16899 - The extreme X-ray weakness of PG 0043+039

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) PG0043+039	COS/FUV COS/NUV	1	14-Apr-2022 10:00:44.0	yes
02	(1) PG0043+039	COS/NUV	1	14-Apr-2022 10:00:46.0	yes

2 Total Orbits Used

ABSTRACT

PG 0043+039 is the most X-ray weak quasar known to date. Marginally detected in 2005, an XMM- Newton observation in 2013 set a clear detection im- plying a flux increase of at least a factor 3.8. Simulta- neous observations at other wavelengths showed the quasar still extreme X-ray weak, with a peculiar spec- tral energy distribution (SED) and unique features in the UV spectrum. We propose that PG 0043+039 is a genuine X-ray weak

quasar. To probe this hy- pothesis and to test alternative emission scenarios (ADAFs, missing corona (Ricci et al., 2020 ApJ 898, L1), cyclotron-emission (Kollatschny et al. 2015, A&A, 577, L1)) this unique source deserves further, deeper, observations, aiming to establish its X-ray spectrum, its optical to hard X-ray SED and new con- straints on its variability. Our proposal is to observe PG 0043+039 quasi-simultaneously (2 days) with XMM-Newton (100ks + 20ks), NuSTAR (60ks) and HST (2 orbits). We will arrange quasi-simultaneous observations with the ground 10m Hobby-Eberly Telescope in Texas and with the 10m SALT Telescope in South Africa.

OBSERVING DESCRIPTION

PG 0043+039 is the most X-ray weak quasar known. We plan to observe PG0043+039 quasi-simultaneously with HST and XMM. We intend to take a FUV spectrum with COS/FUV G140L(1105) for the first orbit. The second orbit is devoted to a NUV spectrum with COS/NUV G230L.
We observed this quasar before with COS/FUV G140L(1105) on July 18, 2013. See the publication: Kollatschny+ 2016, A&A585, A18.

Visit

Proposal 16899, COS FUV spectrum (01), implementation Thu Apr 14 14:00:47 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Diagnostics

(COS FUV spectrum (01)) Warning (Form): COS ACQ/PEAKD exposure should be preceded by an ACQ/PEAKXD exposure in the Visit.

Fixed Targets

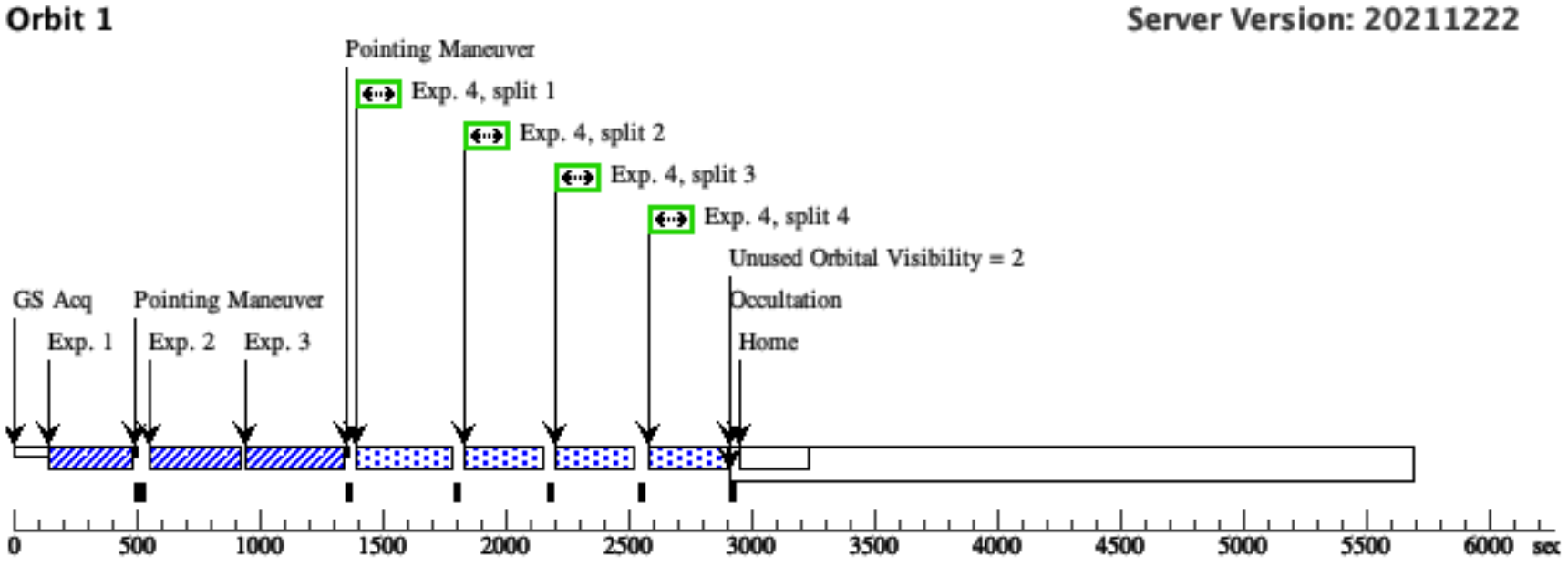
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PG0043+039	RA: 00 45 47.2300 (11.4467917d) Dec: +04 10 23.36 (4.17316d) Equinox: J2000	Epoch of Position: 2015.5	V=16.0	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QUASAR]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/NUVimage (1684621)	(1) PG0043+039	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				15. Secs (15 Secs) *[==>]*	*[1]*
2	ACQ/PEAKXD (1684624)	(1) PG0043+039	COS/FUV, ACQ/PEAKD, PSA	G140L 1105 A	NUM-POS=3; SEGMENT=A; STEP-SIZE=1.3; CENTER=FLUX-WT			50. Secs (50 Secs) *[==>]*	*[1]*
3	ACQ/PEAKD (1684624)	(1) PG0043+039	COS/FUV, ACQ/PEAKD, PSA	G140L 1105 A	NUM-POS=5; STEP-SIZE=0.9; CENTER=FLUX-WT-FLR; SEGMENT=A			50. Secs (50 Secs) *[==>]*	*[1]*
4	(1683193)	(1) PG0043+039	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=ALL; BUFFER-TIME=6000; FLASH=YES			340 Secs (1072 Secs) *[==>268.0 Secs (Split 1)]* *[==>268.0 Secs (Split 2)]* *[==>268.0 Secs (Split 3)]* *[==>268.0 Secs (Split 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16899, COS NUV spectrum (02), implementation Thu Apr 14 14:00:47 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV

Special Requirements: SCHED 100%

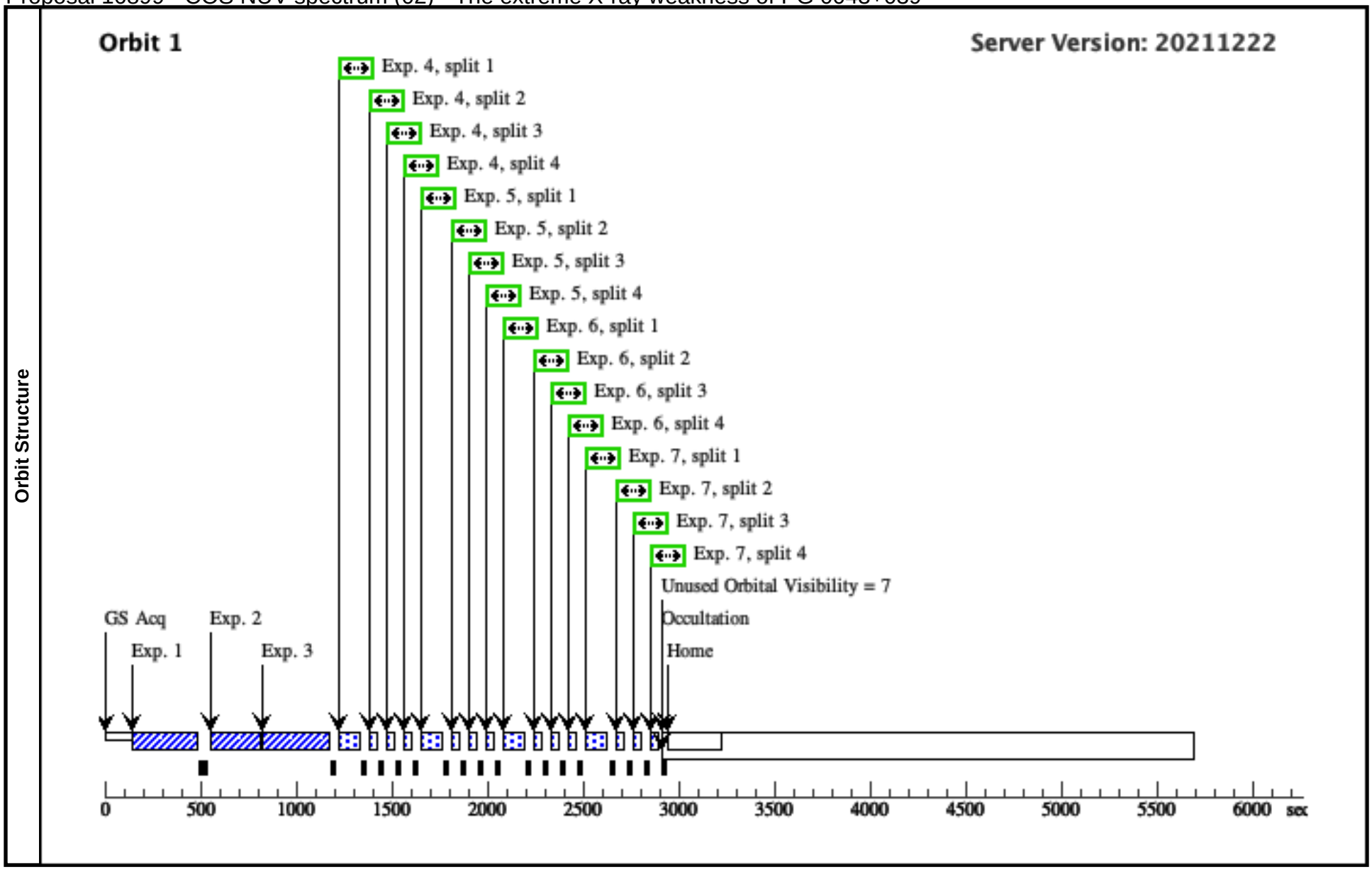
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PG0043+039	RA: 00 45 47.2300 (11.4467917d) Dec: +04 10 23.36 (4.17316d) Equinox: J2000	Epoch of Position: 2015.5	V=16.0	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[QUASAR]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/NUVimage (1684621)	(1) PG0043+039	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				15. Secs (15 Secs) *[==>]*	***[1]***
2	ACQ/PEAKXD (1684626)	(1) PG0043+039	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A	STRIPE=MEDIUM			100. Secs (100 Secs) *[==>]*	***[1]***
3	ACQ/PEAKD (1684628)	(1) PG0043+039	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	NUM-POS=5; STEP-SIZE=0.9; CENTER=FLUX-WT-FLR			40 Secs (40 Secs) *[==>]*	***[1]***
4	(1683190)	(1) PG0043+039	COS/NUV, TIME-TAG, PSA	G230L 2635 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=1100			60 Secs (88 Secs) *[==>22.0 Secs (Split 1)]* *[==>22.0 Secs (Split 2)]* *[==>22.0 Secs (Split 3)]* *[==>22.0 Secs (Split 4)]*	***[1]***
5	(1683190)	(1) PG0043+039	COS/NUV, TIME-TAG, PSA	G230L 2950 A	FP-POS=ALL; BUFFER-TIME=1100; FLASH=YES			60 Secs (88 Secs) *[==>22.0 Secs (Split 1)]* *[==>22.0 Secs (Split 2)]* *[==>22.0 Secs (Split 3)]* *[==>22.0 Secs (Split 4)]*	***[1]***
6	(1683191)	(1) PG0043+039	COS/NUV, TIME-TAG, PSA	G230L 3000 A	FP-POS=ALL; BUFFER-TIME=1100; FLASH=YES			60 Secs (88 Secs) *[==>22.0 Secs (Split 1)]* *[==>22.0 Secs (Split 2)]* *[==>22.0 Secs (Split 3)]* *[==>22.0 Secs (Split 4)]*	***[1]***
7	(1683191)	(1) PG0043+039	COS/NUV, TIME-TAG, PSA	G230L 3360 A	FP-POS=ALL; BUFFER-TIME=1100; FLASH=YES			60 Secs (88 Secs) *[==>22.0 Secs (Split 1)]* *[==>22.0 Secs (Split 2)]* *[==>22.0 Secs (Split 3)]* *[==>22.0 Secs (Split 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20211222
Exp. 4, split 1
Exp. 4, split 2
Exp. 4, split 3
Exp. 4, split 4
Exp. 5, split 1
Exp. 5, split 2
Exp. 5, split 3
Exp. 5, split 4
Exp. 6, split 1
Exp. 6, split 2
Exp. 6, split 3
Exp. 6, split 4
Exp. 7, split 1
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
Unused Orbital Visibility = 7
Occultation
Home
GS Acq
Exp. 1
Exp. 2
Exp. 3
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec