18091 - An Exciting New Population of Luminous Point Sources in Nearby Galaxies

Cycle: 33, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
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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) NGC4697	WFC3/UVIS	2	31-Jul-2025 16:00:15.0	yes
02	(2) NGC3379	WFC3/UVIS	2	31-Jul-2025 16:00:16.0	yes

4 Total Orbits Used

ABSTRACT

An exciting new class of X-ray emitters with no detectable emission above 0.3 keV has recently been discovered within galaxies observed with early archival Chandra ACIS-S data, dubbed 'hypersoft' X-ray sources. Within the narrow 0.15-0.3 keV X-ray bandpass these sources emit up to 1e38 erg/s with bolometric luminosities potentially as high as 1e40 erg/s. The estimated blackbody temperatures of these source are constrained to be below 21 eV (250,000 K), making them strong EUV, and potentially FUV emitters detectable with HST. The available X-ray data indicate the sources are not persistent over ~5 year time scales. Previous WFC3/UVIS/F225W observations of large, nearby elliptical galaxies taken in 2009 have found FUV-bright point sources in those galaxies that we suggest are the FUV tails of hypersoft X-ray sources. We propose WFC3/UVIS/F225W re-observations of two of those nearby large elliptical galaxies known to possess hypersoft X-ray sources to search for variable FUV-bright sources that have turned

off (or on) since the initial 2009 F225W observations that would be strong evidence for a new, unrecognized very high bolometric luminosity class of objects in galaxies.

OBSERVING DESCRIPTION

Our observations are designed to mimic the WFPC3/UVIS/F225W observations of HST program (11583; PI: Bregman) of the galaxies NGC4697 and NGC3379 as much as possible. We plan for four exposures (to eliminate cosmic rays) covering two orbits each for each of the galaxies in the F225W filter. This led to individual exposure times of ~1220 seconds (and four exposures per galaxy). We choose the pattern type as WFC3-UVIS-DITHER-BOX, with UVIS-CENTER as the aperture, and CR-SPLIT=NO to match Program 11583. Since Program 11583 did not increase the flash level, we did not either.

Visit

Proposal 18091, NGC4697 (01) Thu Jul 31 20:00:17 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in NGC4697 (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
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

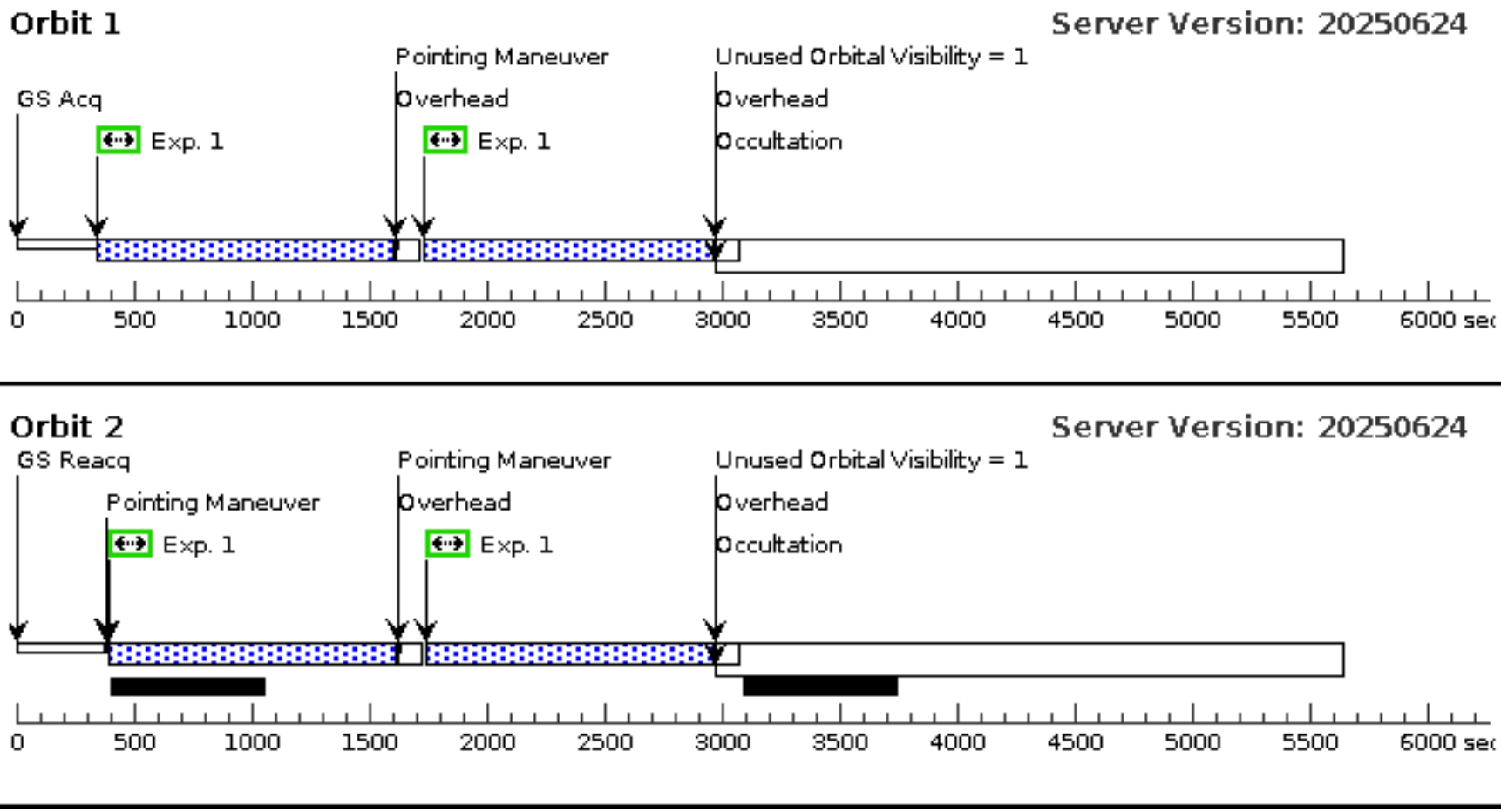
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC4697	RA: 12 48 35.8981 (192.1495754d) Dec: -05 48 2.48 (-5.80069d) Equinox: J2000	Epoch of Position: 2000	V=10.55+/-0.02	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ELLIPTICAL]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) NGC4697	WFC3/UVIS, ACCUM, UVIS-CENTER	F225W	CR-SPLIT=NO		Pattern 1, Exps 1-1 in NGC4697 (01) (1)	1230 Secs (4900 Secs)	
								[==>(Pattern 1)] *[==>(Pattern 2)]*	***[1]***
								[==>1220.0 Secs (Pattern 3)] *[==>1220.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure



Visit

Proposal 18091, NGC3379 (02) Thu Jul 31 20:00:17 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in NGC3379 (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 Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC3379	RA: 10 47 49.6000 (161.9566667d) Dec: +12 34 53.87 (12.58163d) Equinox: J2000	Epoch of Position: 2000	V=9.76	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ELLIPTICAL]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) NGC3379	WFC3/UVIS, ACCUM, UVIS-CENTER	F225W	CR-SPLIT=NO		Pattern 1, Exps 1-1 in NGC3379 (02) (1)	1230 Secs (4896 Secs)	
								[==>1229.0 Secs (Pattern 1)] *[==>1229.0 Secs (Pattern 2)]*	***[1]***
								[==>1219.0 Secs (Pattern 3)] *[==>1219.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure