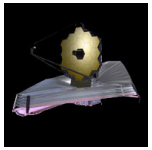

12299 - Catching Eos by the Tail

Cycle: 5, Proposal Category: GO

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Epoch 1				
	1	NIRCam	NIRCam Imaging	(1) SN_Eos_Image_101.1
	3	MIRI	MIRI Imaging	(1) SN_Eos_Image_101.1
Epoch 2				
	4	NIRCam	NIRCam Imaging	(1) SN_Eos_Image_101.1
	5	MIRI	MIRI Imaging	(1) SN_Eos_Image_101.1
Epoch 3				
	6	NIRCam	NIRCam Imaging	(1) SN_Eos_Image_101.1
	7	MIRI	MIRI Imaging	(1) SN_Eos_Image_101.1

ABSTRACT

SN Eos, a remarkable SN IIP at z = 5.13, is the highest-redshift SN ever classified. Due to strong lensing magnification, SN Eos is effectively ~ 60 times brighter than its non-lensed apparent brightness and is doubly-imaged, with the images only a few rest-frame hours apart. This magnifying effect afforded an unprecedented opportunity to spectroscopically observe a core-collapse SN near the Epoch of Reionization, but further observations are needed to take full advantage of this incredible legacy dataset. We propose Cycle 5 NIRCam and MIRI observations of SN Eos to better constrain its phase and bolometric luminosity, as well as measure its nickel and envelope masses and put into context the properties we

measure from its plateau-phase spectrum. Observations are needed now to take full advantage of this dataset that will enable it to be the best currently-available test of low-z core-collapse SN analogs to the high-z SNe that enriched the Universe. Understanding these events and how they influence galaxy evolution and the chemical enrichment history of the Universe are key science goals of JWST, and our ~ 29 hour program promises to make a large advance toward reaching them.

OBSERVING DESCRIPTION

We propose three epochs of observations, two in the fall observing window, one in the spring
(to better sample the light curve evolution). For each epoch, we will take NIRCam imaging
in three filter pairs: F150W2/F277W, F150W2/F356W, and F150W2/F444W. The F150W2
observations will allow for a deep co-added image that may be able to resolve the underlying host of SN Eos. For each LW filter, we will achieve a S/N of 5 by combining the flux of
both images with 2100 s, 600 s, and 515 s of exposure time for the LW filter respectively.. We will combine this with MIRI F770W imaging that will detect the rest-frame NIR of SN Eos. These observations will take 6 hours each. In total, the imaging component of this program will require 21.2 hours of science time.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		
Comments: *Category=Star* *Description=[Supernovae]*				
(2)	SN_Eos_Image_101.2	RA: 19 31 49.1820 (292.9549250d) Dec: -26 34 28.65 (-26.57463d) Equinox: J2000		
Comments: *Category=Star* *Description=[Supernovae]*				
(3)	TA_Star	RA: 19 31 48.6498 (292.9527075d) Dec: -26 34 29.26 (-26.57479d) Equinox: J2000		
Comments: *Category=Star* *Description=[O stars]*				
(4)	MACS1931	RA: 19 31 49.6000 (292.9566667d) Dec: -26 34 34.00 (-26.57611d) Equinox: J2000		
Comments: *Category=Clusters of Galaxies* *Description=[Rich clusters]*				
(5)	SN_Eos_Image_101.3	RA: 19 31 48.3138 (292.9513075d) Dec: -26 34 40.07 (-26.57780d) Equinox: J2000		
Comments: *Category=Star* *Description=[Supernovae]*				
(6)	SN_Eos_Image_101.4	RA: 19 31 48.9477 (292.9539487d) Dec: -26 34 45.94 (-26.57943d) Equinox: J2000		
Comments: *Category=Star* *Description=[Supernovae]*				
(7)	SN_Eos_Image_101.5	RA: 19 31 52.4378 (292.9684908d) Dec: -26 34 32.26 (-26.57563d) Equinox: J2000		
Comments: *Category=Star* *Description=[Supernovae]*				

Observation

Proposal 12299, Observation 1: NIRCam

Fri Mar 13 23:02:54 GMT 2026

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)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEX	4	STANDARD		1

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	10	1	4	4	2104.407	
2	F150W2	F356W	BRIGHT2	7	1	4	4	601.259	
3	F150W2	F444W	BRIGHT2	6	1	4	4	515.365	

Special Requirements

Between Dates 29-AUG-2024:00:00:00 and 09-OCT-2026:00:00:00
Offset 45.0 arcsec, 40.0 arcsec

Group Observations 1, 3, Non-interruptible

Observation

Proposal 12299, Observation 3: MIRI

Fri Mar 13 23:02:54 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	CYCLING	1	4						DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	F770W	FASTR1	100	20	1	Dither 1	4	80	22411.223	

Special Requirements

Group Observations 1, 3, Non-interruptible

Observation

Proposal 12299, Observation 4: NIRCam

Fri Mar 13 23:02:54 GMT 2026

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEX	4	STANDARD		1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F070W	F277W	SHALLOW4	10	1	4	4	2104.407	
2	F070W	F356W	BRIGHT2	7	1	4	4	601.259	
3	F070W	F444W	BRIGHT2	6	1	4	4	515.365	

Special Requirements

Between Dates 07-OCT-2026:00:00:00 and 12-OCT-2026:00:00:00
Offset 45.0 arcsec, 40.0 arcsec

Group Observations 4, 5, Non-interruptible

Observation

Proposal 12299, Observation 5: MIRI

Fri Mar 13 23:02:54 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	CYCLING	1	4						DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	F770W	FASTR1	100	20	1	Dither 1	4	80	22411.223	

Special Requirements

Group Observations 4, 5, Non-interruptible

Observation

Proposal 12299, Observation 6: NIRCam

Fri Mar 13 23:02:54 GMT 2026

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEX	4	STANDARD		1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F070W	F277W	SHALLOW4	10	1	4	4	2104.407	
2	F070W	F356W	BRIGHT2	7	1	4	4	601.259	
3	F070W	F444W	BRIGHT2	6	1	4	4	515.365	

Special Requirements

Between Dates 05-APR-2027:00:00:00 and 20-OCT-2027:00:00:00
Offset 45.0 arcsec, 40.0 arcsec

Group Observations 6, 7, Non-interruptible

Observation

Proposal 12299, Observation 7: MIRI

Fri Mar 13 23:02:54 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SN_Eos_Image_101.1	RA: 19 31 49.2176 (292.9550733d) Dec: -26 34 29.46 (-26.57485d) Equinox: J2000		

Comments:
Category=Star
Description=[Supernovae]

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	CYCLING	1	4						DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	F770W	FASTR1	100	20	1	Dither 1	4	80	22411.223	

Special Requirements

Group Observations 6, 7, Non-interruptible