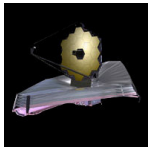

7034 - Distance Scale Linkages between JWST Tip of the Red Giant Branch and JWST/HST Surface Brightness Fluctuations (and SNIa in E Hosts)

Cycle: 4, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Observation Folder				
	1	NGC524	NIRCam Imaging	(1) NGC-0524
	2	NGC1201	NIRCam Imaging	(2) NGC-1201
	3	NGC1340/44	NIRCam Imaging	(3) NGC-1344
	4	NGC1374	NIRCam Imaging	(4) NGC-1374
	5	IC2006	NIRCam Imaging	(5) IC-2006
	6	NGC3643	NIRCam Imaging	(7) NGC-3643
	7	NGC3941	NIRCam Imaging	(8) NGC-3941
	8	NGC4036	NIRCam Imaging	(9) NGC-4036
	9	NGC4125	NIRCam Imaging	(10) NGC-4125
	10	NGC4386	NIRCam Imaging	(11) NGC-4386
	11	NGC5839	NIRCam Imaging	(14) NGC-5839

ABSTRACT

The value of the Hubble constant remains contentious and there is a need for a completely different path to a determination from one using Cepheids or supernovae. A Population II path that is particularly suited to exploitation with JWST involves the bright stars on the red giant branch. In nearby galaxies those stars are resolved and distances can be determined from the magnitudes of those at the tip of the red giant branch (TRGB). In more distant galaxies those same kinds of stars are blended but distances can be inferred from the spatial power spectum of surface brightness fluctuations (SBF). HST SBF observations have been made with WFC3/IR of 220 galaxies. However, the absolute calibration of this outstanding sample depends on a transfer from dated Cepheid observations. The proposed observations will provide a proper calibration of the HST material tied to a Pop II JWST calibration by extending the overlap from 6 to 17 galaxies.

That JWST calibration including establishment of the TRGB zero point and the transfer to SBF is a work in progress. This program will almost double the connections between TRGB and SBF in JWST passbands from 14 to 25 galaxies, all within 30 Mpc. As a secondary benefit, TRGB distances will be determined for 9 elliptical galaxy hosts of Type Ia supernovae.

Immediate products will be a determination of H0 from 220 HST SBF observations within 100 Mpc with a Pop II calibration and a separate determination of H0 from the calibration of SN Ia in E/S0 hosts. The long term benefit is through the calibration of SBF with JWST which ultimately will give H0 with observations reaching 350 Mpc.

OBSERVING DESCRIPTION

Primary observations are made with NIRCam using the SW F090W and F150W filters, with roughly 2/3 of the exposure time devoted to the F090W passband. Simultaneous observations are made through the LW filters F277W and F356W. In all cases, the NIRCam positioning is such that there is simultaneous coverage of the core and the halo of the target galaxies.
All observations use full subarrays and small 4-point dithers.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	NGC-0524	RA: 01 24 47.7456 (21.1989400d) Dec: +09 32 20.04 (9.53890d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(2)	NGC-1201	RA: 03 04 7.9896 (46.0332900d) Dec: -26 04 10.81 (-26.06967d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(3)	NGC-1344	RA: 03 28 19.6224 (52.0817600d) Dec: -31 04 5.34 (-31.06815d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(4)	NGC-1374	RA: 03 35 16.5984 (53.8191600d) Dec: -35 13 34.57 (-35.22627d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(5)	IC-2006	RA: 03 54 28.4544 (58.6185600d) Dec: -35 58 1.56 (-35.96710d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(7)	NGC-3643	RA: 11 21 24.9912 (170.3541300d) Dec: +03 00 50.11 (3.01392d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(8)	NGC-3941	RA: 11 52 55.3704 (178.2307100d) Dec: +36 59 10.79 (36.98633d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				
(9)	NGC-4036	RA: 12 01 26.7744 (180.3615600d) Dec: +61 53 44.81 (61.89578d) Equinox: J2000		
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*				

(10)	NGC-4125	RA: 12 08 6.0168 (182.0250700d) Dec: +65 10 26.87 (65.17413d) Equinox: J2000
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*		
(11)	NGC-4386	RA: 12 24 28.4088 (186.1183700d) Dec: +75 31 44.26 (75.52896d) Equinox: J2000
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*		
(14)	NGC-5839	RA: 15 05 27.4872 (226.3645300d) Dec: +01 38 5.32 (1.63481d) Equinox: J2000
Comments: This object was generated by the targetselector and retrieved from the NED database. *Category=Galaxy* *Description=[Elliptical galaxies, Galaxy halos]*		

Observation

Proposal 7034, Observation 1: NGC524

Tue Apr 29 18:00:07 GMT 2025

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
(1)	NGC-0524	RA: 01 24 47.7456 (21.1989400d) Dec: +09 32 20.04 (9.53890d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	8	3	12	4	10135.511	
2	F150W	F356W	MEDIUM8	6	2	8	4	5024.808	

Special Requirements

Aperture PA Range 64.92542306 to 74.92542306 Degrees (V3 65.0 to 75.0)
Offset -110.0 arcsec, 30.0 arcsec

Observation

Proposal 7034, Observation 2: NGC1201

Tue Apr 29 18:00:07 GMT 2025

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
(2)	NGC-1201	RA: 03 04 7.9896 (46.0332900d) Dec: -26 04 10.81 (-26.06967d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	5	1	4	4	2061.46	
2	F150W	F356W	SHALLOW4	6	1	4	4	1245.465	

Special Requirements

Aperture PA Range 359.92542306 to 29.92542306 Degrees (V3 0.0 to 30.0)
Offset 50.0 arcsec, 30.0 arcsec

Observation

Proposal 7034, Observation 3: NGC1340/44

Tue Apr 29 18:00:07 GMT 2025

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-1344	RA: 03 28 19.6224 (52.0817600d) Dec: -31 04 5.34 (-31.06815d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	7	1	4	4	2920.401	
2	F150W	F356W	SHALLOW4	8	1	4	4	1674.936	

Special Requirements

Aperture PA Range 4.92542306 to 49.92542306 Degrees (V3 5.0 to 50.0)
Offset -110.0 arcsec, 30.0 arcsec

Observation

Proposal 7034, Observation 4: NGC1374

Tue Apr 29 18:00:07 GMT 2025

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)	NGC-1374	RA: 03 35 16.5984 (53.8191600d) Dec: -35 13 34.57 (-35.22627d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	7	1	4	4	2920.401	
2	F150W	F356W	SHALLOW4	8	1	4	4	1674.936	

Special Requirements

Aperture PA Range 297.92542306 to 313.92542306 Degrees (V3 298.0 to 314.0)
Offset 50.0 arcsec, -30.0 arcsec

Observation

Proposal 7034, Observation 5: IC2006

Tue Apr 29 18:00:07 GMT 2025

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)	IC-2006	RA: 03 54 28.4544 (58.6185600d) Dec: -35 58 1.56 (-35.96710d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	7	1	4	4	2920.401	
2	F150W	F356W	SHALLOW4	8	1	4	4	1674.936	

Special Requirements

Aperture PA Range 299.92542306 to 309.92542306 Degrees (V3 300.0 to 310.0)
Offset 110.0 arcsec, -30.0 arcsec

Observation

Proposal 7034, Observation 6: NGC3643

Tue Apr 29 18:00:07 GMT 2025

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)	NGC-3643	RA: 11 21 24.9912 (170.3541300d) Dec: +03 00 50.11 (3.01392d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	8	3	12	4	10135.511	
2	F150W	F356W	MEDIUM8	6	2	8	4	5024.808	

Special Requirements

Aperture PA Range 116.42542306 to 117.42542306 Degrees (V3 116.5 to 117.5)
Offset 65.0 arcsec, 40.0 arcsec

Observation

Proposal 7034, Observation 7: NGC3941

Tue Apr 29 18:00:07 GMT 2025

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)	NGC-3941	RA: 11 52 55.3704 (178.2307100d) Dec: +36 59 10.79 (36.98633d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	SHALLOW4	5	1	4	4	1030.73	
2	F150W	F356W	SHALLOW4	5	1	4	4	1030.73	

Special Requirements

Aperture PA Range 109.92542306 to 119.92542306 Degrees (V3 110.0 to 120.0)
Offset -50.0 arcsec, 30.0 arcsec

Observation

Proposal 7034, Observation 8: NGC4036

Tue Apr 29 18:00:07 GMT 2025

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)	NGC-4036	RA: 12 01 26.7744 (180.3615600d) Dec: +61 53 44.81 (61.89578d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	10	1	4	4	4208.814	
2	F150W	F356W	MEDIUM8	6	1	4	4	2490.931	

Special Requirements

Aperture PA Range 179.92542306 to 189.92542306 Degrees (V3 180.0 to 190.0)
Aperture PA Range 289.92542306 to 319.92542306 Degrees (V3 290.0 to 320.0)
Offset 50.0 arcsec, 30.0 arcsec

Observation

Proposal 7034, Observation 9: NGC4125

Tue Apr 29 18:00:07 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(10)	NGC-4125	RA: 12 08 6.0168 (182.0250700d) Dec: +65 10 26.87 (65.17413d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	7	2	8	4	5883.75	
2	F150W	F356W	MEDIUM8	8	1	4	4	3349.872	

Special Requirements

Aperture PA Range 204.92542306 to 229.92542306 Degrees (V3 205.0 to 230.0)
Offset 125.0 arcsec, -30.0 arcsec

Observation

Proposal 7034, Observation 10: NGC4386

Tue Apr 29 18:00:07 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(11)	NGC-4386	RA: 12 24 28.4088 (186.1183700d) Dec: +75 31 44.26 (75.52896d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	8	4	16	4	13528.33	
2	F150W	F356W	MEDIUM8	8	2	8	4	6742.692	

Special Requirements

Aperture PA Range 221.92542306 to 230.92542306 Degrees (V3 222.0 to 231.0)
Offset -50.0 arcsec, -30.0 arcsec

Observation

Proposal 7034, Observation 11: NGC5839

Tue Apr 29 18:00:07 GMT 2025

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

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
(14)	NGC-5839	RA: 15 05 27.4872 (226.3645300d) Dec: +01 38 5.32 (1.63481d) Equinox: J2000		

Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=Galaxy
Description=[Elliptical galaxies, Galaxy halos]

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	F277W	MEDIUM8	8	3	12	4	10135.511	
2	F150W	F356W	MEDIUM8	6	2	8	4	5024.808	

Special Requirements

Aperture PA Range 103.92542306 to 104.92542306 Degrees (V3 104.0 to 105.0)
Offset -60.0 arcsec, 30.0 arcsec