15604 - Catching an AGN in the Act: A New Accretion Regime for 1ES 1927+654

Cycle: 25, Proposal Category: GO/DD

(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) AT2018ZF	COS/FUV COS/NUV STIS/CCD STIS/NUV-MAMA	2	17-Aug-2018 11:00:34.0	yes

2 Total Orbits Used

ABSTRACT

We are currently observing an AGN caught in the act of changing its accretion state. The AGN 1ES 1927+654, formerly a "true" Type-2, has recently experienced a strong and sudden brightening accompanied by the emergence of broad Balmer lines in the optical spectrum. Observing these changes in real time offers a great opportunity to address open questions in AGN accretion. Our optical spectroscopic sequence shows, for the first time, a time-resolved increase of the blue continuum flux preceding the formation of the broad lines, allowing us to constrain the size of the broad-line region. HST UV spectra taken now will reveal the presence of outflows suggested to be associated with such a transition, and will test competing

models proposed to explain the perplexing rapid time scales associated with changing look AGN. 1ES 1927+654 is rapidly fading back to its quiescent state, making the proposed observations a unique but highly time critical opportunity.

OBSERVING DESCRIPTION

We propose for one orbit of DD time to follow-up with NUV/FUV spectroscopy a recent optical transient in the nucleus of the AGN 1ES 1927+654. In the FUV, COS is preferred to STIS for its higher throughout. We request both FUV and NUV to cover the emission lines CIV 1549, HeII 1640, OIII] 1664, NIII] 1750, CIII] 1909, and MgII 2800 and any blue-shifted BALs associated with the carbon lines or MgII.

To obtain adequate wavelength coverage, we request the COSG140L and STISG230L gratings, centered at 1280A and 2950A, respectively. From the ETC, we expect to achieve excellent S/N will within one orbit per observation. The minimum time needed to achieve decent S/N (20 per resol. elem.) at 1450A and 2800A is 850s and 180s respectively for COSG140L and STISG230L. This assumes the target will be one magnitude fainter by the time of observation. We aim for more conservative values of S/N because the target may fade by the time the observations are taken, making the true signal weaker. One orbit each, with 2220s (2340s) for the COS FUV (STIS NUV) total science exposure, will deliver S/N=30 at 1450A, and S/N=70 at 2800A, including overhead, so we ask for 2 orbits.

The source is highly variable, so it is important to our interpretaion of the observations that the orbits be taken back-to-back.

Visit

Proposal 15604, Visit 01, implementation Fri Aug 17 15:00:35 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD, COS/FUV, COS/NUV

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AT2018ZF	RA: 19 27 19.4900 (291.8312083d) Dec: +65 33 54.40 (65.56511d) Equinox: J2000		V=15.5+/-0.05 4.7e-14 erg/s/cm^2/A at rest-frame 1450A	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, QUASAR, 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	(COS.ta.1280889)	(1) AT2018ZF	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16.2 Secs (16.2 Secs)	
								[==>]	***[1]***
2	(COS.sp.1236482)	(1) AT2018ZF	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=1850; FP-POS=ALL			555 Secs (2464 Secs)	
								[==>616.0 Secs (Split 1)] *[==>616.0 Secs (Split 2)]* *[==>616.0 Secs (Split 3)]* *[==>616.0 Secs (Split 4)]*	***[1]***
3	(STIS.ta.1283402)	(1) AT2018ZF	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
								[==>]	***[2]***
Comments: Exposure time was not supported by the BOT, but the ETC run above gives a SNR = 314.7439 and an electron count rate below the saturation limit of 144,000 electrons.									
4	(STIS.sp.1236438)	(1) AT2018ZF	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				780 Secs X 3 (2583 Secs)	
								[==>861.0 Secs (Copy 1)] *[==>861.0 Secs (Copy 2)]* *[==>861.0 Secs (Copy 3)]*	***[2]***

Orbit Structure