13629 - Characterizing the high-energy properties of a highly magnetized star

Cycle: 22, 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) CPD-28D2561	STIS/CCD STIS/FUV-MAMA	1	27-Mar-2014 21:15:57.0	yes
02	(1) CPD-28D2561	STIS/CCD STIS/FUV-MAMA	1	27-Mar-2014 21:16:03.0	yes
03	(1) CPD-28D2561	STIS/CCD STIS/FUV-MAMA	1	27-Mar-2014 21:16:08.0	yes

3 Total Orbits Used

ABSTRACT

CPD-28 2561 is the only known magnetic O-star without high-energy observations. However, because of the particular geometry of this object, it represents a crucial step towards a full understanding of the dynamic magnetospheres of high-mass stars. We propose to fill this gap by observing it in X-rays as well as in UV, both with high-resolution and with a monitoring to sample crucial phases. These complementary data will help us constrain the energetics, shock physics and 3D structure of the magnetosphere of this unique object.

OBSERVING DESCRIPTION

This program is designed to obtain UV spectroscopy of the magnetic massive star CPD-28D2561 with HST/STIS in order to diagnose the density and velocity structure of the cooler material trapped in its magnetosphere. This information will provide the context required to interpret contemporaneously acquired X-ray spectra from XMM-Newton correctly, and to model both the hot and cool components of the star's circumstellar enviroment completely. STIS/E140M observations are planned at 3 phases of the 73.41-day rotation period in order to constrain the magnetospheric structure at 3 different orientations. The phases correspond to two maxima (as defined by the variation of Halpha equivalent width; these are phases 0.0 and 0.5) and one minimum (either 0.25 or 0.75). The E140M grating provides optimal wavelength coverage and resolution of the resonance lines that are key to the analysis. Adequate S/N (about 50) can be obtained for each of the 3 visits in a single orbit. The target does not violate health or safety limits in this configuration.

REAL TIME JUSTIFICATION

N/A

CALIBRATION JUSTIFICATION

N/A

ADDITIONAL COMMENTS

N/A

Visit

Proposal 13629, Maximum 1 (01), implementation Fri Mar 28 01:16:17 GMT 2014

Diagnostic Status: No Diagnostics

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

Special Requirements: Period 73.41 D AND ZERO-PHASE HJD2454645.49; GROUP 01,02,03 WITHIN 73.4D

Comments: This exposure should be taken at phase=0. +- 0.02
We would prefer to have all data taken within the same 73d period and simultaneously with XMM if possible (i.e. either the 73.4d cycle in May-June or the 73.4d cycle in Nov-Dec 2014).

Fixed Targets

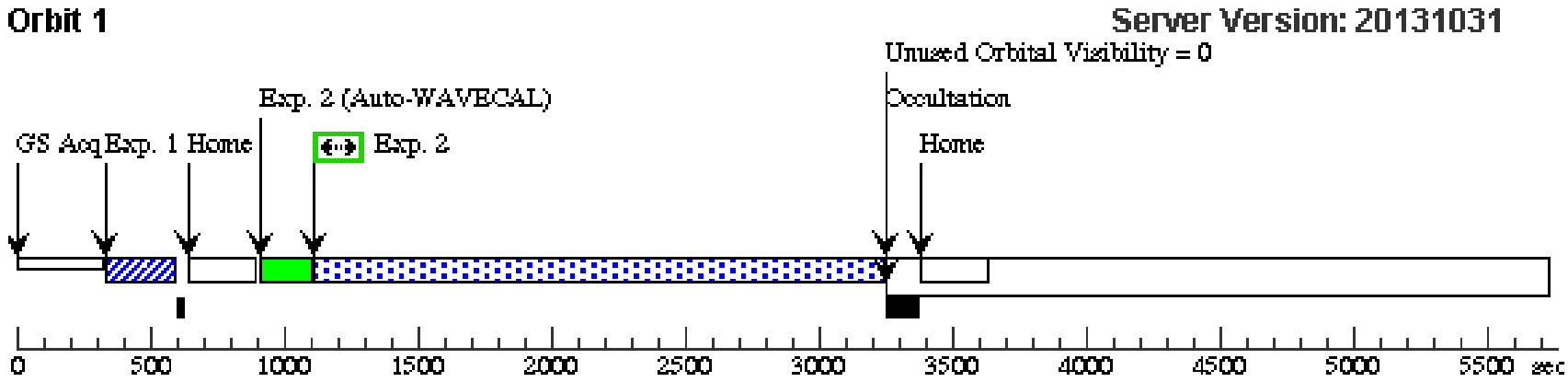
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CPD-28D2561	RA: 07 55 52.8506 (118.9702108d)		V=10.09	Reference Frame: ICRS
	Alt Name1: CD-28D5104	Dec: -28 37 46.79 (-28.62966d)		B-V=0.04	
		Equinox: J2000			

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.566083)	(1) CPD-28D2561	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.98 TO 0.02		1 Secs (1 Secs)	
								[==>]	***[1]***
2	(STIS.sp.566082)	(1) CPD-28D2561	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A		PHASE 0.98 TO 0.02		2600 Secs (2110 Secs)	
								[==>2110.0 Secs]	***[1]***

Orbit Structure



Visit

Proposal 13629, Maximum 2 (02), implementation Fri Mar 28 01:16:19 GMT 2014

Diagnostic Status: No Diagnostics

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

Special Requirements: Period 73.41 D AND ZERO-PHASE HJD2454645.49; GROUP 02,01,03 WITHIN 73.4D

Comments: This exposure should be taken at phase=0.5 +- 0.02
We would prefer to have all data taken within the same 73d period and simultaneously with XMM if possible (i.e. either the 73.4d cycle in May-June or the 73.4d cycle in Nov-Dec 2014).

Fixed Targets

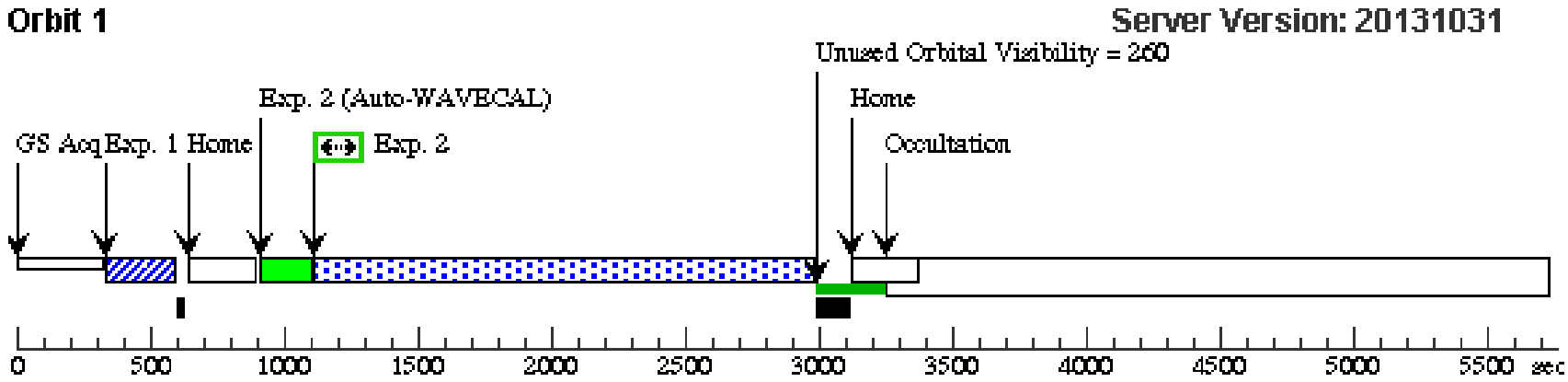
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CPD-28D2561	RA: 07 55 52.8506 (118.9702108d)		V=10.09	Reference Frame: ICRS
	Alt Name1: CD-28D5104	Dec: -28 37 46.79 (-28.62966d)		B-V=0.04	
		Equinox: J2000			

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.566083)	(1) CPD-28D2561	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.48 TO 0.52		1 Secs (1 Secs)	
								[==>]	***[1]***
2	(STIS.sp.566082)	(1) CPD-28D2561	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A		PHASE 0.48 TO 0.52		2600 Secs (1850 Secs)	
								[==>1850.0 Secs]	***[1]***

Orbit Structure



Visit

Proposal 13629, Minimum (03), implementation Fri Mar 28 01:16:19 GMT 2014

Diagnostic Status: No Diagnostics

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

Special Requirements: Period 73.41 D AND ZERO-PHASE HJD2454645.49; GROUP 03,01,02 WITHIN 73.4D

Comments: This exposure should be taken at phase=0.25 or 0.75 +- 0.02.
We would prefer to have all data taken within the same 73d period and simultaneously with XMM if possible (i.e. either the 73.4d cycle in May-June or the 73.4d cycle in Nov-Dec 2014).

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CPD-28D2561	RA: 07 55 52.8506 (118.9702108d)		V=10.09	Reference Frame: ICRS
	Alt Name1: CD-28D5104	Dec: -28 37 46.79 (-28.62966d)		B-V=0.04	
		Equinox: J2000			

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.566083)	(1) CPD-28D2561	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.23 TO 0.27		1 Secs (1 Secs)	
								[==>]	***[1]***
2	(STIS.sp.566082)	(1) CPD-28D2561	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A		PHASE 0.23 TO 0.27		2600 Secs (2000 Secs)	
								[==>2000.0 Secs]	***[1]***

Orbit Structure