



18041 - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Cycle: 33, Proposal Category: GO

(UV Initiative)

(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	(2) 2026OBC	STIS/CCD STIS/NUV-MAMA	1	11-Jun-2026 15:21:36.0	yes
02	(2) 2026OBC	STIS/CCD STIS/FUV-MAMA	1	11-Jun-2026 15:21:36.0	yes
03	(2) 2026OBC	STIS/CCD STIS/FUV-MAMA	1	11-Jun-2026 15:21:36.0	yes
04	(2) 2026OBC	STIS/CCD STIS/NUV-MAMA	1	11-Jun-2026 15:21:37.0	yes
05	(2) 2026OBC	STIS/CCD STIS/NUV-MAMA	1	11-Jun-2026 15:21:37.0	yes
06	(2) 2026OBC	STIS/CCD STIS/NUV-MAMA	1	11-Jun-2026 15:21:37.0	yes

6 Total Orbits Used

ABSTRACT

We propose a disruptive ToO program with HST/STIS to obtain two epochs of UV spectra of a newly discovered Type Ibn supernova (SN) within 250 Mpc. Type Ibn SNe are a rare class of fast-evolving transients that exhibit strong interaction between SN ejecta and dense circumstellar material (CSM), as evidenced by their rapidly evolving light curves and narrow helium lines in their spectra. This dense CSM likely originates from enhanced mass loss during the final years of massive star evolution, but the physical mechanisms driving this remain poorly understood. Studying Type Ibn SNe offers valuable insights into the late stages of massive star evolution and the processes that lead to their explosions--fundamental questions in transient astronomy. UV spectroscopy provides critical diagnostics of the progenitor surface composition, mass, and ejecta geometry. These properties can only be precisely constrained through UV data, enabling a comprehensive exploration of progenitor diversity and offering deeper

insight into the nature of Type Ibn explosions.

OBSERVING DESCRIPTION

We propose a disruptive ToO UV spectroscopic sequence of a newly discovered Type Ibn supernova within 250 Mpc using HST/STIS FUV and NUV MAMA detectors. The sequence will consist of two epochs separated by approximately 10 days, with the first epoch scheduled before or near the optical peak. The primary goal is to capture the UV line evolution of Type Ibn supernovae, providing insights into their progenitor systems and explosion mechanisms.

The first epoch will be a disruptive Target of Opportunity, using the G140L and G230L gratings, while the second epoch, taken about 10 days later, will use the G230L grating only.

Proposal 18041 - First Epoch (NUV) (01) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Thu Jun 11 19:21:38 GMT 2026

Visit	Proposal 18041, First Epoch (NUV) (01), implementation										Thu Jun 11 19:21:38 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: STIS/NUV-MAMA, STIS/CCD										
	Special Requirements: SEQ 01,02,03 WITHIN 2 D; ON HOLD ; TOO MIN RESPONSE TIME 2.0D; TOO MAX RESPONSE TIME 5.0D										
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc On Hold Comments: We will trigger the first epoch on a newly discovered Type Ibn supernova. We understand that the stated response time represents a lower limit on what STScI can accommodate, but an earlier observation would maximize the information we can obtain about the progenitor system.										
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195		V=15.5		Reference Frame: ICRS		
	Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	acuqisition (STIS.ta.235 3895)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				22 Secs (22 Secs)		
									[>=>]		[1]
	2	NUV 1 (STIS.sp.23 53884)	(2) 2026OBC	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=18 21			2000 Secs (2000 Secs)		
									[>=>]		[1]
Orbit Structure	Orbit 1 Server Version: 20260319 Timeline details: GS Acq (0-50s), Exp. 1 (50-100s, blue hatched), Pointing Maneuver (100-150s), Exp. 2 (Auto-WAVECAL) (150-1000s, green solid), Exp. 2 (1000-3000s, blue checkered), Unused Orbital Visibility = 6 (3000-3500s, black solid), Occultation (3000-3100s, black solid), Home (3100-3500s, white solid). A green box with a double-headed arrow highlights the transition between Exp. 1 and Exp. 2.										

Proposal 18041 - First Epoch (FUV 1) (02) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Thu Jun 11 19:21:38 GMT 2026

Visit	Proposal 18041, First Epoch (FUV_1) (02), implementation										Thu Jun 11 19:21:38 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA										
	Special Requirements: SEQ 01,02,03 WITHIN 2 D; ON HOLD ; TOO MIN RESPONSE TIME 2.0D; TOO MAX RESPONSE TIME 5.0D										
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc On Hold Comments: We will trigger the first epoch on a newly discovered Type Ibn supernova. We understand that the stated response time represents a lower limit on what STScI can accommodate, but an earlier observation would maximize the information we can obtain about the progenitor system.										
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195		V=15.5		Reference Frame: ICRS		
Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	acuqisition (STIS.ta.235 3895)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				22 Secs (22 Secs)		
									[>=>]		[1]
	2	FUV 1 (STIS.sp.23 53907)	(2) 2026OBC	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=76 81			2000 Secs (2000 Secs)		
									[>=>]		[1]
Orbit Structure	Orbit 1 Server Version: 20260319										

Proposal 18041 - First Epoch (FUV_2) (03) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Thu Jun 11 19:21:38 GMT 2026

Visit	Proposal 18041, First Epoch (FUV_2) (03), implementation									
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: SEQ 01,02,03 WITHIN 2 D; ON HOLD ; TOO MIN RESPONSE TIME 2.0D; TOO MAX RESPONSE TIME 5.0D									
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc On Hold Comments: We will trigger the first epoch on a newly discovered Type Ibn supernova. We understand that the stated response time represents a lower limit on what STScI can accommodate, but an earlier observation would maximize the information we can obtain about the progenitor system.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195	V=15.5	Reference Frame: ICRS				
Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	acuqisition (STIS.ta.235 3895)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				22 Secs (22 Secs)	
									[>=>]	[1]
	2	FUV 2 (STIS.sp.23 53907)	(2) 2026OBC	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=76 81			2000 Secs (2000 Secs)	
									[>=>]	[1]
Orbit Structure	Orbit 1									
	Server Version: 20260319									

Proposal 18041 - Second Epoch (NUV 1) (04) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Visit	Proposal 18041, Second Epoch (NUV_1) (04), implementation								Thu Jun 11 19:21:38 GMT 2026	
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/NUV-MAMA, STIS/CCD									
	Special Requirements: AFTER 01 BY 6 D TO 12 D; SEQ 04,05,06 WITHIN 2 D; ON HOLD									
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc On Hold Comments: The second visit will be taken around 10d after the first visit									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195		V=15.5		Reference Frame: ICRS		
Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	acuqisition (STIS.ta.235 3896)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				54 Secs (54 Secs)	
									[==>]	[1]
	2	NUV 1 (STIS.sp.23 53891)	(2) 2026OBC	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=19 28			1850 Secs (1850 Secs)	
									[==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20260319 Timeline GS Acq Exp. 1 Pointing Maneuver Exp. 2 (Auto-WAVECAL) Exp. 2 Unused Orbital Visibility = 28 Occultation Home 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 sec									

Proposal 18041 - Second Epoch (NUV 2) (05) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Visit	Proposal 18041, Second Epoch (NUV_2) (05), implementation										Thu Jun 11 19:21:38 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: STIS/NUV-MAMA, STIS/CCD										
	Special Requirements: SEQ 04,05,06 WITHIN 2 D; ON HOLD										
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc										
On Hold Comments: The second visit will be taken around 10d after the first visit											
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195		V=15.5		Reference Frame: ICRS		
	Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	acuqisition (STIS.ta.235 3896)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				54 Secs (54 Secs)		
									[==>]		[1]
	2	NUV 2 (STIS.sp.23 53891)	(2) 2026OBC	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=19 28			1850 Secs (1850 Secs)		
									[==>]		[1]
Orbit Structure	Orbit 1 Server Version: 20260319 GS Acq Exp. 1 Pointing Maneuver Exp. 2 (Auto-WAVECAL) Exp. 2 Unused Orbital Visibility = 28 Occultation Home 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 sec										

Proposal 18041 - Second Epoch (NUV_3) (06) - Unveiling the Progenitors of Type Ibn Supernovae with Early UV Spectroscopy

Visit	Proposal 18041, Second Epoch (NUV_3) (06), implementation										Thu Jun 11 19:21:38 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: STIS/NUV-MAMA, STIS/CCD										
	Special Requirements: SEQ 04,05,06 WITHIN 2 D; ON HOLD										
	Comments: We will trigger the program on a newly discovered Type Ibn supernova within 250 Mpc										
On Hold Comments: The second visit will be taken around 10d after the first visit											
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	2026OBC	RA: 01 07 49.4247 (16.9559363d) Dec: +41 59 43.38 (41.99538d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 0.0195		V=15.5		Reference Frame: ICRS		
	Comments: Category=EXT-STAR Description=[SUPERNOVA] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	acuqisition (STIS.ta.235 3896)	(2) 2026OBC	STIS/CCD, ACQ, F28X50LP	MIRROR				54 Secs (54 Secs)		
									[==>]		[1]
	2	NUV 3 (STIS.sp.23 53891)	(2) 2026OBC	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=19 28			1850 Secs (1850 Secs)		
									[==>]		[1]
Orbit Structure	Orbit 1 Server Version: 20260319 GS Acq Exp. 1 Pointing Maneuver Exp. 2 (Auto-WAVECAL) Exp. 2 Unused Orbital Visibility = 28 Occultation Home 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 sec										