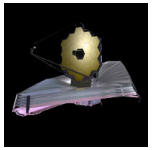

8245 - Mid-infrared overview of the turning on AGN candidate and X-ray QPE emitter SDSS1335+0728

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
SDSS1335+0728				
	1	SDSS1335+0728	MIRI Medium Resolution Spectroscopy	(1) SDSS1335+0728
	2	SDSS1335+0728_bkg	MIRI Medium Resolution Spectroscopy	(2) SDSS1335+0728_bkg

ABSTRACT

The galaxy SDSS1335+0728, which had exhibited no prior optical variations during the previous two decades, began showing significant nuclear variability in the Zwicky Transient Facility (ZTF) alert stream in December 2019. In February 2024, more than four years after the first ZTF alert, it started showing variable X-ray emission. A recent NICER monitoring program revealed a Quasi-Periodic Eruption (QPE) X-ray light curve. The X-ray/UV/optical behavior, coupled with the host-galaxy properties, suggests that SDSS1335+0728 hosts a one million solar mass black hole that is currently turning on. We propose JWST MIRI MRS spectroscopy to better understand the nature of the activity observed in SDSS1335+0728, confirm or rule out the 'turning on' AGN hypothesis, and probe the formation of a dusty torus in this potential newborn AGN.

OBSERVING DESCRIPTION

Our proposed observations use JWST MIRI MRS to understand the recent optical, X-ray, and MIR nuclear transient SDSS1335+0728. We will use all channels and gratings to cover the entire 5-28 micron spectrum. Our observations will be executed with the appropriate 4-point dither pattern for point sources and with 100 groups x 1, 1, 2 integrations in the short, medium, and long modes, respectively, to reach our desired SNR. We will use the full frame and fast readout modes, and for improved astrometry, we request simultaneous MIRI imaging. The host galaxy emission will fill the entire MIRI FOV, and thus, we request an additional background observation away from the host galaxy. These observations should be taken immediately following our science observations in a non-interruptible sequence. Our target is bright, and thus, it is sufficient to take a single background observation with the same number of groups and integrations as our science observations. Lastly, as the nucleus is a point source, we do not require dedicated target acquisition observations, and it suffices to place the target with the default JWST pointing accuracy.

Proposal 8245 - Targets - Mid-infrared overview of the turning on AGN candidate and X-ray QPE emitter SDSS1335+0728

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	SDSS1335+0728	RA: 13 35 19.9161 (203.8329838d) Dec: +07 28 7.53 (7.46876d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Active galactic nuclei, Seyfert galaxies]* *Extended=YES*				
(2)	SDSS1335+0728_bkg	RA: 13 35 22.2930 (203.8428875d) Dec: +07 28 29.92 (7.47498d) Equinox: J2000	Epoch of Position: 2000	
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Calibration* *Description=[Telescope/sky background]* *Extended=YES*				

Observation

Proposal 8245, Observation 1: SDSS1335+0728 Tue Jun 10 17:00:09 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Background Observations:[SDSS1335+0728_bkg (Obs 2)]

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)	SDSS1335+0728	RA: 13 35 19.9161 (203.8329838d) Dec: +07 28 7.53 (7.46876d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Active galactic nuclei, Seyfert galaxies]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	All MRS	YES	FULL	Allow Auto Reorder

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	POINT SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1		IMAGER	F560W	SLOWR1	11	1	1	Dither 1	4	4	1051.156	
1	SHORT(A)	MRSLONG		FASTR1	100	1	1	Dither 1	4	4	1110.016	
1	SHORT(A)	MRSSHORT		FASTR1	100	1	1	Dither 1	4	4	1110.016	
2		IMAGER	F770W	SLOWR1	11	1	1	Dither 1	4	4	1051.156	
2	MEDIUM(B)	MRSLONG		FASTR1	100	1	1	Dither 1	4	4	1110.016	
2	MEDIUM(B)	MRSSHORT		FASTR1	100	1	1	Dither 1	4	4	1110.016	
3		IMAGER	F1000W	SLOWR1	11	1	1	Dither 1	4	4	1051.156	
3	LONG(C)	MRSLONG		FASTR1	100	2	1	Dither 1	4	8	2231.132	
3	LONG(C)	MRSSHORT		FASTR1	100	2	1	Dither 1	4	8	2231.132	

Special Requirements	Sequence Observations 1, 2, Non-interruptible

Observation

Proposal 8245, Observation 2: SDSS1335+0728_bkg Tue Jun 10 17:00:09 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Background Observation For: [SDSS1335+0728 (Obs 1)]

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
(2)	SDSS1335+0728_bkg	RA: 13 35 22.2930 (203.8428875d) Dec: +07 28 29.92 (7.47498d) Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Calibration
Description=[Telescope/sky background]
Extended=YES

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
F1000W	All MRS	YES	FULL	Allow Auto Reorder

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1		IMAGER	F560W	SLOWR1	11	1	1	None	1	1	262.789	
1	SHORT(A)	MRSLONG		FASTR1	100	1	1	None	1	1	277.504	
1	SHORT(A)	MRSSHORT		FASTR1	100	1	1	None	1	1	277.504	
2		IMAGER	F770W	SLOWR1	11	1	1	None	1	1	262.789	
2	MEDIUM(B)	MRSLONG		FASTR1	100	1	1	None	1	1	277.504	
2	MEDIUM(B)	MRSSHORT		FASTR1	100	1	1	None	1	1	277.504	
3		IMAGER	F1000W	SLOWR1	11	1	1	None	1	1	262.789	
3	LONG(C)	MRSLONG		FASTR1	100	2	1	None	1	2	557.783	
3	LONG(C)	MRSSHORT		FASTR1	100	2	1	None	1	2	557.783	

Special Requirements	Sequence Observations 1, 2, Non-interruptible