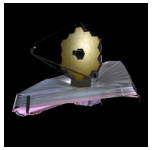

9296 - A supernova at z=7.3

Cycle: 3, Proposal Category: DD

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	EARLY_TIME_SN	NIRCam Imaging	(1) GRB250314A
	2	LATE_TIME_ONLY_IF_HOST_CONTAMINAATED	NIRCam Imaging	(1) GRB250314A

ABSTRACT

We propose to obtain a snapshot detection and characterisation of a supernova associated with a gamma-ray burst at z=7.3. The exceptional sensitivity of NIRCAM across a decade in wavelength provides the capability to identify the unambiguous fingerprint of a typical GRB-supernova at the red end, where the spectrum will rise sharply between 2 and 4.5 microns, while also being sensitive to more exotic supernova properties that may arise from GRBs in the very early Universe (where the supernova ejecta may be re-energised by the action of a central engine). These observations can detect (or, perhaps equally interestingly, rule out) the presence of the most distant supernova observed to date. In turn, we can then compare the luminosity and colours of the supernova to those seen in more local GRBs to test for any changes in SN properties at high redshift. These observations will hone our ability to study supernovae at high redshift and test the feasibility of more in-depth follow-up (multi-epoch imaging, spectroscopy) of future examples discovered either in deep field surveys or (GRB or otherwise) triggered observations. We also request a late-time host subtraction template should it be necessary, but stress that we will only request these observations should it be apparent they are necessary from our initial epoch.

OBSERVING DESCRIPTION

Our strategy is to obtain NIRCAM observations of GRB 250314A in the visibility window in May-July 2025. Observations in mid-late June will correspond to the rest-frame V-band (observed F444W) peak of supernova seen in GRBs (e.g. SN~1998bw).

For NIRCAM, we will use module B with an offset to put the source on one of the amplifiers; we will use the SHALLOW4 reads with six groups per integration and six dithers for a total exposure time of 1868 per filter (double in the case of F150W2 and F277W). These observations will provide 3-

sigma depths of F090W=28.6, F115W=28.6, F150W2= 30.3, F200W=29.0, F277W=29.6, F356W=29.2, F410M=28.4, F444W=28.9.

Proposal 9296 - Targets - A supernova at z=7.3

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	GRB250314A	RA: 13 25 12.1600 (201.3006667d) Dec: -05 16 55.10 (-5.28197d) Equinox: J2000		

Comments:
Category=Unidentified
Description=[High Latitude Field]

Observation

Proposal 9296, Observation 1: EARLY_TIME_SN Tue Nov 18 18:01:31 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	GRB250314A	RA: 13 25 12.1600 (201.3006667d) Dec: -05 16 55.10 (-5.28197d) Equinox: J2000		

Comments:
Category=Unidentified
Description=[High Latitude Field]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	3	STANDARD	8" (SMALL)	2

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F150W2	F277W	SHALLOW4	6	2	12	6	3800.817	
2	F115W	F356W	SHALLOW4	6	1	6	6	1868.198	
3	F090W	F410M	SHALLOW4	6	1	6	6	1868.198	
4	F200W	F444W	SHALLOW4	6	1	6	6	1868.198	

Special Requirements

Between Dates 15-JUN-2025:00:00:00 and 03-JUL-2025:00:00:00
Offset 30.0 arcsec, -30.0 arcsec

Same Aperture PA 1, 2

Observation

Proposal 9296, Observation 2: LATE_TIME_ONLY_IF_HOST_CONTAMINAATED Tue Nov 18 18:01:31 GMT 2025

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
(1)	GRB250314A	RA: 13 25 12.1600 (201.3006667d) Dec: -05 16 55.10 (-5.28197d) Equinox: J2000		

Comments:
Category=Unidentified
Description=[High Latitude Field]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	3	STANDARD	8" (SMALL)	2

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F150W2	F277W	SHALLOW4	6	2	12	6	3800.817	
2	F115W	F356W	SHALLOW4	6	1	6	6	1868.198	
3	F090W	F410M	SHALLOW4	6	1	6	6	1868.198	
4	F200W	F444W	SHALLOW4	6	1	6	6	1868.198	

Special Requirements

Offset 30.0 arcsec, -30.0 arcsec
On Hold The decision on the second epoch will depend on the outcome of the first epoch of observations.

Same Aperture PA 1, 2