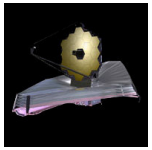

4783 - Anchoring the JWST population II distance ladder to Gaia

Cycle: 3, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1		NIRCam Imaging	(1) NGC-147
	2		NIRCam Imaging	(2) NGC-185
	3		NIRCam Imaging	(3) NGC-205
	4		NIRCam Imaging	(4) AQUARIUS-DIRR
	5		NIRCam Imaging	(5) PEGASUS-DIRR
	6		NIRCam Imaging	(6) LEO-A
	7		NIRCam Imaging	(7) CETUS-DSPH
	8		NIRCam Imaging	(8) IC-1613

ABSTRACT

We propose to obtain multi-band imaging of 8 nearby galaxies that have deep HST photometry and secure distances tied to the Gaia geometric standard in order to establish a Gaia-based anchor for the JWST population II distance ladder. Extragalactic distances play a pivotal role in many branches of modern astrophysics, from galaxy property determinations to measuring cosmic expansion. JWST will massively increase the detection range of Pop II distance indicators, such as the tip of the red-giant branch (TRGB) and the horizontal branch (HB). This program will critically anchor the JWST Pop II distance scale to the Gaia standard, while avoiding challenges posed by saturation. The data acquired by this program will also enable a range of complementary science from improving Pop II stellar age estimates to measuring precise stellar parameters when coupled with panchromatic HST imaging.

OBSERVING DESCRIPTION

This program will obtain NIRCam photometry of 8 nearby galaxies with deep ancillary HST photometry and secure distances tied to Gaia, with the goal of calibrating the population II distance ladder in a range of commonly used NIRCam passbands.

Each visit will obtain photometry in the (F090W, F444W), (F115W, F356W) and (F150W, F277W) passbands. We will acquire 4 dithered (subpixel) exposures per filter, using the SHALLOW4/MEDIUM8 read-out patterns, between 3 and 9 groups per integration, and 1 or 2 integrations per exposure. This set-up has been tuned for each filter and target, to reach the depth of the blue horizontal branch, while avoiding saturation of the tip of the red-giant branch. The total exposure time of the program is 11.99h and the total requested time is 24.3h.

The special requirement OFFSET has been set to center one of the two NIRCam modules on top of existing HST data. For 5 of our 8 targets, we have imposed a PA range constraint, to place the second NIRCam module on high surface-brightness regions of the target. The PA range has been left large enough to include all the schedulability windows that fall outside the micrometeoroid avoidance zone (MAZ). The total schedulability window of our observations ranges from 7 to 11 weeks for the PA-constrained targets (0% MAZ overlap) and from 16 to 27 weeks for the reamining targets (46% to 68% overlap with the MAZ).

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC-147	RA: 00 32 51.4707 (8.2144612d) Dec: +48 22 48.54 (48.38015d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(2)	NGC-185	RA: 00 39 9.3362 (9.7889008d) Dec: +48 25 58.91 (48.43303d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(3)	NGC-205	RA: 00 40 17.0000 (10.0708333d) Dec: +41 44 50.00 (41.74722d) Equinox: J2000	Proper Motion RA: -1.5220343736825374E-4 sec of time/yr Proper Motion Dec: -6.720000556015293E-4 arcsec/yr Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(4)	AQUARIUS-DIRR	RA: 20 46 52.4508 (311.7185450d) Dec: -12 50 47.14 (-12.84643d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(5)	PEGASUS-DIRR	RA: 23 28 37.3490 (352.1556208d) Dec: +14 44 28.26 (14.74118d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(6)	LEO-A	RA: 09 59 26.0343 (149.8584762d) Dec: +30 44 59.80 (30.74994d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(7)	CETUS-DSPH	RA: 00 26 10.2804 (6.5428350d) Dec: -11 03 16.79 (-11.05466d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			
(8)	IC-1613	RA: 01 04 29.0605 (16.1210854d) Dec: +02 09 35.12 (2.15976d) Equinox: J2000	Epoch of Position: 2015.5	
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. *Category=Galaxy* *Description=[Dwarf galaxies]*			

Observation

Proposal 4783, Observation 1 Wed Sep 18 15:00:11 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 1:1) Warning (Form): Data Excess over lower threshold

(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)	NGC-147	RA: 00 32 51.4707 (8.2144612d) Dec: +48 22 48.54 (48.38015d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	6	1	4	4	1245.465	
2	F115W	F356W	BRIGHT2	9	2	8	4	1589.042	
3	F150W	F277W	BRIGHT2	10	2	8	4	1760.83	

Special Requirements

Aperture PA Range 50 to 125 Degrees (V3 50.07457694 to 125.07457694)
Offset -88.1 arcsec, -1.0 arcsec

Observation

Proposal 4783, Observation 2 Wed Sep 18 15:00:11 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 2:1) Warning (Form): Data Excess over lower threshold

(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)	NGC-185	RA: 00 39 9.3362 (9.7889008d) Dec: +48 25 58.91 (48.43303d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	5	1	4	4	1030.73	
2	F115W	F356W	BRIGHT2	9	2	8	4	1589.042	
3	F150W	F277W	BRIGHT2	8	2	8	4	1417.254	

Special Requirements

Aperture PA Range 70 to 125 Degrees (V3 70.07457694 to 125.07457694)
Offset 86.57 arcsec, 1.39 arcsec
Guide Star in Guider 2

Observation

Proposal 4783, Observation 3

Wed Sep 18 15:00:11 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
(3)	NGC-205	RA: 00 40 17.0000 (10.0708333d) Dec: +41 44 50.00 (41.74722d) Equinox: J2000	Proper Motion RA: -1.5220343736825374E-4 sec of time/yr Proper Motion Dec: -6.720000556015293E-4 arcsec/yr Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	7	1	4	4	1460.201	
2	F115W	F356W	SHALLOW4	5	2	8	4	2104.407	
3	F150W	F277W	SHALLOW4	5	2	8	4	2104.407	

Special Requirements

Offset 86.57 arcsec, 1.39 arcsec

Observation

Proposal 4783, Observation 4

Wed Sep 18 15:00:11 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
(4)	AQUARIUS-DIRR	RA: 20 46 52.4508 (311.7185450d) Dec: -12 50 47.14 (-12.84643d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	MEDIUM8	6	1	4	4	2490.931	
2	F115W	F356W	SHALLOW4	9	2	8	4	3822.29	
3	F150W	F277W	SHALLOW4	7	2	8	4	2963.349	

Special Requirements

Offset 86.57 arcsec, 1.39 arcsec

Observation

Proposal 4783, Observation 5

Wed Sep 18 15:00:11 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
(5)	PEGASUS-DIRR	RA: 23 28 37.3490 (352.1556208d) Dec: +14 44 28.26 (14.74118d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	8	1	4	4	1674.936	
2	F115W	F356W	SHALLOW4	6	2	8	4	2533.878	
3	F150W	F277W	SHALLOW4	5	2	8	4	2104.407	

Special Requirements

Aperture PA Range 50 to 90 Degrees (V3 50.07457694 to 90.07457694)
Offset -88.1 arcsec, -1.0 arcsec

Observation

Proposal 4783, Observation 6

Wed Sep 18 15:00:11 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 6:1) Warning (Form): Data Excess over lower threshold

(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)	LEO-A	RA: 09 59 26.0343 (149.8584762d) Dec: +30 44 59.80 (30.74994d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	7	1	4	4	1460.201	
2	F115W	F356W	SHALLOW4	5	2	8	4	2104.407	
3	F150W	F277W	BRIGHT2	10	2	8	4	1760.83	

Special Requirements

Aperture PA Range 287 to 258 Degrees (V3 287.07457694 to 258.07457694)
Offset 86.57 arcsec, 1.39 arcsec

Observation

Proposal 4783, Observation 7

Wed Sep 18 15:00:11 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 7:1) Warning (Form): Data Excess over lower threshold

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(7)	CETUS-DSPH	RA: 00 26 10.2804 (6.5428350d) Dec: -11 03 16.79 (-11.05466d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	6	1	4	4	1245.465	
2	F115W	F356W	BRIGHT2	9	2	8	4	1589.042	
3	F150W	F277W	BRIGHT2	9	2	8	4	1589.042	

Special Requirements

Aperture PA Range 40 to 75 Degrees (V3 40.07457694 to 75.07457694)
Offset -88.1 arcsec, -1.0 arcsec

Observation

Proposal 4783, Observation 8 Wed Sep 18 15:00:11 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 8:1) Warning (Form): Data Excess over lower threshold

(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)	IC-1613	RA: 01 04 29.0605 (16.1210854d) Dec: +02 09 35.12 (2.15976d) Equinox: J2000	Epoch of Position: 2015.5	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Galaxy
Description=[Dwarf galaxies]

Template

Module	Subarray	Target Placement
ALL	FULL	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	NONE		STANDARD		4

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F090W	F444W	SHALLOW4	6	1	4	4	1245.465	
2	F115W	F356W	BRIGHT2	9	2	8	4	1589.042	
3	F150W	F277W	BRIGHT2	8	2	8	4	1417.254	

Special Requirements

Aperture PA Range 55 to 80 Degrees (V3 55.07457694 to 80.07457694)
Offset 86.57 arcsec, 1.39 arcsec