		[3]			



Proposal 18486 - Visit 02 - Luminous X-ray Sources Below 0.3 keV in Galaxies: A New Population

Visit	Proposal 18486, Visit 02										Fri Oct 16 15:00:29 GMT 2026			
	Diagnostic Status: Warning													
	Scientific Instruments: WFC3/UVIS													
	Special Requirements: AFTER 01 BY 25 D TO 40 D													
Diagnostics	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser													
Patterns	#	Primary Pattern				Secondary Pattern					Exposures			
	(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Coordinate Frame=POS-TARG Pattern Orientation=23.884 Purpose=DITHER Angle Between Sides=81.785 Number Of Points=4 Center Pattern=false Point Spacing=0.173 Line Spacing=0.112									(1)			
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous					
	(1)	M-94	RA: 12 50 53.0738 (192.7211408d)		Proper Motion RA: 0.714 mas/yr		V=8.24		Reference Frame: ICRS					
			Dec: +41 07 12.90 (41.12025d)		Proper Motion Dec: 0.8 mas/yr									
			Equinox: J2000		Epoch of Position: 2000									
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.													
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.														
Category=GALAXY														
Description=[SPIRAL]														
Extended=YES														
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit			
	1		(1) M-94	WFC3/UVIS, ACCUM, UVIS-CENTER	F225W			Pattern 1, Exps 1-1 in Visit 02 (1)	1200 Secs (4948 Secs)					
									[==>1242.0 Secs (Pattern 1)]		[1]			
									[==>1242.0 Secs (Pattern 2)]					
									[==>1232.0 Secs (Pattern 3)]		[2]			
[==>1232.0 Secs (Pattern 4)]														

