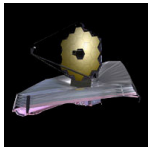

1279 - Thermal emission from Trappist-1 b

Cycle: 1, Proposal Category: GTO

INVESTIGATORS

Name	*Institution*
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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
MIRIM TRAPPIST-1b				
	1	TRAPPIST-1 b Eclipse 1	MIRI Imaging	(1) TRAPPIST-1B
	6	Repeat Visit 1.1	MIRI Imaging	(1) TRAPPIST-1B
	2	TRAPPIST-1 b Eclipse 1	MIRI Imaging	(1) TRAPPIST-1B
	3	TRAPPIST-1 b Eclipse 1	MIRI Imaging	(1) TRAPPIST-1B
	4	TRAPPIST-1 b Eclipse 1	MIRI Imaging	(1) TRAPPIST-1B
	5	TRAPPIST-1 b Eclipse 1	MIRI Imaging	(1) TRAPPIST-1B

ABSTRACT

The aim is to detect the thermal emission from the TRAPPIST-1 b exoplanet, an Earth mass like transiting exoplanet.

The emission will be obtained from photometric observations of eclipses of the exoplanet.

Given the temperature of the exoplanet, around 400 K, we will use the MIRI instrument.

Five eclipses are needed to expect a Signal over Noise ratio at the 5 sigma level when using the 12.8 microns filter.

The program is conducted in coordination with a similar program from Tom Greene; the difference between the two programs being just the use of a different MIRI filter (15.0 microns versus 12.8 microns).

This program is considered as a first step towards future ambitious programs, requiring tens of eclipses to characterize spectroscopically the atmosphere of Earth mass temperature exoplanets.

OBSERVING DESCRIPTION

We want to observe five eclipses of the Trappist-1 b exoplanet with MIRI in the imager mode (filter : F1280W).

The observations have to be done in time-series mode with no dither, with target acquistion and in full array mode to monitor at the same time a nearby relative bright star.

We do not allow for parallel observations given the high level of stability required.

The observations are time constrained; they have to start phased for eclipses.

Proposal 1279 - Targets - Thermal emission from Trappist-1 b

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Observation

Proposal 1279, Observation 1: TRAPPIST-1 b Eclipse1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: For these high precission time series observations we want to use the full array of MIRI to include a nearby background star to be used a calibraton object to monitor changes in the instrument and or telescope. This will ensure we can reach a higth photometric photometric stability. To make sure both target star and calibration star are within MIRI imager FOV we specified a source offset and PA restrictions. Further, as this is a time series observation, we specified a narrow phase range during which the observations should start to ensure the secondary eclipse is properly covered. Given the relatively long time between the submission of the proposal and the observations, the period may need to be updated.

Diagnostics

(TRAPPIST-1 b Eclipse1 (Obs 1)) 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 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray

FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	17	280	1	None	1	280	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.51087081 Days and zero-phase 2457322.51736 HJD
Aperture PA Range 51 to 90 Degrees (V3 46.16455103 to 85.16455103)
Offset 25.0 arcsec, -48.5 arcsec
Time Series Observation
No Parallel Attachments
No Parallel Attachments

Observation

Proposal 1279, Observation 6: Repeat Visit 1.1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: replace visit1.1 which has been skipped

Diagnostics

(Repeat Visit 1.1 (Obs 6)) 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 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray
FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	17	280	1	None	1	280	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.51087081 Days and zero-phase 2457322.51736 HJD
Aperture PA Range 51 to 90 Degrees (V3 46.16455103 to 85.16455103)
Offset 25.0 arcsec, -48.5 arcsec
Time Series Observation
No Parallel Attachments
No Parallel Attachments

Observation

Proposal 1279, Observation 2: TRAPPIST-1 b Eclipse1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: For these high precission time series observations we want to use the full array of MIRI to include a nearby background star to be used a calibraton object to monitor changes in the instrument and or telescope. This will ensure we can reach a higth photometric photometric stability. To make sure both target star and calibration star are within MIRI imager FOV we specified a source offset and PA restrictions. Further, as this is a time series observation, we specified a narrow phase range during which the observations should start to ensure the secondary eclipse is properly covered. Given the relatively long time between the submission of the proposal and the observations, the period may need to be updated.

Diagnostics

(TRAPPIST-1 b Eclipse1 (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)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray
FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	15	315	1	None	1	315	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.5108794 Days and zero-phase 2459785.2533425996 HJD
Time Series Observation
No Parallel Attachments
No Parallel Attachments

Observation

Proposal 1279, Observation 3: TRAPPIST-1 b Eclipse1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: For these high precission time series observations we want to use the full array of MIRI to include a nearby background star to be used a calibraton object to monitor changes in the instrument and or telescope. This will ensure we can reach a higth photometric photometric stability. To make sure both target star and calibration star are within MIRI imager FOV we specified a source offset and PA restrictions. Further, as this is a time series observation, we specified a narrow phase range during which the observations should start to ensure the secondary eclipse is properly covered. Given the relatively long time between the submission of the proposal and the observations, the period may need to be updated.

Diagnostics

(TRAPPIST-1 b Eclipse1 (Obs 3)) 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 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray
FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	15	315	1	None	1	315	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.5108794 Days and zero-phase 2459785.2533425996 HJD
Time Series Observation
No Parallel Attachments
No Parallel Attachments

Observation

Proposal 1279, Observation 4: TRAPPIST-1 b Eclipse1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: For these high precission time series observations we want to use the full array of MIRI to include a nearby background star to be used a calibraton object to monitor changes in the instrument and or telescope. This will ensure we can reach a higth photometric photometric stability. To make sure both target star and calibration star are within MIRI imager FOV we specified a source offset and PA restrictions. Further, as this is a time series observation, we specified a narrow phase range during which the observations should start to ensure the secondary eclipse is properly covered. Given the relatively long time between the submission of the proposal and the observations, the period may need to be updated.

Diagnostics

(TRAPPIST-1 b Eclipse1 (Obs 4)) 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 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray
FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	15	315	1	None	1	315	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.5108794 Days and zero-phase 2459785.2533425996 HJD
Time Series Observation
No Parallel Attachments
No Parallel Attachments

Observation

Proposal 1279, Observation 5: TRAPPIST-1 b Eclipse1 Mon Jun 12 19:00:25 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: For these high precission time series observations we want to use the full array of MIRI to include a nearby background star to be used a calibraton object to monitor changes in the instrument and or telescope. This will ensure we can reach a higth photometric photometric stability. To make sure both target star and calibration star are within MIRI imager FOV we specified a source offset and PA restrictions. Further, as this is a time series observation, we specified a narrow phase range during which the observations should start to ensure the secondary eclipse is properly covered. Given the relatively long time between the submission of the proposal and the observations, the period may need to be updated.

Diagnostics

(TRAPPIST-1 b Eclipse1 (Obs 5)) 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 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TRAPPIST-1B	RA: 23 06 29.3600 (346.6223333d)	Proper Motion RA: 922.1 mas/yr	
		Dec: -05 02 29.20 (-5.04144d)	Proper Motion Dec: -471.9 mas/yr	
		Equinox: J2000	Parallax: 0.08258"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
TRAPPIST-1 star and b planet
Category=Star
Description=[Exoplanet Systems, Exoplanets, M dwarfs, M stars]
Extended=NO

Template

Subarray
FULL

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1280W	FASTR1	15	315	1	None	1	315	13983.427	89674

Special Requirements

Phase 0.42659 to 0.45419 with period 1.5108794 Days and zero-phase 2459785.2533425996 HJD
Time Series Observation
No Parallel Attachments
No Parallel Attachments