



9226 - A legacy epoch for Hubble's optical jets: a reference for the future

Cycle: 3, Proposal Category: GO

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Dr. Eileen T Meyer (PI)	University of Maryland Baltimore County
Dr. Onic I. Shuvo (CoI)	University of Maryland Baltimore County
Dr. Roeland P. van der Marel (CoI)	Space Telescope Science Institute
Dr. William B. Sparks (CoI)	SETI Institute
Prof. Eric S. Perlman (CoI)	Florida Institute of Technology
Dr. Markos Georganopoulos (CoI)	University of Maryland Baltimore County
Dr. Marco Chiaberge (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Jay Anderson (CoI)	Space Telescope Science Institute

OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	5	3C264	NIRCam Imaging	(5) 3C264
	1	3C15	NIRCam Imaging	(1) 3C-15
	2	3C66B	NIRCam Imaging	(2) 3C66B
	3	3C78	NIRCam Imaging	(3) 3C78
	4	3C346	NIRCam Imaging	(4) 3C346
	6	4C04.77	NIRCam Imaging	(6) 4C04.77
	7	0521-365	NIRCam Imaging	(7) 0521-365
	8	M87	NIRCam Imaging	(8) M87
	9	4C00.58	NIRCam Imaging	(9) 4C00.58
	10	3C371	NIRCam Imaging	(10) 3C371
	11	3C273	NIRCam Imaging	(11) 3C273

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	12	3C403	NIRCam Imaging	(12) 3C403
	13	3C273	NIRCam Imaging	(11) 3C273
	14	3C264	NIRCam Imaging	(5) 3C264

ABSTRACT

While we have long known that jets from super-massive black holes exhibit highly relativistic speeds on parsec scales from radio interferometry, it is not generally known how the jet evolves on kpc to Mpc scales, where the jet leaves the host galaxy and begins to interact with the intergalactic medium, with implications for our understanding of jet structure and quantifying the energy carried by the jet into the external environment. With the development of state-of-the-art astrometry techniques and new data from the Gaia mission, it is now possible register images of nearby jets first observed by HST in the 1990s to extremely high precision, reaching accuracies on proper motions of better than 0.3 mas/year. This enabled the dramatic finding of colliding superluminal knots in the jet of 3C264 and helical motions of plasma on kpc scales in M87. We propose a new epoch of joint HST/JWST observations on the 12 nearby optical jets which are essentially a legacy sample of monitored sources with observations spanning nearly 3 decades. This sample is an extremely unique one, and only HST and JWST can provide the precision astrometry and sensitivity needed to track the motion of plasma in jets on kpc scales.

OBSERVING DESCRIPTION

We propose NIRCam short-wavelength observations of a sample of 12 optical jets which have been monitored by HST over the last 20-30 years for proper motions of the relativistic plasma on kpc scales. The requested JWST observations are designed to match as closely as possible those of HST, which for most recent epochs were taken with ACS/WFC in F606W filter. In general, the shorter wavelength range is better suited to the measurement of plasma motions since these are broad-band synchrotron sources and the higher frequencies will have the best angular resolution and also the most compact features for tracking. This HST cycle 32 bridge program requested a standard set of 1-orbit ACS/WFC F606W exposures on all targets to be paired with concurrent (same cycle) JWST observations in the F070W filter with NIRCam. There is no constraint on timing of the JWST exposures other than occurring during the same cycle as the plasma motions vary slowly, on multi-year timescales. The paired observations will be used to form a matched reference frame of stars and background galaxies which can be used to join smoothly from long-term HST monitoring of these jets to JWST, extending time baselines into the future up to 50 years. We will also carefully examine the detailed jet structures and knots in the HST and JWST images given the change in instrument/wavelength to confirm consistency in the component positions used to map the velocity field, and the three bands (HST F606W, JWST F070W/F444W) will be used to characterize the near-IR to optical spectrum of these jets, which we expect to relate to the observed proper motion variation.

JWST Proposal 9226 (Created: Friday, May 23, 2025, 2:00:36PM Eastern Standard Time) - Overview

For 10/12 jets, the giant elliptical host galaxy forms the principle background for the jet emission. The effective (half-light) radius of these galaxies (all within about 400 Mpc distance) is on the order of 4-8". We have included in our ETC simulations an offset elliptical host (n=4 Sersic profile) for these cases in determining the SNR for the knots, which have fluxes on the order of 1-10 uJy within a very compact region (< 0.2" diameter typically). We request a simple 4-position dither pattern to cover the SW chip gaps and provide sub-pixel PSF sampling. The remaining two jets, 3C273 and 3C403, are FR-II type with much larger separation of the optical jet knots from the core/host, so the background will be the standard/typical for a field object (no host galaxy contribution). For this reason these have slightly reduced total exposure to reach the same effective sensitivity, and use a 3-position dither pattern.

While the primary science is accomplished with the F070W imaging, we can take advantage of the dual-band observing capabilities to obtain more information about the jet spectral energy distributions. Indeed, optical jets have not been extensively studied in the IR due to the previous lack of high-resolution capabilities. To compliment the optical band observations we requested the F444W filter in the long wavelength channel, a wide band to maximize sensitivity, and also optimizing the frequency coverage to measure, e.g. spectral curvature.

Proposal 9226 - Targets - A legacy epoch for Hubble's optical jets: a reference for the future

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	3C-15	RA: 00 37 4.0000 (9.2666667d) Dec: -01 09 8.00 (-1.15222d) Equinox: J2000	Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				
(2)	3C66B	RA: 02 23 11.0000 (35.7958333d) Dec: +42 59 31.00 (42.99194d) Equinox: J2000	Proper Motion RA: -1.197 mas/yr Proper Motion Dec: 0.558 mas/yr Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>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.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				
(3)	3C78	RA: 03 08 26.0000 (47.1083333d) Dec: +04 06 39.00 (4.11083d) Equinox: J2000	Proper Motion RA: -0.495 mas/yr Proper Motion Dec: -0.26000004709203495 mas/yr Parallax: 3.472E-4" Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>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.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				
(4)	3C346	RA: 16 43 48.6000 (250.9525000d) Dec: +17 15 49.40 (17.26372d) Equinox: J2000	Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				
(5)	3C264	RA: 11 45 5.0000 (176.2708333d) Dec: +19 36 23.00 (19.60639d) Equinox: J2000	Proper Motion RA: -0.481 mas/yr Proper Motion Dec: 0.879 mas/yr Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>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.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				
(6)	4C04.77	RA: 22 04 18.0000 (331.0750000d) Dec: +04 40 2.00 (4.66722d) Equinox: J2000	Epoch of Position: 2000	
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>				

Fixed Targets

Proposal 9226 - Targets - A legacy epoch for Hubble's optical jets: a reference for the future

(7)	0521-365	RA: 05 22 58.0000 (80.7416667d) Dec: -36 27 30.00 (-36.45833d) Equinox: J2000	Proper Motion RA: 0.23700000000000002 mas/yr Proper Motion Dec: -0.16000001323845936 mas/yr Parallax: 9.17E-5" Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			
(8)	M87	RA: 12 30 48.8700 (187.7036250d) Dec: +12 23 29.90 (12.39164d) Equinox: J2000	Proper Motion RA: -8.029 mas/yr Proper Motion Dec: 10.734 mas/yr Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			
(9)	4C00.58	RA: 16 06 12.9000 (241.5537500d) Dec: +00 00 28.80 (.00800d) Equinox: J2000	Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			
(10)	3C371	RA: 18 06 50.0000 (271.7083333d) Dec: +69 49 28.00 (69.82444d) Equinox: J2000	Proper Motion RA: 0.082 mas/yr Proper Motion Dec: -0.07699993602727773 mas/yr Parallax: 0.0031" Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			
(11)	3C273	RA: 12 29 6.0000 (187.2750000d) Dec: +02 02 58.00 (2.04944d) Equinox: J2000	Proper Motion RA: -0.023 mas/yr Proper Motion Dec: 0.098 mas/yr Parallax: 1.08E-5" Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			
(12)	3C403	RA: 19 52 16.0000 (298.0666667d) Dec: +02 30 26.40 (2.50733d) Equinox: J2000	Epoch of Position: 2000
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p>Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]</p>			

Proposal 9226 - Observation 5 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 5: 3C264</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(5)	3C264	RA: 11 45 5.0000 (176.2708333d) Dec: +19 36 23.00 (19.60639d) Equinox: J2000		Proper Motion RA: -0.481 mas/yr Proper Motion Dec: 0.879 mas/yr Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	
Special Requirements	Offset 40.0 arcsec, -30.0 arcsec									

Proposal 9226 - Observation 1 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 1: 3C15</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCcam Imaging</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)	3C-15	RA: 00 37 4.0000 (9.2666667d) Dec: -01 09 8.00 (-1.15222d) Equinox: J2000		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=Galaxy</i></p> <p><i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 2 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 2: 3C66B</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
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)	3C66B	RA: 02 23 11.0000 (35.7958333d) Dec: +42 59 31.00 (42.99194d) Equinox: J2000		Proper Motion RA: -1.197 mas/yr Proper Motion Dec: 0.558 mas/yr Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers		Subpixel Dither Type		Dither Size		Subpixel Positions
	1	INTRAMODULEX		4		SMALL-GRID-DITHER				1
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 3 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 3: 3C78</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam 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		
	(3)	3C78	RA: 03 08 26.0000 (47.1083333d) Dec: +04 06 39.00 (4.11083d) Equinox: J2000		Proper Motion RA: -0.495 mas/yr Proper Motion Dec: -0.26000004709203495 mas/yr Parallax: 3.472E-4" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module					Subarray				
	B					FULL				
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 4 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 4: 3C346</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCcam Imaging</p>									
Diagnostics	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(4)	3C346	RA: 16 43 48.6000 (250.9525000d) Dec: +17 15 49.40 (17.26372d) Equinox: J2000		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=Galaxy</i></p> <p><i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 6 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 6: 4C04.77</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Miscellaneous		
	(6)	4C04.77	RA: 22 04 18.0000 (331.0750000d) Dec: +04 40 2.00 (4.66722d) Equinox: J2000			Epoch of Position: 2000				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=Galaxy Description=[Active galactic nuclei, Galaxy jets]									
Template	Module					Subarray				
	B					FULL				
Dithers	#	Primary Dither Type		Primary Dithers		Subpixel Dither Type		Dither Size	Subpixel Positions	
	1	INTRAMODULEX		4		SMALL-GRID-DITHER			1	
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 7 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 7: 0521-365</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCcam Imaging</p>																															
Diagnostics	(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.																															
Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th colspan="4">Targ. Coord. Corrections</th> <th colspan="4">Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(7)</td> <td>0521-365</td> <td>RA: 05 22 58.0000 (80.7416667d) Dec: -36 27 30.00 (-36.45833d) Equinox: J2000</td> <td colspan="4">Proper Motion RA: 0.23700000000000002 mas/yr Proper Motion Dec: -0.16000001323845936 mas/yr Parallax: 9.17E-5" Epoch of Position: 2000</td> <td colspan="4"></td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous				(7)	0521-365	RA: 05 22 58.0000 (80.7416667d) Dec: -36 27 30.00 (-36.45833d) Equinox: J2000	Proper Motion RA: 0.23700000000000002 mas/yr Proper Motion Dec: -0.16000001323845936 mas/yr Parallax: 9.17E-5" Epoch of Position: 2000							
#	Name	Target Coordinates	Targ. Coord. Corrections				Miscellaneous																									
(7)	0521-365	RA: 05 22 58.0000 (80.7416667d) Dec: -36 27 30.00 (-36.45833d) Equinox: J2000	Proper Motion RA: 0.23700000000000002 mas/yr Proper Motion Dec: -0.16000001323845936 mas/yr Parallax: 9.17E-5" Epoch of Position: 2000																													
Template	Module					Subarray																										
	B					FULL																										
Dithers	#	Primary Dither Type		Primary Dithers		Subpixel Dither Type		Dither Size		Subpixel Positions																						
	1	INTRAMODULEX		4		SMALL-GRID-DITHER				1																						
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID																						
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412																						
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec																															

Proposal 9226 - Observation 8 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 8: M87 Diagnostic Status: Warning Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(8)	M87	RA: 12 30 48.8700 (187.7036250d) Dec: +12 23 29.90 (12.39164d) Equinox: J2000		Proper Motion RA: -8.029 mas/yr Proper Motion Dec: 10.734 mas/yr Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 9 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 9: 4C00.58</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCcam Imaging</p>									
Diagnostics	(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(9)	4C00.58	RA: 16 06 12.9000 (241.5537500d) Dec: +00 00 28.80 (.00800d) Equinox: J2000		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=Galaxy</i></p> <p><i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 10 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 10: 3C371</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(10)	3C371	RA: 18 06 50.0000 (271.7083333d) Dec: +69 49 28.00 (69.82444d) Equinox: J2000		Proper Motion RA: 0.082 mas/yr Proper Motion Dec: -0.07699993602727773 mas/yr Parallax: 0.0031" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i></p> <p><i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module					Subarray				
	B					FULL				
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 11 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 11: 3C273 Diagnostic Status: Warning Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(11)	3C273	RA: 12 29 6.0000 (187.2750000d) Dec: +02 02 58.00 (2.04944d) Equinox: J2000		Proper Motion RA: -0.023 mas/yr Proper Motion Dec: 0.098 mas/yr Parallax: 1.08E-5" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module					Subarray				
	B					FULL				
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULE		3	STANDARD			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	3	3	708.627	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 12 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 12: 3C403</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
Diagnostics	<p>(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(12)	3C403	RA: 19 52 16.0000 (298.0666667d) Dec: +02 30 26.40 (2.50733d) Equinox: J2000		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=Galaxy</i></p> <p><i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULE		3	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	3	3	708.627	231412

Proposal 9226 - Observation 13 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 13: 3C273 Diagnostic Status: Warning Observing Template: NIRCcam Imaging</p>									
Diagnostics	(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(11)	3C273	RA: 12 29 6.0000 (187.2750000d) Dec: +02 02 58.00 (2.04944d) Equinox: J2000		Proper Motion RA: -0.023 mas/yr Proper Motion Dec: 0.098 mas/yr Parallax: 1.08E-5" Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module					Subarray				
	B					FULL				
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULE		3	STANDARD			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	3	3	708.627	231412
Special Requirements	Offset -25.0 arcsec, -25.0 arcsec									

Proposal 9226 - Observation 14 - A legacy epoch for Hubble's optical jets: a reference for the future

Fri May 23 19:00:36 GMT 2025

Observation	<p>Proposal 9226, Observation 14: 3C264</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRCam Imaging</p>									
Diagnostics	(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.									
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections			Miscellaneous		
	(5)	3C264	RA: 11 45 5.0000 (176.2708333d) Dec: +19 36 23.00 (19.60639d) Equinox: J2000		Proper Motion RA: -0.481 mas/yr Proper Motion Dec: 0.879 mas/yr Epoch of Position: 2000					
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>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.</i></p> <p><i>Category=Galaxy</i> <i>Description=[Active galactic nuclei, Galaxy jets]</i></p>									
Template	Module				Subarray					
	B				FULL					
Dithers	#	Primary Dither Type		Primary Dithers	Subpixel Dither Type		Dither Size	Subpixel Positions		
	1	INTRAMODULEX		4	SMALL-GRID-DITHER			1		
Spectral Elements	#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
	1	F070W	F444W	MEDIUM2	3	1	4	4	944.836	
Special Requirements	Offset 40.0 arcsec, -30.0 arcsec									