



18484 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Cycle: 34, 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) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:22.0	yes
02	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:22.0	yes
03	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:23.0	yes
04	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:23.0	yes
05	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:24.0	yes

<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>
06	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:24.0	yes
07	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:25.0	yes
08	(1) FEIGE-20	STIS/CCD STIS/FUV-MAMA	1	05-Oct-2026 18:01:25.0	yes

8 Total Orbits Used

ABSTRACT

We request Chandra and Hubble observations to characterise the X-ray and ultraviolet variability of the hot white dwarf HS 0209+0832. The white dwarf is accreting material from a remnant planetary system with chemical abundances that match no known object. TESS observations reveal a periodic 4.4 day signal, an extremely rare variability mode for hot white dwarfs. We suggest two hypotheses, both of which would be extraordinary discoveries: First, this may be only the second known example of an EUV variable white dwarf; Second, the signals could reveal an evaporating giant planet. We will obtain a soft X-ray light curve and spectrum of the system to search for EUV variation to test these hypotheses, along with phase-resolved ultraviolet spectra to search for metal line variability.

OBSERVING DESCRIPTION

The aim is to acquire phase resolved E140M spectra of the white dwarf HS0209+0832 (Feige 20). Eight exposures should be taken over the 4.399 day period identified with TESS.

We estimate (etc run 2370262) that a single E140M observation should return S/N of about 10 to 20 over the spectrum. Data should be obtained in time-tag mode.

The ephemeris of the periodic behaviour is unknown so the submission date was used.

Proposal 18484 - Visit 01 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 01, implementation									Mon Oct 05 22:01:25 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000		V=13.84		Reference Frame: ICRS		
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0 TO 0.125		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1									
	Server Version: 20260828									

Proposal 18484 - Visit 02 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 02, implementation										Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA										
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000	V=13.84	Reference Frame: ICRS					
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.										
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)		
									[==>]	[1]	
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.125 TO 0. 25		1600 Secs (1761 Secs)		
									[==>1761.0 Secs]	[1]	
Orbit Structure	Orbit 1 Server Version: 20260828 The diagram illustrates the timeline of Orbit 1, spanning from 0 to 6000 seconds. Key events and phases are marked along the timeline: GS Acq: Ground Station Acquisition at the start of the orbit. Exp. 1: First exposure, indicated by a blue hatched bar. Home: Transition to the Home position. Exp. 2 (Auto-WAVECAL): Second exposure, indicated by a green bar. Exp. 2: Third exposure, indicated by a green box with a double-headed arrow. Occultation: Period of occultation, indicated by a black bar. Home: Transition back to the Home position. Unused Orbital Visibility = 0: Indicated by a long black bar at the end of the orbit.										

Proposal 18484 - Visit 03 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 03, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000	V=13.84	Reference Frame: ICRS				
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.25 TO 0.3 75		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1									
	Server Version: 20260828									

Proposal 18484 - Visit 04 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 04, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000	V=13.84	Reference Frame: ICRS				
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.375 TO 0. 5		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1 Server Version: 20260828									

Proposal 18484 - Visit 05 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 05, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000		V=13.84	Reference Frame: ICRS			
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.5 TO 0.62 5		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1 Server Version: 20260828 Timeline labels: GS Acq, Exp. 1, Home, Exp. 2 (Auto-WAVECAL), Exp. 2, Occultation, Home, Unused Orbital Visibility = 0									

Proposal 18484 - Visit 06 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 06, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000		V=13.84		Reference Frame: ICRS		
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.625 TO 0. 75		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1 Server Version: 20260828 GS Acq Exp. 1 Home Exp. 2 (Auto-WAVECAL) Exp. 2 Occultation Unused Orbital Visibility = 0 Home 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 sec									

Proposal 18484 - Visit 07 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 07, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000		V=13.84		Reference Frame: ICRS		
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.75 TO 0.8 75		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1 Server Version: 20260828									

Proposal 18484 - Visit 08 - Planet or EUV variation? Chandra and Hubble observations of a variable white dwarf

Visit	Proposal 18484, Visit 08, implementation									Mon Oct 05 22:01:26 GMT 2026
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: Period 4.399 D AND ZERO-PHASE HJD2461315									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	FEIGE-20	RA: 02 12 4.8544 (33.0202267d) Dec: +08 46 50.89 (8.78080d) Equinox: J2000	Proper Motion RA: 80.074 mas/yr Proper Motion Dec: -25.774000073397474 mas/yr Parallax: 0.0120996" Epoch of Position: 2000		V=13.84	Reference Frame: ICRS			
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.									
	SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[DA, DZ] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2370260)	(1) FEIGE-20	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs)	
									[==>]	[1]
	2	(2370262)	(1) FEIGE-20	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	BUFFER-TIME=27 2	PHASE 0.875 TO 0		1600 Secs (1761 Secs)	
									[==>1761.0 Secs]	[1]
Orbit Structure	Orbit 1 Server Version: 20260828									