16896 - XMM HST monitoring of the ultra soft Narrow Line Seyfert RX J1355.2+5612

Cycle: 29, 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) LEDA-2816068	COS/FUV COS/NUV	1	21-Jun-2022 11:00:58.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(1) LEDA-2816068	COS/FUV COS/NUV	1	21-Jun-2022 11:00:59.0	yes
03	(1) LEDA-2816068	COS/FUV COS/NUV	1	21-Jun-2022 11:00:59.0	yes
04	(1) LEDA-2816068	COS/FUV COS/NUV	1	21-Jun-2022 11:01:00.0	yes
05	(1) LEDA-2816068	COS/FUV COS/NUV	1	21-Jun-2022 11:01:01.0	yes

5 Total Orbits Used

ABSTRACT

Ultra soft Narrow Line Seyfert US-NLS are characterized by a large spectral variability, a very steep X-ray primary continuum Gamma> 2.5 and a strong soft excess. This remarkable spectral shape questions the origin of their broad-band UV-X-ray continuum compared to standard Seyfert galaxies. We propose to perform a monitoring composed of 5x26 ks XMM observations total: 130ks, spaced by 2-3 days and coordinated with HST, to probe the FUV, of the US-NLS RX J1355.2+5612. The HST COS data are crucial to provide the best constraints on the accretion disc temperature which is expected to be quite hot in these objects. The proposed monitoring will then allow us to 1) disentangle the different spectral components present from the UV/FUV to X-ray energy range and 2) investigate the nature of the soft X-ray excess and discriminate between the theoretical models that have been heavily discussed in the past decade.

OBSERVING DESCRIPTION

This is a joint XMM / HST proposal to study the correlation between the X-ray and UV variability of an AGN on time scale of a few days. HST will provide an excellent picture of the FUV range and allow to constrain the accretion disc temperature. We have been granted 5 orbits of HST and 140 ks of XMM observation time. The plan is to observe our source (LEDA-2816068) 5 times quasi simultaneously with both XMM and HST: 5x (28 ks XMM observation + 1 orbit of HST). Strict simultaneity is not required, a shift of a few hours up to a day is acceptable given the expected variability. The XMM+HST observations should be separated by 3-4 days to catch the source at different levels of X-ray flux.

We thus plan 5 visits, each composed of 1 orbit (total 5 orbits). Each visit is defined as:

1) a target acquisition exposure with COS / NUV in ACQ/IMAGE mode and MIRROR B + PSA.
Given that the archival NUV flux (GALEX) is at the limit of the flux limits for MIRROR A + PSA. We use MIRROR B + PSA. We estimate the exposure time using the ETC run #1684797. For the ETC run, we use the lowest NUV archival flux (1.8e-15 erg/s/cm2/A at 2340 A, GALEX) to get a SNR of 25. This gives an exposure time of 40 s.

2) primary science exposure using COS / FUV with grating G140L at 1105 A, in TIME-TAG mode and the PSA.
ETC run #1684832 : we use the maximum archival FUV flux (4e-15 erg/s/cm2/A at 1550 A, GALEX) for the simulation.
We use FP-POS = ALL as it is recommended in the documentation.
The ETC run gives a buffer fill time of 8277 s, following the decision tree of the documentation, we fix the buffer time to the exposure time of each FP-POS (BT = 509s) as the exact count rate of the source is not known.
We auto-adjust the exposure time of the splits (different FP-POS exposure) using the corresponding orbit planner option.

Timing requirements:
Each visit should be as simultaneous as possible with the corresponding XMM observation. Strict simultaneity is not required, a shift of a few hours up to a day is acceptable. Each visit should be separated by 3-4 days from the precedent.

Visit planner:
The XMM visibility tool shows that the source will be visible to XMM from November 3rd 2022 to January 21st 2023.
The HST visit planner shows two possible openings for the complete observational strategy:
1) from November 3rd 2022 to November 20th 2022
2) from December 22nd 2022 to January 10th 2023

Bright object tool :
no warnings obtained with the current settings.

Visit

Proposal 16896, Visit 01, implementation Tue Jun 21 15:01:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: BETWEEN 02-NOV-2022:00:00:00 AND 20-NOV-2022:00:00:00; BETWEEN 22-DEC-2022:00:00:00 AND 10-JAN-2023:00:00:00

Comments: This is a joint XMM/HST monitoring of 5 observations spaced by 3-4 days accepted at the last XMM call. (proposal 90337)
This observation must be as simltaneous as possible (<1 day) with the first XMM observation

Fixed Targets

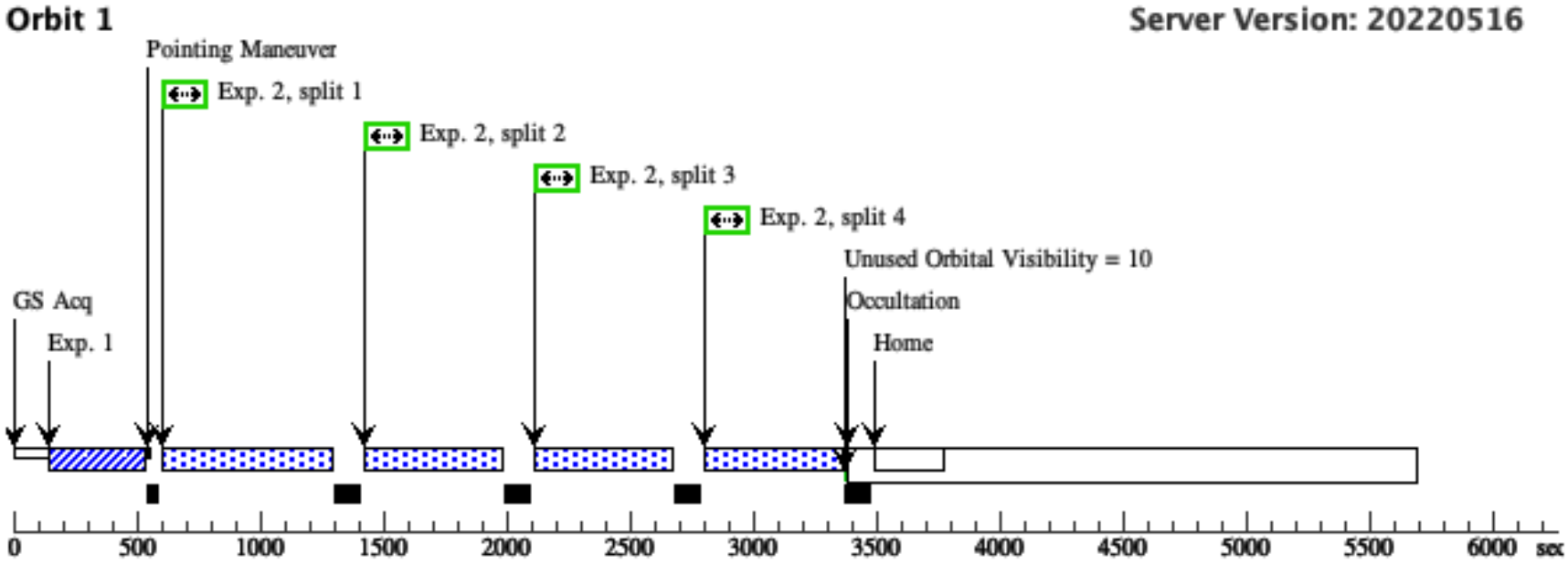
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LEDA-2816068 Alt Name1: RXJ1355.2+5612	RA: 13 55 16.5541 (208.8189754d) Dec: +56 12 44.63 (56.21240d) Equinox: J2000	Proper Motion RA: -3.32065120951953E-5 sec of time/yr Proper Motion Dec: -2.0700006189144915E-4 arcsec/yr Epoch of Position: 2015.5	V=17.09	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, CORONA, DISK, NUCLEUS, SEYFERT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	TA (1684797)	(1) LEDA-2816068	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				40 Secs (40 Secs) *[==>]*	*[1]*
2	Obs (1684832)	(1) LEDA-2816068	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=509; FP-POS=ALL			500 Secs (2036 Secs) *[==>509.0 Secs (Split 1)]* *[==>509.0 Secs (Split 2)]* *[==>509.0 Secs (Split 3)]* *[==>509.0 Secs (Split 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16896, Visit 02, implementation Tue Jun 21 15:01:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER 01 BY 3 D TO 4 D

Comments: This is a joint XMM/HST monitoring of 5 observations spaced by 3-4 days accepted at the last XMM call. (proposal 90337)
This observation must be as simltaneous as possible (<1 day) with the second XMM observation

Fixed Targets

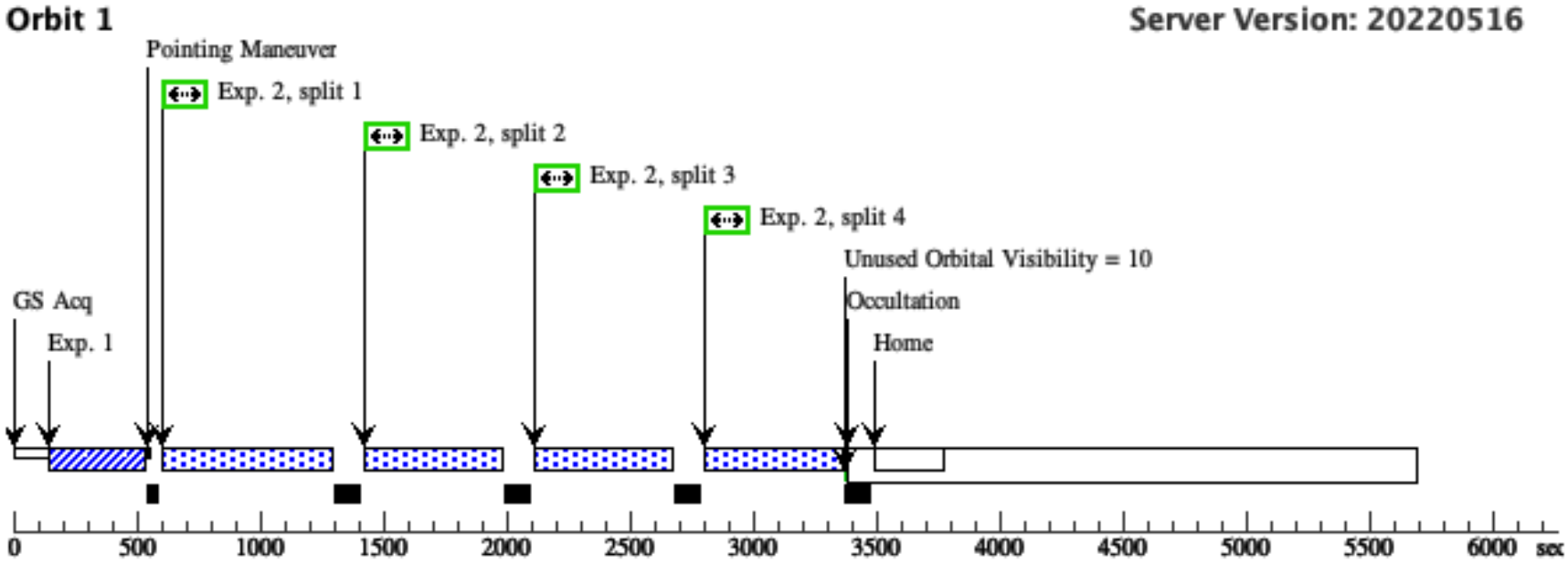
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LEDA-2816068 Alt Name1: RXJ1355.2+5612	RA: 13 55 16.5541 (208.8189754d) Dec: +56 12 44.63 (56.21240d) Equinox: J2000	Proper Motion RA: -3.32065120951953E-5 sec of time/yr Proper Motion Dec: -2.0700006189144915E-4 arcsec/yr Epoch of Position: 2015.5	V=17.09	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, CORONA, DISK, NUCLEUS, SEYFERT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	TA (1684797)	(1) LEDA-2816068	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				40 Secs (40 Secs) *[==>]*	*[1]*
2	Obs (1684832)	(1) LEDA-2816068	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=509; FP-POS=ALL			500 Secs (2036 Secs) *[==>509.0 Secs (Split 1)]* *[==>509.0 Secs (Split 2)]* *[==>509.0 Secs (Split 3)]* *[==>509.0 Secs (Split 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16896, Visit 03, implementation Tue Jun 21 15:01:02 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER 02 BY 3 D TO 4 D

Comments: This is a joint XMM/HST monitoring of 5 observations spaced by 3-4 days accepted at the last XMM call. (proposal 90337)
This observation must be as simltaneous as possible (<1 day) with the third XMM observation

Fixed Targets

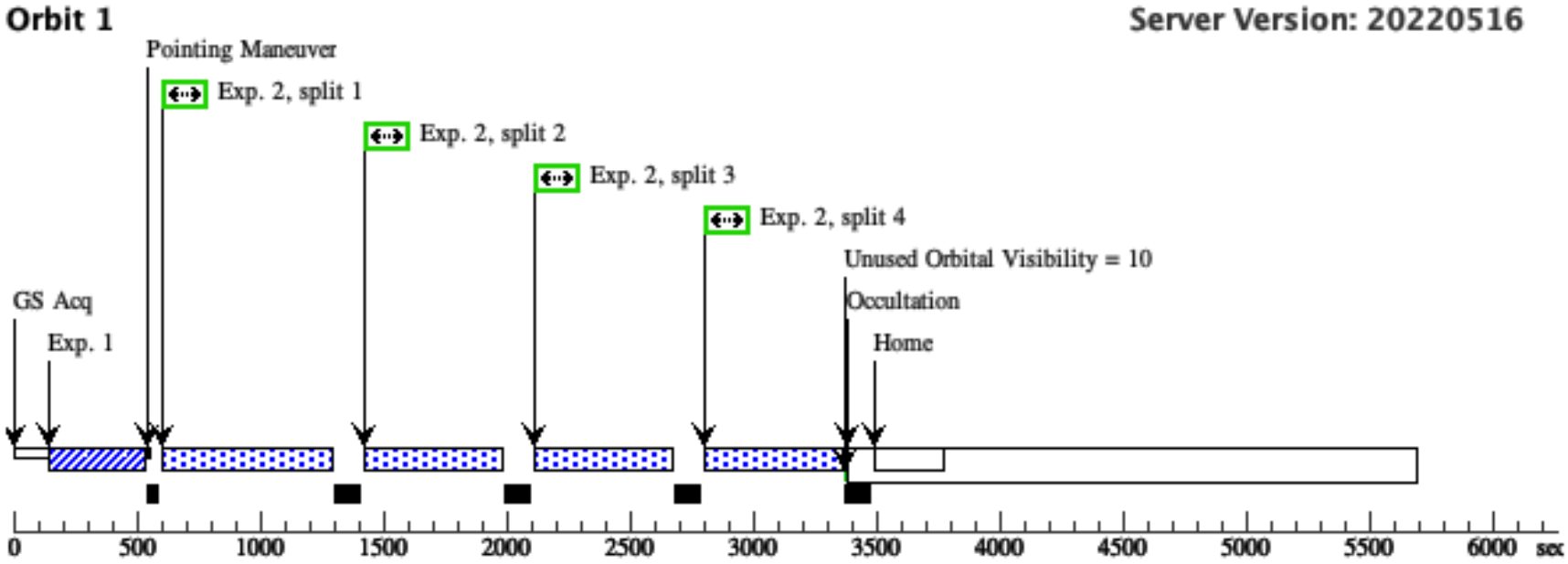
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LEDA-2816068 Alt Name1: RXJ1355.2+5612	RA: 13 55 16.5541 (208.8189754d) Dec: +56 12 44.63 (56.21240d) Equinox: J2000	Proper Motion RA: -3.32065120951953E-5 sec of time/yr Proper Motion Dec: -2.0700006189144915E-4 arcsec/yr Epoch of Position: 2015.5	V=17.09	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, CORONA, DISK, NUCLEUS, SEYFERT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	TA (1684797)	(1) LEDA-2816068	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				40 Secs (40 Secs) *[==>]*	*[1]*
2	Obs (1684832)	(1) LEDA-2816068	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=509; FP-POS=ALL			500 Secs (2036 Secs) *[==>509.0 Secs (Split 1)]* *[==>509.0 Secs (Split 2)]* *[==>509.0 Secs (Split 3)]* *[==>509.0 Secs (Split 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16896, Visit 04, implementation

Tue Jun 21 15:01:02 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER 03 BY 3 D TO 4 D

Comments: This is a joint XMM/HST monitoring of 5 observations spaced by 3-4 days accepted at the last XMM call. (proposal 90337)
This observation must be as simltaneous as possible (<1 day) with the fourth XMM observation

Fixed Targets

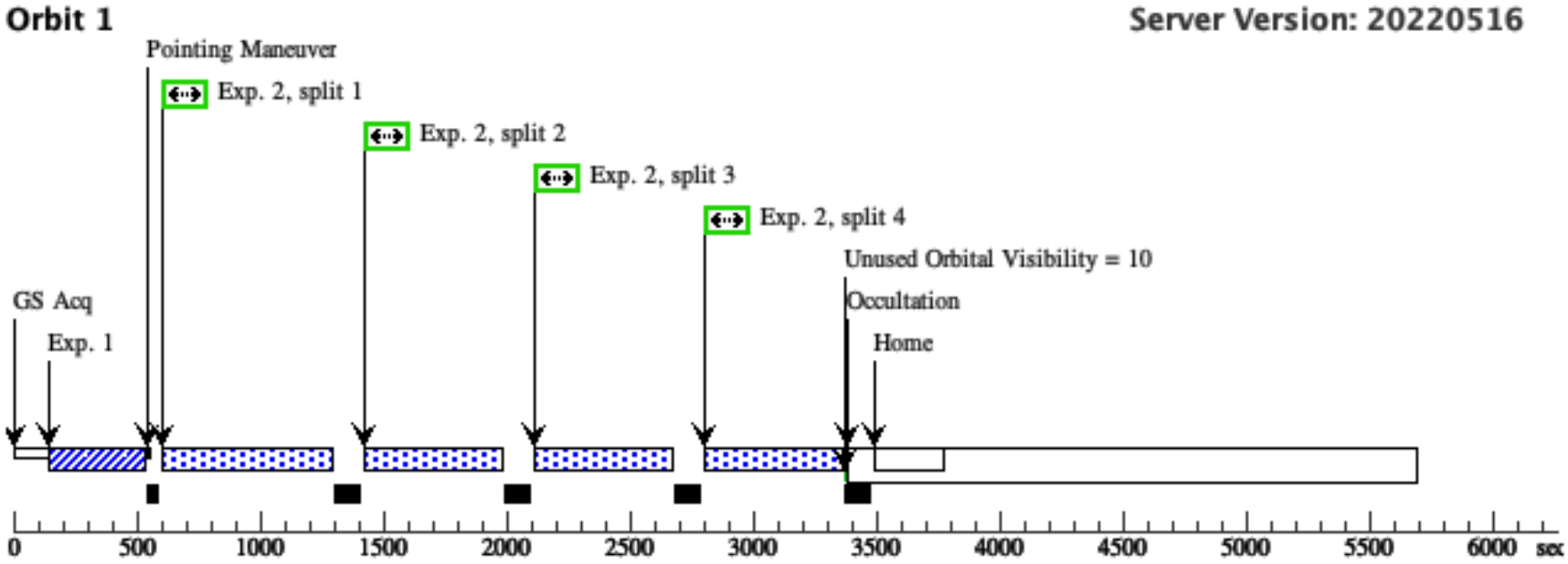
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LEDA-2816068 Alt Name1: RXJ1355.2+5612	RA: 13 55 16.5541 (208.8189754d) Dec: +56 12 44.63 (56.21240d) Equinox: J2000	Proper Motion RA: -3.32065120951953E-5 sec of time/yr Proper Motion Dec: -2.0700006189144915E-4 arcsec/yr Epoch of Position: 2015.5	V=17.09	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, CORONA, DISK, NUCLEUS, SEYFERT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	TA (1684797)	(1) LEDA-2816068	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				40 Secs (40 Secs) *[==>]*	*[1]*
2	Obs (1684832)	(1) LEDA-2816068	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=509; FP-POS=ALL			500 Secs (2036 Secs) *[==>509.0 Secs (Split 1)]* *[==>509.0 Secs (Split 2)]* *[==>509.0 Secs (Split 3)]* *[==>509.0 Secs (Split 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16896, Visit 05, implementation Tue Jun 21 15:01:02 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER 04 BY 3 D TO 4 D

Comments: This is a joint XMM/HST monitoring of 5 observations spaced by 3-4 days accepted at the last XMM call. (proposal 90337)
This observation must be as simltaneous as possible (<1 day) with the fifth XMM observation

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	LEDA-2816068 Alt Name1: RXJ1355.2+5612	RA: 13 55 16.5541 (208.8189754d) Dec: +56 12 44.63 (56.21240d) Equinox: J2000	Proper Motion RA: -3.32065120951953E-5 sec of time/yr Proper Motion Dec: -2.0700006189144915E-4 arcsec/yr Epoch of Position: 2015.5	V=17.09	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, CORONA, DISK, NUCLEUS, SEYFERT]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	TA (1684797)	(1) LEDA-2816068	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				40 Secs (40 Secs) *[==>]*	*[1]*
2	Obs (1684832)	(1) LEDA-2816068	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=509; FP-POS=ALL			500 Secs (2036 Secs) *[==>509.0 Secs (Split 1)]* *[==>509.0 Secs (Split 2)]* *[==>509.0 Secs (Split 3)]* *[==>509.0 Secs (Split 4)]*	*[1]*

Orbit Structure