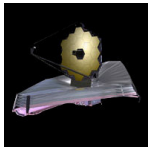

12507 - A Panoramic View of Rapid Dust Production by Disintegrating Asteroids around a White Dwarf

Cycle: 4, Proposal Category: DD

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	ZTFJ0328-1219-MIRI-LRS	MIRI Low Resolution Spectroscopy	(1) 2MASS-J03283351-1219439
	2	ZTFJ0328-1219-NIRSPEC-BOTS	NIRSpec Bright Object Time Series	(1) 2MASS-J03283351-1219439

ABSTRACT

Planetary activity appears to be common around white dwarfs, with the most dramatic manifestations taking the form of deep, irregular transits from actively disintegrating asteroids. Only about a dozen such systems are currently known, yet they play a central role in our understanding of tidal disruption events and the subsequent formation and evolution of circumstellar debris disks. This proposal focuses on ZTFJ0328-1219, a white dwarf hosting transiting disintegrating asteroids that has recently entered an exceptionally active phase. Given the rarity and short-lived nature of such events, we request immediate JWST follow-up observations to constrain the physical properties of the newly produced dust, both in absorption through transits and in thermal emission via infrared excess. Beyond its immediate relevance to white dwarf planetary systems, this program has broad implications for understanding the production and evolution of dust in a wide range of astrophysical environments.

OBSERVING DESCRIPTION

This is a DDT proposal to observe the white dwarf, ZTFJ0328-1219, which within the last few weeks has entered an extremely active period with dust transits blocking up to 35% of the flux from the white dwarf.

This program will obtain NIRSpec BOTS (Bright Object Time Series) spectra over the 11.35 hour observing period and obtain a single MIRI/LRS spectra consecutively, to ensure we can model the full SED.

The MIRI/LRS data will be taken with the P750L disperser, FULL subarray, and FASTR1 readout pattern. 50 groups per integration with 4 intergrations will be used to achieve our required SNR.

This program will also obtain a timeseries NIR spectra using NIRSpec BOTS mode. The period of the transiting material is 11.35 hours, and this time series data will cover the full observing period accounting for the potential of beginning the observations at the start of the main transit. The S1600A1 aperture with a fixed 1.6"x1.6" field of view is used with PRISM to cover the full 0.6-5 micron region, and SUB512 is selected with 30 groups per integration.

Proposal 12507 - Targets - A Panoramic View of Rapid Dust Production by Disintegrating Asteroids around a White Dwarf

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	2MASS-J03283351-1219439	RA: 03 28 33.5153 (52.1396471d)	Proper Motion RA: 110.73899999999999 mas/yr	
		Dec: -12 19 45.26 (-12.32924d)	Proper Motion Dec: -14.392999969459197 mas/yr	
		Equinox: J2000	Parallax: 0.0230377"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Circumstellar disks, DZ stars, White dwarfs]
Extended=NO

Observation

Proposal 12507, Observation 1: ZTFJ0328-1219-MIRI-LRS Tue Mar 17 13:00:25 GMT 2026

Diagnostic Status: Warning

Observing Template: MIRI Low Resolution Spectroscopy

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)	2MASS-J03283351-1219439	RA: 03 28 33.5153 (52.1396471d)	Proper Motion RA: 110.73899999999999 mas/yr	
		Dec: -12 19 45.26 (-12.32924d)	Proper Motion Dec: -14.392999969459197 mas/yr	
		Equinox: J2000	Parallax: 0.0230377"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Circumstellar disks, DZ stars, White dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	F560W	FAST	6	1	1	16.65	287482.04

Template

Subarray	Obtain Verification Image?
FULL	true

Dithers

#	Dither Type	No. Spectral Steps	Spectral Step Offset	No. Spatial Steps	Spatial Step Offset
1	ALONG SLIT NOD				

Pointing Verification

#	PV Readout Pattern	PV Groups/Int	PV Integrations/Exp	PV Total Integrations	PV Exposures/Dith	PV Total Dithers	PV Total Exposure Time	Optional ETC ID	Filter
1	FASTR1	6	1	1	1	1	16.65		F560W

Spectral Elements

#	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	Optional ETC ID
1	FASTR1	50	4	8	1	2	1126.666	287482.03

Special Requirements

Group Observations 1, 2, Non-interruptible

Observation

Proposal 12507, Observation 2: ZTFJ0328-1219-NIRSPEC-BOTS Tue Mar 17 13:00:25 GMT 2026

Diagnostic Status: Warning

Observing Template: NIRSpec Bright Object Time Series

Diagnostics

(ZTFJ0328-1219-NIRSPEC-BOTS (Obs 2)) Warning (Form): Exposure Duration exceeds the limit of 10000.0 seconds. Above this limit it is possible that a High Gain Antenna move may occur during the exposure.

(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)	2MASS-J03283351-1219439	RA: 03 28 33.5153 (52.1396471d)	Proper Motion RA: 110.73899999999999 mas/yr	
		Dec: -12 19 45.26 (-12.32924d)	Proper Motion Dec: -14.392999969459197 mas/yr	
		Equinox: J2000	Parallax: 0.0230377"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Circumstellar disks, DZ stars, White dwarfs]
Extended=NO

Acquisition

#	Target	TA Method	Subarray	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	WATA	SUB32	F140X	NRSRAPID	3	1	1	0.08	287482.02

Template

Subarray
SUB512

Spectral Elements

#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
1	PRISM/CLEAR	NRSRAPID	30	6145	1	1	6145	43208.199	287482.05

Special Requirements	
	Time Series Observation No Parallel Attachments Group Observations 1, 2, Non-interruptible