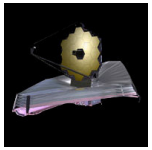

7321 - SN 2008S and NGC 300 2008-OT: Are They Terminal Electron Capture Supernovae?

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
SN2008S				
NGC300-2008OT				
	3		MIRI Imaging	(2) NGC-300-OT2008-1
	4		NIRCam Imaging	(2) NGC-300-OT2008-1

ABSTRACT

SN 2008S and NGC 300 2008-OT are the archetypical members of a class of highly reddened transients called intermediate luminosity red transients (ILRTs). All observed ILRT progenitors, including the progenitors of SN 2008S and NGC 300 2008-OT, are heavily obscured by circumstellar dust and the transients themselves are also very dusty. It is unknown what physical mechanisms produce ILRTs. One proposed explanation for ILRTs is that they are electron capture supernovae (ECSNe) resulting from the core-collapse of eight to ten solar mass super asymptotic branch stars (SAGB). We propose to obtain very late time infrared photometry of SN 2008S and NGC 300 2008-OT to investigate whether or not ILRTs have a luminous remnant. With the sensitivity of JWST in the infrared we are able to detect dust-obscured luminous remnants down to 10% the luminosity of their

progenitors. No detection would confirm that ILRTs are terminal ECSNe.

OBSERVING DESCRIPTION

We are proposing to obtain very late-time photometry for SN 2008S and NGC 300 2008-OT (the two archetypical intermediate luminosity red transients) with MIRI and NIRCam in 8 filters ranging in wavelength from 1-21 microns. In total, including overheads, we are requesting 11.9 hours of JWST time.

Proposal 7321 - Targets - SN 2008S and NGC 300 2008-OT: Are They Terminal Electron Capture Supernovae?

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	NGC-300-OT2008-1	RA: 00 54 34.1600 (13.6423333d) Dec: -37 38 28.60 (-37.64128d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Circumstellar dust, Cocoon stars, Supernovae]

Observation

Proposal 7321, Observation 3

Thu Sep 04 22:00:08 GMT 2025

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
(2)	NGC-300-OT2008-1	RA: 00 54 34.1600 (13.6423333d) Dec: -37 38 28.60 (-37.64128d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Circumstellar dust, Cocoon stars, 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	2	1	Dither 1	4	8	2231.132	
2	F1000W	FASTR1	100	2	1	Dither 1	4	8	2231.132	
3	F1500W	FASTR1	100	2	1	Dither 1	4	8	2231.132	
4	F2100W	FASTR1	25	8	1	Dither 1	4	32	2297.733	

Special Requirements

Group Observations 3, 4, Non-interruptible

Observation

Proposal 7321, Observation 4

Thu Sep 04 22:00:08 GMT 2025

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
(2)	NGC-300-OT2008-1	RA: 00 54 34.1600 (13.6423333d) Dec: -37 38 28.60 (-37.64128d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Circumstellar dust, Cocoon stars, Supernovae]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	4	STANDARD	8" (SMALL)	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	Optional ETC ID
1	F115W	F356W	SHALLOW4	8	1	4	4	1674.936	
2	F200W	F444W	SHALLOW4	8	1	4	4	1674.936	

Special Requirements

Offset 38.0 arcsec, 38.0 arcsec

Group Observations 3, 4, Non-interruptible