



5141 - The Fornax Planetary Nebula - an LRS Pilot Study

Cycle: 3, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
FornaxPN				
	1	FornaxPN	MIRI Low Resolution Spectroscopy	(1) FORNAXPN

ABSTRACT

Our goal is to characterize the Fornax planetary nebula (PN). This PN is the only one known within the Fornax Dwarf Galaxy and was the most distant PN observed with the Infrared Spectrometer (IRS) on Spitzer. The rarity of PNe known in Local Group dwarf galaxies means we have few

options to characterize the stellar ejecta with which these objects are enriching their hosts. This makes it essential to study the few that are known in order to understand their stellar populations and better inform the models of distant, unresolvable galaxies. The PN is so faint, though, that while hints of spectral features can be seen in the IRS spectrum, it was too noisy to analyze. The high sensitivity of the Low Resolution Spectrometer (LRS) on JWST's MIRI makes it the ideal instrument for this study, requiring less than 3 hours to complete.

OBSERVING DESCRIPTION

This project will use MIRI's LRS to observe the Fornax Planetary Nebula. For Target Acquisition, we use self-TA with the Fast readout mode. With the F1000W filter, 4 Groups give the needed SNR for TA. This source is faint, so we need 360 groups, 3 integrations per exposure, and Dither with the Along Slit Nod setting. According to the ETC (132790), this will give us the required SNR of >100 for 5-11.5 μ m and 20-50 to the end of the LRS band.

Proposal 5141 - Targets - The Fornax Planetary Nebula - an LRS Pilot Study

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	FORNAXPN	RA: 02 39 49.1555 (39.9548146d)	Proper Motion RA: 0	
		Dec: -34 32 47.84 (-34.54662d)	Proper Motion Dec: 0		
		Equinox: J2000			
	<i>Comments:</i>				
	<i>Category=ISM</i>				
	<i>Description=[Planetary nebulae]</i>				
	<i>Extended=NO</i>				

Proposal 5141 - Observation 1 - The Fornax Planetary Nebula - an LRS Pilot Study

Wed Aug 14 19:00:11 GMT 2024

Observation	<p>Proposal 5141, Observation 1: FornaxPN</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: MIRI Low Resolution Spectroscopy</p>									
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)	FORNAXPN	RA: 02 39 49.1555 (39.9548146d) Dec: -34 32 47.84 (-34.54662d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0						
	<p><i>Comments:</i> <i>Category=ISM</i> <i>Description=[Planetary nebulae]</i> <i>Extended=NO</i></p>									
Acquisition	#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	
	1	SAME	F1000W	FAST	4	1	1	11.1	167592	
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	PV ETC Wkbk.Calc ID	Filter
	1	FASTR1	5	1	1	1	1	13.875		F1000W

Proposal 5141 - Observation 1 - The Fornax Planetary Nebula - an LRS Pilot Study

Spectral Elements	#	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	FASTR1	360	3	6	1	2	6005.187	167592