14853 - Catching a Changing Look Quasar as it undergoes significant changes in accretion rate

Cycle: 24, 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) MRK-1018	COS/FUV COS/NUV	2	20-Jan-2017 21:00:42.0	yes

2 Total Orbits Used

ABSTRACT

We propose a joint TOO observation of Chandra (50 ks) and HST (2 orbits) of Mrk 1018. In February this year, we discovered the unambiguous case of a "changing look" quasar completing a full cycle: Mrk 1018 transformed from a Seyfert 1.9 to a Seyfert 1 in 1984, and it has just now transitioned

back into a Seyfert 1.9. This state change is accompanied by extreme dimming in both X-ray and optical which might be still ongoing. Joint HST and Chandra observations are needed to constrain the current physical state of the accretion disk and embedded hot corona, respectively. This program will only be triggered if our optical monitoring programs detects a change of more than a factor of 5 in optical flux of Mrk 1018. Note that this proposal is accompanied by a GO proposal of the same object.

OBSERVING DESCRIPTION

Standard two-orbit COS/FUV G140L observation of Markarian 1018, using the Primary Science Aperture. 40 sec ACQ/IMAGE observation to center on the UV photocentroid (the point source associated with the AGN). Four science exposures, spread over two orbits, are used to cycle through all four FP-POS positions.

Visit

Proposal 14853, FUV-COS Mrk1018 (01), implementation Sat Jan 21 02:00:43 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: PCS MODE FINE; BEFORE 28-FEB-2017:12:00:00

Comments: UV spectroscopy of Lya and FUV continuum with COS of Mrk 1018 at the nucleus.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-1018 Alt Name1: UGC01597 Alt Name2: HE0203-0031	RA: 02 06 15.9888 (31.5666200d) Dec: -00 17 29.18 (-.29144d) Equinox: J2000	Redshift: 0.043	V=15.0+/-0.5 7.5 counts/s in the 250s long COS NUV (PSA and MIRRORB) acquisition images from Feb 2016	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition Exposure (ACQ/IMAGE) (839385)	(1) MRK-1018	COS/NUV, ACQ/IMAGE, PSA	MIRRORA		GS ACQ SCENARIO BASE1B3		40 Secs (40 Secs) *[==>]*	*[1]*

Comments: The nucleus of Mrk 1018 has significantly dimmed compared to the GALEX observations. Observations with COS in Feb 2016 show a total contrate in the NUV acquisition images of 920 counts/s and the FUV QSO spectrum had a continuum flux of 1e-15 erg/s/cm2/A at 1310A. We currently perform u-band monitoring with ground-based telescope which confirm that the nucleus has further dimmed by 0.4mag. We therefore assume that it is safe to use the PSA/MIRRORA configuration and base the ETC computation a continuum flux of 0.5e-15 erg/s/cm2/A to be little more conservative. We may need to update this slightly if something dramatic happens when triggering these observations.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Science Exposure 1 (FP-POS=1) (839387)	(1) MRK-1018	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=1080; FLASH=YES; FP-POS=1; SEGMENT=A			1180 Secs (1180 Secs) *[==>]*	*[1]*

Comments: ETC run is attached to verify the maximum count/rates expected if the source would be as bright as in the HST-COS observation taken in Feb 2016.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	Science Exposure 2 (FP-POS=2) (839387)	(1) MRK-1018	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=1080; FLASH=YES; FP-POS=2; SEGMENT=A			1186 Secs (1186 Secs) *[==>]*	*[1]*

Comments: ETC run is attached to verify the maximum count/rates expected if the source would be as bright as in the HST-COS observation taken in Feb 2016.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
4	Science Exposure 3 (FP-POS=3) (839388)	(1) MRK-1018	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=1310; FLASH=YES; FP-POS=3; SEGMENT=A			1410 Secs (1410 Secs) *[==>]*	*[2]*

Comments: ETC run is attached to verify the maximum count/rates expected if the source would be as bright as in the HST-COS observation taken in Feb 2016.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
5	Science Exposure 4 (FP-POS=4) (839388)	(1) MRK-1018	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=1300; FLASH=YES; FP-POS=4; SEGMENT=A			1409 Secs (1409 Secs) *[==>]*	*[2]*

Comments: ETC run is attached to verify the maximum count/rates expected if the source would be as bright as in the HST-COS observation taken in Feb 2016.

Orbit Structure