18114 - Unveiling Hidden Protoplanets: Direct Extinction Measurement at Optical Wavelengths in the Planet-Formed Gap of AS209

Cycle: 33, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
Dr. Gabriele Cugno (PI) (ESA Member) (Contact)	**Universitat Zurich**
Prof. Stefano Facchini (CoI) (ESA Member) (CoPI)	Universita di Milano
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Dr. Jaehan Bae (CoI)	University of Florida
Dr. Felipe Mauricio Alarcon (CoI) (ESA Member)	Universita di Milano
Dr. Yifan Zhou (CoI) (AdminUSPI)	The University of Virginia
Dr. Laurent Pueyo (CoI)	Space Telescope Science Institute

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:23.0	yes
02	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:25.0	yes
03	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:27.0	yes
04	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:29.0	yes
05	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:31.0	yes
06	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:33.0	yes
07	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:35.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
08	(1) EM-AS-209	WFC3/UVIS	1	25-Nov-2025 16:00:37.0	yes
09	(1) EM-AS-209	WFC3/IR	1	25-Nov-2025 16:00:40.0	yes
10	(1) EM-AS-209	WFC3/IR	1	25-Nov-2025 16:00:43.0	yes
11	(1) EM-AS-209	WFC3/IR	1	25-Nov-2025 16:00:47.0	yes
12	(1) EM-AS-209	WFC3/IR	1	25-Nov-2025 16:00:50.0	yes

12 Total Orbits Used

ABSTRACT

While disk substructures provide compelling indirect evidence for the presence of accreting protoplanets, direct detections remain frustratingly scarce and extinction by circumstellar and circumplanetary dust is often invoked as an explanation. AS 209bkg, a background star shining through the outer gap of the well-studied disk around AS 209, offers a unique opportunity to test this hypothesis. By performing transmission spectroscopy of AS 209bkg, we can directly measure the extinction caused by dust in a planet-forming disk gap for the first time. Existing data constrain the extinction at wavelengths longer than 1 um, but the extinction solutions diverge at shorter wavelengths. This is a critical spectral region for the search for protoplanets, as most searches for accretion signatures target the Halpha line at 0.656um - right where extinction may be strongest. We propose to use the imaging capabilities of WFC3 in three filters spanning 0.8-1.2um to detect AS 209bkg and measure the wavelength dependence of extinction across this key range. Our results will provide the first empirical calibration of optical dust attenuation in disk gaps and will directly inform the interpretation of low-yield Halpha imaging surveys, helping determine whether elusive protoplanets are truly missing or simply veiled in dust.

OBSERVING DESCRIPTION

The primary goal of our observations is to use the direct-imaging technique to detect a background star shining through the disk gap in the AS209 system. We will observe AS209 using WFC3/UVIS and WFC3/IR with the F814W, F098M and F125W filters for 8,2 and 2 consecutive orbits. We will use the UVIS2-C512C-SUB IRSUB256-FIX subarrays to reduce readout time and improve observing efficiency. The images will be taken using a box dithering pattern with a dithering distance of 0.02 and 0.065 arcsec (0.5 pixels) for UVIS and IR on both sides. This will allow reconstructing Nyquist-sampled images, which are necessary for the post-processing of high-contrast images. At each dithering position, several copies of exposures will be taken. The exposure time and iteration numbers are determined to maximize the point spread function signal to noise ratio, avoid saturation and maximize the usage of orbital visibility.

Every visit contains one orbit. Observations are linked by timing requirements and will be executed continuously. To facilitate two-roll angular differential imaging, the second visit will have a 25 to 35 (80 to 100) degrees difference in telescope orientation for UVIS (IR) compared to those of the previous visit. For UVIS, every second visit will have the same orientation as two visits before. The orientation constraints ensure that in no visit the background star's signal (PA 110 deg) coincides with the position of one of the PSF spike.

Based on suggestions from STScI and the contact scientist on a similar program executed during the past cycles, we switch on the FLASH and set the level to 20 to mitigate the CTE loss.

Visit

Proposal 18114, AS209 - F814W (01), implementation Tue Nov 25 21:00:51 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (01) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
								[==>(Pattern 2, Copy 6)]	
								[==>(Pattern 2, Copy 7)]	
								[==>(Pattern 2, Copy 8)]	
								[==>(Pattern 2, Copy 9)]	
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								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 3, Copy 3)]	
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								[==>(Pattern 3, Copy 5)]	
								[==>(Pattern 3, Copy 6)]	
								[==>(Pattern 3, Copy 7)]	
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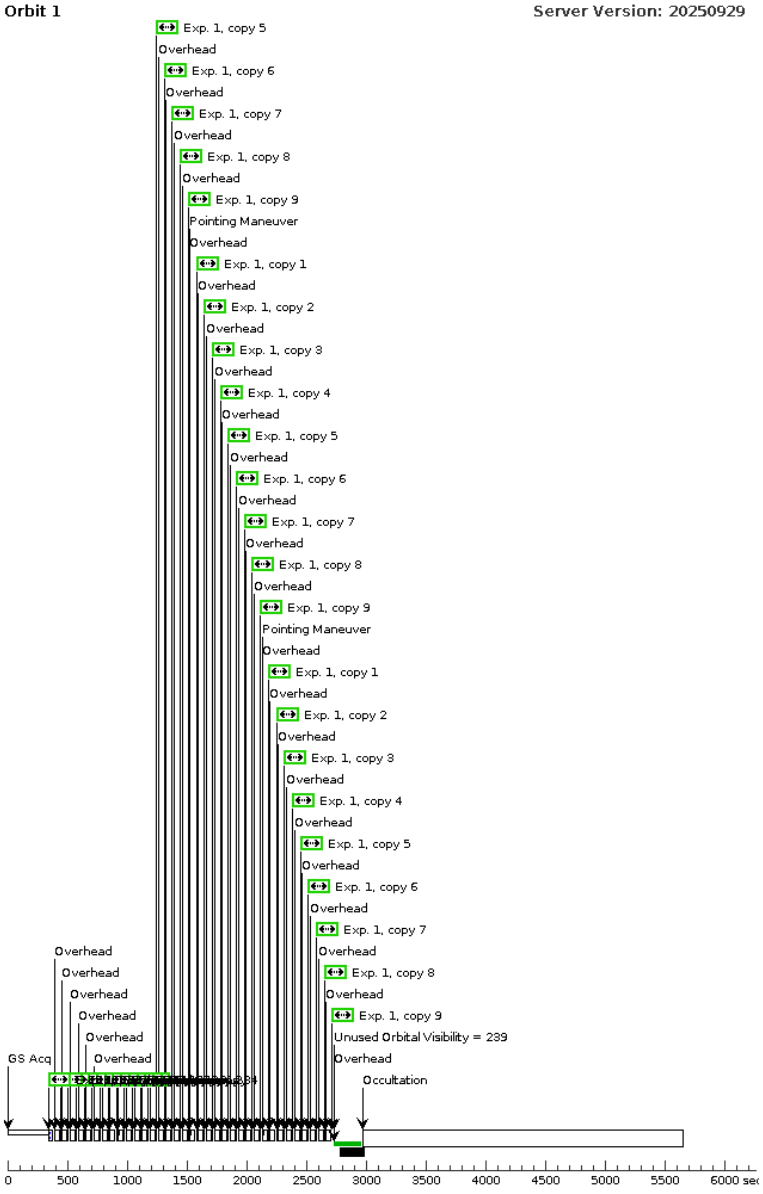
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F814W (02), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 25D TO 35D FROM 01; AFTER 01 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F814W (02)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (02) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
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								[==>(Pattern 3, Copy 9)]	
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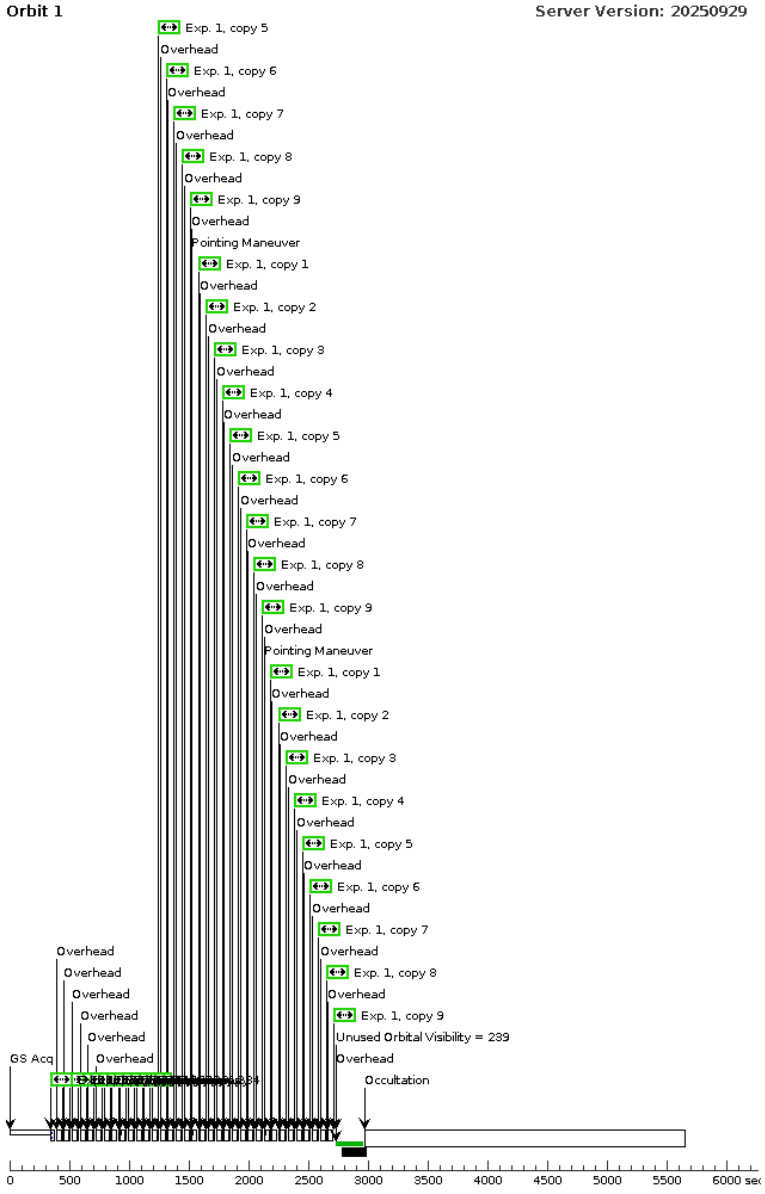
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F814W (03), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (03) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
								[==>(Pattern 2, Copy 6)]	
								[==>(Pattern 2, Copy 7)]	
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								[==>(Pattern 2, Copy 9)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	
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								[==>(Pattern 3, Copy 8)]	
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
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								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
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								[==>(Pattern 4, Copy 9)]	

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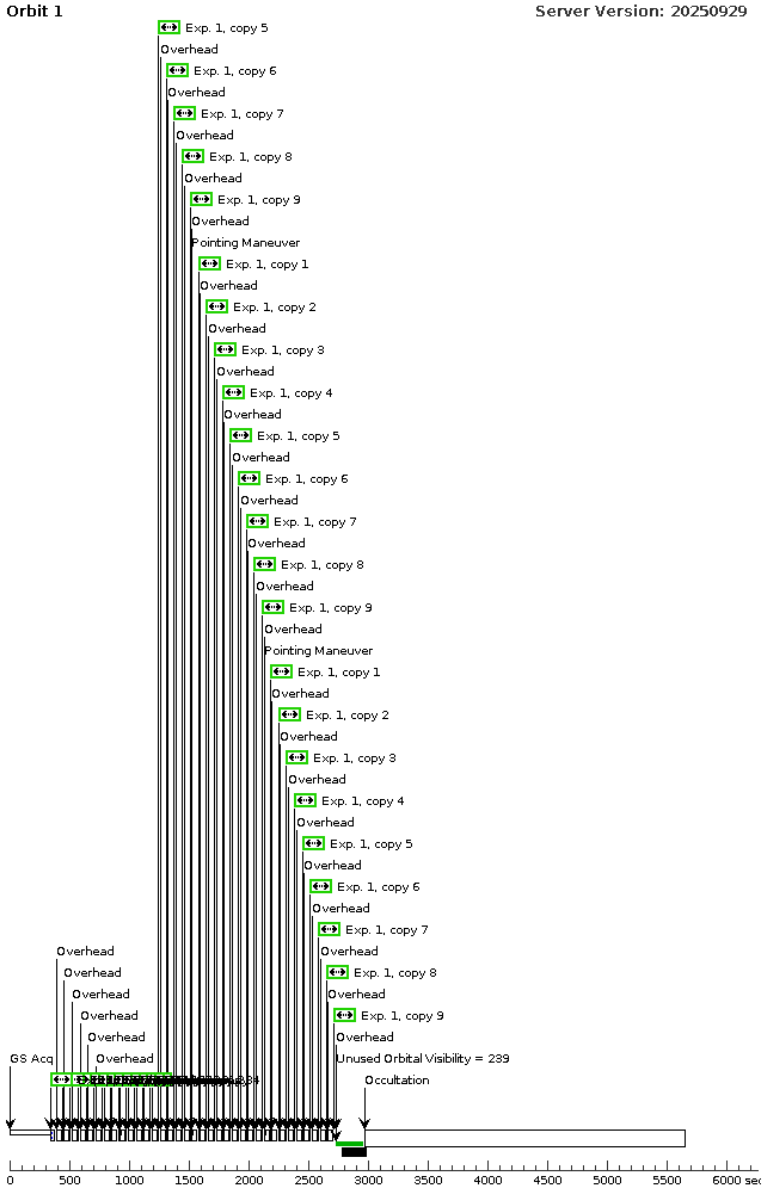
Orbit Structure



Visit

Proposal 18114, AS209 - F814W (04), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 25D TO 35D FROM 03; AFTER 03 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F814W (04)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (04) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
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								[==>(Pattern 2, Copy 7)]	
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								[==>(Pattern 3, Copy 8)]	
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

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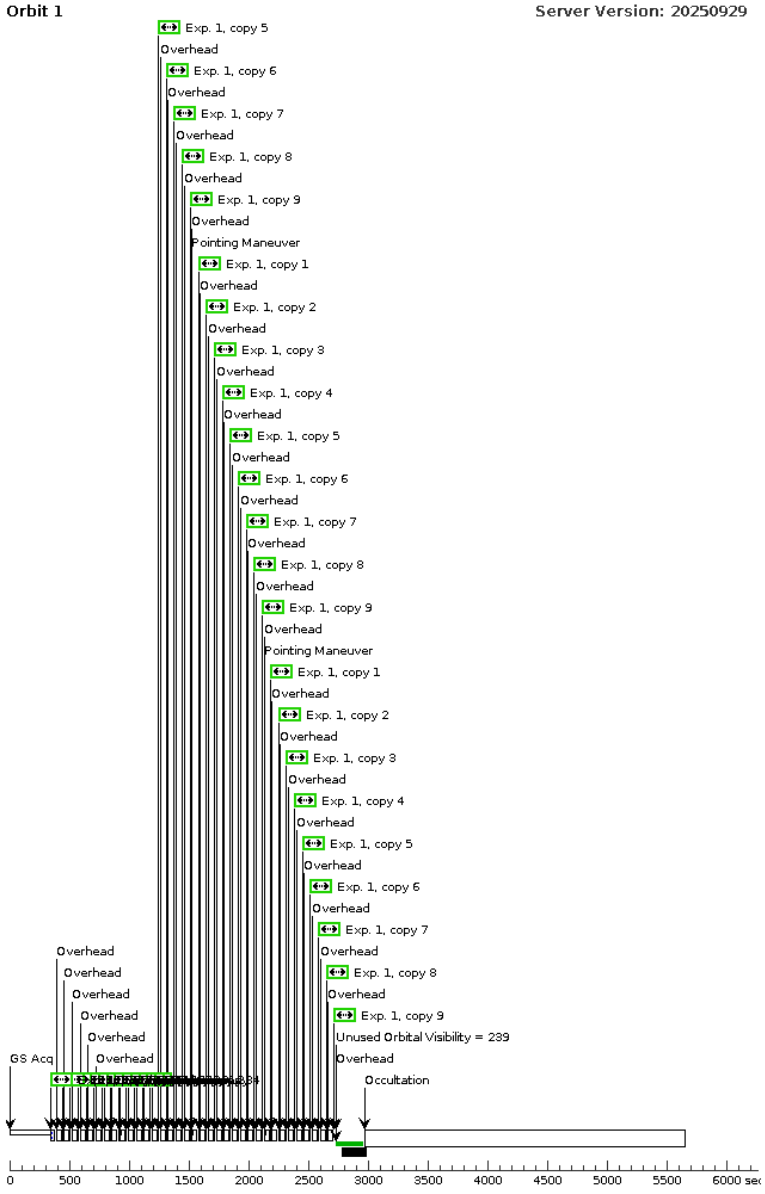
Orbit Structure



Visit

Proposal 18114, AS209 - F814W (05), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (05) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
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								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
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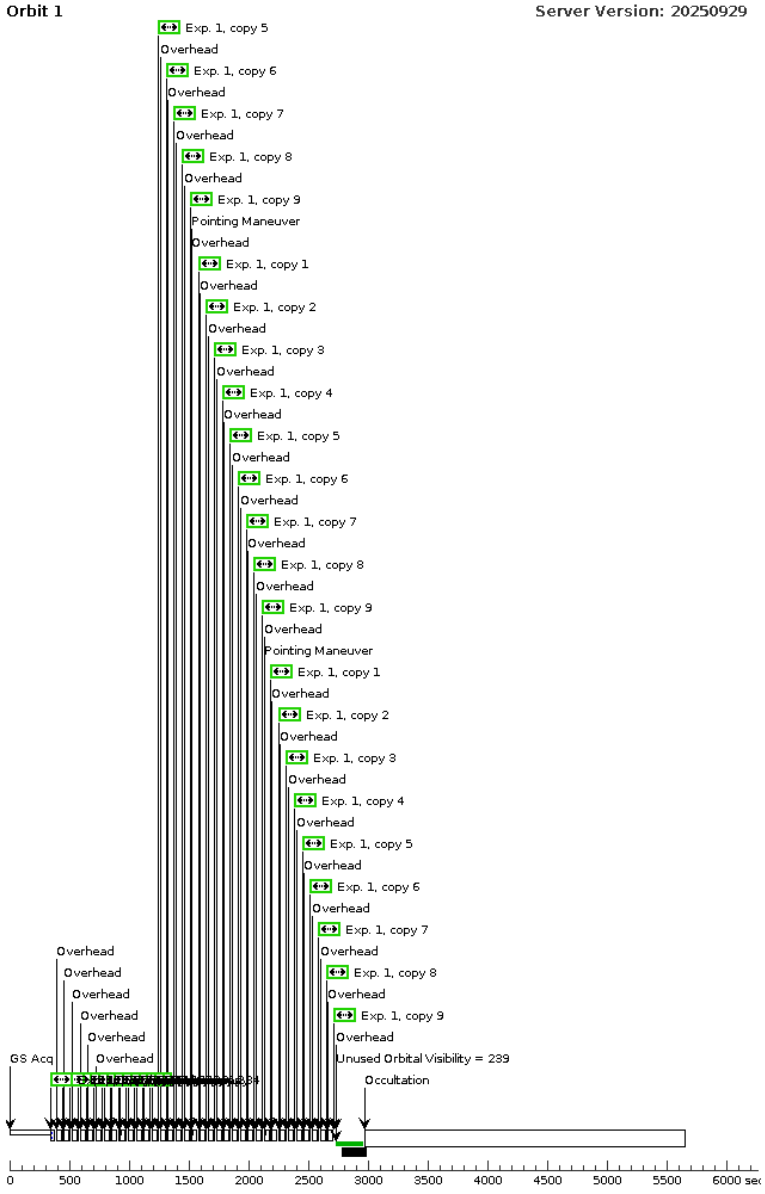
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F814W (06), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 25D TO 35D FROM 05; AFTER 05 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F814W (06)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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

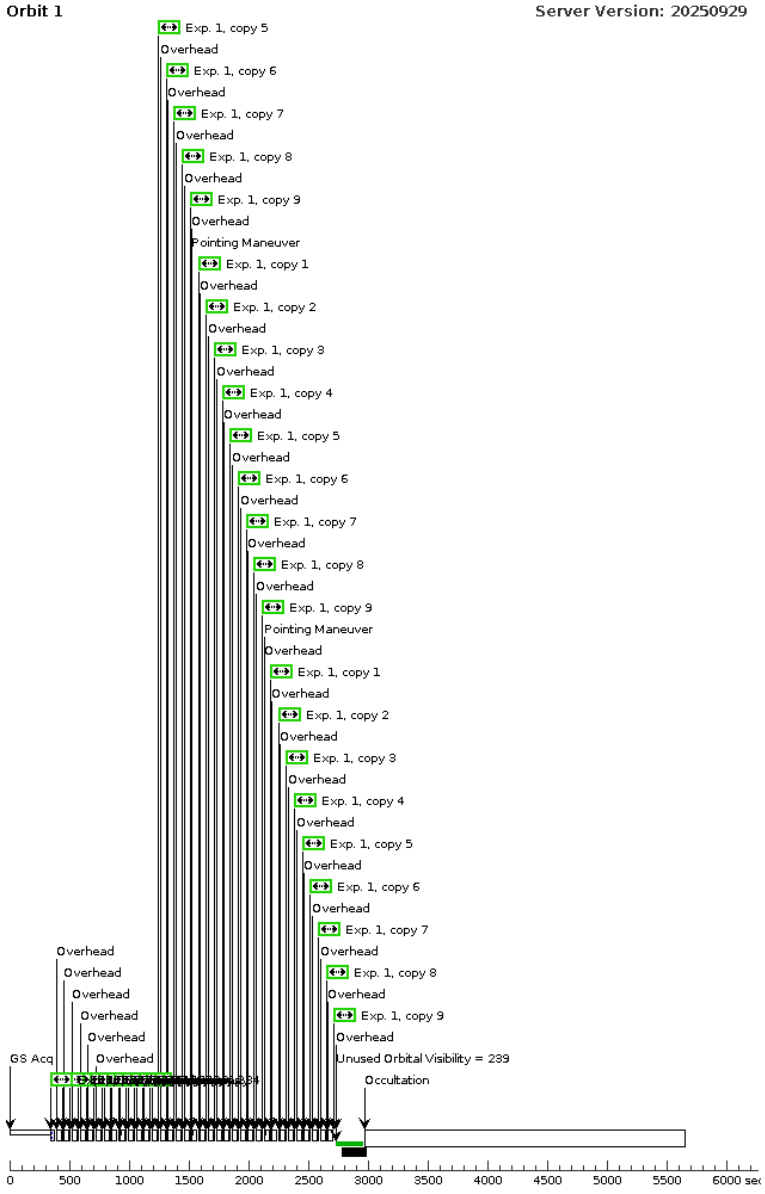
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (06) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
								[==>(Pattern 2, Copy 6)]	
								[==>(Pattern 2, Copy 7)]	
								[==>(Pattern 2, Copy 8)]	
								[==>(Pattern 2, Copy 9)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 3, Copy 3)]	
								[==>(Pattern 3, Copy 4)]	
								[==>(Pattern 3, Copy 5)]	
								[==>(Pattern 3, Copy 6)]	
								[==>(Pattern 3, Copy 7)]	
								[==>(Pattern 3, Copy 8)]	
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F814W (07), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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

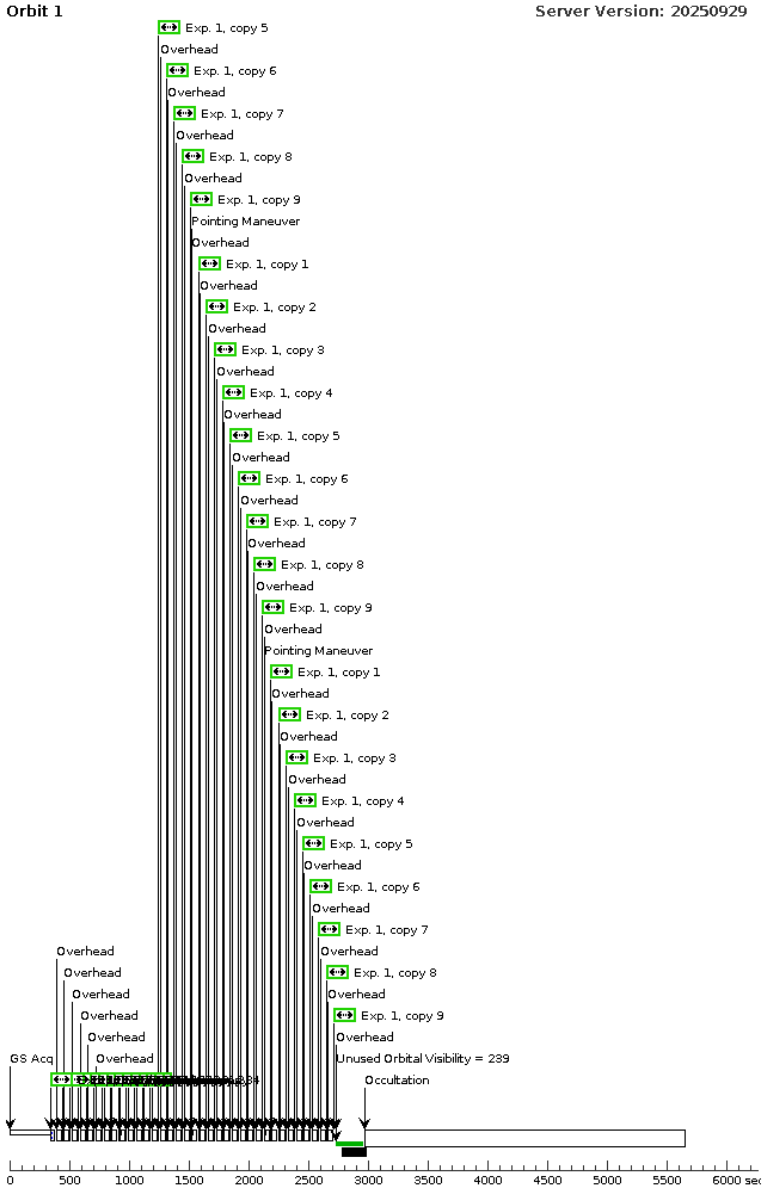
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (07) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
								[==>(Pattern 2, Copy 6)]	
								[==>(Pattern 2, Copy 7)]	
								[==>(Pattern 2, Copy 8)]	
								[==>(Pattern 2, Copy 9)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 3, Copy 3)]	
								[==>(Pattern 3, Copy 4)]	
								[==>(Pattern 3, Copy 5)]	
								[==>(Pattern 3, Copy 6)]	
								[==>(Pattern 3, Copy 7)]	
								[==>(Pattern 3, Copy 8)]	
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F814W (08), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 25D TO 35D FROM 07; AFTER 07 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F814W (08)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=0.02			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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

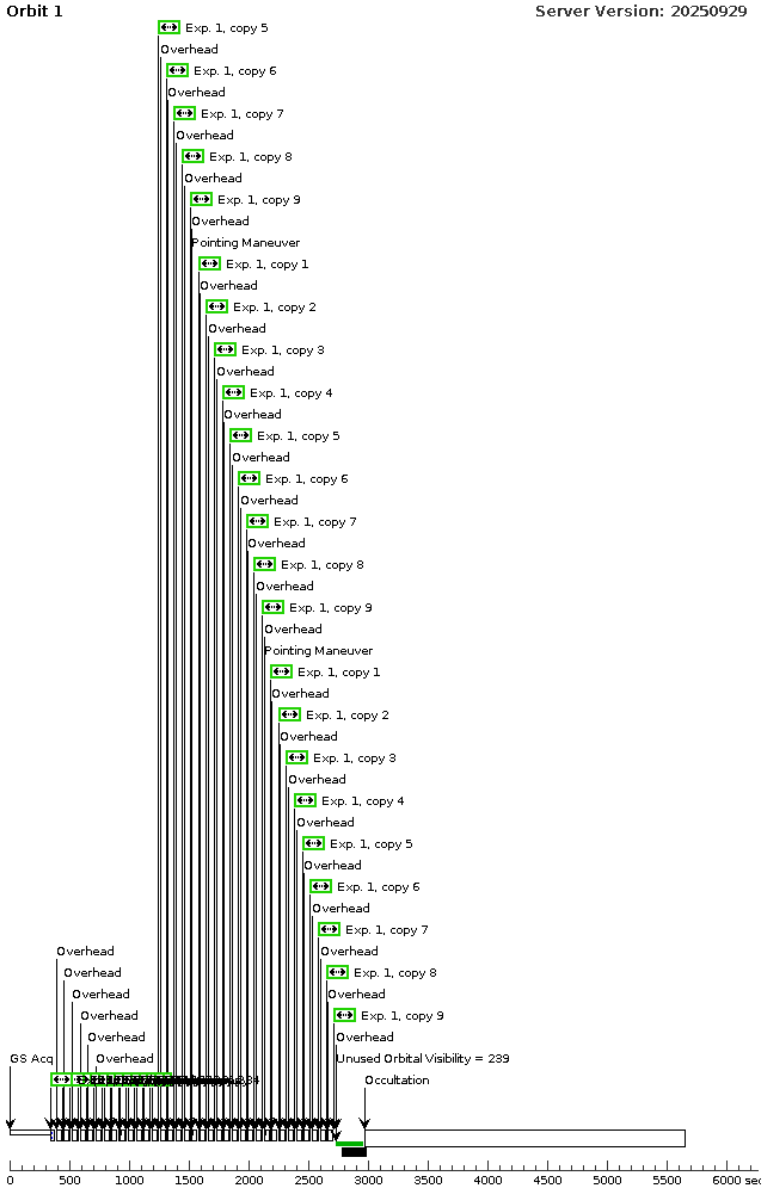
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EM-AS-209	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=20		Pattern 1, Exps 1-1 in AS209 - F814W (08) (1)	1.5 Secs X 9 (54 Secs)	
								[==>(Pattern 1, Copy 1)]	***[1]***
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 1, Copy 4)]	
								[==>(Pattern 1, Copy 5)]	
								[==>(Pattern 1, Copy 6)]	
								[==>(Pattern 1, Copy 7)]	
								[==>(Pattern 1, Copy 8)]	
								[==>(Pattern 1, Copy 9)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 2, Copy 4)]	
								[==>(Pattern 2, Copy 5)]	
								[==>(Pattern 2, Copy 6)]	
								[==>(Pattern 2, Copy 7)]	
								[==>(Pattern 2, Copy 8)]	
								[==>(Pattern 2, Copy 9)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 3, Copy 3)]	
								[==>(Pattern 3, Copy 4)]	
								[==>(Pattern 3, Copy 5)]	
								[==>(Pattern 3, Copy 6)]	
								[==>(Pattern 3, Copy 7)]	
								[==>(Pattern 3, Copy 8)]	
								[==>(Pattern 3, Copy 9)]	
								[==>(Pattern 4, Copy 1)]	
								[==>(Pattern 4, Copy 2)]	
								[==>(Pattern 4, Copy 3)]	
								[==>(Pattern 4, Copy 4)]	
								[==>(Pattern 4, Copy 5)]	
								[==>(Pattern 4, Copy 6)]	
								[==>(Pattern 4, Copy 7)]	
								[==>(Pattern 4, Copy 8)]	
								[==>(Pattern 4, Copy 9)]	

Comments: The exposure time to reach saturation is estimated to be 0.8 seconds. Given the large separation of the candidate, we plan to observe with exposures of 1.0 s, slightly saturating the PSF core. This will not affect our ability to center the image, as we can use the PSF spikes for that. This has been shown in past works on UVIS data.

Orbit Structure



Visit

Proposal 18114, AS209 - F125W (09), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.065	Center Pattern=false		
	Line Spacing=0.0605			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

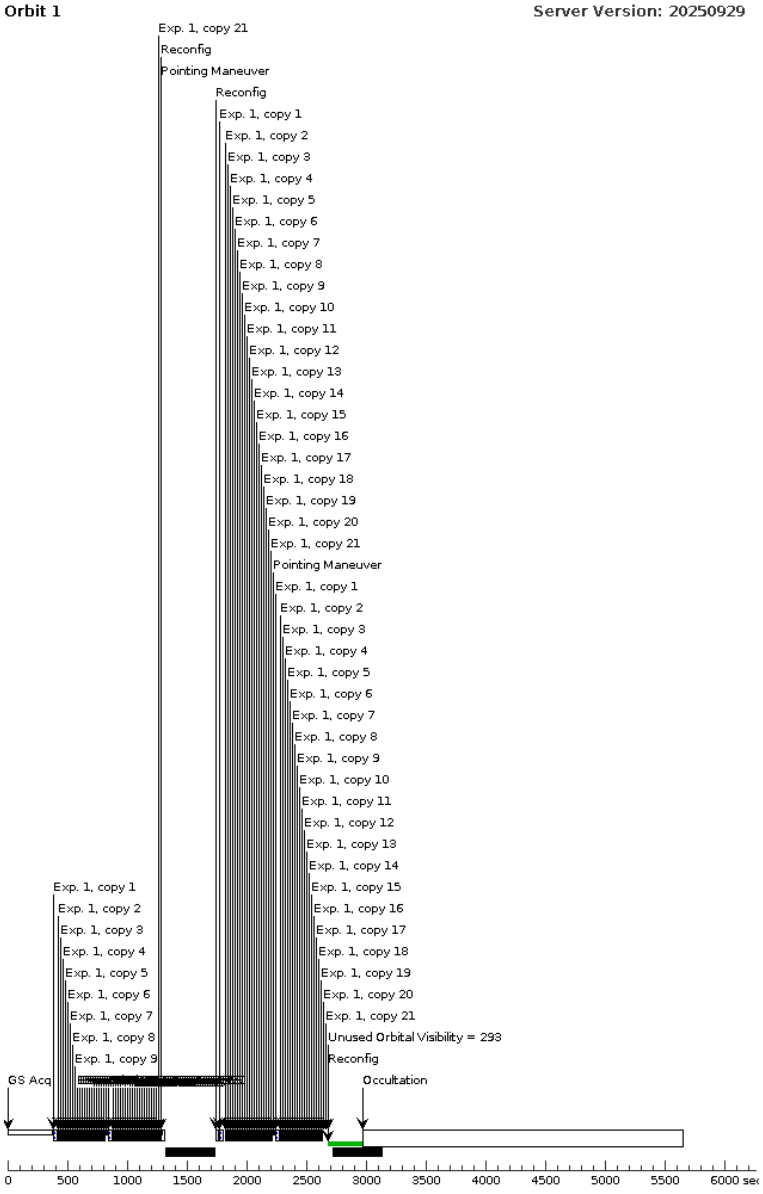
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit

	1	(1) EM-AS-209	WFC3/IR, MULTIACCUM, IRSUB256-FIX	F125W	NSAMP=6; SAMP-SEQ=RAPID	Pattern 2, Exps 1-1 in AS209 - F125W (09) (2)	1.66689 Secs X 21 (140.019 Secs)	

		[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 1, Copy 3)]* *[==>(Pattern 1, Copy 4)]* *[==>(Pattern 1, Copy 5)]* *[==>(Pattern 1, Copy 6)]* *[==>(Pattern 1, Copy 7)]* *[==>(Pattern 1, Copy 8)]* *[==>(Pattern 1, Copy 9)]* *[==>(Pattern 1, Copy 10)]* *[==>(Pattern 1, Copy 11)]* *[==>(Pattern 1, Copy 12)]* *[==>(Pattern 1, Copy 13)]* *[==>(Pattern 1, Copy 14)]* *[==>(Pattern 1, Copy 15)]* *[==>(Pattern 1, Copy 16)]* *[==>(Pattern 1, Copy 17)]* *[==>(Pattern 1, Copy 18)]* *[==>(Pattern 1, Copy 19)]* *[==>(Pattern 1, Copy 20)]* *[==>(Pattern 1, Copy 21)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]* *[==>(Pattern 2, Copy 3)]* *[==>(Pattern 2, Copy 4)]* *[==>(Pattern 2, Copy 5)]* *[==>(Pattern 2, Copy 6)]* *[==>(Pattern 2, Copy 7)]* *[==>(Pattern 2, Copy 8)]* *[==>(Pattern 2, Copy 9)]* *[==>(Pattern 2, Copy 10)]* *[==>(Pattern 2, Copy 11)]* *[==>(Pattern 2, Copy 12)]* *[==>(Pattern 2, Copy 13)]* *[==>(Pattern 2, Copy 14)]* *[==>(Pattern 2, Copy 15)]* *[==>(Pattern 2, Copy 16)]* *[==>(Pattern 2, Copy 17)]* *[==>(Pattern 2, Copy 18)]* *[==>(Pattern 2, Copy 19)]* *[==>(Pattern 2, Copy 20)]* *[==>(Pattern 2, Copy 21)]* *[==>(Pattern 3, Copy 1)]* *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 3, Copy 3)]*	***[1]***

		[==>(Pattern 3, Copy 4)] *[==>(Pattern 3, Copy 5)]* *[==>(Pattern 3, Copy 6)]* *[==>(Pattern 3, Copy 7)]* *[==>(Pattern 3, Copy 8)]* *[==>(Pattern 3, Copy 9)]* *[==>(Pattern 3, Copy 10)]* *[==>(Pattern 3, Copy 11)]* *[==>(Pattern 3, Copy 12)]* *[==>(Pattern 3, Copy 13)]* *[==>(Pattern 3, Copy 14)]* *[==>(Pattern 3, Copy 15)]* *[==>(Pattern 3, Copy 16)]* *[==>(Pattern 3, Copy 17)]* *[==>(Pattern 3, Copy 18)]* *[==>(Pattern 3, Copy 19)]* *[==>(Pattern 3, Copy 20)]* *[==>(Pattern 3, Copy 21)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]* *[==>(Pattern 4, Copy 3)]* *[==>(Pattern 4, Copy 4)]* *[==>(Pattern 4, Copy 5)]* *[==>(Pattern 4, Copy 6)]* *[==>(Pattern 4, Copy 7)]* *[==>(Pattern 4, Copy 8)]* *[==>(Pattern 4, Copy 9)]* *[==>(Pattern 4, Copy 10)]* *[==>(Pattern 4, Copy 11)]* *[==>(Pattern 4, Copy 12)]* *[==>(Pattern 4, Copy 13)]* *[==>(Pattern 4, Copy 14)]* *[==>(Pattern 4, Copy 15)]* *[==>(Pattern 4, Copy 16)]* *[==>(Pattern 4, Copy 17)]* *[==>(Pattern 4, Copy 18)]* *[==>(Pattern 4, Copy 19)]* *[==>(Pattern 4, Copy 20)]* *[==>(Pattern 4, Copy 21)]*	

Orbit Structure



Visit

Proposal 18114, AS209 - F125W (10), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 25D TO 35D FROM 09; AFTER 09 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F125W (10)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.065	Center Pattern=false		
	Line Spacing=0.0605			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

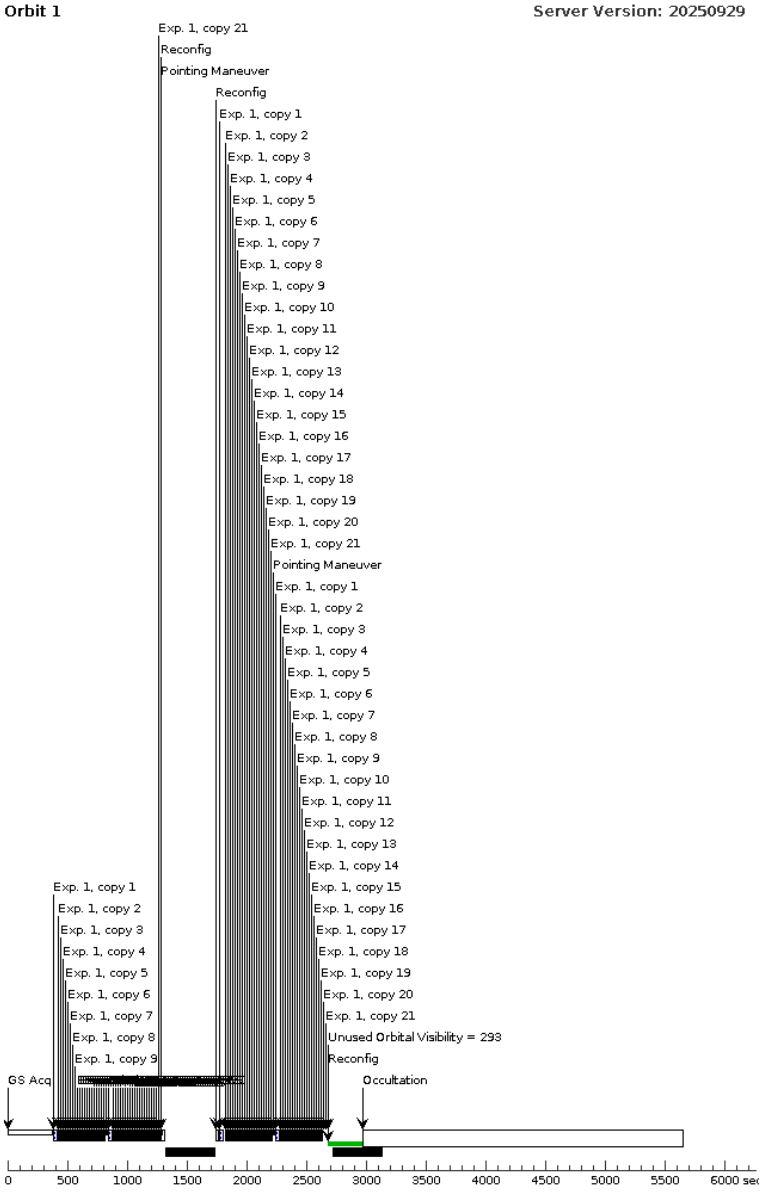
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit

	1	(1) EM-AS-209	WFC3/IR, MULTIACCUM, IRSUB256-FIX	F125W	NSAMP=6; SAMP-SEQ=RAPID	Pattern 2, Exps 1-1 in AS209 - F125W (10) (2)	1.66689 Secs X 21 (140.019 Secs)	

		[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 1, Copy 3)]* *[==>(Pattern 1, Copy 4)]* *[==>(Pattern 1, Copy 5)]* *[==>(Pattern 1, Copy 6)]* *[==>(Pattern 1, Copy 7)]* *[==>(Pattern 1, Copy 8)]* *[==>(Pattern 1, Copy 9)]* *[==>(Pattern 1, Copy 10)]* *[==>(Pattern 1, Copy 11)]* *[==>(Pattern 1, Copy 12)]* *[==>(Pattern 1, Copy 13)]* *[==>(Pattern 1, Copy 14)]* *[==>(Pattern 1, Copy 15)]* *[==>(Pattern 1, Copy 16)]* *[==>(Pattern 1, Copy 17)]* *[==>(Pattern 1, Copy 18)]* *[==>(Pattern 1, Copy 19)]* *[==>(Pattern 1, Copy 20)]* *[==>(Pattern 1, Copy 21)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]* *[==>(Pattern 2, Copy 3)]* *[==>(Pattern 2, Copy 4)]* *[==>(Pattern 2, Copy 5)]* *[==>(Pattern 2, Copy 6)]* *[==>(Pattern 2, Copy 7)]* *[==>(Pattern 2, Copy 8)]* *[==>(Pattern 2, Copy 9)]* *[==>(Pattern 2, Copy 10)]* *[==>(Pattern 2, Copy 11)]* *[==>(Pattern 2, Copy 12)]* *[==>(Pattern 2, Copy 13)]* *[==>(Pattern 2, Copy 14)]* *[==>(Pattern 2, Copy 15)]* *[==>(Pattern 2, Copy 16)]* *[==>(Pattern 2, Copy 17)]* *[==>(Pattern 2, Copy 18)]* *[==>(Pattern 2, Copy 19)]* *[==>(Pattern 2, Copy 20)]* *[==>(Pattern 2, Copy 21)]* *[==>(Pattern 3, Copy 1)]* *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 3, Copy 3)]*	***[1]***

		[==>(Pattern 3, Copy 4)] *[==>(Pattern 3, Copy 5)]* *[==>(Pattern 3, Copy 6)]* *[==>(Pattern 3, Copy 7)]* *[==>(Pattern 3, Copy 8)]* *[==>(Pattern 3, Copy 9)]* *[==>(Pattern 3, Copy 10)]* *[==>(Pattern 3, Copy 11)]* *[==>(Pattern 3, Copy 12)]* *[==>(Pattern 3, Copy 13)]* *[==>(Pattern 3, Copy 14)]* *[==>(Pattern 3, Copy 15)]* *[==>(Pattern 3, Copy 16)]* *[==>(Pattern 3, Copy 17)]* *[==>(Pattern 3, Copy 18)]* *[==>(Pattern 3, Copy 19)]* *[==>(Pattern 3, Copy 20)]* *[==>(Pattern 3, Copy 21)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]* *[==>(Pattern 4, Copy 3)]* *[==>(Pattern 4, Copy 4)]* *[==>(Pattern 4, Copy 5)]* *[==>(Pattern 4, Copy 6)]* *[==>(Pattern 4, Copy 7)]* *[==>(Pattern 4, Copy 8)]* *[==>(Pattern 4, Copy 9)]* *[==>(Pattern 4, Copy 10)]* *[==>(Pattern 4, Copy 11)]* *[==>(Pattern 4, Copy 12)]* *[==>(Pattern 4, Copy 13)]* *[==>(Pattern 4, Copy 14)]* *[==>(Pattern 4, Copy 15)]* *[==>(Pattern 4, Copy 16)]* *[==>(Pattern 4, Copy 17)]* *[==>(Pattern 4, Copy 18)]* *[==>(Pattern 4, Copy 19)]* *[==>(Pattern 4, Copy 20)]* *[==>(Pattern 4, Copy 21)]*	

Orbit Structure



Visit

Proposal 18114, AS209 - F098M (11), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 75D TO 110 D; ORIENT 165D TO 200 D; ORIENT 255D TO 290 D; ORIENT 345D TO 20 D; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.065	Center Pattern=false		
	Line Spacing=0.0605			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

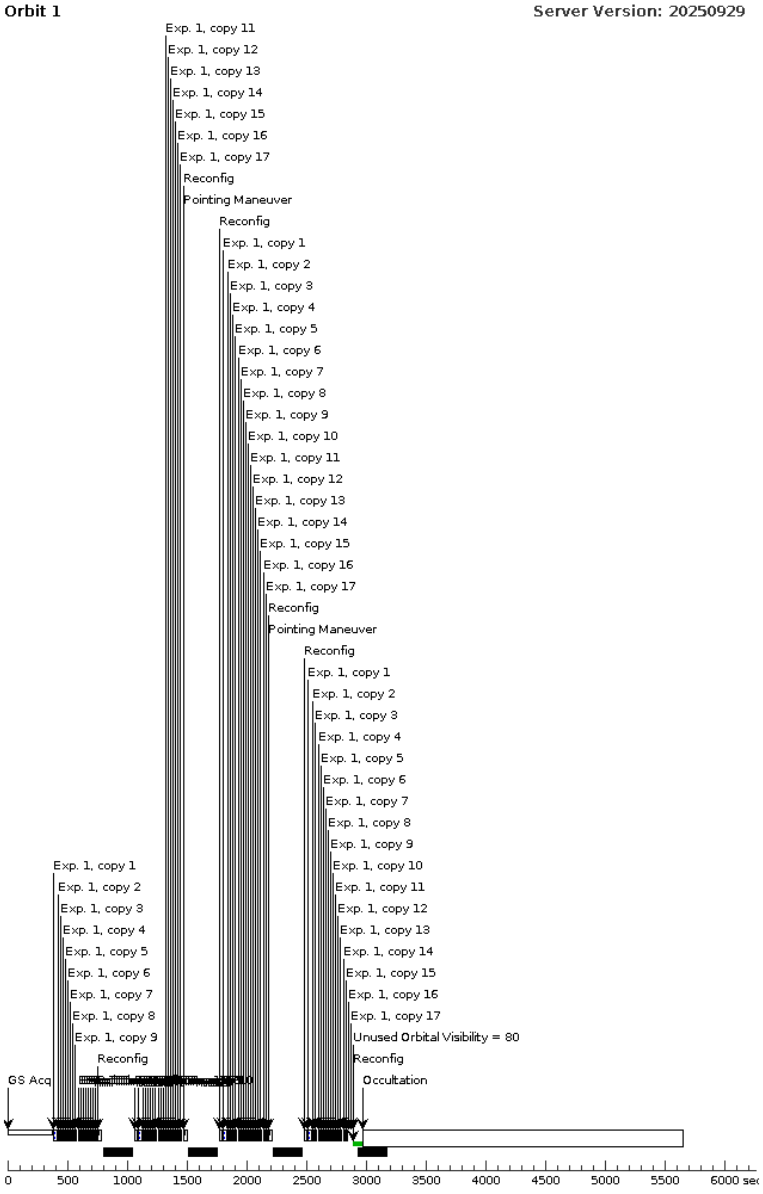
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit

	1	(1) EM-AS-209	WFC3/IR, MULTIACCUM, IRSUB256-FIX	F098M	NSAMP=9; SAMP-SEQ=RAPID	Pattern 2, Exps 1-1 in AS209 - F098M (11) (2)	2.500335 Secs X 17 (170.023 Secs)	

		[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 1, Copy 3)]* *[==>(Pattern 1, Copy 4)]* *[==>(Pattern 1, Copy 5)]* *[==>(Pattern 1, Copy 6)]* *[==>(Pattern 1, Copy 7)]* *[==>(Pattern 1, Copy 8)]* *[==>(Pattern 1, Copy 9)]* *[==>(Pattern 1, Copy 10)]* *[==>(Pattern 1, Copy 11)]* *[==>(Pattern 1, Copy 12)]* *[==>(Pattern 1, Copy 13)]* *[==>(Pattern 1, Copy 14)]* *[==>(Pattern 1, Copy 15)]* *[==>(Pattern 1, Copy 16)]* *[==>(Pattern 1, Copy 17)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]* *[==>(Pattern 2, Copy 3)]* *[==>(Pattern 2, Copy 4)]* *[==>(Pattern 2, Copy 5)]* *[==>(Pattern 2, Copy 6)]* *[==>(Pattern 2, Copy 7)]* *[==>(Pattern 2, Copy 8)]* *[==>(Pattern 2, Copy 9)]* *[==>(Pattern 2, Copy 10)]* *[==>(Pattern 2, Copy 11)]* *[==>(Pattern 2, Copy 12)]* *[==>(Pattern 2, Copy 13)]* *[==>(Pattern 2, Copy 14)]* *[==>(Pattern 2, Copy 15)]* *[==>(Pattern 2, Copy 16)]* *[==>(Pattern 2, Copy 17)]* *[==>(Pattern 3, Copy 1)]* *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 3, Copy 3)]* *[==>(Pattern 3, Copy 4)]* *[==>(Pattern 3, Copy 5)]* *[==>(Pattern 3, Copy 6)]* *[==>(Pattern 3, Copy 7)]* *[==>(Pattern 3, Copy 8)]* *[==>(Pattern 3, Copy 9)]* *[==>(Pattern 3, Copy 10)]* *[==>(Pattern 3, Copy 11)]*	***[1]***

		[==>(Pattern 3, Copy 12)] *[==>(Pattern 3, Copy 13)]* *[==>(Pattern 3, Copy 14)]* *[==>(Pattern 3, Copy 15)]* *[==>(Pattern 3, Copy 16)]* *[==>(Pattern 3, Copy 17)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]* *[==>(Pattern 4, Copy 3)]* *[==>(Pattern 4, Copy 4)]* *[==>(Pattern 4, Copy 5)]* *[==>(Pattern 4, Copy 6)]* *[==>(Pattern 4, Copy 7)]* *[==>(Pattern 4, Copy 8)]* *[==>(Pattern 4, Copy 9)]* *[==>(Pattern 4, Copy 10)]* *[==>(Pattern 4, Copy 11)]* *[==>(Pattern 4, Copy 12)]* *[==>(Pattern 4, Copy 13)]* *[==>(Pattern 4, Copy 14)]* *[==>(Pattern 4, Copy 15)]* *[==>(Pattern 4, Copy 16)]* *[==>(Pattern 4, Copy 17)]*	

Orbit Structure



Visit

Proposal 18114, AS209 - F098M (12), implementation Tue Nov 25 21:00:52 GMT 2025

Diagnostic Status: Informational

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 25D TO 35D FROM 11; AFTER 11 BY 0.5 Orbits TO 1.5 Orbits; BEFORE 31-OCT-2026:00:00:00

Comments: The orientation requirements are meant to avoid the PSF spikes to end up at the position of the background source, which is located at a position angle of ~110 deg East of North.

Diagnostics

(AS209 - F098M (12)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=90		
	Point Spacing=0.065	Center Pattern=false		
	Line Spacing=0.0605			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EM-AS-209	RA: 16 49 15.3035 (252.3137646d) Dec: -14 22 8.64 (-14.36907d) Equinox: J2000	Proper Motion RA: -7.365999999999999 mas/yr Proper Motion Dec: -23.65800007737562 mas/yr Parallax: 0.0082477" Epoch of Position: 2000	V=11.28	Reference Frame: ICRS

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=[K V-IV, PROTOPLANETARY DISK]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit

	1	(1) EM-AS-209	WFC3/IR, MULTIACCUM, IRSUB256-FIX	F098M	NSAMP=9; SAMP-SEQ=RAPID	Pattern 2, Exps 1-1 in AS209 - F098M (12) (2)	2.500335 Secs X 17 (170.023 Secs)	

		[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 1, Copy 3)]* *[==>(Pattern 1, Copy 4)]* *[==>(Pattern 1, Copy 5)]* *[==>(Pattern 1, Copy 6)]* *[==>(Pattern 1, Copy 7)]* *[==>(Pattern 1, Copy 8)]* *[==>(Pattern 1, Copy 9)]* *[==>(Pattern 1, Copy 10)]* *[==>(Pattern 1, Copy 11)]* *[==>(Pattern 1, Copy 12)]* *[==>(Pattern 1, Copy 13)]* *[==>(Pattern 1, Copy 14)]* *[==>(Pattern 1, Copy 15)]* *[==>(Pattern 1, Copy 16)]* *[==>(Pattern 1, Copy 17)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]* *[==>(Pattern 2, Copy 3)]* *[==>(Pattern 2, Copy 4)]* *[==>(Pattern 2, Copy 5)]* *[==>(Pattern 2, Copy 6)]* *[==>(Pattern 2, Copy 7)]* *[==>(Pattern 2, Copy 8)]* *[==>(Pattern 2, Copy 9)]* *[==>(Pattern 2, Copy 10)]* *[==>(Pattern 2, Copy 11)]* *[==>(Pattern 2, Copy 12)]* *[==>(Pattern 2, Copy 13)]* *[==>(Pattern 2, Copy 14)]* *[==>(Pattern 2, Copy 15)]* *[==>(Pattern 2, Copy 16)]* *[==>(Pattern 2, Copy 17)]* *[==>(Pattern 3, Copy 1)]* *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 3, Copy 3)]* *[==>(Pattern 3, Copy 4)]* *[==>(Pattern 3, Copy 5)]* *[==>(Pattern 3, Copy 6)]* *[==>(Pattern 3, Copy 7)]* *[==>(Pattern 3, Copy 8)]* *[==>(Pattern 3, Copy 9)]* *[==>(Pattern 3, Copy 10)]* *[==>(Pattern 3, Copy 11)]*	***[1]***

		[==>(Pattern 3, Copy 12)] *[==>(Pattern 3, Copy 13)]* *[==>(Pattern 3, Copy 14)]* *[==>(Pattern 3, Copy 15)]* *[==>(Pattern 3, Copy 16)]* *[==>(Pattern 3, Copy 17)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]* *[==>(Pattern 4, Copy 3)]* *[==>(Pattern 4, Copy 4)]* *[==>(Pattern 4, Copy 5)]* *[==>(Pattern 4, Copy 6)]* *[==>(Pattern 4, Copy 7)]* *[==>(Pattern 4, Copy 8)]* *[==>(Pattern 4, Copy 9)]* *[==>(Pattern 4, Copy 10)]* *[==>(Pattern 4, Copy 11)]* *[==>(Pattern 4, Copy 12)]* *[==>(Pattern 4, Copy 13)]* *[==>(Pattern 4, Copy 14)]* *[==>(Pattern 4, Copy 15)]* *[==>(Pattern 4, Copy 16)]* *[==>(Pattern 4, Copy 17)]*	

Orbit Structure