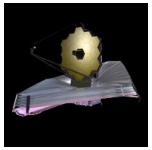

6675 - Time delay cosmography with strong cluster lenses.

Cycle: 3, Proposal Category: GO

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1		NIRCam Imaging	(2) COOLJ1153+0755
	2		NIRCam Imaging	(3) COOLJ0335-1927
	3		NIRCam Imaging	(4) COOLJ0542-2125
	4		NIRCam Imaging	(5) SDSSJ0909+4449

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
	5		NIRCam Imaging	(6) SDSSJ1004+4112
	6		NIRCam Imaging	(7) SDSSJ1029+2623
	7		NIRCam Imaging	(8) SDSSJ1326+4806
	8		NIRCam Imaging	(9) SDSSJ2222+2745

ABSTRACT

Coordinated JWST observations for HST proposal 5790:

We propose to assemble a complete data set of HST and JWST imaging for the complete known sample of 8 gravitational lens systems where a variable quasar is multiply lensed by a cluster of galaxies. Such lens systems produce image separations and time delays an order of magnitude larger than the much more common galaxy-scale lensed quasars. All these systems are targets of completed or ongoing photometric monitoring programs, allowing us to measure time delays between the lensed quasar images. Time delay values with 1-2% uncertainty have already been measured in half of these lens systems, and preliminary time delays are available for all; similar precision will be reached in the remaining systems within ~2 years. The long time delays, coupled with space-based imaging which provide a large number of additional lensing mass constraints from image families of lensed sources at different redshifts, make these cluster-lensed quasars spectacular targets for determining H0. The Refsdal method, based on measuring time delays between multiple, gravitationally lensed images of variable sources can provide unique insight into the origin of the intriguing "Hubble tension" between local distance ladder and CMB-based determinations of H0. To enable such H0 measurements for the full sample of 8 lensed quasars, we request HST imaging for three systems with no prior space-based data, complemented by JWST imaging at longer wavelengths for the full sample of 8 lenses, as well as modest archival support, to construct precise and accurate models of the lensing mass distribution across the entire sample and derive a joint H0 measurement.

OBSERVING DESCRIPTION

The JWST observations of this joint HST-JWST program consist of NIRCam imaging of 8 targets: COOLJ1153, COOLJ0335, COOLJ0542, SDSSJ0909, SDSSJ1004, SDSSJ1029, SDSSJ1326, and SDSSJ2222.

We request imaging in the filters F115W, F150W, and F444W.

For one of the targets, COOLJ0542, we use FULLBOX dithering with 4TIGHT dithers and specified orientation angle ranges to encompass the second mass concentration of a pair of two merging galaxy clusters.

For the other targets we use INTRAMODULEBOX dither pattern with 4 primary dithers.

The exposures are as follows:

F115W/F444W: 1 exposure per dither position, each in 1 integration with 8 groups (644s total exposure)
F150W/F444W: 1 exposure per dither position, each in 1 integration with 5 groups (386s total exposure)

All exposures use the BRIGHT1 readout pattern.

The exposure time in total amounts to 2.30h on source, 11.79 hours charged in total.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	COOLJ1153+0755	RA: 11 53 18.7500 (178.3281250d) Dec: +07 55 54.40 (7.93178d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Active galactic nuclei, Quasars]*				
(3)	COOLJ0335-1927	RA: 03 35 4.0400 (53.7668333d) Dec: -19 27 50.04 (-19.46390d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Broad-absorption line quasar]*				
(4)	COOLJ0542-2125	RA: 05 42 57.0000 (85.7375000d) Dec: -21 25 40.76 (-21.42799d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				
(5)	SDSSJ0909+4449	RA: 09 09 46.0200 (137.4417500d) Dec: +44 49 53.92 (44.83164d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				
(6)	SDSSJ1004+4112	RA: 10 04 33.4797 (151.1394988d) Dec: +41 12 43.18 (41.21199d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				
(7)	SDSSJ1029+2623	RA: 10 29 12.6385 (157.3026604d) Dec: +26 23 32.80 (26.39244d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				
(8)	SDSSJ1326+4806	RA: 13 25 59.5580 (201.4981583d) Dec: +48 06 49.37 (48.11371d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				
(9)	SDSSJ2222+2745	RA: 22 22 8.7000 (335.5362500d) Dec: +27 45 34.58 (27.75961d) Equinox: J2000		
Comments: *Category=Galaxy* *Description=[Quasars]*				

Observation

Proposal 6675, Observation 1 Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(2)	COOLJ1153+0755	RA: 11 53 18.7500 (178.3281250d) Dec: +07 55 54.40 (7.93178d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Active galactic nuclei, Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset 30.0 arcsec, 30.0 arcsec

Observation

Proposal 6675, Observation 2 Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(3)	COOLJ0335-1927	RA: 03 35 4.0400 (53.7668333d) Dec: -19 27 50.04 (-19.46390d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Broad-absorption line quasar]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset 30.0 arcsec, -26.0 arcsec

Observation

Proposal 6675, Observation 3

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(4)	COOLJ0542-2125	RA: 05 42 57.0000 (85.7375000d) Dec: -21 25 40.76 (-21.42799d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	FULLBOX	4TIGHT	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Aperture PA Range 335 to 355 Degrees (V3 335.07457694 to 355.07457694)
Offset -90.0 arcsec, -30.0 arcsec

Observation

Proposal 6675, Observation 4

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(5)	SDSSJ0909+4449	RA: 09 09 46.0200 (137.4417500d) Dec: +44 49 53.92 (44.83164d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset -26.0 arcsec, 26.0 arcsec

Observation

Proposal 6675, Observation 5

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(6)	SDSSJ1004+4112	RA: 10 04 33.4797 (151.1394988d) Dec: +41 12 43.18 (41.21199d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset -30.0 arcsec, 30.0 arcsec

Observation

Proposal 6675, Observation 6

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(7)	SDSSJ1029+2623	RA: 10 29 12.6385 (157.3026604d) Dec: +26 23 32.80 (26.39244d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset -30.0 arcsec, -30.0 arcsec

Observation

Proposal 6675, Observation 7

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(8)	SDSSJ1326+4806	RA: 13 25 59.5580 (201.4981583d) Dec: +48 06 49.37 (48.11371d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset -30.0 arcsec, -30.0 arcsec

Observation

Proposal 6675, Observation 8

Tue Sep 17 18:00:10 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(9)	SDSSJ2222+2745	RA: 22 22 8.7000 (335.5362500d) Dec: +27 45 34.58 (27.75961d) Equinox: J2000		

Comments:
Category=Galaxy
Description=[Quasars]

Template

Module	Subarray
B	FULL

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRAMODULEBOX	4	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	F115W	F444W	BRIGHT2	7	1	4	4	601.259	143577
2	F150W	F444W	BRIGHT2	5	1	4	4	429.471	143577

Special Requirements

Offset -26.0 arcsec, -26.0 arcsec