



4534 - Exoplanet search around Altair

Cycle: 3, Proposal Category: GTO

INVESTIGATORS

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OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Altair				
	1	Altair - Roll 1	NIRCam Coronagraphic Imaging	(1) ALTAIR
	2	Altair - Roll 2	NIRCam Coronagraphic Imaging	(1) ALTAIR
	3	Vega - Altair Reference star	NIRCam Coronagraphic Imaging	(2) VEGA

ABSTRACT

Coronagraphic imaging of Altair to directly image orbiting planets.

The proximity of Altair (just 5 pc away) enables detection of planets at just a few AU orbital separation, while its young age (100 Myr) results in relatively low-mass detection limits for cooling self-luminous exoplanets.

NIRCam coronagraphic observations will be sensitive to Jupiter-mass planets at 5 AU and Saturn-mass planets outside of 10 AU - two of the Solar

System's planets would be detectable if they were around Altair!

OBSERVING DESCRIPTION

Coronagraphic imaging of Altair to discover orbiting planets.

Altair is observed with 2 roll angles separated by 5-10 degrees.

Vega is observed as a reference star, with 5 dithers to provide PSF diversity.

Target acquisition on these bright stars requires RADID integrations, even after dimming the stars with the neutral density filter.

The shortest integration provides $\text{SNR} > 300$.

All science observations are with the F430R NIRCcam coronagraphic mask, with F200W / F444W filters.

For these bright stars, readout is RAPID.

Up to 10 groups of observations are possible before saturation.

The total exposure time for the reference star is the same as for each roll of the primary target, once the 5 dithers are added together.

Proposal 4534 - Targets - Exoplanet search around Altair

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
	(1)	ALTAIR	RA: 19 50 46.9985 (297.6958271d) Dec: +08 52 5.96 (8.86832d) Equinox: J2000	Proper Motion RA: 536.23 mas/yr Proper Motion Dec: 385.29 mas/yr Parallax: 0.19495" Epoch of Position: 2000	
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=Star Description=[A stars] Extended=NO				
(2)	VEGA	RA: 18 36 56.3364 (279.2347350d) Dec: +38 47 1.28 (38.78369d) Equinox: J2000	Proper Motion RA: 200.94 mas/yr Proper Motion Dec: 286.23 mas/yr Parallax: 0.130" Epoch of Position: 2000		
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=Star Description=[A stars, Debris disks] Extended=NO				

Proposal 4534 - Observation 1 - Exoplanet search around Altair

Tue Jun 04 23:00:09 GMT 2024

Observation	Proposal 4534, Observation 1: Altair - Roll 1 Diagnostic Status: Warning Observing Template: NIRCam Coronagraphic Imaging									
	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (Altair - Roll 1 (Obs 1)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(1)	ALTAIR	RA: 19 50 46.9985 (297.6958271d) Dec: +08 52 5.96 (8.86832d) Equinox: J2000		Proper Motion RA: 536.23 mas/yr Proper Motion Dec: 385.29 mas/yr Parallax: 0.19495" Epoch of Position: 2000					
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=Star Description=[A stars] Extended=NO										
Acquisition	#	Target	Filter	Target Brightness	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	SAME	F335M	BRIGHT (ND Square)	RAPID	9	1	1	0.504	157600.4
Template	Module	Coronagraphic Mask			Obtain Astrometric Confirmation Images?		Subarray	Dither Pattern		
	A	MASK430R			true		SUB320A430R	NONE		
Confirmation	#	Conf. Readout Pattern		Conf. Groups/Int	Conf. Integrations/Exp		Conf. Total Integrations	Conf. Total Exposure Time	Conf. Total Dithers	
	1	RAPID		5	2		2	118.104	1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F200W	F444W	RAPID	5	650	1	650	4182.568	157600.6

Proposal 4534 - Observation 1 - Exoplanet search around Altair

PSF References	Vega - Altair Reference star (Obs 3) (PSF Reference; Filters [F200W/F444W]) Additional Justification: false
Special Requirements	Between Dates 11-OCT-2024:00:00:00 and 18-OCT-2024:00:00:00 Offset -0.006 arcsec, -0.012 arcsec No Parallel Attachments Sequence Observations 1, 2, 3, Non-interruptible Aperture PA Offset 1 from 2 by 8 to 10 Degrees (Same offsets in V3)

Proposal 4534 - Observation 2 - Exoplanet search around Altair

Tue Jun 04 23:00:09 GMT 2024

Observation	<p>Proposal 4534, Observation 2: Altair - Roll 2</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Coronagraphic Imaging</p>									
Diagnostics	<p>(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(Altair - Roll 2 (Obs 2)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(1)	ALTAIR	RA: 19 50 46.9985 (297.6958271d) Dec: +08 52 5.96 (8.86832d) Equinox: J2000		Proper Motion RA: 536.23 mas/yr Proper Motion Dec: 385.29 mas/yr Parallax: 0.19495" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=Star</i></p> <p><i>Description=[A stars]</i></p> <p><i>Extended=NO</i></p>									
Acquisition	#	Target	Filter	Target Brightness	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	SAME	F335M	BRIGHT (ND Square)	RAPID	9	1	1	0.504	157600.4
Template	Module		Coronagraphic Mask		Obtain Astrometric Confirmation Images?		Subarray	Dither Pattern		
	A		MASK430R		false		SUB320A430R	NONE		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F200W	F444W	RAPID	5	650	1	650	4182.568	157600.6
PSF References	<p>Vega - Altair Reference star (Obs 3) (PSF Reference; Filters [F200W/F444W])</p> <p>Additional Justification: false</p>									

Proposal 4534 - Observation 2 - Exoplanet search around Altair

Special Requirements

Offset -0.006 arcsec, -0.012 arcsec

Sequence Observations 1, 2, 3, Non-interruptible

Aperture PA Offset 1 from 2 by 8 to 10 Degrees (Same offsets in V3)

Proposal 4534 - Observation 3 - Exoplanet search around Altair

Tue Jun 04 23:00:10 GMT 2024

Observation	<p>Proposal 4534, Observation 3: Vega - Altair Reference star</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCcam Coronagraphic Imaging</p>									
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)	VEGA	RA: 18 36 56.3364 (279.2347350d) Dec: +38 47 1.28 (38.78369d) Equinox: J2000		Proper Motion RA: 200.94 mas/yr Proper Motion Dec: 286.23 mas/yr Parallax: 0.130" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=Star</i></p> <p><i>Description=[A stars, Debris disks]</i></p> <p><i>Extended=NO</i></p>									
Acquisition	#	Target	Filter	Target Brightness	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	SAME	F335M	BRIGHT (ND Square)	RAPID	9	1	1	0.504	157600.5
Template	Module		Coronagraphic Mask		Obtain Astrometric Confirmation Images?		Subarray		Dither Pattern	
	A		MASK430R		false		SUB320A430R		5-POINT-BOX	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
	1	F200W	F444W	RAPID	5	140	5	700	4504.304	157600.7
PSF References	PSF Reference: true									

Proposal 4534 - Observation 3 - Exoplanet search around Altair

Special Requirements

Offset -0.006 arcsec, -0.012 arcsec

Sequence Observations 1, 2, 3, Non-interruptible