



14477 - UV to hard X-ray spectroscopy of the prototype disk wind quasar, PDS 456

Cycle: 24, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) PDS456	COS/FUV	2	15-Mar-2016 21:04:53.0	yes

2 Total Orbits Used

ABSTRACT

PDS 456, the most luminous nearby AGN, is now recognised as the prototype ultra fast outflow. Our recent XMM-Newton and NuSTAR campaign on PDS 456 established the presence of a fast (0.3c), wide angle disk wind, sufficient to provide significant mechanical feedback into its host galaxy. The new RGS data have revealed the presence of variable, broad soft X-ray absorption lines from the disk wind, which may be associated to the partial covering absorber. Here we propose for 2x80 ks XMM-Newton observations of PDS 456 and a two orbit HST/COS snapshot which will simultaneously measure the wind in the UV and X-rays. The requested observations will be concurrent with a likely Astro-H observation during 2016. For the first time we will obtain high resolution coverage of the wind from the UV to hard X-rays.

OBSERVING DESCRIPTION

We propose a HST/COS observation of PDS~456 using the G140L grating which give a suitable velocity resolution over the required wavelength range from blueward of Ly α to redward of HeII λ 1640. We adopt the previous HST/STIS spectrum as a guide to the target flux, and assume no major UV continuum variability. Comparing the HST/STIS observed flux with the XMM-Newton OM UV magnitudes provides fluxes consistent to well within a factor of two. Simulations show that we can measure the required spectral features with sufficient accuracy to achieve the science goals of our proposal by attaining a signal-to-noise ratio of 20-30 per HST/COS spectral resolution element. We require this S/N particularly at the location of the broad absorption feature (observed wavelength \approx 1350 \AA) and the NV and CIV emission lines (observed wavelengths \approx 1450 \AA and 1800 \AA). We have used the on-line HST exposure-time calculators to determine and compare the required exposure times. To cover the spectral range required, we request observations using the G140L grating for 95 minutes. The previous HST/STIS observation shows that the host-galaxy of PDS~456 does not contaminate the UV spectrum significantly. Given the declination of PDS~456, we have 54 minutes per orbit of visibility.

The HST observations are to be coordinated with an XMM-Newton observation as part of this joint XMM-Newton/HST program,

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Wed Mar 16 01:04:54 GMT 2016

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	PDS456	RA: 17 28 19.8000 (262.0825000d) Dec: -14 15 55.90 (-14.26553d) Equinox: J2000			V=14.03 The observed continuum flux at 1350 Angstrom is 4e-15
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Extended=NO</i>						

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(COS.sa.771 494)	(1) PDS456	COS/FUV, ACQ/SEARCH, PSA	G140L 1280 A	SCAN-SIZE=2			25 Secs (25 Secs) [==>]	[1]
	2	(COS.sa.770 514)	(1) PDS456	COS/FUV, ACQ/PEAKXD, PSA	G140L 1280 A				25 Secs (25 Secs) [==>]	[1]
	3	(COS.sa.770 514)	(1) PDS456	COS/FUV, ACQ/PEAKD, PSA	G140L 1280 A	NUM-POS=5; STEP-SIZE=0.9; CENTER=FLUX-W T-FLR			25 Secs (25 Secs) [==>]	[1]
	4	(COS.sp.770 505)	(1) PDS456	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=15 00; FP-POS=ALL			1000 Secs (4642 Secs) [==>946.0 Secs (Split 1)] [==>946.0 Secs (Split 2)] [==>1375.0 Secs (Split 3)] [==>1375.0 Secs (Split 4)]	[1] [2]

