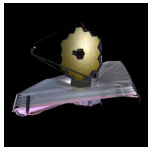

12774 - Taking aim at Precision Cosmology with SN Atalanta

Cycle: 4, Proposal Category: DD

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OBSERVATIONS

Folder	***Observation***	***Label***	***Observing Template***	***Science Target***
Observation Folder				
	1	NIRSpec	NIRSpec Fixed Slit Spectroscopy	(32) SMACS0723-GLSN-1
	2	NIRCam	NIRCam Imaging	(32) SMACS0723-GLSN-1

ABSTRACT

A multiply imaged supernova, SN Atalanta, has been discovered in JWST/NIRCam imaging of the galaxy cluster SMACS J0723.3-7327 — the iconic Early Release Observation deep field. Two images are currently visible at ~25x magnification, with a model-predicted time delay of 20–30 observer-frame days. Available photometry is consistent with a Type IIP SN near the end of its plateau, a phase whose sharp subsequent decline is well suited to precise time-delay measurement. However, the extremely faint host galaxy (~29.5 mag) has no spectroscopic redshift, and the SN classification remains photometric. Both are required to convert the time delay into a measurement of H0. We request 4 HST orbits and 3.3 hours of JWST time to obtain multi-epoch imaging of the post-plateau drop-off and a single NIRSpec PRISM spectrum for redshift and classification. With

existing lens models anchored by deep multi-facility coverage of this cluster, we estimate a ~5–10% H0 measurement from this system alone. SN Atalanta is actively fading and will be beyond spectroscopic reach before the next JWST visibility window.

OBSERVING DESCRIPTION

We propose 4 HST orbits and 3.3 hours of JWST time to follow up SN Atalanta, a multiply imaged supernova discovered in the galaxy cluster SMACS J0723.3-7327. Three epochs of HST/WFC3-IR imaging in F110W and F160W will sample the post-plateau decline of both SN images, providing a precise photometric time delay. A single JWST visit pairs NIRCam imaging in F115W/F150W/F300M/F444W with NIRSpec fixed-slit PRISM spectroscopy. The NIRCam epoch fills the HST observability gap and matches the discovery filters, while the NIRSpec spectrum delivers a spectroscopic redshift for the faint host galaxy and a SN classification via H-alpha and other diagnostic emission lines. Together these observations enable a 5–10% measurement of H0 from one of the most well-characterized lensing clusters in existence.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(32)	SMACS0723-GLSN-1	RA: 07 23 17.7040 (110.8237667d) Dec: -73 27 10.74 (-73.45298d) Equinox: J2000		
Comments: *Category=Star* *Description=[Type II supernovae]*				
(33)	SMACS0723-GLSN-2	RA: 07 23 18.0329 (110.8251371d) Dec: -73 27 7.89 (-73.45219d) Equinox: J2000		
Comments: *Category=Star* *Description=[Type II supernovae]*				
(34)	NIRSpec-TA	RA: 07 23 13.6358 (110.8068158d) Dec: -73 27 6.21 (-73.45173d) Equinox: J2000		
Comments: *Category=Star* *Description=[O stars]* *Extended=NO*				

Observation

Proposal 12774, Observation 1: NIRSpec

Thu Jun 25 15:00:37 GMT 2026

Diagnostic Status: Warning

Observing Template: NIRSpec Fixed Slit Spectroscopy

Diagnostics

(NIRSpec (Obs 1)) Warning (Form): Observers are responsible for checking that target acquisition is feasible.

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(32)	SMACS0723-GLSN-1	RA: 07 23 17.7040 (110.8237667d) Dec: -73 27 10.74 (-73.45298d) Equinox: J2000		

Comments:
Category=Star
Description=[Type II supernovae]

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	34 NIRSpec-TA	WATA	SUB2048	F140X	NRSRAPID	3	1	1	3.628	

Template

HFF Readout Mode	Slit	Subarray
false	S200A1	FULL

Dithers

#	Primary Dither Positions	Sub-Pixel Pattern
1	5	NONE

Spectral Elements

#	Grating/Filter	Slit	Readout Pattern	Groups/Int	Integrations/Exp	#	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	PRISM/CLEAR	S200A1	NRSIRS2	9	1	1	NONE	5	5	3355.445	

Special Requirements	
	Before Date 07-JUL-2026:00:00:00 Group Observations 1, 2, Non-interruptible

Observation

Proposal 12774, Observation 2: NIRCam

Thu Jun 25 15:00:37 GMT 2026

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(32)	SMACS0723-GLSN-1	RA: 07 23 17.7040 (110.8237667d) Dec: -73 27 10.74 (-73.45298d) Equinox: J2000		

Comments:
Category=Star
Description=[Type II supernovae]

Template

Module	Subarray	Target Placement
ALL	FULL	Module B center (small extended source)

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		SMALL-GRID-DITHER		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F115W	F444W	BRIGHT1	10	1	4	4	815.995	
2	F150W	F300M	BRIGHT1	10	1	4	4	815.995	

Special Requirements

Offset 38.0 arcsec, -30.0 arcsec
Fiducial Point Override NRCBS_FULL

Group Observations 1, 2, Non-interruptible